



The Nordic Bioeconomy Initiative

2013-2018

Vision

The **Nordic Bioeconomy Initiative** has its basis in the primary sector, which is comprised of the agriculture, forestry, fisheries and food industries, while at the same time recognising the importance of working together with other sectors. The initiative is a platform encompassing a variety of activities such as research, infrastructure cooperation, coordination of national priorities, dialogue meetings, conferences and workshops. The bioeconomy field is rapidly developing at the national, European, and global levels. It is therefore important that a Nordic initiative is dynamic and flexible, and can easily accommodate a changing research environment and shifts in political priorities.

The initiative identifies central thematic areas considered to be important at the Nordic level. These build on European and national priorities and as such should not be seen as exclusive and distinct, but rather as initial priorities that will be subject to change, depending on national priorities and European initiatives.

The most demanding aspects of efforts to implement a biobased economy must be carried out at the national level; thus, this initiative is not designed to replace national or European initiatives, but to support and supplement them. The aim is to join forces at the Nordic level to achieve advantages of scale in addition to producing and disseminating knowledge among countries.

Nordic financial resources alone are not sufficient to achieve a significant impact, but a combination of public and private national resources for specific, identified topics will facilitate a targeted approach that can lead to contributions at both the national and the European level.

Background and definition

The concept of “bioeconomy” or “biobased society” has become an important component of national, Nordic, EU and global policies. The social, economic and biological challenges we face, and the scarcity of natural resources combined with climatological changes, necessitate new approaches

to knowledge and innovation as well as to knowledge-based policies. The transformation to a biobased economy means a transition from a fossil fuel-based economy to a more resource-efficient economy based on renewable materials produced through sustainable use of ecosystem services from land and water. A greater focus on research and innovation can provide us with new products developed from biomass that will replace fossil material, combat climate change, reduce waste and create new jobs.

The Nordic Bioeconomy Initiative is not sector-specific, and its primary focus is on adapting and changing the Nordic societies so that they can address future climatic, economic, social and biological challenges in a sustainable manner.

Development of a bioeconomy is part of a broader strategy of sustainable green growth. A social, economic and political toolbox will be employed to create a sustainable society in terms of production as well as consumption. A biobased economy implies sustainable and effective use of the biomass, i.e. the total mass of biological material on land and at sea. This includes new products from agriculture, forestry, aquaculture, peat lands, other vegetation, marine resources, wild and domestic animals, bacteria, waste, etc. The sustainable production, use, consumption and waste management of biomass all contribute to a bioeconomy.

A biobased economy (bioeconomy) can be defined as an economy based on:

- The sustainable production of biomass to enhance the use of biomass products within a number of different sectors of society. The objective is to reduce climate effects and the use of fossil-based raw materials.
- Increased added value for biomass materials, concomitant with a reduction in energy consumption and recovery of nutrients and energy as additional end-products. The objective is to optimise the value and contribution of ecosystem services to the economy.

The Nordic countries produce large amounts of biomass in industries such as agriculture, aquaculture, fisheries and forestry. The anticipated climate change will also have an impact on Nordic biomass production, and it is estimated that Nordic biomass will increase by at least 30 %. In addition, the production of biomass can be developed to become more efficient and dynamic, thus increasing Nordic capacity to generate even more biomass. Obviously, the Arctic areas, too, are affected by climate change and will experience an increase in the production of biomass. The Nordic Bioeconomy Initiative will therefore place particular emphasis on the Arctic region.

The present challenges are diverse and multidimensional, requiring solutions and approaches that extend across a variety of sectors. The efficient, sustainable use of Nordic biomass entails a focus on the entire biomass value chain. The present and future value chains cut across many sectors, and cooperation is essential to promote social, economic and industrial change towards sustainability in each of the individual links in the chain as well as in the chain as a whole.

On 13 February 2012, the European Commission adopted a new strategy entitled “Innovating for Sustainable Growth: A Bioeconomy for Europe” (COM (2012) 60). Nearly all of the Nordic countries are developing national strategies for a biobased economy. The Swedish Research Council (Formas) has published a research and innovation strategy for a biobased society, and the Swedish Government has allocated special resources for the purpose of developing a bioeconomy in its new research budget (autumn 2012). The Research Council of Norway has established the research programme “Sustainable Innovation in Food and Bio-based Industries (BIONAER), and in Finland both the Finnish Innovation Fund (SITRA) and the Finnish Funding Agency for Technology and Innovation (TEKES) have developed strategies in this area. The Danish Ministry of Science, Innovation and Higher Education has initiated discussions on issues related to the bioeconomy among the relevant ministries. By the end of 2012 the government will decide whether to draw up a strategy on the bioeconomy.

Cooperation is essential to the implementation of the various aspects of this initiative. The Nordic Joint Committee for Agricultural and Food Research (NKJ) anticipates that the partners in this initiative will include the Nordic Council of Ministers, NordForsk, Nordic Innovation, the Nordic Forest Research Cooperation Committee (SNS), the Nordic Working Group for Fisheries and Aquaculture (AG-Fisk), Nordic Energy Research, the Nordic Genetic Resource Centre (NordGen), the Top-level Research Initiative (TRI) and the national research and innovation funding bodies.

Objectives

The objectives of the Nordic Bioeconomy Initiative are to:

- Enhance Nordic cooperation, advance research and innovation, and create a foundation for knowledge-based policies.
- Improve the sustainable management and utilisation of biological resources and strengthen the Nordic primary sector in order to optimise the local economic and social benefits.
- Encourage a proactive response to climate change, open new markets, create new jobs, contribute to food security and public health, and secure access to biobased feedstock in the Nordic countries and beyond.

The Nidaros declaration

Important challenges to green growth and the bioeconomy were addressed in the Nidaros declaration at the meeting of the Nordic Council of Ministers for Fisheries and Aquaculture, Agriculture, Food and Forestry (MR-FJLS) on 28 June 2012 in Trondheim.

The Nordic Bioeconomy Initiative is a direct follow-up to the Nidaros declaration, and aims to create a common Nordic policy platform for the exchange of viewpoints and development of the Nordic bioeconomy. The initiative takes as its point of departure the fundamental idea that developing the bioeconomy in the Nordic countries must be a sustainable choice. The platform is intended for application across sectors and national borders.

In the Nidaros declaration the Ministers emphasised that primary production and food industries are vital to green growth. The goal of the declaration is to increase sustainability and competitive production within the MR-FJLS sectors of food, feedstuff, building and construction, bioenergy and new innovative products from both terrestrial and aquatic environments.

The Nidaros declaration emphasises the role of the bioeconomy, including the processing industries, as a key factor in green growth. The Nordic Bioeconomy Initiative will strengthen green economic growth by promoting:

Increased efficiency

- Sustainable and ecosystem-based use of renewable terrestrial and aquatic natural resources, with a focus on growth, processing and breeding aimed at adaptation to climate change and improved product quality.
- Efficient use of residual materials and waste.
- Reduced spillage in the value chain and by the consumer.

Growth

- Profitable companies and new businesses based on innovative services and products from the primary industries.
- Economic growth based on improved use of biomass, food quality, healthy foods, and regional and local advantages.

Improved framework conditions

- Government regulations and measures that encourage the development of increased biological production and processing in the Nordic region on a sustainable basis.
- Enhanced cooperation within the Nordic Council of Ministers, including regional cooperation.
- Coordination with the European Commission's focus on bioeconomy as well as with neighbouring countries in the East and West.

The declaration also states: "The areas of responsibility under MR-FJLS are key for green growth, and will be given a higher priority in the future. With help from their institutions and co-operative bodies like NordGen, Nordic Forest Research Cooperation Committee (SNS), Nordic Working Group for Fisheries and Aquaculture (AG Fisk) and the Nordic Joint Committee for Agricultural and Food Research (NKJ), MR-FJLS will contribute to the development of a more biobased economy in the Nordic countries."

Goals of the Nordic Bioeconomy Initiative

The Nordic Bioeconomy Initiative is focused primarily on Nordic collaboration, but cooperation with other regions, such as the Northwest Atlantic region, Europe and the Baltic Sea region, is encouraged as well. As the sustainable use of resources and the utilisation of by-products/waste from one sector by another sector is an important part of a bioeconomy, an essential part of the initiative is the involvement of a range of different disciplines, with an emphasis on interdisciplinary cooperation and establishment of networks across sectors.

Specific goals of the Nordic Bioeconomy Initiative are to:

- Enhance and facilitate Nordic cooperation within research and policymaking and between the agriculture, forestry, fisheries, aquaculture and food industries in order to develop the Nordic societies into sustainable biobased economies.
- Produce new knowledge to create and stimulate knowledge-based policies with special focus on the educational sector in the Nordic countries, regionally and beyond.
- Advance Nordic bioeconomy research and innovation, improve the sustainable management and utilisation of Nordic and Arctic renewable biological resources, and subsequently open up new markets for food and biobased products.
- Strengthen Nordic socioeconomic research on the consequences of introducing a biobased economy and ensure increased research and innovation on new biobased-products and services to create new jobs and enhance food security.

- Contribute to adaptation and mitigation of climate change impacts by initiating proactive activities in the Nordic countries in order to meet future economic, social and biological challenges and opportunities as well as international obligations in a sustainable manner.
- Facilitate the role of the Nordic primary sectors in improving public health and local economic development, e.g. through improved utilisation of local resources and more sustainable consumer habits.
- Utilise existing structures and institutions in Nordic cooperation to foster discussion and development of the Nordic Bioeconomy Initiative.
- Enhance and expand regional cooperation within and outside the EU framework.

Thematic priorities

The Nordic Bioeconomy Initiative contains three main focus areas, all of which are based on sustainability, ecosystem protection and human welfare – locally, regionally and globally. These areas will also enhance innovation in and the potential to establish new services and products.

1) Sustainable production and use of biomass for products and services in the Nordic countries

Biobased industries as well as consumers need to adapt in order to meet future challenges related to climate change, population growth and increased pressure to switch from fossil fuel-based energy to biobased energy. New and innovative products and services for a biobased economy will require more efficient, sustainable production and utilisation of biomass. This will influence the development of new technologies, processes and bioproducts. Achieving sustainable, environment-friendly and integrated production within the agriculture, fisheries, food and forestry industries is a political priority. The primary production of biomass must give due consideration to the need for biodiversity, a sustainable ecosystem, management and more efficient use of residual materials and waste. Research and cooperation must be transdisciplinary, involving a wide range of stakeholders from biomass producers to biorefineries and trade.

Examples of more direct sub-themes:

- Producing bioenergy without compromising food security.
- Improved and extended utilisation of bioresources.
- Increased production, also by applying biotechnology.

2) Sustainable production and use of biomass in relation to food security and safety:

There are strong indications that climate change will increase the potential for food production in the Nordic countries, while more populated countries further south will experience a severe decline in terrestrial biomass and food productivity. This situation, together with a growing global population, will increase the pressure to expand food production at higher latitudes. It is vital that increased food production is sustainable, safeguarding natural resources such as soil, water and the marine environment for the future. Innovation in food production, new tools and methods are therefore critical. Meeting this challenge will also require a change in lifestyle and consumption patterns, as well as sustainable waste treatment and utilisation of biological waste materials, such as fully utilising by-products from food production.

Examples of more direct sub-themes for better use of bioenergy in the food chain:

- Measures to avoid food waste.
- Food waste as a bioresource for other products/sectors.
- Changes in the food habits of the Nordic population.
- Food production versus biomass production for other uses; regulation, land-use conflicts, advantages/disadvantages for farmers.
- Development of new unconventional raw materials in food and feed production, e.g. fish feed from the biotechnology and forestry industries.

3) Sustainable production and use of biomass to foster local economic and social development:

The primary industries (agriculture, forestry, fisheries, etc.) are to play a major part in, and will benefit from, the bioeconomy initiative. These industries are located mainly in rural areas. Thus it is a specific thematic priority to focus on the regional areas and their development. The Nordic Bioeconomy Initiative should further encourage “participative government” in the discussion of the value of public goods (e.g. natural resources), and a specific goal of the initiative is therefore to increase the general public’s understanding of this issue.

Examples of more direct sub-themes:

- The role of rural areas in the bioeconomy.
- Local food production and origin-linked products.
- Multiple use of forest resources, including social innovations and products promoting the sustainable development of rural communities.
- Science-based public debate on the bioeconomy and utilisation of natural resources in a broad context.

Methods of implementation

Cross-cutting methods for implementing the initiative are:

- Combined research and innovation activity. Cooperation between research and innovation is particularly important for the development of new strategies, technologies and policies. Research and industry should play a role in drawing up the strategies and be included at the project level as well.
- An emphasis on joint Nordic use and development of infrastructures.
- Dissemination and coordination. The flow of knowledge between different stakeholders is vital to an initiative which strives to support national and European efforts to successfully develop and implement a biobased economy.
- Coordination at all levels is required to successfully implement the initiative and prevent overlap. Cooperation with both the producers of biomass and its industrial stakeholders is crucial as well.
- A Nordic Bioeconomy Panel – The initiative should include a Nordic dialogue on national Nordic and European priorities. It should include thematic workshops and seminars, which will help the various stakeholders to prioritise and to identify Nordic added value and Nordic potential.