



INDUSTRIAL BIOTECHNOLOGY IN NORWAY

INDUSTRIAL BIOTECHNOLOGY IN NORWAY¹

INTRODUCTION	3
RESEARCH AND INNOVATION	4
A. Public research funding	4
B. Pilot and demonstration plants	4
i. pilot plants	4
ii. demonstration plants	5
II. POLICY	6
A. Policies and regulations	6
B. Public procurement	6
C. Standardisation, labelling and certification	6
D. Access to finance	7
E. Communication	7

Released in January 2009

¹ Please send your contributions and modifications to a.peeters@europabio.org

INDUSTRIAL BIOTECHNOLOGY IN NORWAY

INTRODUCTION

Norwegian life science and biotechnology research institutions are internationally well known for their high standard and quality. For this reason many big pharma companies have engaged themselves in development projects and clinical trials in Norway. In the shadow of the “big ones” a number of smaller Norwegian entrepreneurial companies have developed during the last decade, a few of these in industrial biotechnology.

RESEARCH AND INNOVATION

Modern industrial biotechnology is a relatively new discipline, with major areas of knowledge still to be explored. Public support to research as well as the establishment of pilot and demonstration facilities to scale-up individual processes will therefore help in the development of a European bio-based economy.

A. Public research funding

Norwegian research policy is managed by the **Research Council of Norway**² (RCN). The RCN is member of the European Network Area on Industrial biotechnology³ (**ERA-net IB**) as an observer.

The Research Council of Norway has established centres of excellence and centres for research-based innovation as a part of its efforts to strengthen the basis for applied research and development in Norway. The intention is also to bring more Norwegian researchers and research groups up to a high international standard. The centres are devoted to long-term basic research. According to the research council the main objective for the centres for research-based innovation is to enhance the capability of the business sector to innovate by focusing on long-term research based on forging close alliances between research-intensive enterprises and prominent research groups.

The RENERGI programme⁴ focuses on the development and use of environment-friendly technology and fuels, including hydrogen and other biofuels. Part of this funding is linked to the government's national hydrogen strategy.

B. Pilot and demonstration plants

i. pilot plants

Pilot plants are listed by alphabetical order of location

Stavanger

Biosentrum, Stavanger	
General, products, feedstocks	Biosentrum can process a wide range of products from starter cultures to high value products, including fine chemicals and recombinant proteins.
Services	The plant offers fermentation capacities ranging from small-scale lab-fermenters, pilot productions for nonclinical development to commercial quantities up to 30m ³ . Biosentrum have a research facility for the construction of production cell lines and fermenting development The pilot facility also includes upstream and downstream equipment as well as analytical services.
Financing	
Contact	Prof. Olav Hanssensvei: bio-info@biosentrum.no http://www.biosentrum.no/index.htm

Trondheim

² <http://www.forskningsradet.no>

³ <http://www.era-ib.net>

⁴ <http://www.rcn.no/servlet/Satellite?cid=1088801905103&pageid=1088801905103&pagename=renergi%2FPage%2FHovedSideEng&site=renergi>

SINTEF/NTNU, Trondheim	
General, products, feedstocks	This pilot plant for bioprocesses is capable of handling liquid volumes in the range of 100-1500 liters and includes fermentors, centrifuges, cell homogenizer and equipment for membrane filtration and chromatography.
Services	The institute offers contract research in the development and optimization of biotechnological processes for the pharmaceutical, fine chemicals, food and feed industries.
Financing	
Contact	Håvard Sletta: havard.sletta@sintef.no (fermentation) or Inga Marie Aasen: inga.m.aasen@sintef.no (downstream processing) http://www.sintef.no/Home/Materials-and-Chemistry/Biotechnology/ From laboratory to industry Trond E. Ellingsen, Research Director: trond.e.ellingsen@sintef.no http://www.sintef.no/upload/Materialer_kjemi/Bioteknologi/Poster1-%20lab-industri-a3.pdf

ii. demonstration plants

There is currently no demonstration project in Norway

II. POLICY

Public authorities can promote the quick take-up of industrial biotechnology innovations by implementing a number of “instruments” or policy initiatives. This can be the improvement of the regulatory framework; the integration of specification for bio-based products in public procurement; the establishment of standardisation, labelling and certification schemes to overcome perceived uncertainty about product properties and weak market transparency; the development of financial instruments and supports to increase investments into research, technology development and innovation as well as the elaboration of communication and information campaign to communicate the benefits of bio-based products to users.

A. Policies and regulations

The “White paper on Research in Norway” entitled “**Commitment to Research**”⁵, highlights three areas of technology of which one is biotechnology. However, it is not specified that industrial biotechnology is a priority for Norway. Main acts regarding biotechnology concerns healthcare biotechnology which is more developed than industrial biotech in Norway.

The **Gene Technology Act**⁶ ensures that the production and use of genetically modified organisms and the production of cloned animals take place in an ethically justifiable and socially acceptable manner, in accordance with the principle of sustainable development and without adverse effects on health and the environment.

The Act is administered by both the Ministry of Health and Social Affairs and the Ministry of Environment. Contained use of GMOs is administered by the Ministry of Health and Social Affairs and the National Institute of Public Health, whereas deliberate release of GMOs is administered by the Ministry of Environment and the Directorate for Nature Management.

B. Public procurement

Specific public procurement does not exist for bio-based products.

However, since January 2008 and for three years, when purchasing products in the priority groups (property management and building, transport and vehicles, food, ICT equipment and e-meetings, textiles, health and hygiene consumer products), government institutions must follow specific requirements stipulated in the “environmental policy for government procurement”⁷.

C. Standardisation, labelling and certification

The Swan label⁸ applies in Norway. This label has been introduced by the Nordic Council of Ministers with the objective to promote a more sustainable consumerism with the goal of creating a sustainable society.

In this voluntary system, the applicant agrees to follow a certain criteria set outlined by the Nordic Ecolabelling in cooperation with stakeholders. These criteria include environmental, quality and health arguments. The criteria levels promote products and services belonging to the most environmentally sound and take into account factors such as free trade and proportionality (cost vs. benefits)

⁵ <http://www.forskningsradet.no/en/Article/Norwegian+research+policy/1193297223664>

⁶ <http://www.regjeringen.no/en/doc/Laws/Acts/Gene-Technology-Act.html?id=173031>

⁷ http://www.regjeringen.no/Upload/MD/Vedlegg/Planer/T-1467_eng.pdf

⁸ <http://www.svanen.nu>

The Swan label does not communicate specific bio-based properties / qualities as a specific labelling system for bio-based products does not exist.

Regulations relating to the labelling, transport, import and export of genetically modified organisms⁹. The object of these Regulations is to simplify the transport and import of genetically modified organisms. With the exception of genetically modified organisms listed in the regulation (chapter 2) the transport and import of genetically modified organisms may take place without special approval when the requirements of the regulations regarding labelling and packaging are fulfilled.

Declaration and Labelling of Microbiological Products¹⁰. The purpose of these regulations is to prevent the microorganisms in microbiological products from damaging human health or having detrimental environmental effects in the form of disturbance of ecosystems, pollution, waste, etc. Any person that manufactures or imports microbiological products or places them on the market in Norway has a duty to ensure that the packaging of the product is labelled in Norwegian as specified in the legislation (paragraph 5).

D. Access to finance

There is no market development plan for bio-based products in particular¹¹.

The Research Council of Norway offers partial financing of research and development projects. Industry projects are financed through the tax deduction scheme **SkatteFUNN**¹². The objective of the SkatteFUNN tax deduction scheme is to increase innovation and enhance value creation in trade and industry, as well as to boost R&D activity in Norwegian industry. All enterprises subject to taxation in Norway are eligible for a tax deduction for R&D expenses in approved projects. In order to qualify under the scheme, a project must be limited and focused, and must be aimed at generating new knowledge, information or experience which is presumed to be of use for the enterprise in developing new or improved products, services or manufacturing/processing methods. This programme is open to enterprises active in industrial biotechnology.

The User-driven Research based Innovation¹³ (BIA) programme was established in 2006. The BIA programme is targeted at industry and has a budget for 2008 of approximately NOK 300 million. Companies may apply for partial funding of R&D projects which are based on their own strategies and priorities, regardless of the branch of industry or thematic area. The projects must result in substantial value creation for the companies as well as for society-at-large, and must take an international perspective. This programme is open to companies active in industrial biotechnology.

E. Communication

Industrial biotechnology is promoted at the national level by the Norwegian Biotechnology Association¹⁴. The association is an independent member of the Confederation of Norwegian Business and Industry¹⁵ (NHO).

⁹ <http://www.regjeringen.no/en/dep/md/documents-and-publications/acts-and-regulations/regulations/2005/regulations-relating-to-the-labelling-tr.html?id=440383>

¹⁰ <http://www.regjeringen.no/en/dep/md/documents-and-publications/acts-and-regulations/regulations/1998/declaration-and-labelling-of-microbiolog.html?id=440456>

¹¹ <http://www.forskningsradet.no/en/Funding+for+industry/1186122423152>

¹² <http://www.skattefunn.no/>

¹³

<http://www.forskningsradet.no/servlet/Satellite?cid=1119339919294&pagename=innovasjonsarena%2FPage%2FHovedSideEng>

¹⁴ <http://www.biotekforum.no>

¹⁵ <http://www.nho.no/>