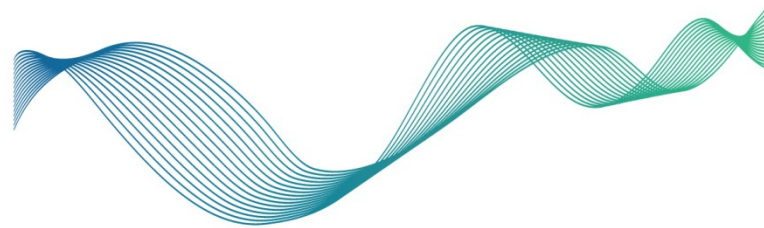


MarineBiotech



ERA-NET Preparatory Action in Marine Biotechnology



CSA (Coordinating) in Marine Biotechnology. MarineBiotech is funded under the European Commission's Seventh Framework Programme.
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Mapping the Marine Biotechnology RTDI Landscape

Jan-Bart Calewaert
Marine Board-ESF

Work Package Leader of WP3 CSA MarineBiotech



www.marinebiotech.eu

www.marineboard.eu

Presentation outline



- I. Why profile Marine Biotech in Europe?
- II. Situating the mapping activities
 - Components
 - Follow up activities
- III. Inventory of Marine Biotechnology RTDI Strategies, Programmes and Initiatives in Europe
 - Approach
 - Status
 - The way forward



I. Why profile the landscape?

- 2001 ESF Marine Board Position Paper
 - Recognised underexploited benefits of marine biotechnology in Europe
 - Called for European initiative to mobilise scattered human capital & refocus dispersed infrastructure
- 2006 EC background paper no. 10 on Marine Biotechnology
- 2007 “The Bremen meeting”. MB experts meet, hosted by German presidency
- 2008 “Blue Book”. EC-US task force on Biotech (marine genomics), Monaco
- 2008 EC launched “European Strategy for Marine and Maritime Research”
- **2009 CWG-MB advocates integrated Marine Biotech R&D in Europe**
- **2010 Updated Position paper from ESF’s Marine Board**



2009 KBBE-net Collaborative Working Group on Marine Biotechnology



First attempt to map national research priorities of European countries

- Biodiscovery / Bioprospecting
- Reference marine organisms and systems
- Molecular aquaculture
- Marine biomass production, use and transformation
- R & D tools (model organisms, reference sequences, bioinformatics, databases and biobanks, HTS technologies, IPR)



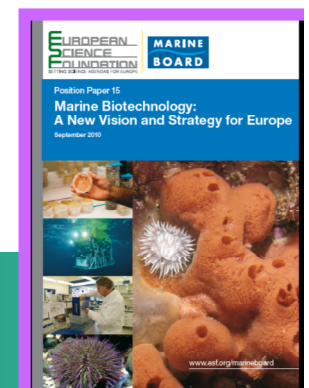
Objectives of the Marine Biotechnology Working Group 2009-2010



- provide a **strategic assessment** of the current scientific understanding of marine biotechnology relevant to European and member states policies
- identify the **priorities for further research** needed in this field
- **formulate recommendations** for future policies

Chaired by: Joel Querellou (Ifremer)

11 experts from various disciplines: Torger Børresen (Dk), Catherine Boyen (Fr), Alan Dobson (Ir), Manfred Höfle (G), Adrianna Ianora (It) Marcel Jaspars (UK), Anake Kijjooa (Pt), Jan Olafsen (N), Joel Querellou (Fr), George Rigos (Gr), René Wijffels (NI)



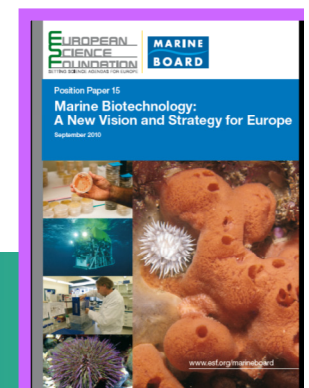
2010 position paper «Marine Biotechnology: A New Vision and Strategy for Europe»



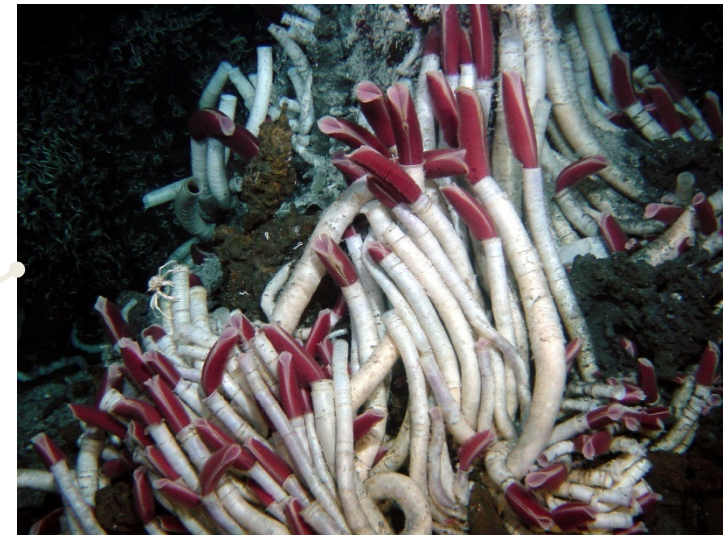
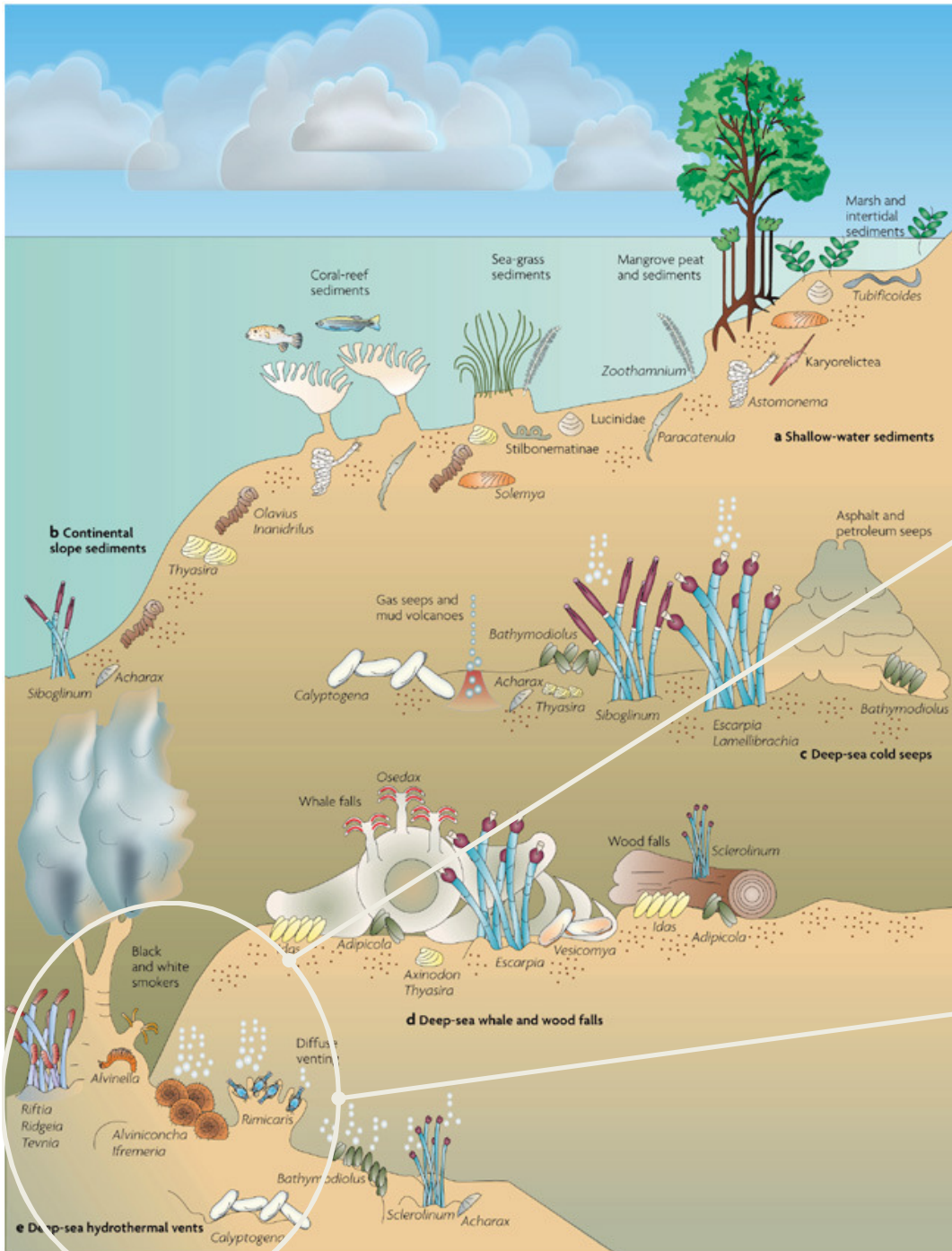
Marine biotechnology contributes to Grand Societal Challenges of our time...

- Protection and management of the **environment** (including marine ecosystems)
- Securing **human health and well-being**
 - bioactive natural products (pharmacy, cosmetics, ...)
 - ingredients
 - biocatalyser
- Sustainable alternative source of **energy**
- Sustainable supply of high quality and healthy **food**
- Industrial development and **economic recovery**

The global market for marine biotechnology products is growing

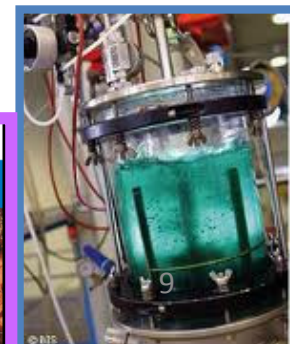


Hydrothermal vent fauna – a marvel!



Challenges – MB PP15

- Access to resources (especially) very deep specimens
- Increased understanding of physiology of marine species
- Culturing marine microorganisms
- Sustainable aquaculture of algae, fish, and shellfish for food, fuels and high value products and processes
- New policies for the protection of marine genetic resources
- Address legal and policy barriers in the biodiscovery pipeline (ABS, IP, ...)



Recommendations – MB PP15

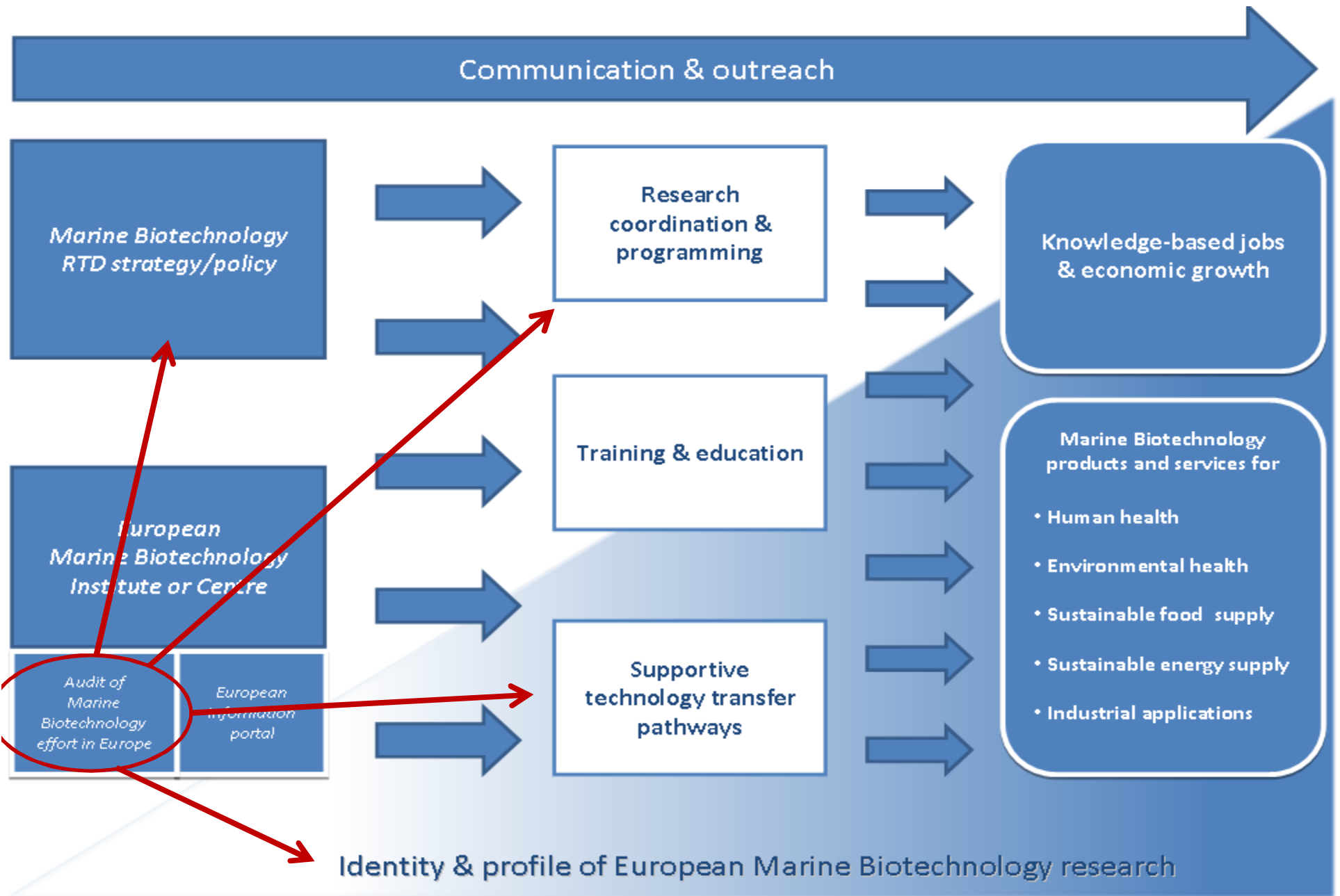
- I. Create a strong **identity and communication strategy** to raise the profile and awareness of European marine biotechnology research
- II. Stimulate the development of **research strategies and programmes** for Marine Biotechnology research and align these at the national, regional and pan-European level.
- III. Improve **technology transfer** pathways, strengthen the basis for proactive interaction between academic research and industry
- IV. Improve **training and education** to support marine biotechnology in Europe to provide both research and industry with skilled people



Strategy – how to achieve the goals?

- *Profile marine biotechnology landscape in Europe in international context*
- *Create a central European portal*
www.marinebiotech.eu
- *Develop a coherent European marine biotechnology RTD policy to strengthen integration*
- *Develop collaborative industry-academia research programmes*
- *Improve policies in property rights and IP*





II. Mapping components in a nutshell

- Inventory of **European** Marine Biotechnology RTDI Strategies, Programmes and Initiatives
Task 3.1 Task Leader: Marine Board-ESF, Partner 7
- A **Global** Perspective: High-level analysis of key trends and developments in global marine biotechnology RTDI
Task 3.2 Task Leader: BioBridge, Partner 11



Where does it lead to?



- Preliminary Analysis of the European Marine Biotechnology RTDI Landscape
Task 3.3. Task Leader: Marine Board-ESF, Partner 7
- Produce a discussion paper
Task 4.1 Task leader: Marine Board-ESF, Partner 7



III. TASK 3.1. Inventory of European Marine Biotechnology RTDI Strategy, Programmes and Initiatives



General approach:

- Three levels
 - Countries
 - Regional (European sea-basins)
 - Pan-European
- High level essential information and complement with more details as information is gathered and is made available
- Develop a strong visual concept to present the results → 2 pagers per country / region
- Finalise the draft in Mo 13 (October-November 2012)
 - suggest earlier to remain useful for future ERA-NET



Inventory information

- Overarching science strategies, plans and policies
- Research Funding Schemes and Programmes
- Research priorities for marine biotechnology research
- Strategic documents
- Infrastructures and coordination and support capacities / initiatives
- Major Initiatives
- Observations, trends and future prospects



EXAMPLE

Norway



Overarching science strategies, plans and policies:

- National Whitepaper: "Climate for research" describes the overall Norwegian government's research strategy.
<http://www.regjeringen.no/pages/2178785/PDF/STM200820090030000DDPDFS.pdf>
- National Whitepaper: "Marine Bioprospecting - a source of new and sustainable wealth growth" describes the Norwegian government's strategy for marine bioprospecting.
http://www.regjeringen.no/upload/FKD/Vedlegg/Diverse/2009/Marin_bioprospektering_080909_lavoppl.pdf
- National Whitepaper: "National strategy for biotechnology" describes the Norwegian government's strategy on biotechnology.
<http://www.regjeringen.no/upload/KD/Vedlegg/Forskning/Bioteknologistrategi.pdf>
- National White paper: "Strategy for an Environmentally Sustainable Norwegian Aquaculture Industry" describes the Norwegian government's strategy on aquaculture.
<http://www.regjeringen.no/upload/FKD/Vedlegg/Diverse/2009/strategi%20for%20an%20sustainable%20aquaculture.pdf>
- National White paper: "Nordområdestregerien" describes the Norwegian government's strategy for research in the high north.
<http://www.regjeringen.no/upload/FKD/Vedlegg/Diverse/2009/strategi%20for%20an%20sustainable%20aquaculture.pdf>



Research Funding Schemes and Programmes:

- The Research Council of Norway (RCN) funds research projects, innovation projects, industrial projects and infrastructure. Relevant research programmes include:
 - o BIOTEK2021: A research financing program that finance applied academic research and industrial development of biotechnology.
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&pagename=biotek2021%2FHovedsidedal&cid=1253970728155&langvariant=en>
 - o Aquaculture- An industry in growth: A research financing program that finance applied academic research and industrial development on aquaculture and fisheries
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&pagename=havbruk%2FHovedsidedal&cid=1226994216892>
 - o The ocean and the coast: A research financing program that finance academic research and industrial development on eco systems and the marine environment
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&cid=1226994156395&pagename=havkyst%2FHovedsidedal>
 - o Sustainable Innovation in Food and Bio-based Industries: A research financing program that finance applied academic research and industrial development of bio-based industries.
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&pagename=bionær%2FHovedsidedal&cid=1253971968584&langvariant=en>
 - o Polar research: A research financing program that finance research on sustainable management and development of industries in the high north
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&pagename=polarforskning%2FHovedsidedal&cid=1231229969369&langvariant=en>
- Innovation Norway funds innovation projects with industry and infrastructure. Relevant programmes include:
 - o Public R&D contracts and Private R&D contracts, where SMBs can be funded with up to 35% in a collaboration project with either a public or private customer.
<http://www.innovasjon Norge.no/Finansiering/IFUOFU/>
 - o Entrepreneurial grant, where start-ups can be funded in an initial period of the company.
<http://www.innovasjon Norge.no/Finansiering/Etablerertiskudd1/>

- SIVA funds infrastructures, such as laboratories and necessary housing for innovation centres .
<http://www.siva.no/internet/cms.nsf/pages/english?open>
- Regional research foundations funds research projects, innovation projects, industrial projects and infrastructure.
<http://www.regionaleforskningsfond.no/ser/vlet/Satellite?c=Page&pagename=ff-hovedside/Hovedsidedal&cid=1253954088866>
- A collaboration effort exists between Innovation Norway, The research council of Norway, SIVA and equivalent research councils in the United Kingdom to fund innovation and applied research in marine biotechnology.
http://connect.innovateuk.org/web/biosciencesktn/articles/_/blob/6374683;isessionid=E2F59BACA08C2F4E4CA1F541C658C55B7_MekushUdbew4

Research priorities for marine biotechnology research:

- Bioprospecting / Biodiscovery, Aquaculture, Human and animal health
- Fisheries
- Polar research
- Industrial biotechnology
- Bio-based industries



Strategic documents:

- Strategy plan for Marin Bioprospecting: A strategy document formed by the RCN, Innovation Norway and SIVA on how to implement the national strategy for Marin Bioprospecting.
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&cid=1253953666626&pagename=fuge%2FHovedsidedal>
- The Arctic and Northern Areas Initiative (Forskning.nord.no): The Research Council of Norway's research strategy for the high north
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Nyhet&cid=1253960952749&lang=no&pagename=nord%2FHovedsidedal>
- A new program plan (Biotek2021) for biotechnology is under development.

Infrastructures and coordination and support capacities / initiatives:

- Biotech North: BioTech North is the network organisation for the development of biotechnology in the Tromsø region in North Norway. <http://biotechnorth.no/biotech-north-2/>
- Biotech Forum: Norwegian Bioindustry Association (NBA) was established autumn 2001 by representatives for Norwegian biotechnological industries and the Confederation of Norwegian Business and Industry (NHO). The Association is an independent member organization with purpose to promote development of Norwegian biotechnological trade and research. http://www.biotekforum.no/About_us/
- 10 biotechnology platforms: These technology platforms have been built up during the course of the FUGE programme. They offer service in different high tech niches to academic researchers and industry.
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&cid=1226993578290&pagename=fuge%2FHovedsidedal>
- Mabcent-SFI: Center for research based innovation on bioprospecting in Tromsø where academic research groups and SMBs collaborate on defined research topics for innovation. <http://www0.nfh.uit.no/mabcent/>
- MarBank: A national marine biobank organising the collection, and structuring of the marine biodiversity for research and industrial development.
http://www.imr.no/barentshavet/tokt/toktdagbok_2006/dagbok/marbank
http://www.noruega.org.pt/PageFiles/575028/7%20Kjersti%20%20Gabrielsen_Marbank%20-%20A%20national%20collection%20of%20Arctic%20Marine%20Organisms.pdf

Major Initiatives:

- FUGE: The first targeted programme at The Research Council of Norway aimed at functional genomics. The program was in function from 2002 to 2011 and have financed research projects for about 1,7 billion kroner of which about 20 % are within marine biotechnology. The responsibility for fulfilling the national strategy for marine bioprospecting was part of the program. This is now continued within the BIOTEK2021 programme.
<http://www.forskingsradet.no/ser/vlet/Satellite?c=Page&pagename=fuge%2FHovedsidedal&cid=1226993493126>

Examples of national strategic documents with an identifiable focus on marine biotech



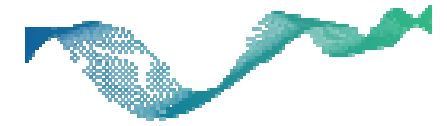
- **Ireland 2007** : <http://www.marine.ie/home/SeaChange.htm>
 - *“**Sea Change** - A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013”*
Marine Biotechnology, Marine Technology, Marine Functional Food and Renewable Ocean Energy
- **Norway 2009**
 - *“A strategy for **Marine Bioprospecting** – a source of new and viable wealth creation”*
Encourage use of marine resources, biobanks, international collaboration, innovation – develop value chain
- **Denmark 2010**
 - *“**The Ocean** – a underutilised resource”*
Better use of marine biomass, healthy diet, bioprospecting for new biological principles and compounds, biofilms



Status and the way forward

- Main focus on partner countries, supplemented by main European maritime nations
- Regional level / Pan-European level initiated
- More one-on-one interviews planned in may-june
- Gather stakeholder information and further inputs – how to do this post-meeting?
- Ensure information feeds into
 - Portal
 - T3.3. Preliminary Analysis of the Landscape
 - T4.1 . Discussion paper





Thank you!

