Submariner - Sustainable Uses of Baltic Marine Resources

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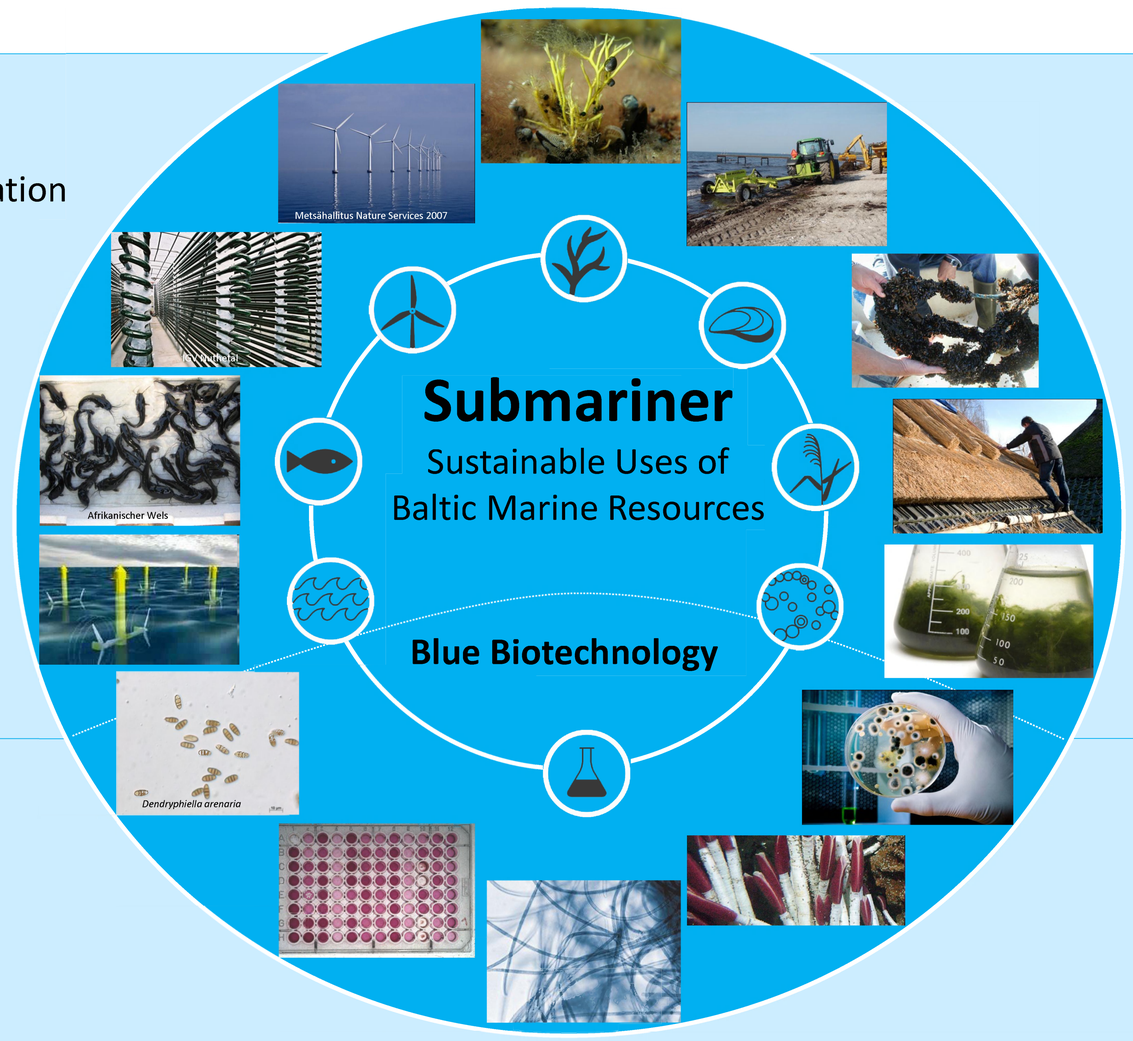
Background and Project Idea

The Baltic Sea is one of the world's largest brackish waters. The economical and environmental-friendly use of the resources of the Baltic Sea for a positive development of the Baltic Region is the main goal of this project. The project SUBMARINER has partners in 19 institutions from 8 nations. They all work on new innovative applications and their coordinated, cross-border realization. All applications are evaluated and summarized in a compendium as basis and guidance for stakeholders and politicians for their possible strategic implementation. In the now edited roadmap the stepwise actions in the near and medium-term future are stated.

Topics

- Macroalgae Harvesting and Cultivation
- Mussel Cultivation
- Reed Harvesting
- Large-Scale Microalgae Cultivation
- Blue Biotechnology
- Wave Energy
- Sustainable Fish Aquaculture
- Combinations with Offshore Wind Parks



Partner Countries

- Poland: lead Partner
- Denmark
- Estonia
- Finland
- Germany
- Latvia
- Lithuania
- Sweden

BioCon Valley M-V e.V. in the Project

BioCon Valley® is the central contact for biotechnology in North Eastern Germany and networks the competencies of business, universities, academies, and research institutions. The Ernst-Moritz-Arndt-University Greifswald as well as the Institute of Marine Biotechnology e.V. investigate in biotechnological products of marine microorganisms.

These institutions have a prominent platform technology in marine genomics which is unique in Germany. Using this platform with all the experience and the facilities to transfer research to industrial application should strengthen the competitiveness of Mecklenburg-Vorpommern and in the European context all Baltic Sea countries.

Marine Functional Genomics

- a valuable tool in Blue Biotechnology

Environment
monitoring programs of the Baltic Sea with high-throughput-gene expression

- develop and implement potential biomarkers to detect pollution
- barcoding for monitoring of invasive species
- bioinformatics & databases

Climate change

- understanding the impact of microorganisms in the metabolic cycles of the ocean
- monitoring disturbances in the marine ecosystem

Medical Diagnostics and Therapy

- Tumor treatment and diagnosis with magnetotactic particles from bacteria
- analysis of uncultivable symbionts in human pathogens to combat diseases caused by these pathogens

New Natural Products

- drugs
- cosmetics
- food & feed
- supplements
- nutraceuticals

Valuable Microorganisms from the Baltic Sea

- *Magnetospirillum gryphiswaldense* from the river Ryck for treatment + diagnosis of cancer
- mineral oil degrading bacterium *Alcanivorax borkumensis* for bioremediation
- *Rhodopirellula baltica* as model organism; specific adaptations to different habitats; functions unknown
- *Anabaena spec.*: emulsion of nanoparticles & bacterial biomass against skin bacterial infections caused by MRSA

New Enzymes

- energy reduction with cold-adapted enzymes from the Baltic Sea
- better quality of treated material
- eco-friendly production (extremely high or low temperature optimum, thermosensitivity, different pH-optimum, high pressure resistance, enantioselectivity)

Networks

- Norddeutsches Zentrum für Mikrobielle Genomforschung NZMG: excellence cluster founded in 2013 to commonly use the technology platform in microbial genomics and cooperate in projects and in the promotion of young staff members
- Nordverbund Marine Biotechnologie: research and industry network, to improve the innovation and competitiveness in the marine Biotechnology in Northern Germany
- Konsortium Deutsche Meeresforschung KDM: support of science & German marine research, coordination of international projects, public representation
- ScanBalt fmba: organization for the Baltic Sea or Nordic-Baltic Region's Health and Life science community

More information
www.submariner-project.eu
www.marine-biotechnologie.de
www.uni-greifswald.de
www.bcv.org

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