

## Good regulatory practices for macroalgae cultivation in Northern Europe and the Baltic Sea region

### Macroalgae cultivation in the Baltic Sea benefits the environment

Sustainable blue bioeconomy is advocated as a way forward in EU's marine and ocean policy by the recently adopted EU Algae Initiative. In the Baltic Sea basin, the cultivation of macroalgae (seaweeds) has an untapped potential. It can provide marine biomass resources for several different business sectors and improve water quality at the same time. Regulatory authorities can and must promote this activity.

While growing, macroalgae assimilates nutrients and thereby limits plankton growth in the Baltic Sea. The cultivation of seaweed thus counteracts eutrophication, which is one of the most important and researched environmental challenges in the Baltic Sea. The removal of nutrients by the so called low-trophic aquaculture also contributes to the fight against biodiversity loss, oxygen deficiency and climate change in the Baltic Sea.

Macroalgae cultivation in the Baltic Sea has during the past few years received some research attention. The GRASS (Interreg BRS), FucoSan (Interreg DE-DK), TANG.NU (Villum-Velux foundation), Seafarm (SE Formas), and SUSCULT (NCM) projects have advanced knowledge on the topic.

The BalticSeaSafe project has the goal of facilitating benchmarking and collaboration between countries and stakeholders for environmentally safe macroalgae cultivation in the Baltic Sea. Achieving a sustainable blue bioeconomy, fostering investment, and improving environmental permit procedures are at the core of the project.

### Policy coherence between the EU and national regulation

In the European Union (EU) countries, the EU environmental regulation has substantively advanced the criteria for environmental protection. For macroalgae cultivation and aquaculture, the Water Framework Directive (2000/60/EC) and the Marine Strategy Framework Directive (2008/56/EC) are the most relevant regulations. In addition, if a project is in a Natura 2000 area regulated by the Habitats Directive (92/43/EEC) and if the project causes a significant risk to nature values, a Natura 2000 exemption is required.

The environmental permit systems fall within the national competence, and therefore permits are granted by national or regional government authorities. Each country has a unique environmental permit system in place. This permit system should be coherent towards the above-mentioned EU regulation. The environmental permit system is committed to advance environmental impact assessment and public participation in decision-making on the permits.

The rationale behind environmental permitting for individual activities is to minimize environmental risks, prevent and reduce pollution, and to ensure that no significant harm is caused to the environment. "Do no significant harm" and "polluter pays" are guiding EU principles for the environmental permitting in the EU. Risks with macroalgae cultivation include diseases, pathogens, and spore release, see Eklipse report (2022). In the Baltic Sea, the benefits of nutrient removal may often outweigh the environmental risks. EU's Environmental Impact Assessment directive (EIA, 2011/92/EU) mandates the EIA for major

projects and recommends it on a case-by-case basis for other projects that cause direct or indirect impacts on the environmental factors such as human health, biodiversity, land, soil, water, air, climate, landscape, material assets and cultural heritage. Monitoring requirements are typically set as a part of the permit.

## Streamlining the environmental permit system

In many countries, there are not yet established practices for the permitting and monitoring of macroalgae cultivation. Developing these practices has been based on existing legislation and environmental permit procedures. Varying country by country or region by region, macroalgae cultivation can require between several different permits, and obtaining these permits can take several years altogether.

The national and regional authorities could do more to improve the situation. The licensing authority can develop clear guidance on macroalgae cultivation including the typical monitoring requirements, based on existing legislation. The Scottish government, for example, has published its “Seaweed Cultivation Policy Statement” (2017). Alternatively, or in addition, the legislator, i.e., the parliament, can enact specific legislation on macroalgae cultivation. With clear rules, the licensing process can be shortened.

In Table 1, we list the permit requirements, the responsible authority and related legislation in Northern European countries. Each country has its unique environmental legislation in place and therefore it is not possible to suggest an ideal type of environmental permit procedure for macroalgae cultivation.

**Table 1: Environmental permit system of macroalgae cultivation – examples of permits required in Northern European countries**

| Country   | Permit requirements   | Responsible authority  | Related legislation  |
|-----------|---|--|--|
| Finland   | Water permit;<br>environmental permit                                       | Regional State Administrative Agency (Aluehallintovirasto)                     | Water act 587/2011;<br>Environmental protection act 527/2014 |
| Estonia   | Water permit;<br>superficies license  | Environmental Board;<br>Consumer Protection and<br>Technical Regulatory Agency | Fishing act 2015, Water act 1994                             |
| Latvia    | Aquaculture permit  | National Board of Fisheries  | Marine Environment Protection and Management Law 2010        |
| Lithuania | No license required for macroalgae cultivation                              | n/a  | n/a  |
| Poland    | Permit for cultivation of living organisms;<br>water permit; fishing permit | Ministry of Maritime Economy and Inland Navigation: Fisheries Department       | Law on cultivation of living organisms; Water law            |

|         |                               |   |   |
|---------|-------------------------------|---|---|
| Germany | Water permit; fishing permit  | Federal Waterways and Shipping Agency; Länder level authorities | Federal Water Act; Water Acts of the Länder |
| Denmark | Macroalgae cultivation permit | Danish Coastal Authority  | Fisheries Act (LBK nr 372 2006)             |
| Sweden  | Water permit (> 0.3 ha)       | Country Administrative Board; Land and Environmental Court      | Environmental code 1998:808                 |

## Systemic approach for regulating the macroalgae sector

BalticSeaSafe project together with its partners has developed regional guidance on sea basin level on monitoring applications and regulatory practices of environmental permitting. The project has involved national and regional stakeholders in capacity building. As recommendations of the BalticSeaSafe project on good regulatory practices for safe macroalgae cultivation, we propose:

- National authorities and/or legislators must publish clear rules for macroalgae cultivation
- The presumption in licensing and legislation should be that macroalgae cultivation is nature positive
- The operator should be required to interact with one authority only, and the process should be shortened to max 9 months
- Monitoring requirements should follow the proportionality principle and focus on real risks

### Contact:

Finnish Environment Institute (Syke)

Anu Lähteenmäki-Uutela [anu.lahteenmaki-utela@syke.fi](mailto:anu.lahteenmaki-utela@syke.fi)

Eerika Albrecht [eerika.albrecht@syke.fi](mailto:eerika.albrecht@syke.fi)

Latvian Institute of Aquatic Ecology (LHEI)

Anda Ikauniece [anda.ikauniece@lhei.lv](mailto:anda.ikauniece@lhei.lv)

Ieva Bārda [ieva.barda@lhei.lv](mailto:ieva.barda@lhei.lv)

SUBMARINER Network for Blue Growth

Efthalia Arvaniti [ea@submariner-network.eu](mailto:ea@submariner-network.eu)

### Baltic Sea Safe project

Baltic Seaweed Biosafety or BalticSeaSafe is a 16-months project (January 2022 – April 2023) funded by Global Seaweed Safety Coalition. BalticSeaSafe project is coordinated by SUBMARINER Network for Blue Growth EEIG, with partners Finnish Environmental Institute & Latvian Institute of Aquatic Ecology. Website: <https://www.submariner-network.eu/BSS>

BalticSeaSafe aims for creating a well justified guidance, resulting in recommendations and position papers on environmental monitoring and license conditions for **cultivation of**