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Interreg Baltic Sea Region

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Environmental impacts of macroalgae cultivation and harvesting in the Baltic Sea

Latvian Institute of Aquatic Ecology

Ieva Barda

7th May, 2021

Baltic Macroalgae Conference

Environmental Impact Assessments

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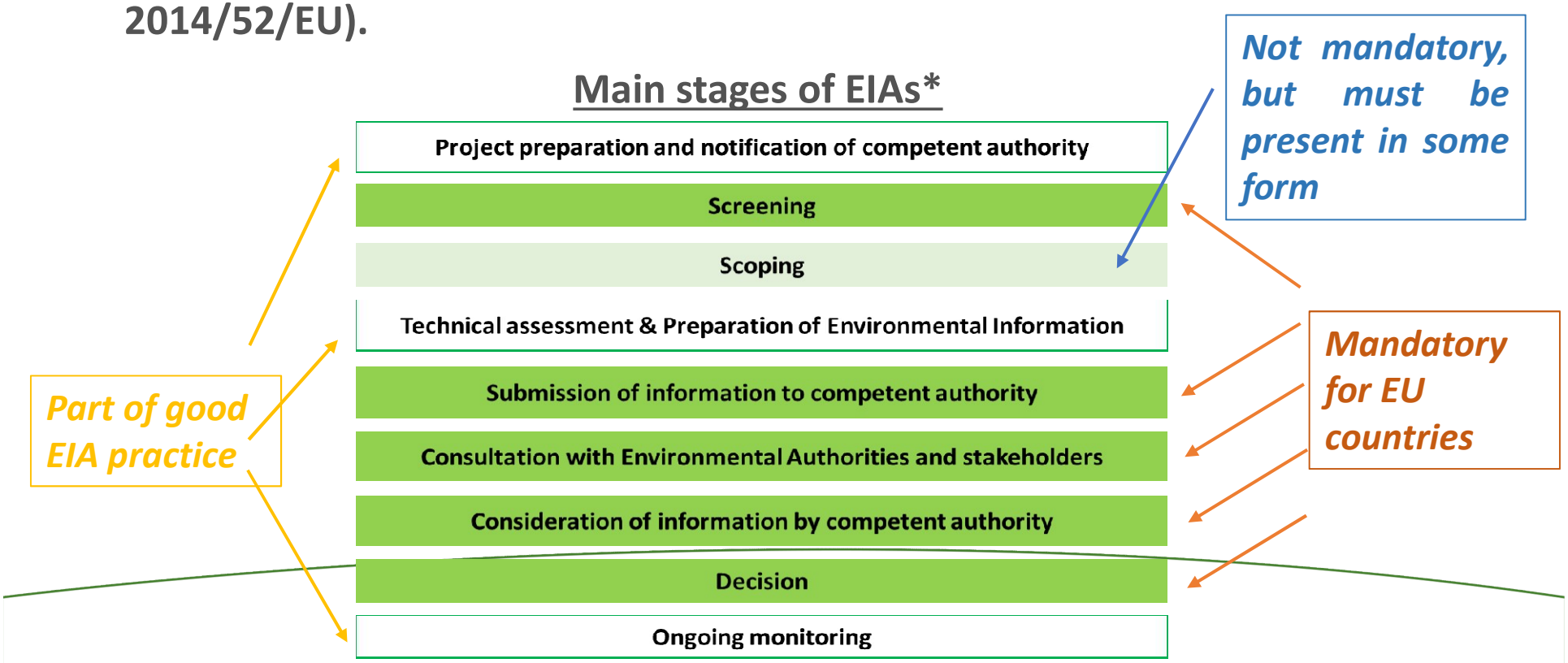
1. **The EIA aims to inform the decision maker, or anyone else interested, of the consequences of the proposal and to identify mitigation measures that will minimize any significant environmental impacts**
2. **EIAs are part of the licensing procedure for plans, projects, and programmes, and are an EU wide requirement regulated by the EIA Directive (Directive 2014/52/EU).**

Main stages of EIAs*



*adopted from European Commission Guidance on EIA 2001

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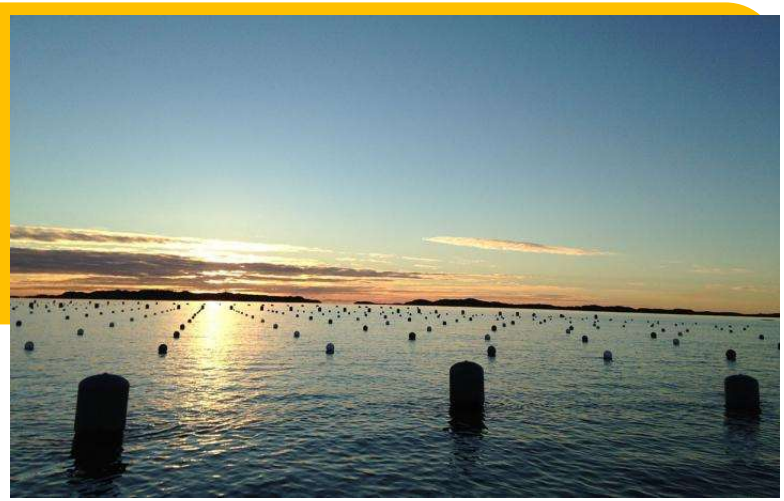
Based on the existing EIA Directive (Annex III screening criteria) and the findings of the assessment of ecological impacts of macroalgae cultivation in the Baltic Sea region conducted as part of the GRASS project the following criteria have been identified to support the screening process:

Screening criteria:

- Scale/Quantity of harvested
- Location of project
- Method of cultivation and harvest



Macroalgae cultivation in the Baltic Sea

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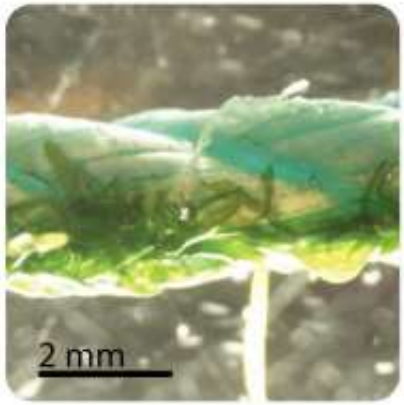
Fucus

https://www.fucosan.eu/en/network/publications/

https://www.syke.fi/

Cladophora



E.R.Christiansen, 2018. The Potential of Ulva for Bioremediation

Ulva

Macroalgae cultivation in the Baltic Sea

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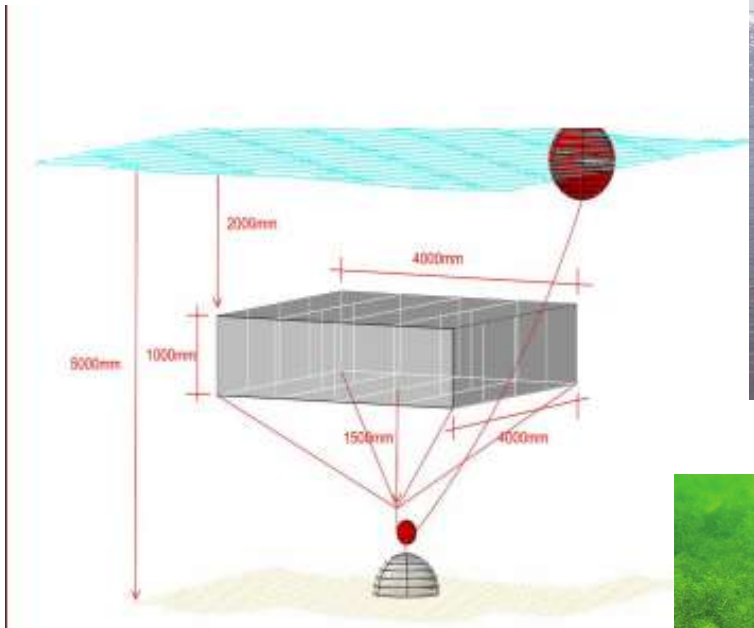
Pilot projects regarding field cultivation techniques of red macroalgae *F. lumbricalis* in Estonia



https://www.submariner-network.eu/images/06_Estagar_seaweed_24.04.2019.pdf

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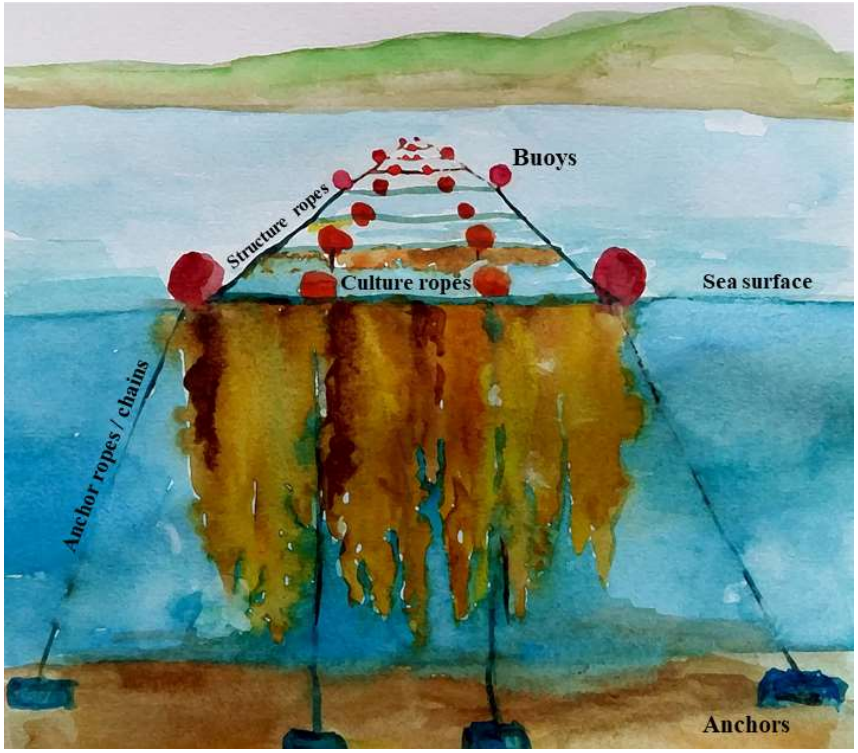
Macroalgae cultivation in the Baltic Sea

Sugar kelp *Saccharina latissima* - cultivated in the milder, saltier waters of the western Baltic using longline systems



https://www.kielregion.de/leben/produkte/produktstory/naturkosmetik-aus-dem-meer/

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Expected environment impacts

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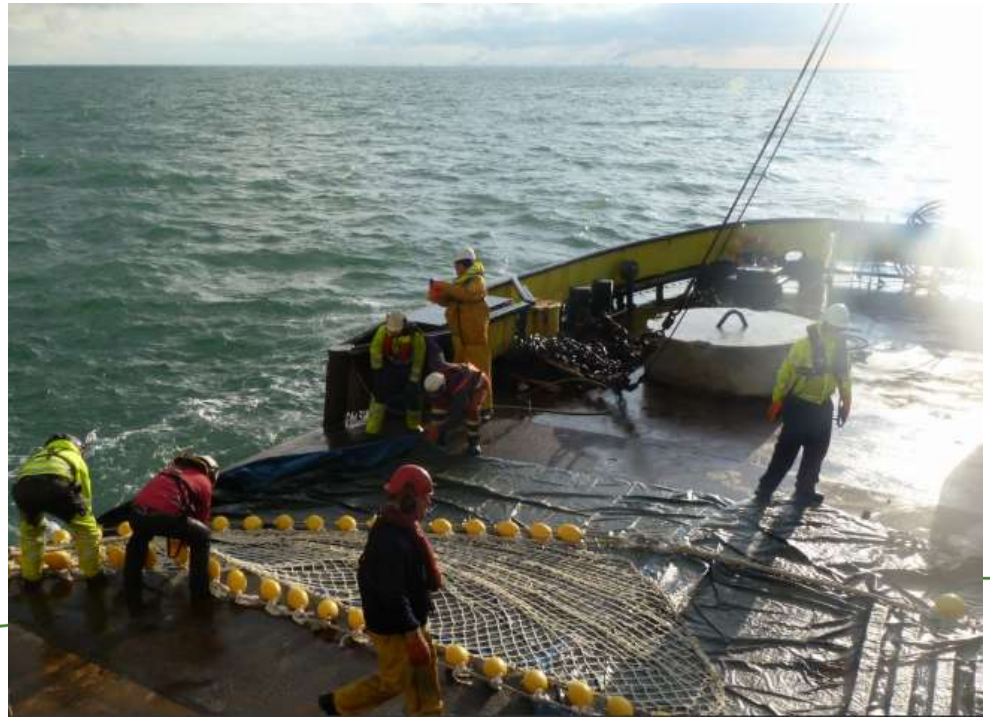
Installation

Cultivation and Harvest

Decommissioning

a) Physical alteration of the environment
   - introduction of hard substrate
   - introduction or increased presence of algae
   - risk of entanglement for mammals and fish



https://www.syke.fi/

b) Spread of disease and parasites
c) Spread of non-native & invasive species

- **aquaculture has been responsible for around 121 of 223 of non-native macroalgae introductions across the globe**
- **Regulation (EU) No 1143/2014 2014 on the prevention and management of the introduction and spread of invasive alien species -> only native species found within the marine environment can be cultivated commercially**
- **14 NIS macroalgae species in the Baltic Sea - in Germany - 7, Denmark - 11 and Sweden – 2 (Aquanis data base)**

Brown algae - Sargassum muticum

https://species.biodiversityireland.ie/profile.php?taxonId=764

d) Underwater noise pollution (increased ship intensity; noise of ship engine)
e) Change of water flow
f) Light conditions (additional vegetation on the surface -> shadowing)

g) Nutrients, CO_2

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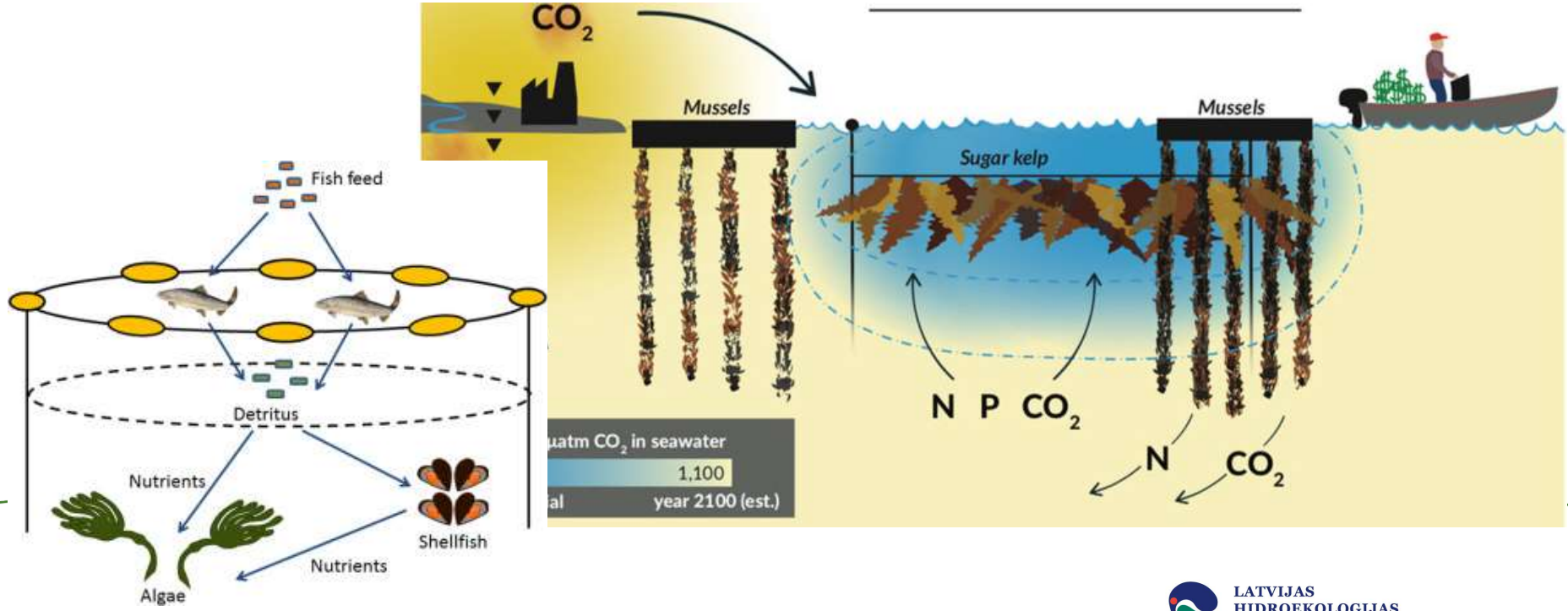
- assimilate and accumulate nutrients, which mitigate the effects of eutrophication
- assimilate dissolved carbon in the form of CO_2, making them contributors to carbon sinks
- Economically and environmentally more sustainable trough the practice of Integrated multi-trophic aquaculture (IMTA)



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Thank You!

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