

SUSTAINABLE BIOGAS

Project Presentation

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Baltic Sea City Accelerator Club (BSCAC)

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EUROPEAN UNION
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SUSTAINABLE BIOGAS PROJECT

- Promotes the sustainability of biogas from the water protection point of view
- Is financed by the **EU Interreg Central Baltic Programme**
- Runs from 2020 to 2022

<https://sustainablebiogas.eu/>

Biogas is a climate-friendly energy form which also enables nutrient recycling. However, it can pose a risk of nutrient leaching to water bodies if the management of digestates and wastewater from biogas plants is not carefully planned.



IMPROVEMENTS ARE NEEDED AT BIOGAS PLANT AND REGIONAL LEVEL



NUTRIENT MANAGEMENT AT BIOGAS PLANTS

Biogas plants can be a significant source of nutrients to surrounding watercourses and environment.

The main pathways of nutrients to the environment: Improper treatment of reject waters, leakages of organic biomass and biogas digestate storages, accidents at the plants.

Improved nutrient management practices for biogas plant operators as well as tools for the authorities to plan, permit and monitor the biogas production processes are needed.



REGIONAL NUTRIENT BALANCES

The aspect of producing nutrient-rich end-products is not considered when making decisions on location of new biogas plants, or in the EIA and permitting of the plants.

Lack of information on nutrient balances and tools for regional nutrient management.

Lack of regional nutrient management plans.

MARKETS, USAGE AND DISPOSAL POSSIBILITIES OF DIGESTATES NEEDS TO BE DEVELOPED



MARKETS FOR RECYCLED NUTRIENTS

Use of digestate based fertilizers would save mined virgin resources and energy used to capture nitrogen from the atmosphere.

Producing digestate based organic fertilizers requires processing which reduces its cost-competitiveness compared to mineral fertilizers.

Farmers need for certified and safe recycled nutrients as well as information on correct and optimal usage of digestate based fertilizers.



USAGE AND DISPOSAL POSSIBILITIES FOR SEWAGE-BASED BIOMASSES

Consumers and food industry, have become increasingly critical towards the use of food grown with sewage-based fertilizers.

Sewage-sludge management options are linked with partly contradictory objectives such as soil pollution prevention, nutrient recycling and climate change mitigation.

Analysis of the future usage and disposal possibilities of sewage based digestates in Finland and Latvia is important to identify sustainable and realistic solutions for different fractions.

HOW THE PROJECT WILL IMPROVE THE SITUATION

Improved regulatory and operational approaches

Guidelines for sustainable biogas production (covering e.g. planning, permitting, monitoring)

Policy brief on nutrient management in biogas production

Tools for more holistic management of nutrient balances

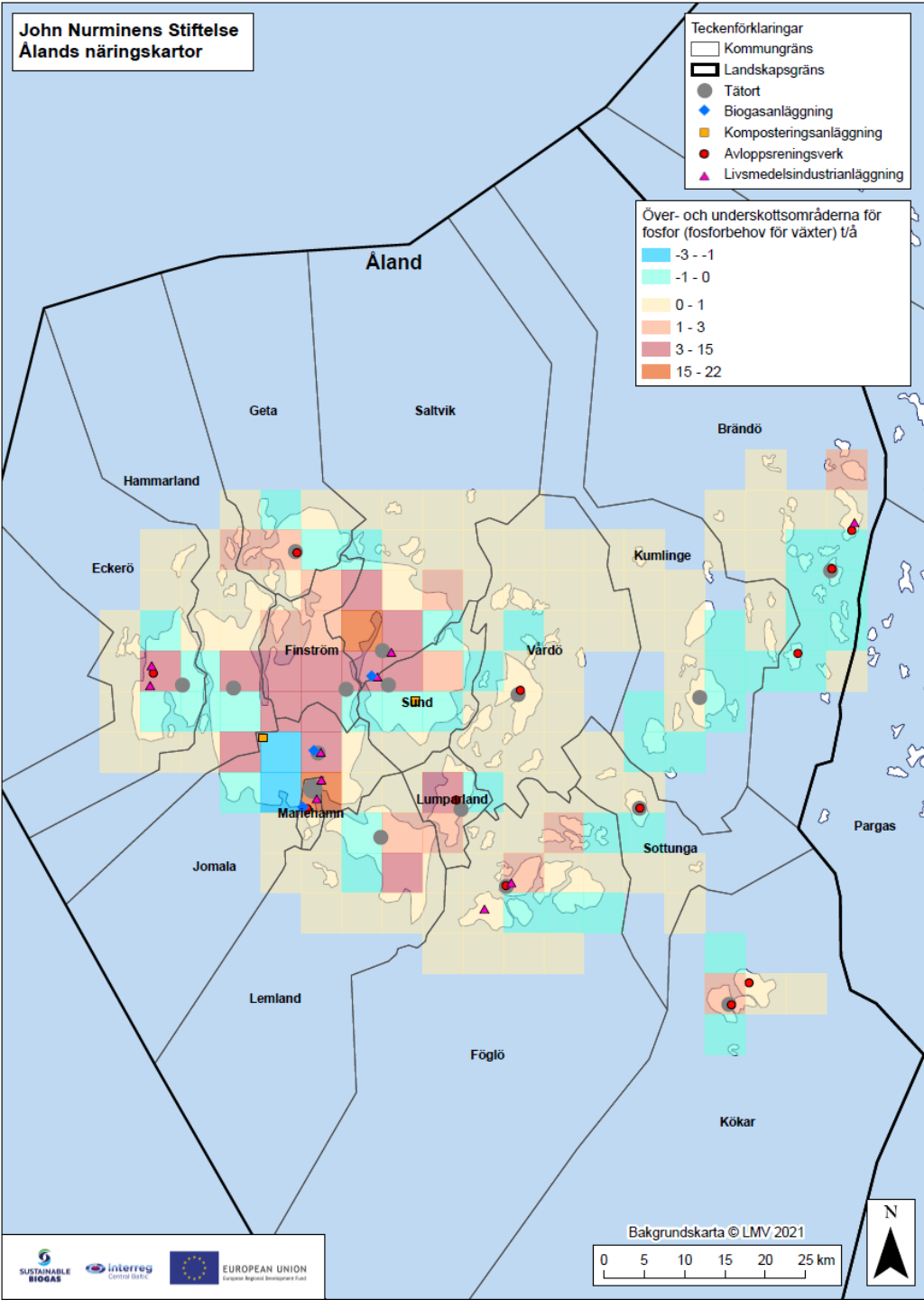
Nutrient maps and regional nutrient management plans for three focus areas (Zemgale in Latvia, Southwest Finland and Åland Islands)

Support for creating markets for recycled nutrients

Digestate quality assurance schemes

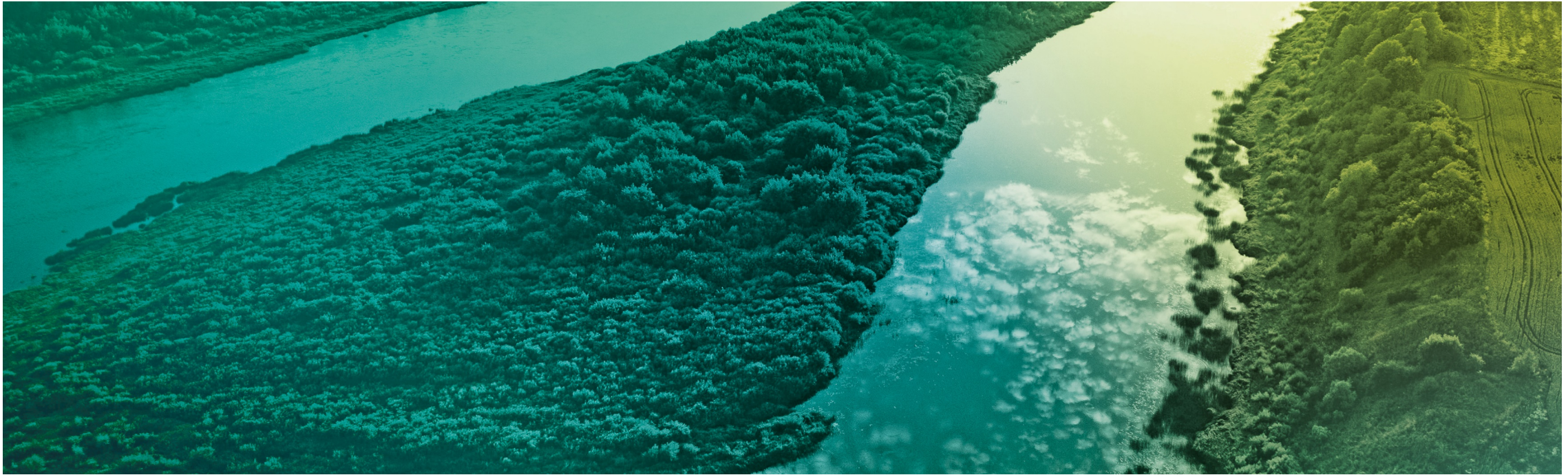
Information on the correct and optimal use of recycled nutrients

Development plans for overcoming current regulatory obstacles



CASE-STUDY: ÅLAND ISLANDS NUTRIENT BALANCE

- Åland is one of the three case-study areas for the project for which development plans are produced.
- According to nutrient maps, nutrients are formed:
242,5 t phosphorus ja 1 254 t nitrogen annually
 - Farm animal manure (P 70 %, N 76 %)
 - Agricultural by-products (P 13 %, N 14 %)
 - Municipal wastewater sludges (P 9 %, N 3 %)
 - By-product biowaste from food industry (P 7 %, N 7 %)
 - Municipal biowaste (P 1 %, N 1 %)
- Based on the phosphorus demand by crops, there is an annual overproduction of 160,8 tons of phosphorus.
- Based on environmental compensation scheme fertilization rules, there is an annual nitrogen deficiency for 101t N.



REGIONAL NUTRIENT BALANCE MANAGEMENT IS IMPORTANT

- Nutrients should be transferred from surplus areas to areas where they are needed. On an island where phosphorus is generated in excess of what is needed, finding solutions is particularly challenging.
- Option for processing and transport of nutrient-containing biomass is expensive for individual actors, so the contribution of society would be needed to solve the nutrient problem.
- The nutrient maps, tools and plans produced in the project creates the knowledge and awareness of regional nutrient balances, which enable the authorities and decision makers to consider the nutrient aspect already when doing zoning and location planning for biogas plants.

THANK YOU

The project Final Conference on 15th June 2022

- The event details will be published soon, please follow:
 - <https://sustainablebiogas.eu>
 - John Nurminen Foundation social media
 - Twitter
 - LinkedIn



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