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SAVE THE BALTIC SEA

OVERVIEW OF THE RELATIONSHIP BETWEEN AGRICULTURAL PRACTICES, EUTROPHICATION AND THE STATE OF THE BALTIC SEA

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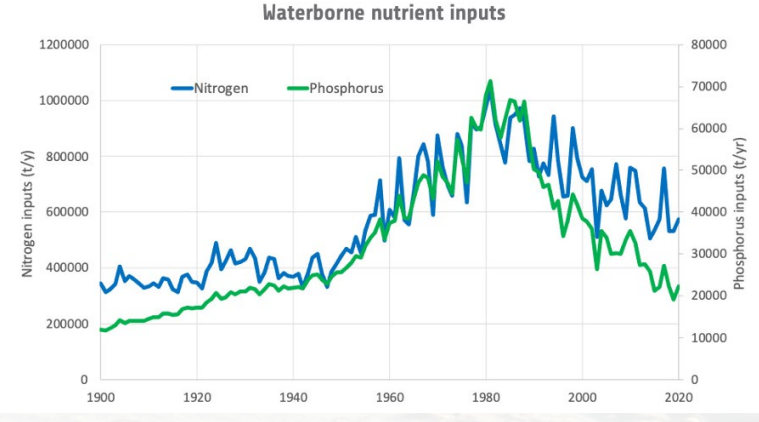
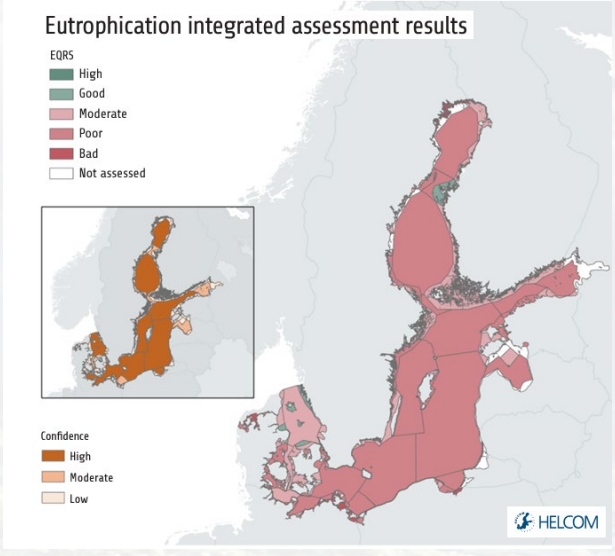
Sustainable agriculture for a healthy Baltic Sea: Cultivating joint solutions and sharing best practices
11 October 2024
Eurooppasali, Helsinki

EUTROPHICATION OF THE BALTIC SEA

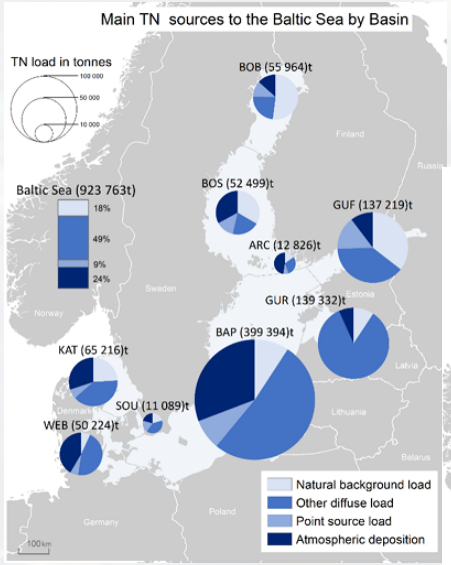
- The Baltic Sea is heavily burdened by eutrophication driven by both land-based and internal nutrient loading
- Nutrient input has reduced in the last 20 years by 12% for nitrogen and 28% for phosphorus
- Still, maximum allowable inputs have not been achieved

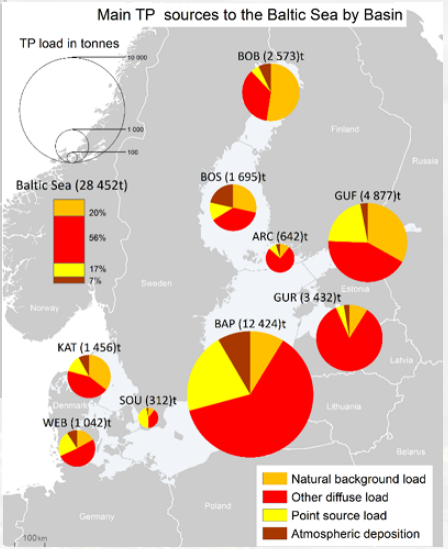




ORIGIN OF NUTRIENT INPUT

- Nitrogen
  - Mostly diffuse load and atmospheric deposition: the highest share for both of agricultural origin
    - Diffuse: riverine runoff
    - Atmospheric: NH_3 from manure management and N-fertilizers
- Phosphorus
  - Mostly diffuse load: the highest share of agricultural origin
    - Riverine runoff





WHAT IS BEING DONE IN AGRICULTURE?

- Many measures to reduce nutrient inputs from agriculture have already been established, are being enhanced and are introduced as new ones
  - Without the existing measures, the situation would be far worse
  - Not all agricultural nutrient input can be deleted
  - Variable conditions make reduction challenging and the change is slow

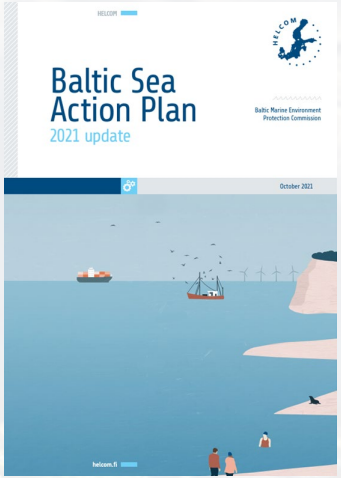
- Joint and national measures in the Theme of Agriculture in the HELCOM Baltic Sea Action Plan (2021) are important in guiding the Baltic Sea countries towards improved agricultural practices

Status refers to BSAP 2007, new data is being collected

EXAMPLES OF AGRICULTURAL ACTIONS IN BSAP

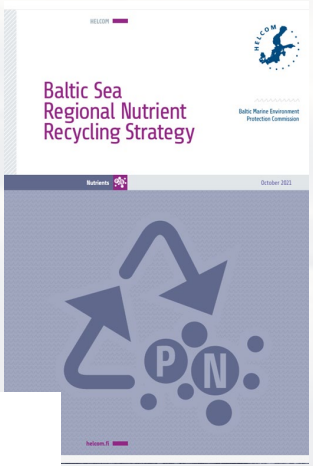
- Most of the 36 actions on eutrophication are connected to agriculture
  - 15 agricultural measures + 3 addressing nitrogen deposit + 7 related to nutrient recycling
- Main aim: More precise nutrient use and reduction of nutrient loading

- A few examples of actions:
  - E5 (national): *implementing and enforcing the provisions of part 2 of Annex III "Prevention of pollution from agriculture" of the Convention*
    - Setting the basis for all actions
  - E13-14 (joint): *BAT/BEP in animal farming and manure management*
    - Being drafted
  - E20 (joint): *revising the Recommendation on 24/3 on "Measures aimed at the reduction of emissions and discharges from agriculture"*
    - Revision ready, implementation now crucial
  - E30 (joint): *implementing the Regional Nutrient Recycling Strategy with related actions (E31-36)*



POTENTIAL OF REGIONAL NUTRIENT RECYCLING

- Nutrient recycling has been recognised as one of the potential measures for enhancing nutrient use efficiency and reducing nutrient loading
  - *HELCOM Baltic Sea Regional Nutrient Recycling Strategy*
- The status of nutrient recycling differsbetween the Baltic Sea countries
  - The strategy offers a starting point
    - Data needed to recognise the potential, support the measures and monitor the progress
    - Issues to be tackled
    - Examples of ways forward
- CiNURGi project (2023-2026) in support of the actions related to nutrient recycling:



Vision

Nutrients are managed sustainably in all HELCOM countries, securing the productivity of agriculture and minimizing nutrient loss to the Baltic Sea environment through efficient use of nutrients and cost-effective nutrient recycling.

CIRCULAR ECONOMY CiNURGi | Interreg Baltic Sea Region | Co-funded by the European Union

EXAMPLES FROM MEASURES TOWARDS REDUCED NUTRIENT INPUT TO THE BALTIC SEA: FINLAND

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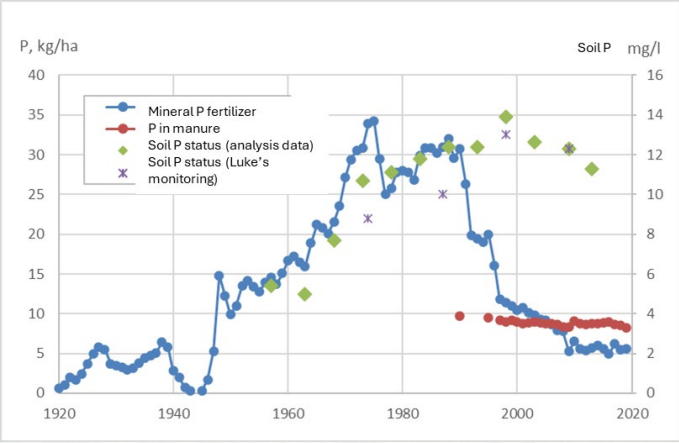
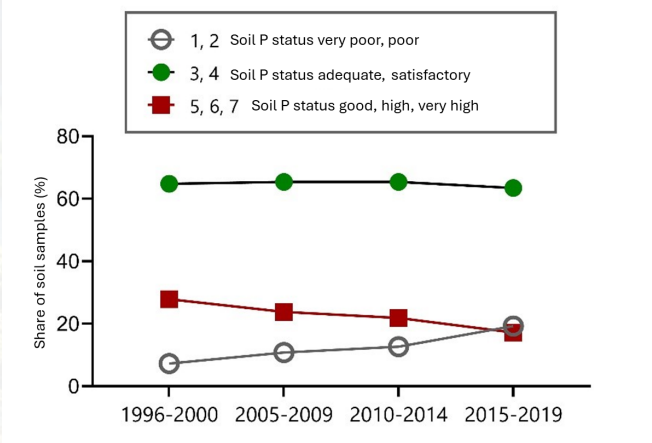
FINLAND: HISTORY OF PHOSPHORUS IN FIELD SOILS

- High phosphorus status in part of the field soils due to historical high P fertilization
  - Legacy phosphorus from previous high use of mineral P fertilizer
- Fertilization limits have since turned the share of soils with high status into a decline
- This will eventually reduce also P runoff from fields, but the change is very slow

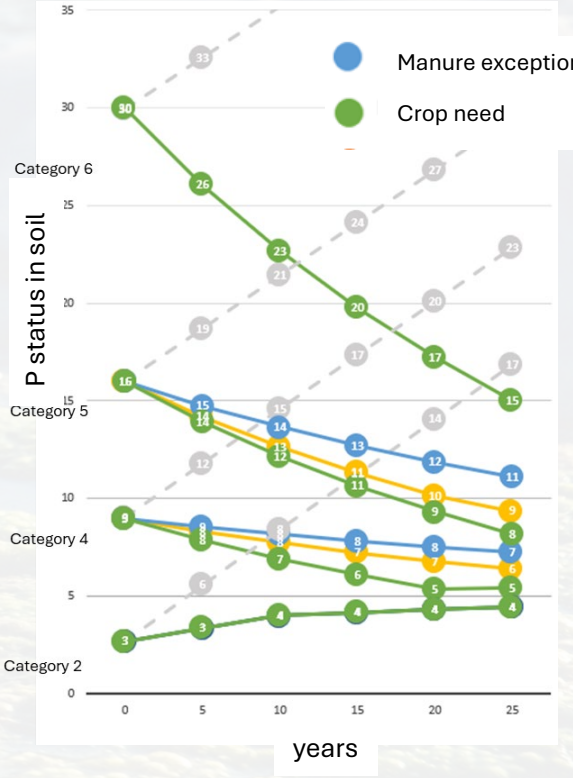




Lemola et al. 2023. http://urn.fi/URN:ISBN:978-952-380-612-2

FINLAND: NEW DECREE ON PHOSPHORUS FERTILIZATION

- Previously limits for phosphorus fertilization were in voluntary agrienvironmental scheme
  - Most farms were included, but not all
- A new decree since 2023: limits apply to all phosphorus fertilization, including manure
  - Dose allowed depends on crop, soil P status, yield level targeted
  - This will further reduce high P status in field soils, but the process is slow
    - Example: broiler farm in southwestern Finland (manure fertilization on clay soils)



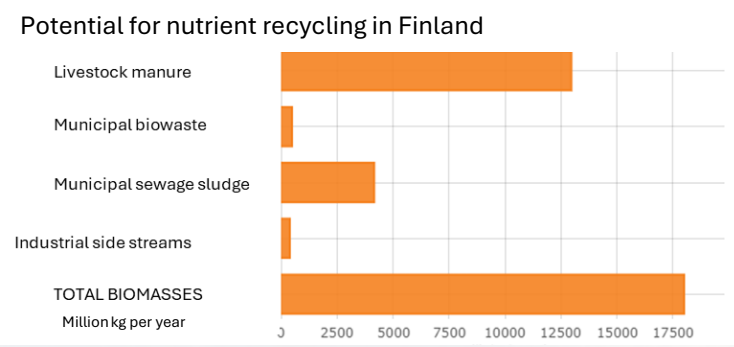
FINLAND: SOIL IMPROVERS TO CATCH P RUNOFF

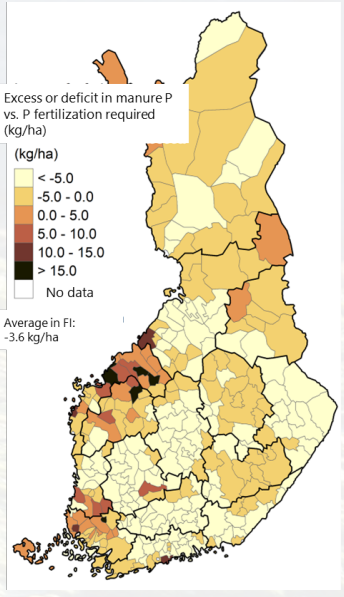
- Due to the slow process of reducing high soil P status and or many other water protection measures in agriculture, solutions reducing nutrient loading more quickly are also needed
  - Short-term help while waiting for the changes in longer term due to other measures
- Gypsum, structural liming and fibers from pulp and paper industry can reduce nutrient runoff via binding soil particles, when applied to suitable field soils
  - Gypsum application supported with a separate instrument, fiber application via CAP
  - Research on all soil improvers ongoing

Photos: Pasi Valkama, Finnish Environment Institute

FINLAND: NUTRIENT RECYCLING

- Nutrient recycling has been actively promoted for several years via e.g. funding for RDI projects and full-scale investments
  - Currently a new nutrient recycling support available for biogas plants digesting manure or plant biomasses from water restoration
- The status of nutrient recycling is being monitored via a nutrient recycling indicator (update every three years)
  - 90% of P fertilization need could be covered with recycled P, if it could be reallocated better
  - Especially measures to process and reallocate part of manure needed
  - Also, quality development for recycled fertilizer products from other biomasses needed





P fertilization need
23 300 t/a
P in biomasses
21 500 t/a

CONCLUSIONS

- There are a lot of regional commitments and regulation, coming from the European Union and as part of the HELCOM Convention, already in place
- The Baltic Sea countries have also various national regulation, strategies etc. aimed at enhanced nutrient use and reduced nutrient loading to the Baltic Sea

- It is of outmost importance to implement them thoroughly to make a large enough impact so that the state of the Baltic Sea can be improved

THANK YOU!

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