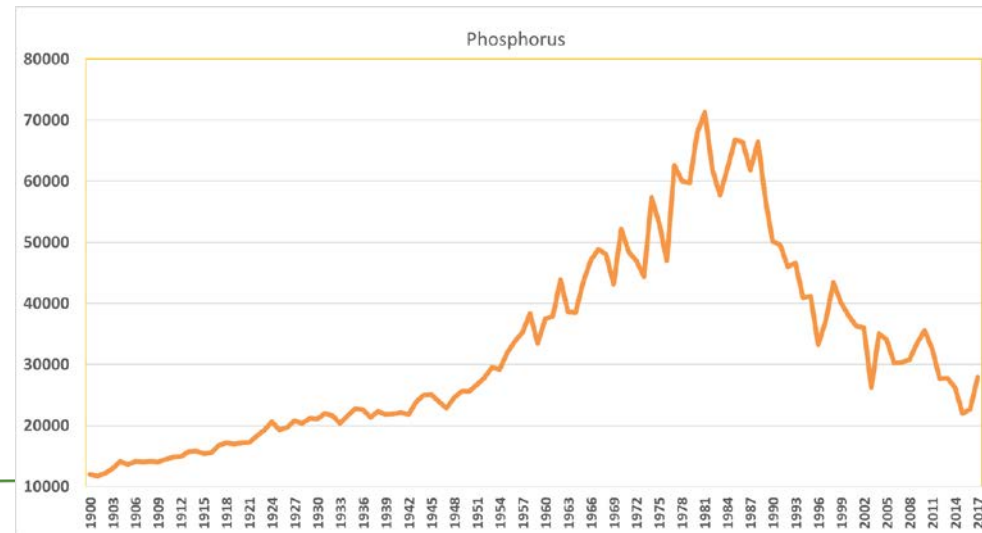
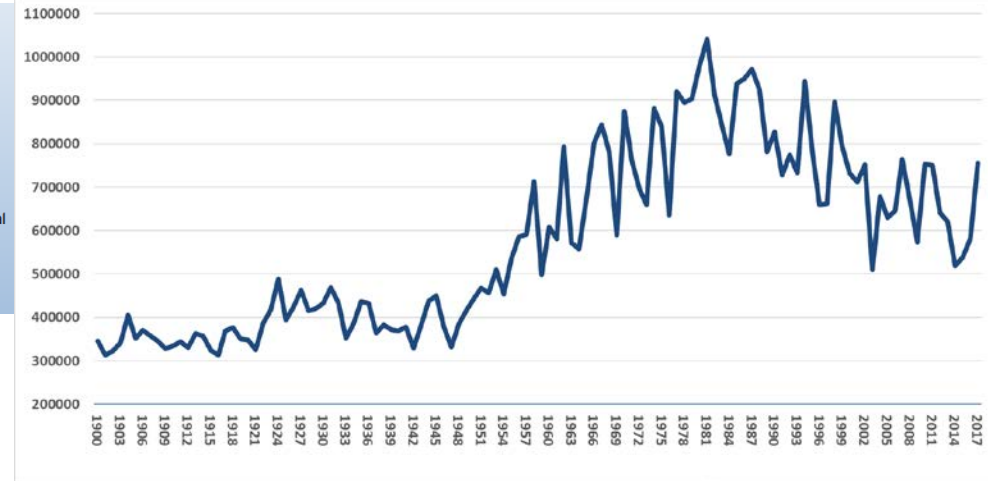
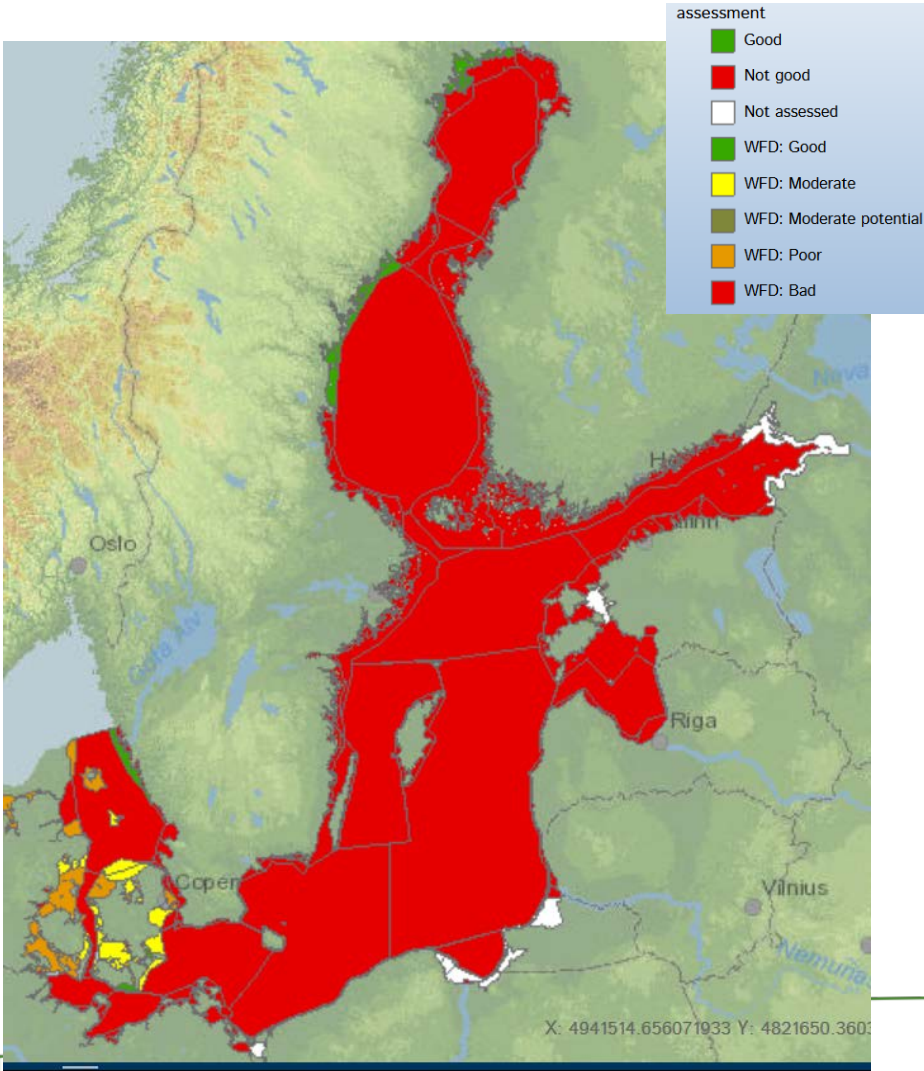


Regional nutrient recycling policy – BSR-water contribution

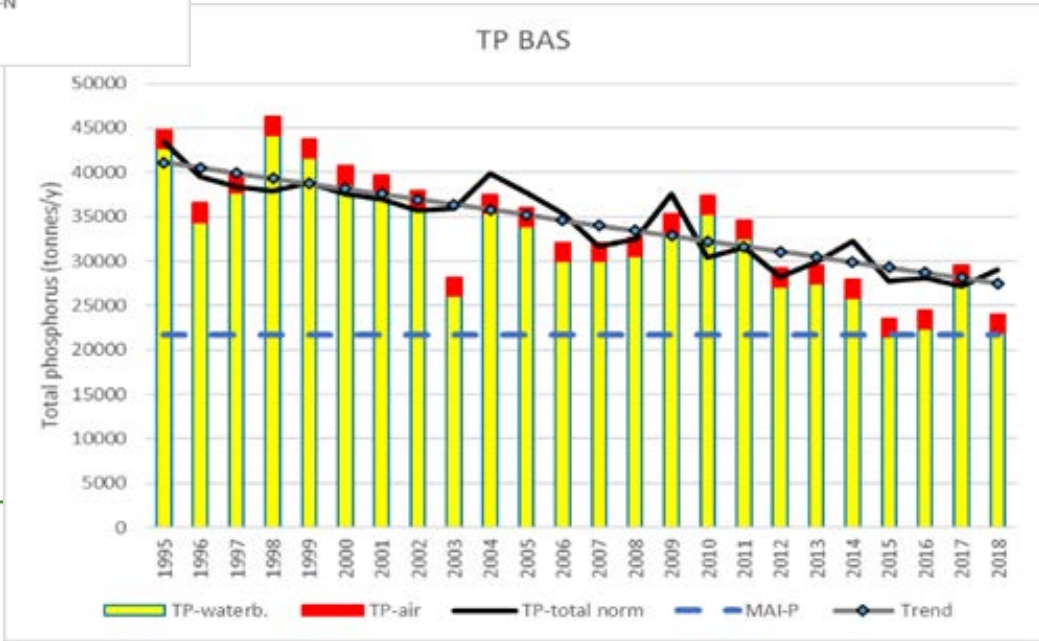
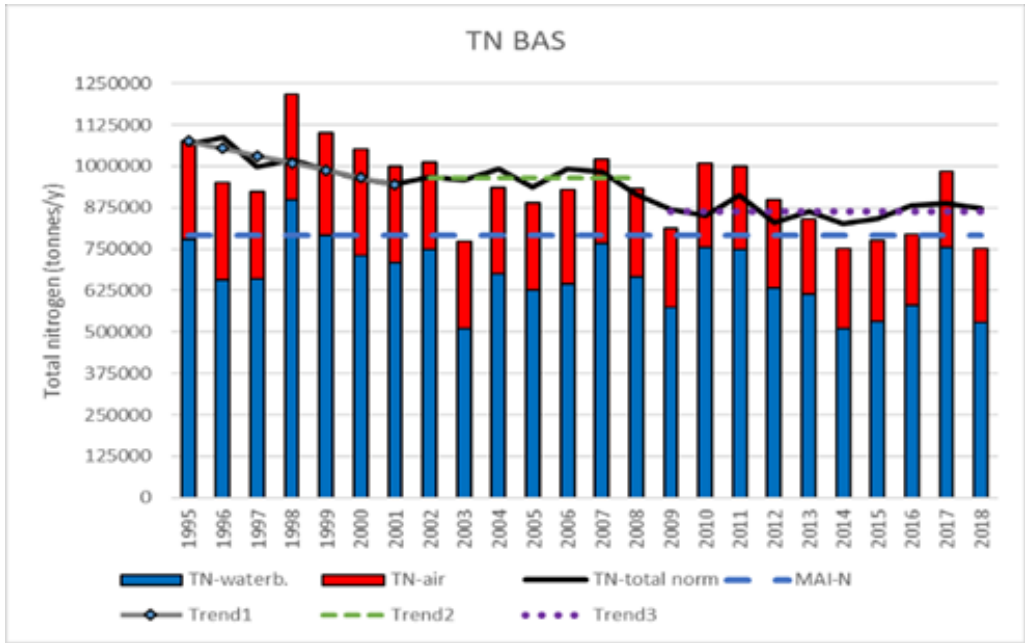
Dmitry Frank-Kamenetsky
HELCOM Secretariat

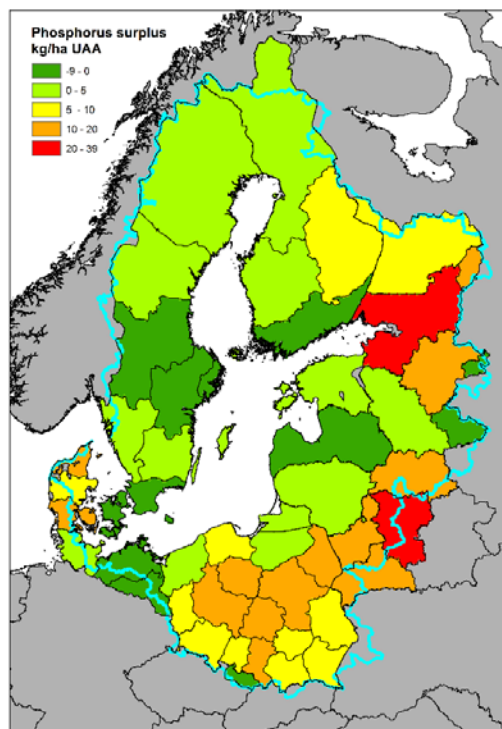
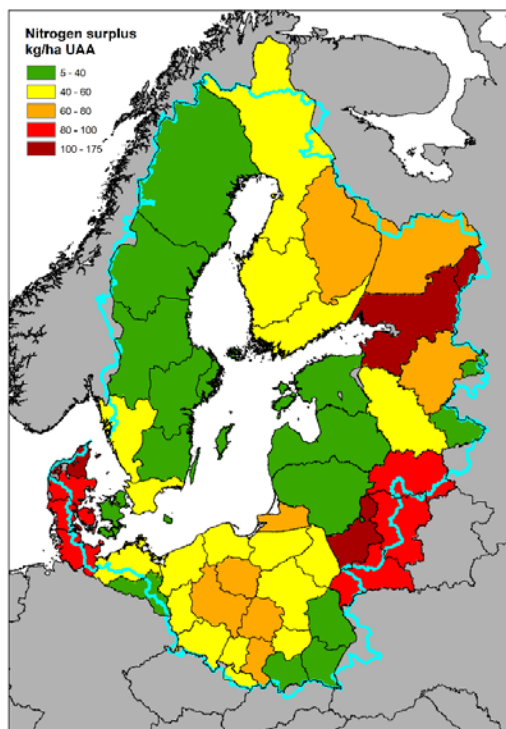
BSAP goal:

Baltic sea unaffected by eutrophication



Progress towards maximum allowable inputs of nitrogen and phosphorus by 2018





Nutrients surplus and fertilizer application rate in the Baltic Sea region

From: Svanbäck et al 2019, STOTEN 648 (2019) 1549–1559, <https://doi.org/10.1016/j.scitotenv.2018.08.194>

HELCOM PLC-7 Background report. In press.

	DE	DK	EE	FI	LT	LV	PL	RU	SE	percent
Nitrogen kg ha⁻¹ agricultural land										
Mineral fertiliser	101	94	38	62	63	40	61	0,86	66	57
Organic fertiliser	61	69	22	43	11	n.a.	30	95	40	43
Total fertiliser	161	163	60	105	74	n.a.	91	96	106	856
Phosphorus kg ha⁻¹ agricultural land										
Mineral fertiliser	6,1	8,4	4,1	5,5	8	5,9	8	0,4	4,8	34
Organic fertiliser	15	13	4,3	7,6	n.a.	n.a.	5,7	19,7	6,4	66
Total fertiliser	21	21	8,4	13	n.a.	n.a.	14	20	11	108,4

Recycled nutrients can replace traditional fertilizers

The total amount of recyclable phosphorus

26 000 t / year



26 000 t =

The portion of recyclable phosphorus would easily cover the amount needed for all of Finland's annual plant production.

>100%



The agricultural consumption of traditional inorganic phosphorus in 2015 was

11 000 t.

What is phosphorus?

Phosphorus is an element mined from the ground, used as a fertilizer to improve plant growth. Phosphorus becomes a problem when it flows into water bodies, where it causes algal blooms and increases eutrophication.

SOURCE: Marttinen et al.: Towards a breakthrough in nutrient recycling – State-of-the-art and recommendations for developing policy instruments in Finland. Natural resources and bioeconomy studies, Luke 45/2017.



Experts warn

Sewage sludge is a sink for:
heavy metals, antibiotics, PAHs,
organochlorides, microplastics, etc.

Baltic Sea Action Plan

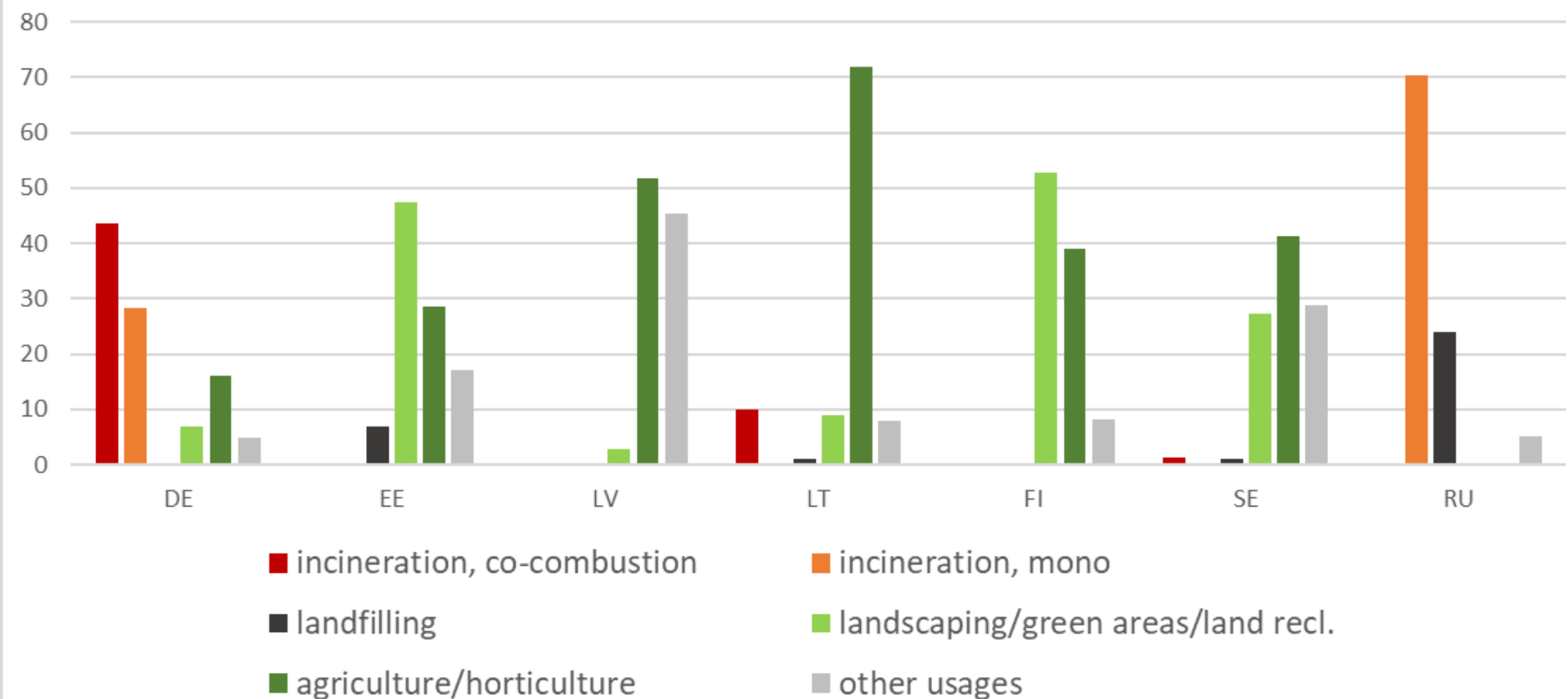
Ecological objectives on hazardous substances:

- Concentrations of hazardous substances close to natural levels,
- All fish safe to eat
- Healthy wildlife



HELCOM Recommendation 38/1 on SEWAGE SLUDGE HANDLING

Sewage sludge handling in the BS region in 2018



Drivers and challenges for nutrient recycling from sewage


HELCOM Workshop on regional nutrient recycling strategy, 6 November 2018

Drivers

- Understanding of the need to reduce input of nutrients to the Baltic Sea
- Independence of external P supplies and closing the loop
- Economic model to reduce the costs of sewage handling

Challenges

- Risk of contamination
- Lack of the system to assure that sewage based products are safe to use
- Lack of holistic cross-sectoral approach



NUTRITIONALLY SPEAKING,
IT'S NUTTY TO PUT
NUTRIENTS IN THE SEA?

YEP! INSTEAD, WE
NEED A STRATEGY TO
RECYCLE THEM SAFELY.

HOORAY!

HELCOM Regional Nutrient Recycling Strategy

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.

Objectives

Baltic Sea region as a model area for nutrient recycling

Reducing environmental impacts

Safe nutrient recycling

Creating business opportunities

Improving policy coherence

Knowledge exchange and awareness raising

Measures

The Strategy includes the list of possible measures as a toolbox which gives Contracting Parties expert advice and ideas how to develop nutrient recycling in their respective countries.

- fertilization according to the plant needs and soil nutrient content,
- good soil structure and other conditions for optimal nutrient intake,
- efficient manure management,
- efficient management to reduce impact from animal grazing and trampling,
- returning nutrients from food industry side streams back to the fields,
- reduction of food waste from the whole food system, and
- proper treatment of sewage sludge from waste water treatment plants returning nutrients back to the cycle without risks to human health and the environment.

The updated BSAP and measures for nutrient recycling

(provisional actions)

- Implement adequate measures, especially in agriculture and wastewater management, to achieve the objectives of the Baltic Sea Regional Nutrient Recycling Strategy by 2027.
- Enhance the use of recycled nutrients in agriculture making use of best available technologies and fertilize according to crop needs.
- Develop by 2027 safety requirements for recycled fertilizer products and minimise the occurrence of harmful compounds in these products to comply with the requirements.
- Increase the knowledge and promote education and advisory services on nutrient recycling.
- Improve the conditions for the development of a market for recycled fertilizer products by setting incentives with the aim of making the use of such products equally attractive to farmers as the use of mineral fertilizers.
- Enhance cooperation and share experiences between sectors and actors to create a holistic view on sustainable food systems including nutrient recycling across sectors.

INTERREG project platforms

as key contributors to the development of the Nutrient Recycling Strategy and related measures for the updated BSAP

SuMaNu

Sustainable manure and nutrient management for reduction of nutrient loss in the Baltic Sea Region

PLATFORM
BSR WATER

enhance cross-sectoral cooperation in smart water management by transnational experience exchange, sharing good practices and delivering a comprehensive overview of the current and future BSR policy contexts

PLATFORM
BSR WATER

INTERREG BSR WATER project

4.1. Developing regional policy recommendations on nutrient recycling

4.2. Developing recommendation on hazardous substances

4.3. Constructing integrated model for Water-Sludge-Energy cooperation

4.4. Developing policy recommendations for implementing sustainable urban storm water management

Palette of Solutions

for nutrient recycling in wastewater management sector



Solutions to recover P should be considered as a part of the whole technological cycle of wastewater treatment.

Policy brief 1: Large WWTP (> 100.000 PE)

Policy brief 2: Medium size WWTP (50.000 – 100.000 PE)

Policy brief 3: Small WWTP (< 50.000 PE)

<https://helcom.fi/wp-content/uploads/2021/07/Palette-of-Solutions-for-Nutrient-Recycling-in-the-BSR.pdf>

Guidelines on integrated model for Water-Sludge-Energy cooperation *(under reviewing)*

The Guidelines outlines possible points of cooperation for the WWTP with a quick description of potential financial balance of the recommendation and an overview of different important parameters and potential effects to WWTPs to help in making informed decisions.

Solutions to recycle nutrients are currently available almost for all types of sewerage systems. Palette of solutions is an example of tailoring nutrient recycling processes for various sewage systems.

Its time for transition

from removal

to

recycling

and

from waste water treatment plant

to

resource recovery plant

Conclusions of the workshop “Smart water management: regional strategies, best practices and expertise exchange from the BSR WATER platform”. BSD2021.



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