

HELCOM vision to sewage sludge handling and recycling of nutrients



IWAM
Interactive Water Management

Interreg
Baltic Sea Region



EUROPEAN UNION
EUROPEAN
REGIONAL
DEVELOPMENT
FUND

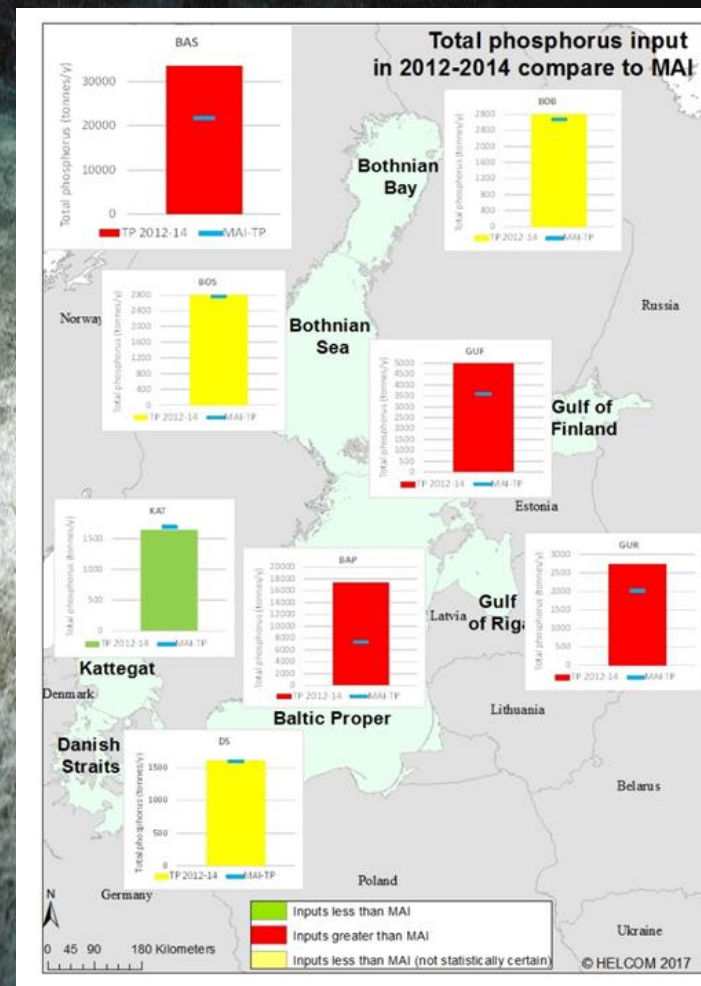
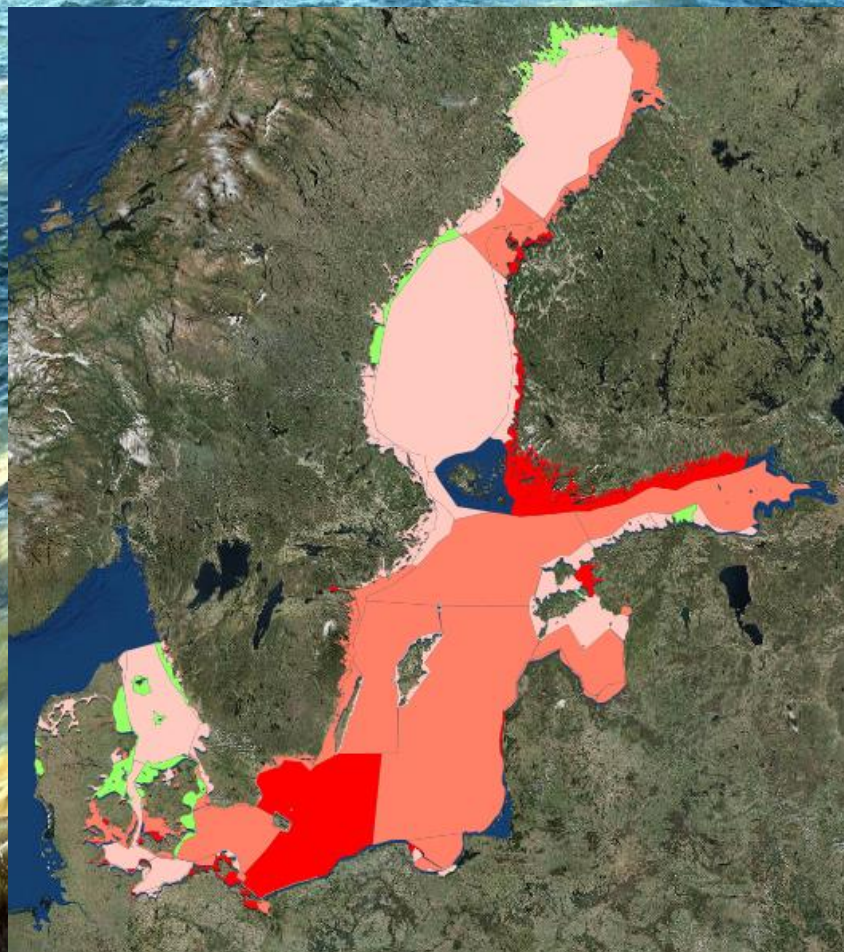
Dmitry Frank-Kamenetsky
professional secretary



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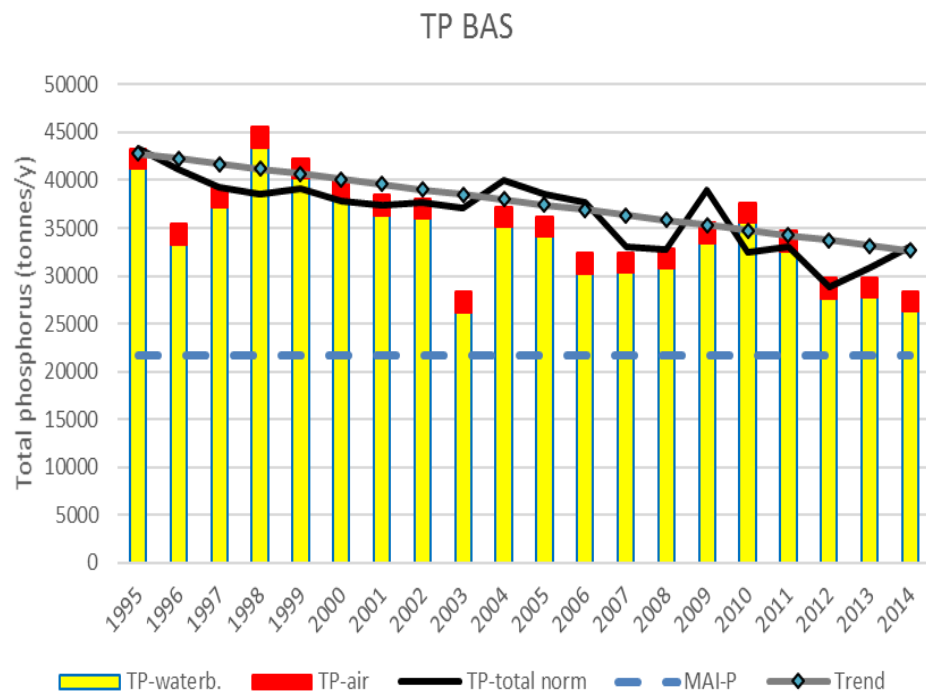
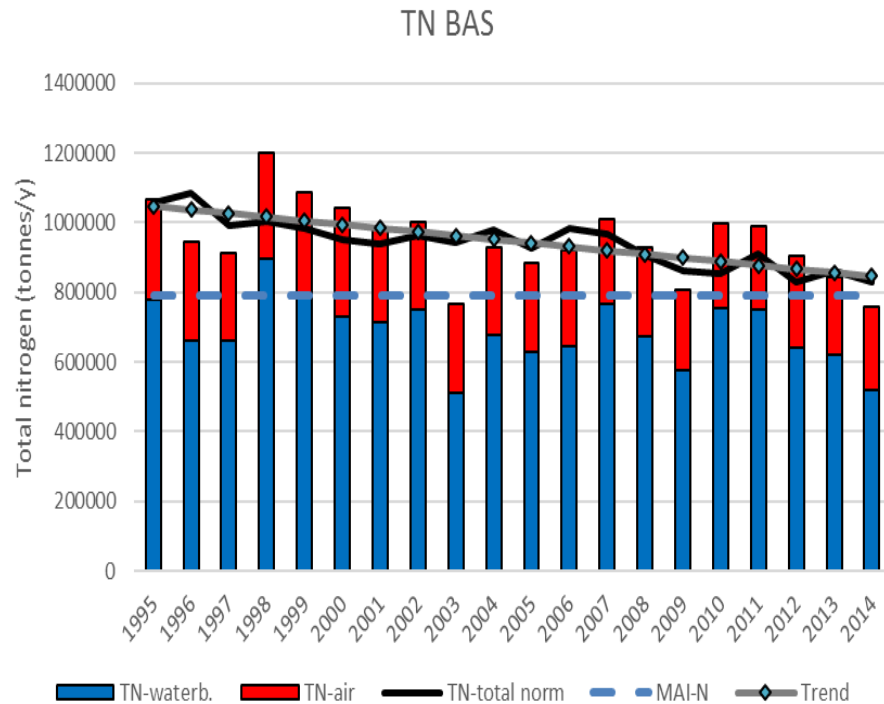
Baltic Sea Action Plan

Baltic Sea unaffected by eutrophication



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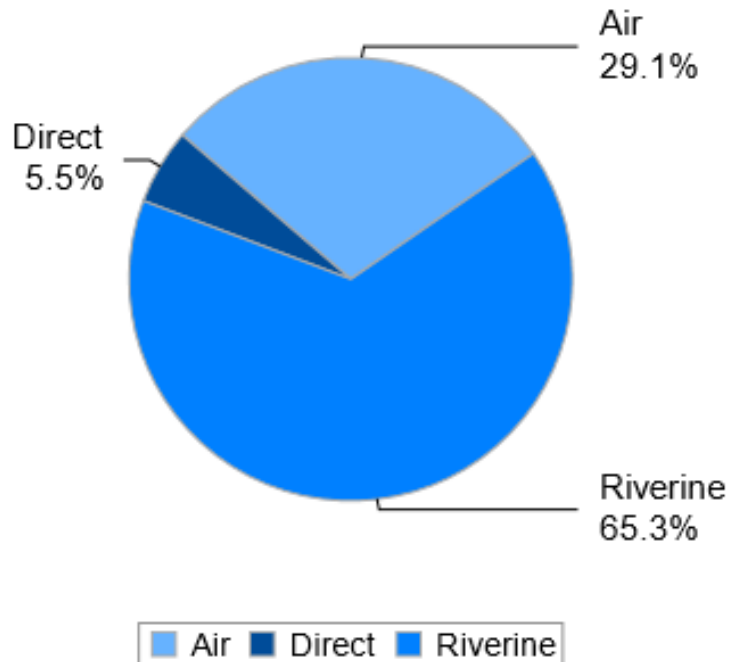
Progress in reduction of nutrient loads



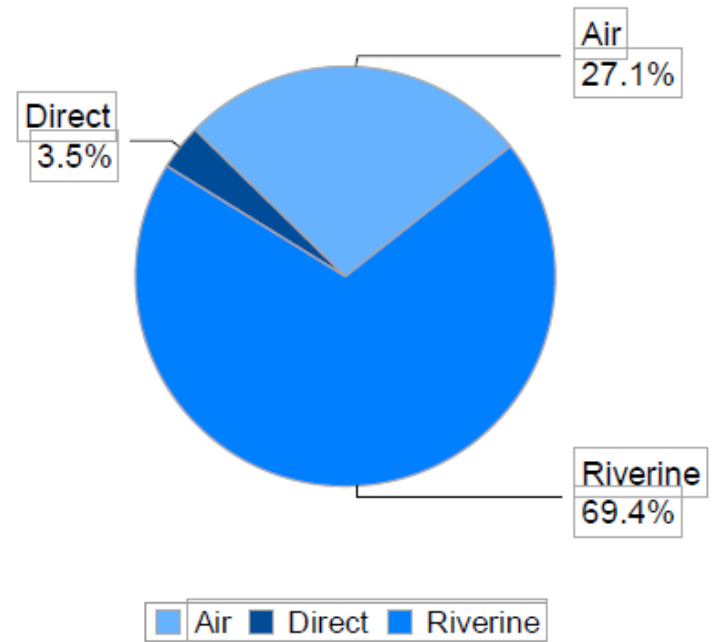
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Major pathways of nutrients to the BS

1995 (1,056,922 tonnes)

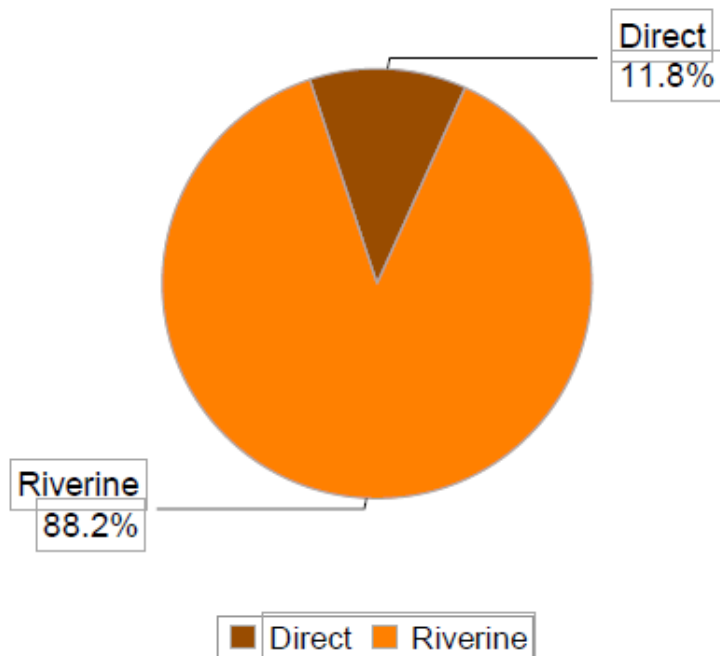


2014 (825,825 tonnes)

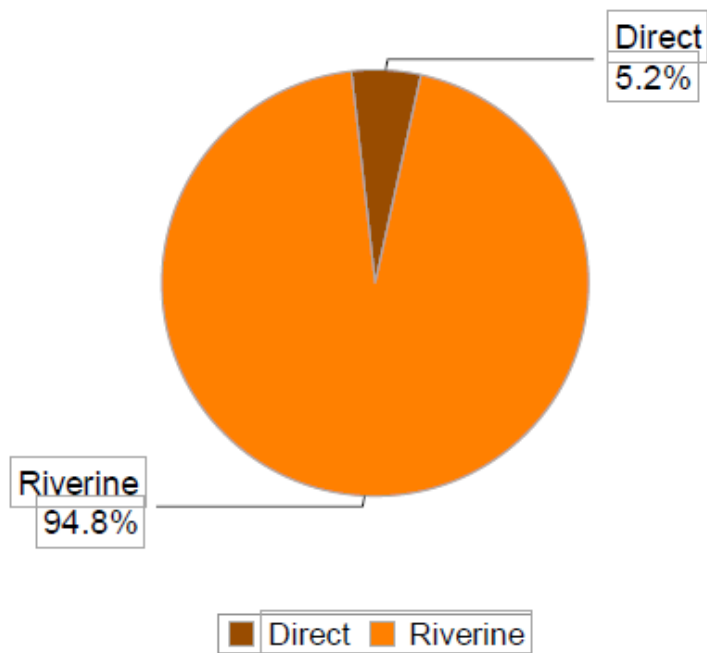


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1995 (41,163 tonnes)



2014 (30,949 tonnes)



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Municipal waste water treatment
in accordance with
HELCOM RECOMMENDATION 28E/5
removes 70-90% of phosphorus.



**3.5 million ton of dry solids
per year in the BS region**

PURE project



Phosphate Rock
 P_2O_5 30% MIN

**Quick calculation based on
pessimistic assumptions on P
content and recovery gives:**

- **21 th. t/P per year**
- **270 th. t of phosphate rock**
- **30 mln. dollars**



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HELCOM Copenhagen Ministerial Declaration

3 October 2013, Copenhagen, Denmark

AGREE to enhance the recycling of phosphorus (especially in agriculture and waste water treatment) and to promote development of appropriate methodology;



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Experts warn

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

Baltic Sea Action Plan

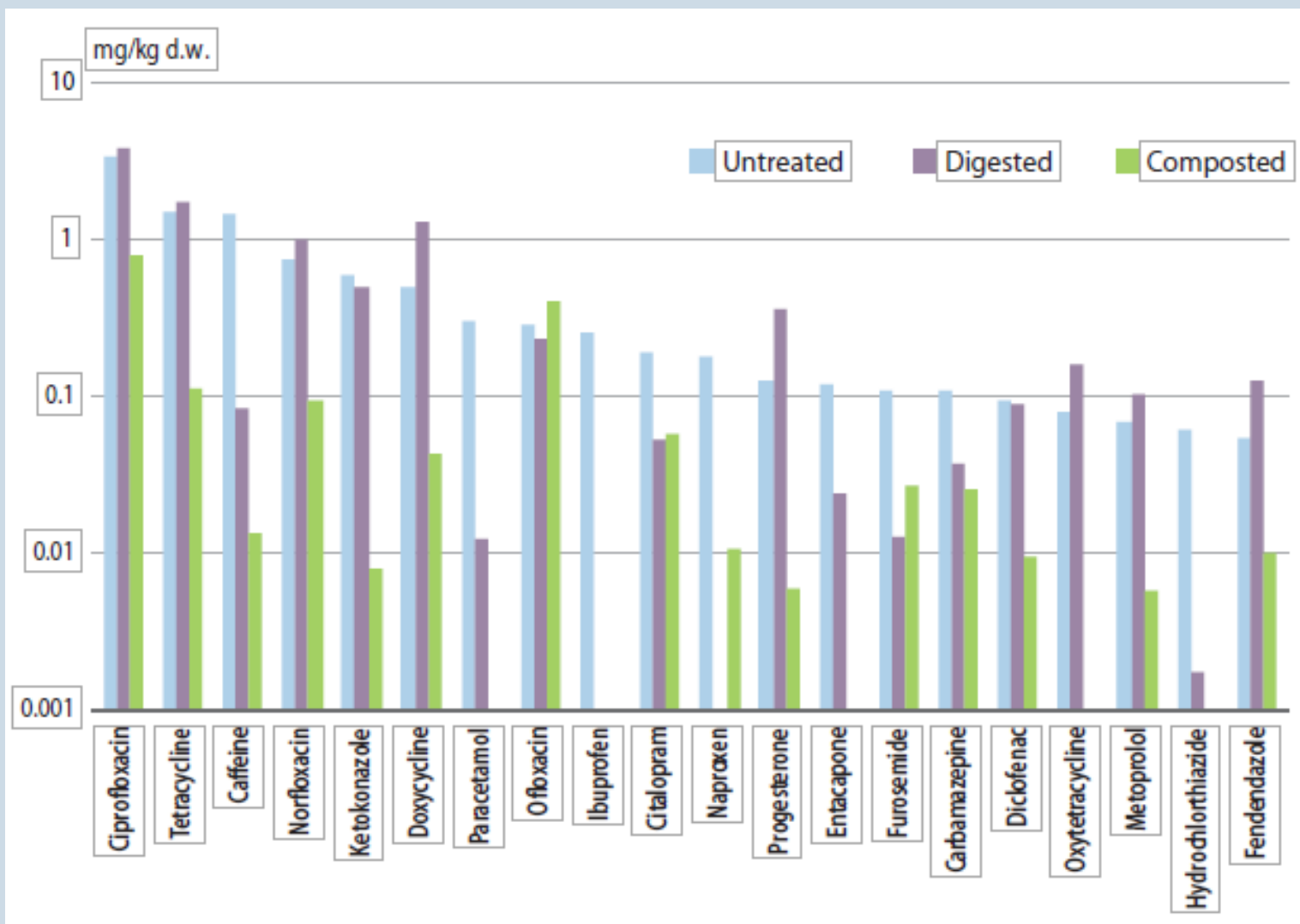
Ecological objectives on hazardous substances:

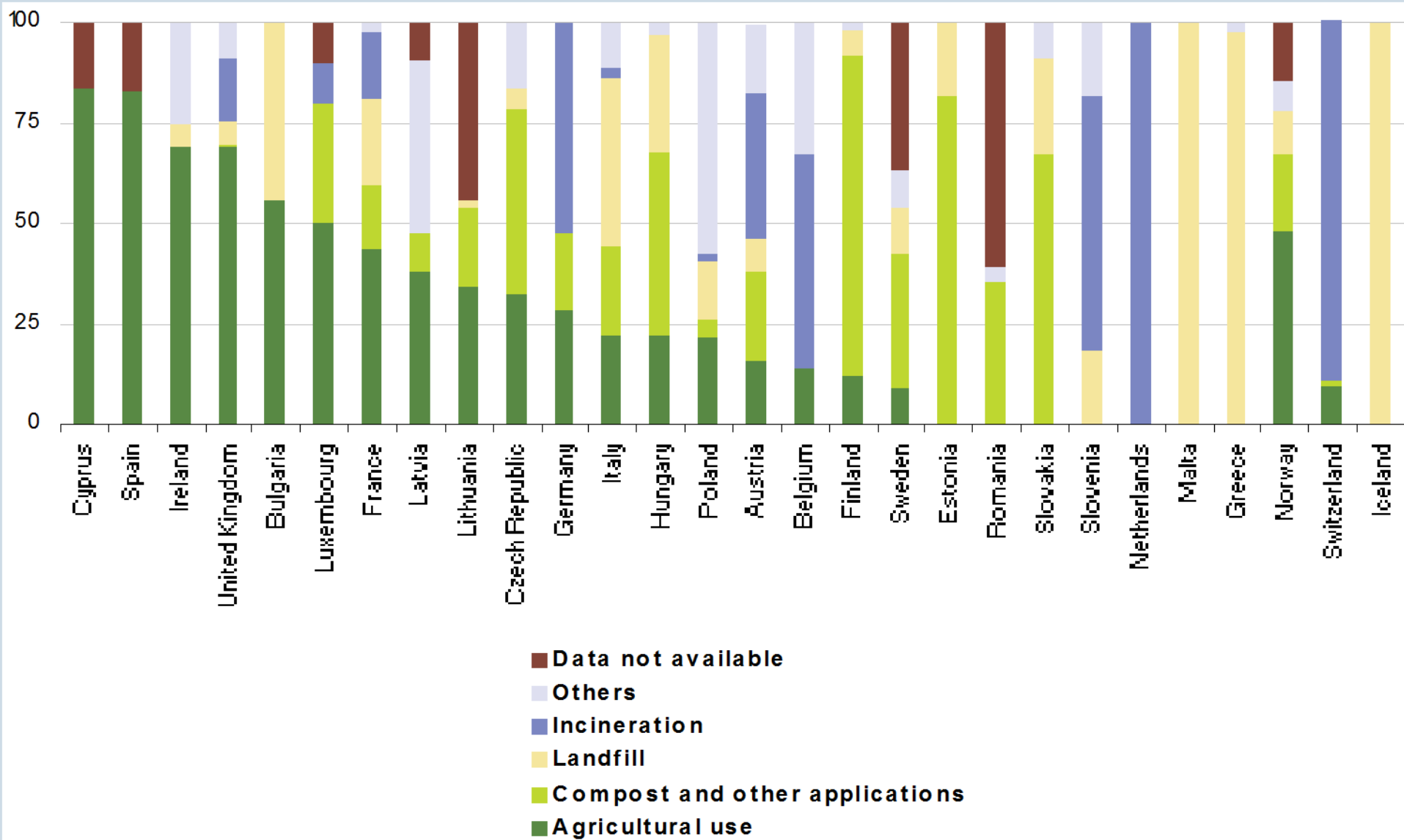
- Concentrations of hazardous substances close to natural levels,
- All fish safe to eat
- Healthy wildlife



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Average concentrations of top 20 pharmaceuticals in untreated, digested and composted sludge





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HELCOM Recommendation 38/1 on sewage sludge handling

The Recommendation identifies general principles for sustainable handling of sewage sludge and upstream measures to improve the quality of the sludge and paves the way for a regional dialog to elaborate regionally agreed parameters assuring maximum utilization of the valuable components of the sludge and minimise potential negative effects.

HELCOM 38-2017



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Basic principles of sewage sludge handling

Landfilling of untreated sewage sludge should be avoided

Reuse or recycling of nutrients, especially phosphorus, from the sewage sludge as well as utilisation of its energetic potential

Ensure also that leaching of the nutrients to the environment as well as emissions and leakages of substances polluting the environment are prevented

Techniques and practices of sewage sludge handling should prevent or, at least, minimize all kinds of emissions to the air, water and soil



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Overall restrictions regarding handling of sewage sludge

Recommendations regarding agricultural and horticultural use

Recommendations regarding use in forestry, green areas, landscaping and land reclamation

Recommendations regarding incineration, construction and other applications

HELCOM Recommendation does not prescribe any technical solutions or set limit values.



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Regional nutrient recycling strategy

- Nutrients from agricultural production and waste water treatment systems that have leached into the Baltic Sea cause eutrophication.
- Phosphorus and nitrogen are essential nutrients to the growth of plants and the food production.
- The valuable resources have turned into a serious problem, when in the wrong place.
- There is a need to improve recycling of nutrients on land to close the loop and prevent losses to the sea to minimize the impact on the Baltic Sea.



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Regional palette of solution to advance P recycling from waste water

Recovery of P can increase the cost of sewage sludge handling. Thus, reuse of P should be considered as a part of the whole waste water and sludge handling process to find the most sustainable solutions.

Experts recommended to collect information on the technological solution and elaborate a palette of technological solutions for P recovery from waste water sewage sludge.



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National reporting on sewage sludge quality and handling practices.

A. Waste water from origins

1. Have actions been taken to improve the waste water quality from origins before it reach WWTP (source reduction)?

2. Is improved waste water quality from origins a matter for the central, regional or local governments?



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B. Sewage sludge handling

1. Generated sewage sludge, dry mass, t/a

2. Used for biogas generation dry mass, t/a

3. Usage of sewage sludge

a) incineration, co-combustion

b) incineration, mono

c) landfilling

d) landfilling, mono

e) landscaping/green areas/land reclamation

f) agriculture/horticulture

g) forestry

h) other usages

3. Have actions been taken to reduce the leakage of nutrients from sludge handling?

4. Implementation of Recommendation: new legislation, amendment to existing legislation or other means.

5. Does your country technically recover phosphorus from: waste water, sewage sludge or sewage sludge ashes?



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C. Sewage sludge quality

1. Concentrations of nutrients and hazardous substances in sewage sludge

Other hazardous substances and pathogens as CP considers appropriate. (Add additional rows as necessary)

2. National limit values for hazardous substances and pathogens in sewage sludge

3. Is there a demand for hygienization of sewage sludge in national legislation?

Information on hygienization treatments used

4. Amount of phosphorus recovered from sewage sludge or products of its treatment

Phosphorus recovery strategies



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Summary

- Implementing commitments of MD 2013, HELCOM adopted Recommendation on sustainable sewage sludge handling.
- HELCOM agreed to start the work on regional nutrient recycling strategy, integrating recycling of nutrients from manure, sewage water and bio wastes.
- HELCOM PRESSURE group agreed to launch data compilation, using Recommendation 38/1 as a starting point, to create knowledge base for regional palette of solutions to recover P from sewage water.
- HELCOM agreed to continue the work on limit values for sewage sludge application.



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