

Solutions for safe and sustainable nutrient recycling from wastewater

University of Tartu

TAAVO TENNO

PLATFORM
BSR WATER

 **Interreg**
Baltic Sea Region



EUROPEAN
REGIONAL
DEVELOPMENT
FUND



UNIVERSITY OF TARTU

BSR WATER

Platform on
Integrated Water
Cooperation



Duration:
1 October 2018 to
30 September 2021

10

Partners



19

Associated partners



Funding:
Interreg BSR
Programme
2014–2020



Budget:
EUR 1,1 million

9

Countries
from Baltic
Sea Region



www.bsrwater.eu

Welcome to the IWAMA project

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IWAMA AIMS at improving wastewater management in the Baltic Sea Region by developing the capacity of the wastewater treatment operators and implementing pilot investments to increase the energy efficiency and advance the sludge handling.

Capacity Development



Capacity development activities in IWAMA are focused on enabling structured lifelong learning and expertise exchange of the specialists working in the field of wastewater treatment.

Energy Efficiency



One of the IWAMA aims is applying energy efficient technologies in the wastewater treatment sector to reduce nutrient impact in the Baltic Sea Region.

Sludge Handling



Smart sludge management is an important step to reducing loads of nutrients and hazardous substances to the Baltic Sea.

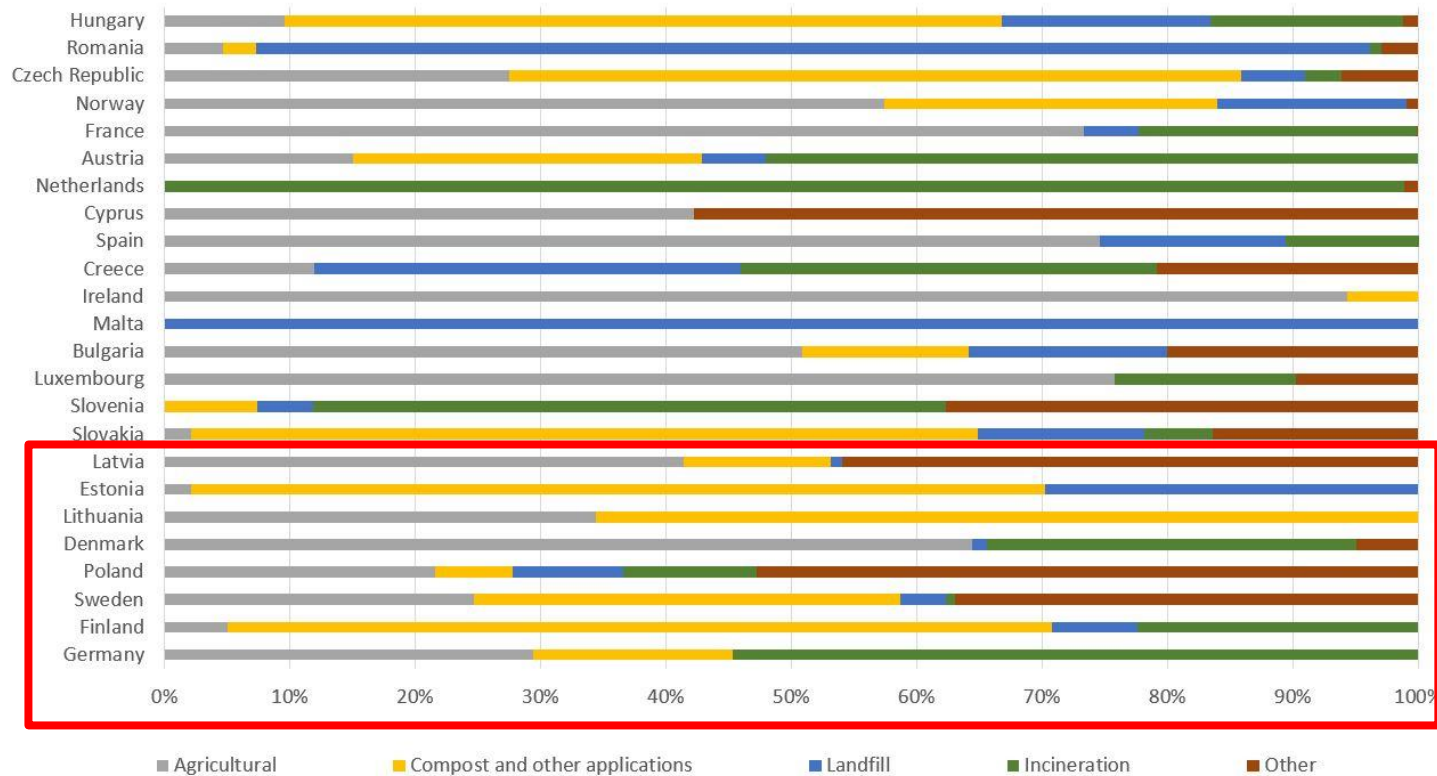
Report on pallet of solutions for nutrient recycling in the BSR

Content

- Sources and flows of nutrients in WWTP
- Nutrient recycling and recovery technologies
- Cases of nutrient reuse and recovery
- Feasibility
- Use of recycled nutrients
- Policy summary



Sewage sludge disposal in Europe 2012



Data: ec.europa.eu/eurostat

What should be done with the sewage sludge?

Fertilizer

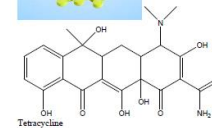
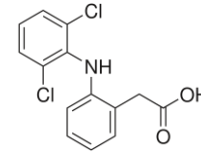
- N, P, K, Mg, ..
- Organic fertilizer
- Cheap



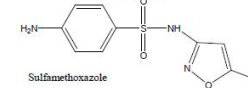
Waste

Anthropogenic contaminants

- Heavy metals,
- Pharmaceuticals
- Hormones
- Microplastics



Tetracycline



Sulfamethoxazole



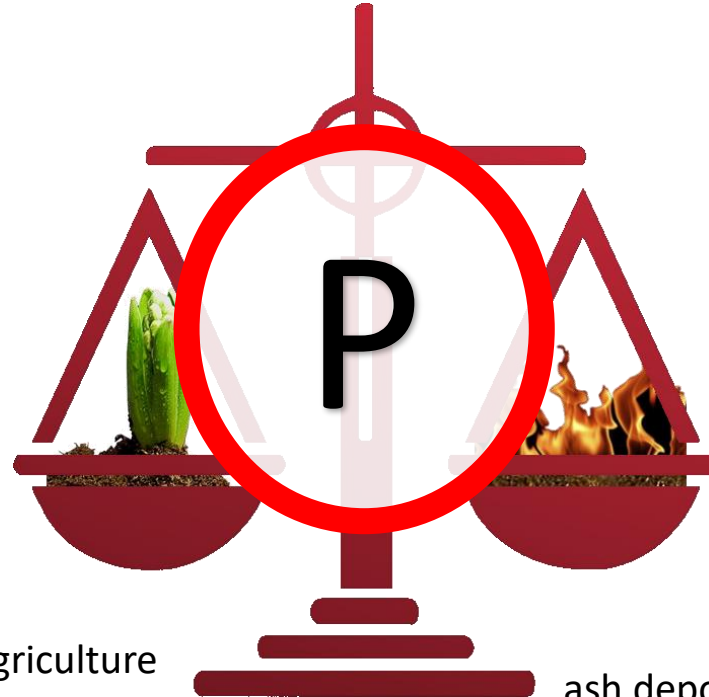
What should be done with the sewage sludge?

Fertilizer

- N, P, K, Mg, ..
- Organic fertilizer
- Cheap

SLUDGE REUSE

agriculture
greenery
recultivation



ash deposit
P-recovery

Waste

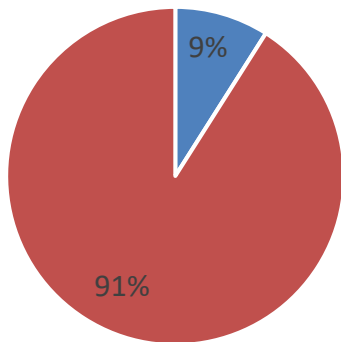
Anthropogenic contaminants

- Heavy metals,
- Pharmaceuticals
- Hormones
- Microplastic

NUTRIENT RECYCLE & RECOVERY

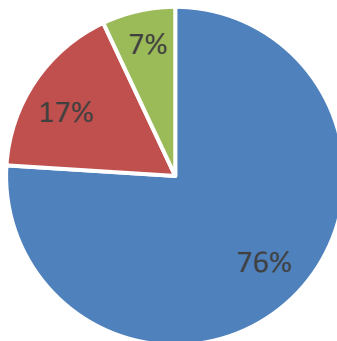
EU P supply and recovery

Supply



■ European fossil P ■ Import production

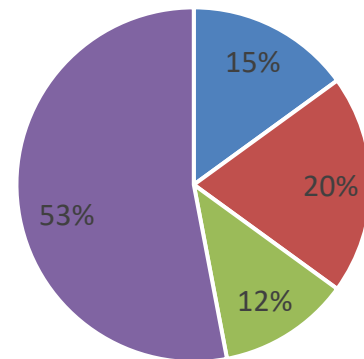
Demand



Total 1 480 000tP/a

■ Fertilizer
■ Feed additives
■ Other

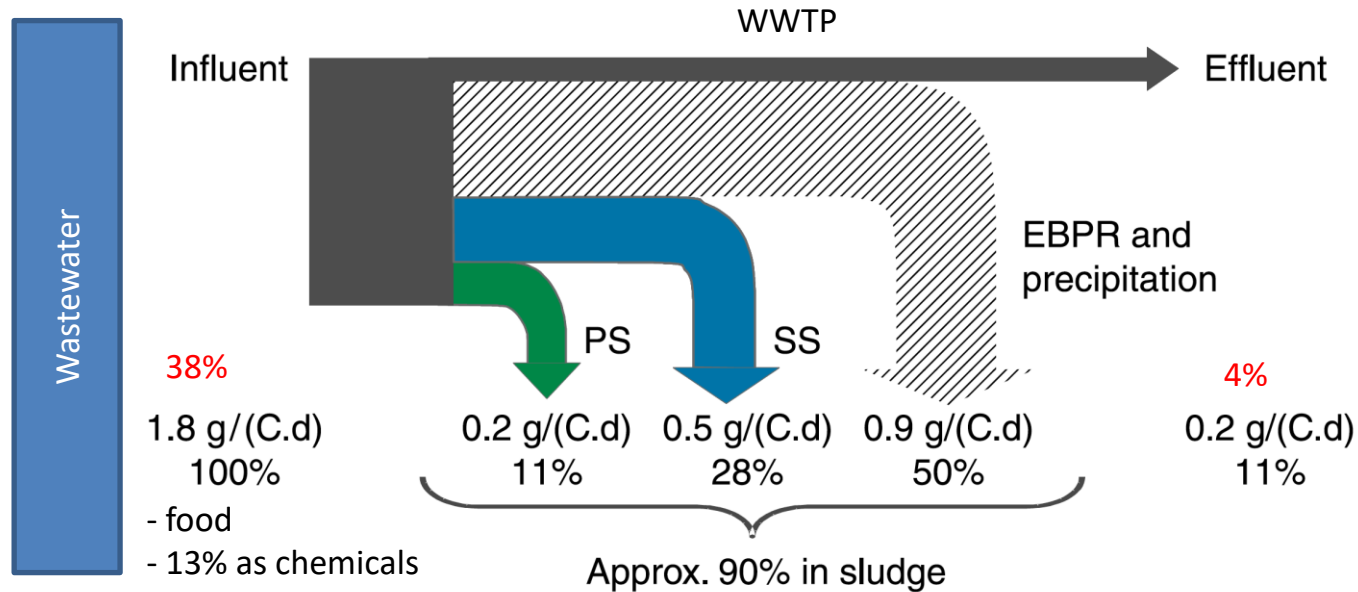
Recovery potential



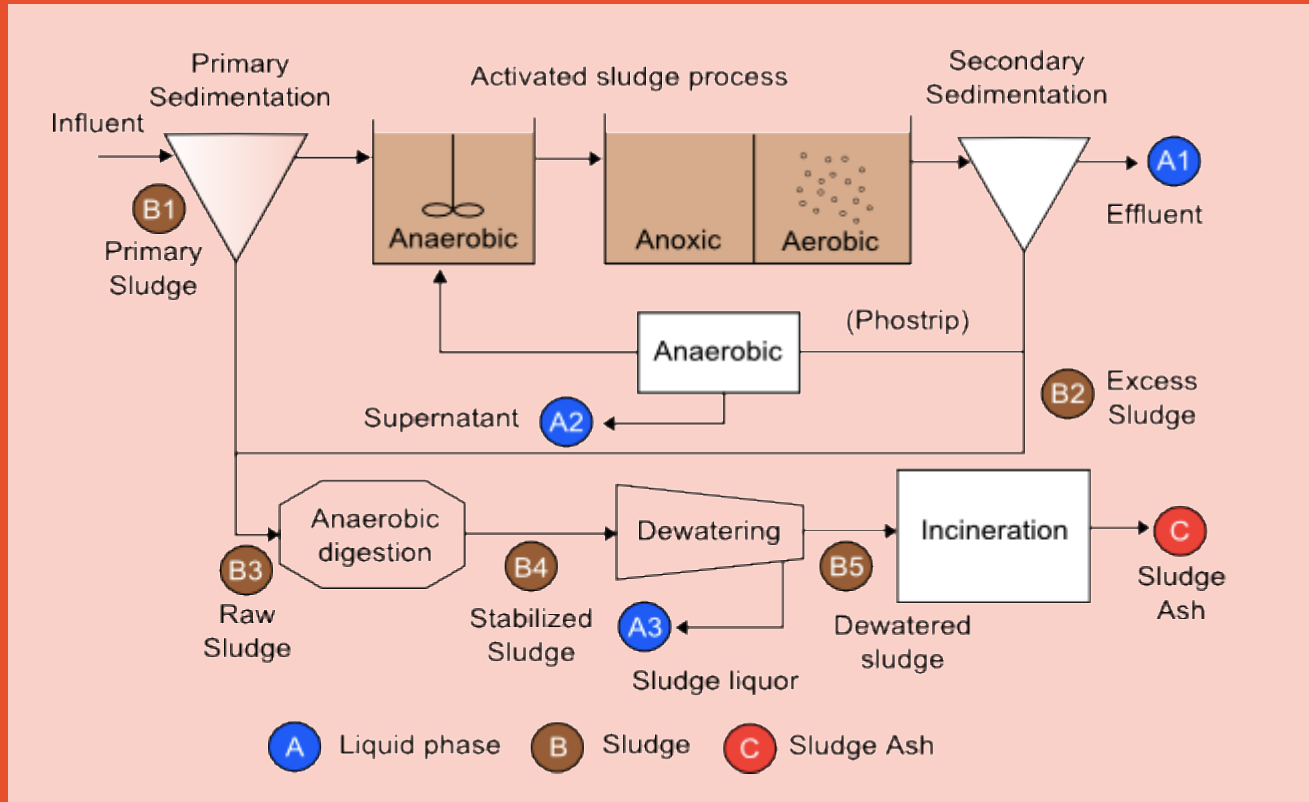
■ Municipal sewage sludge
■ Slaughterhouse waste
■ Food waste (household and retail)
■ Demand uncovered

Phosphorous recovery form sewage sludge

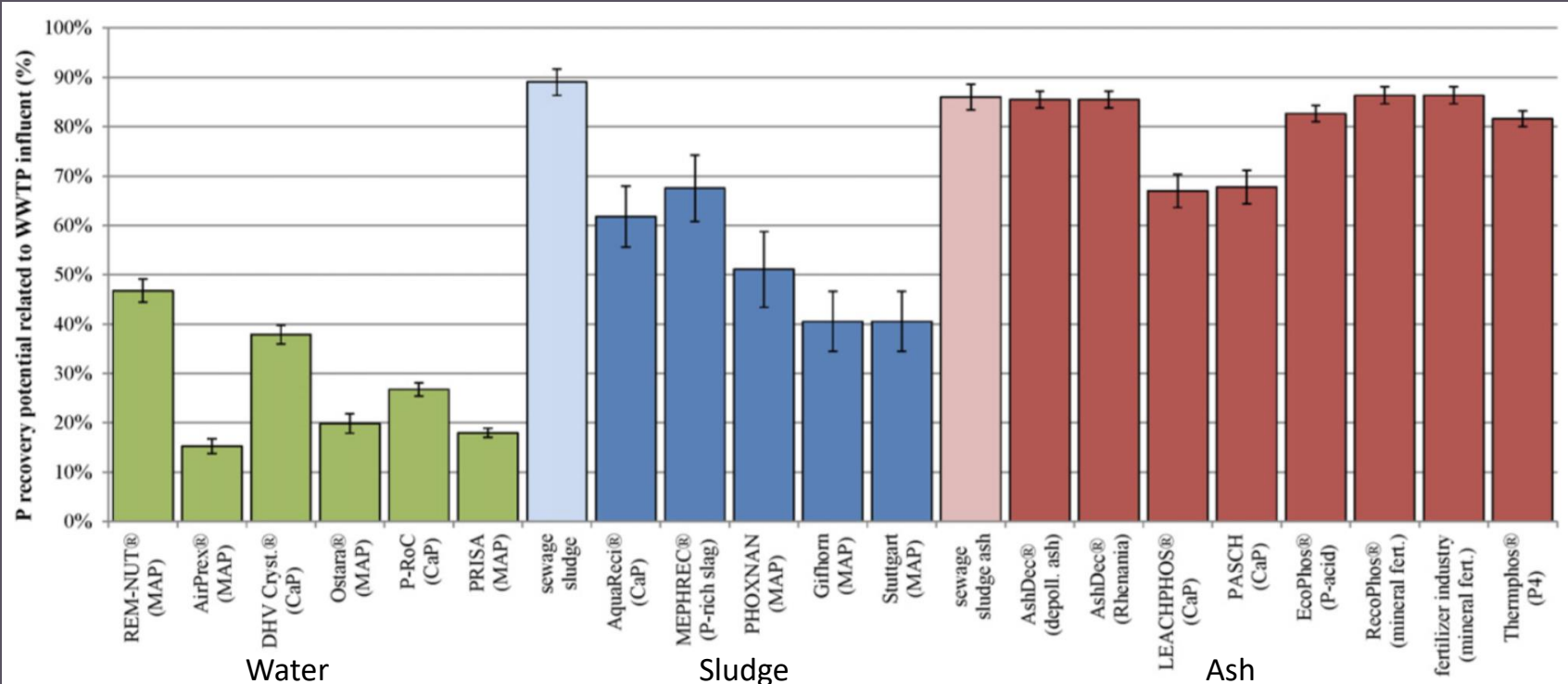
EU average P import (2015) 4,7g/(C.d)



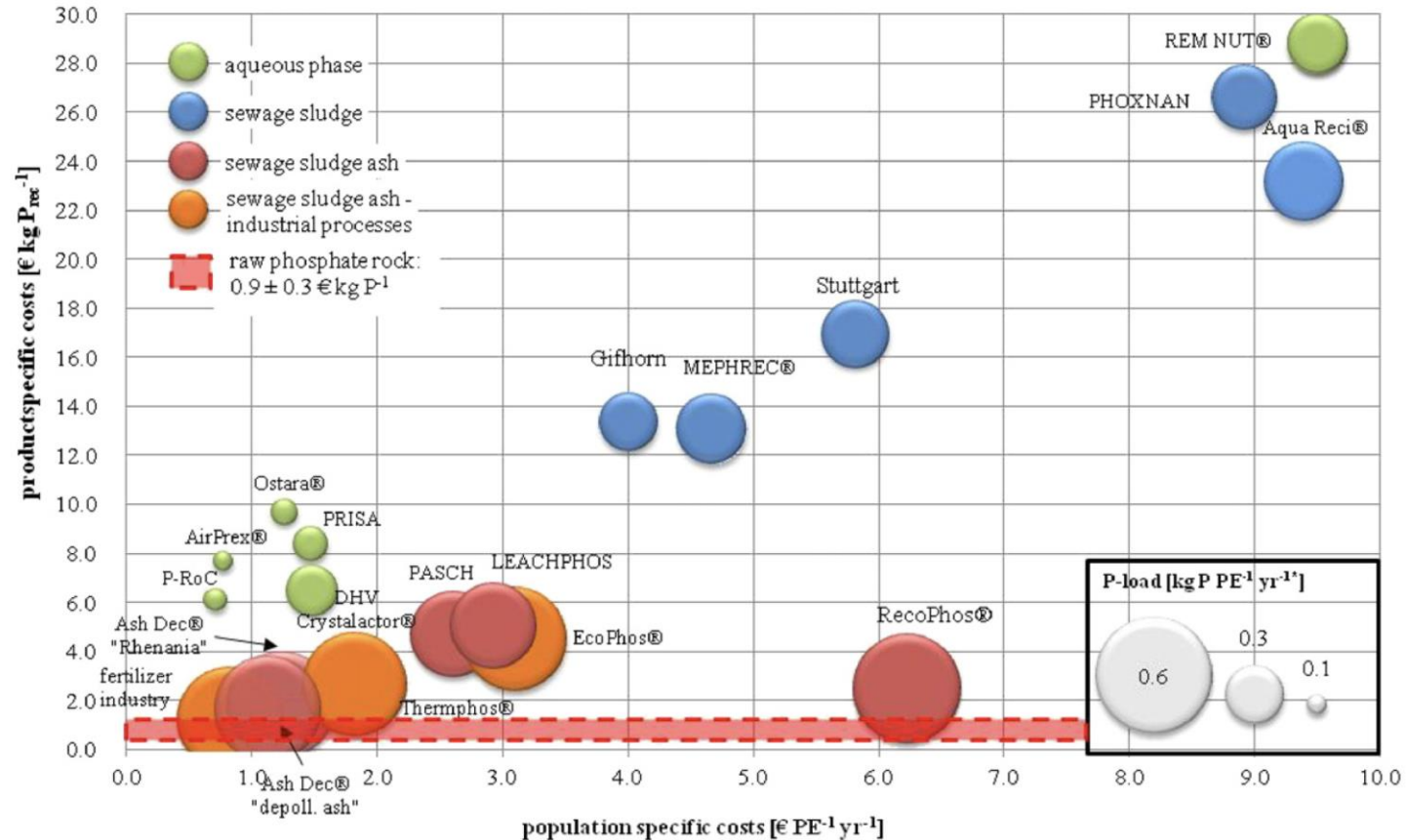
Phosphorous recovery from sewage sludge



P recovery potential (%) of recovery technologies relative to the WWTP influent.



Economy of P recovery



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Thank you!

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