

Nutrient management in EU water utilities: the EurEau perspective

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EurEau Waste Water committee

3rd EUROPEAN NUTRIENT EVENT @ ECOMONDO 2018

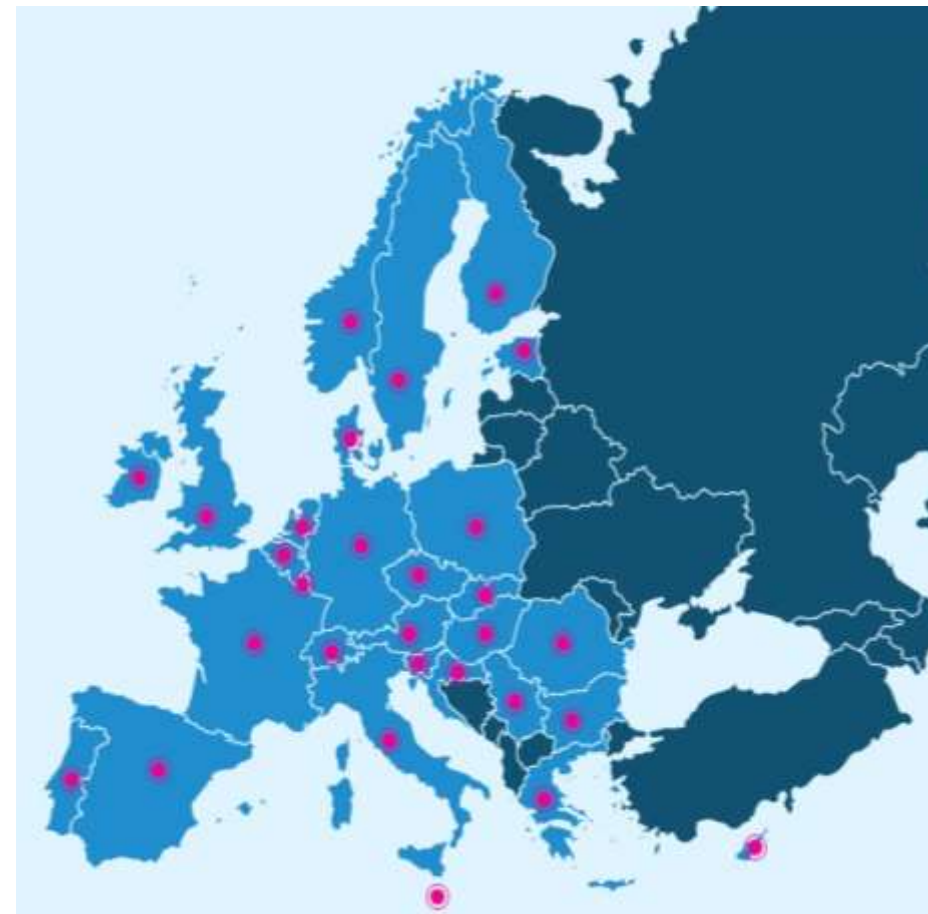
8 - 9 November 2018, Rimini, Italy

www.smart-plant.eu/ENE3



EurEau - Who we are

- ~ EurEau is the **European federation of water services**
- ~ We represent **32** national associations of **drinking and waste water operators** from **29** European countries
- ~ We represent both **public** and **private** sector
- ~ With **470,000 direct jobs**, we make a significant contribution to the European economy.



EurEau - What we do

Our experts exchange knowledge

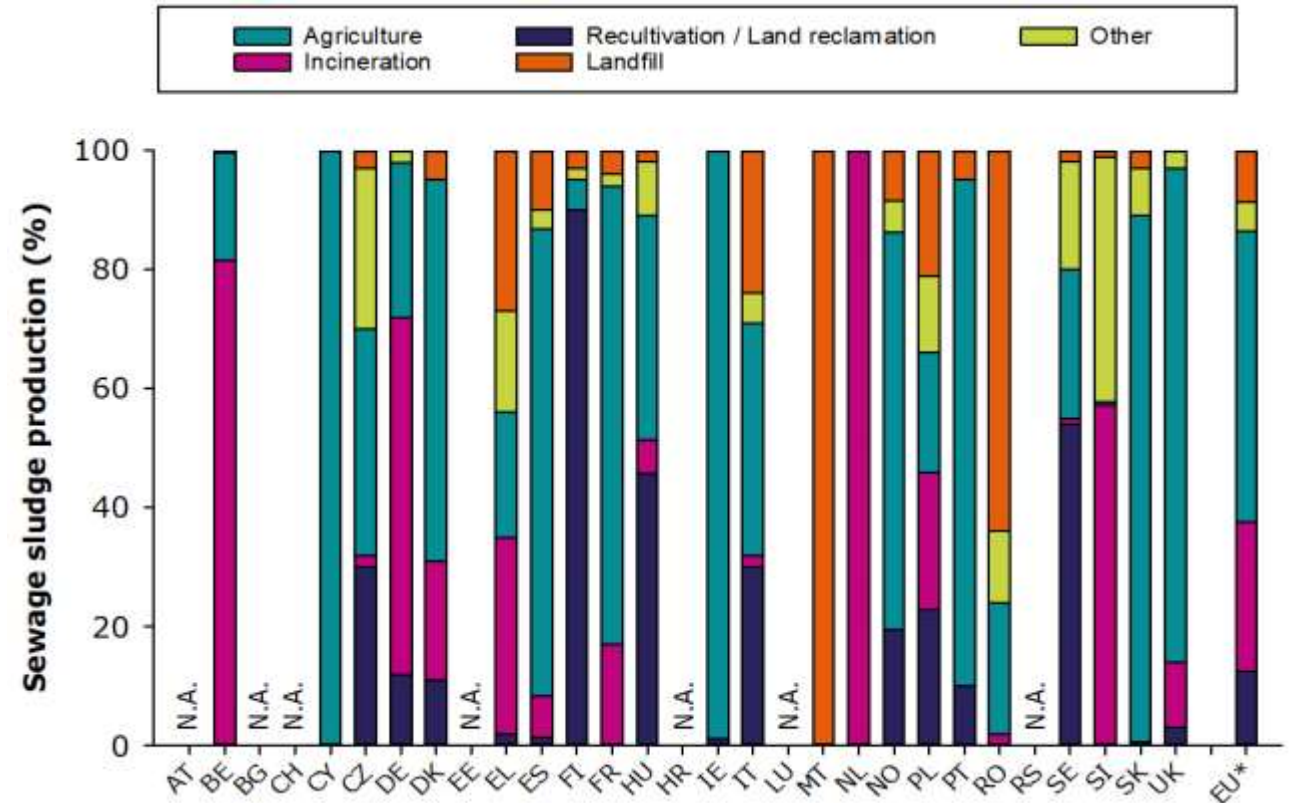
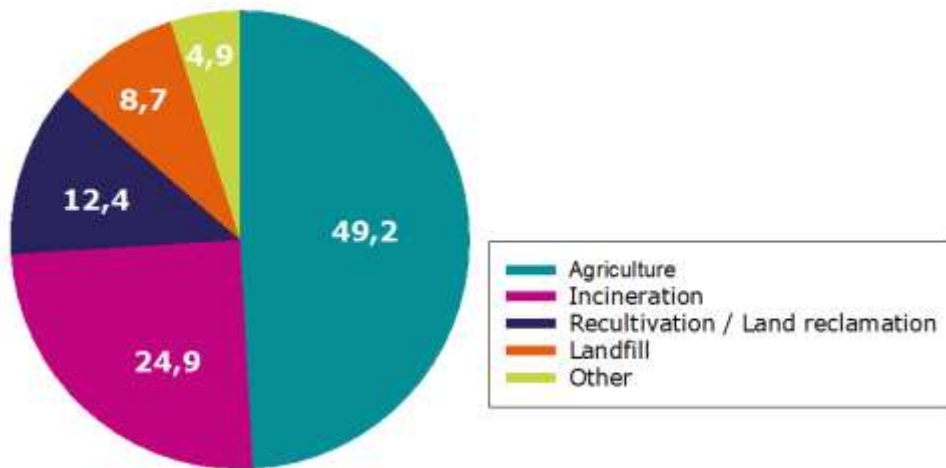
We establish positions

We engage with EU policy makers.

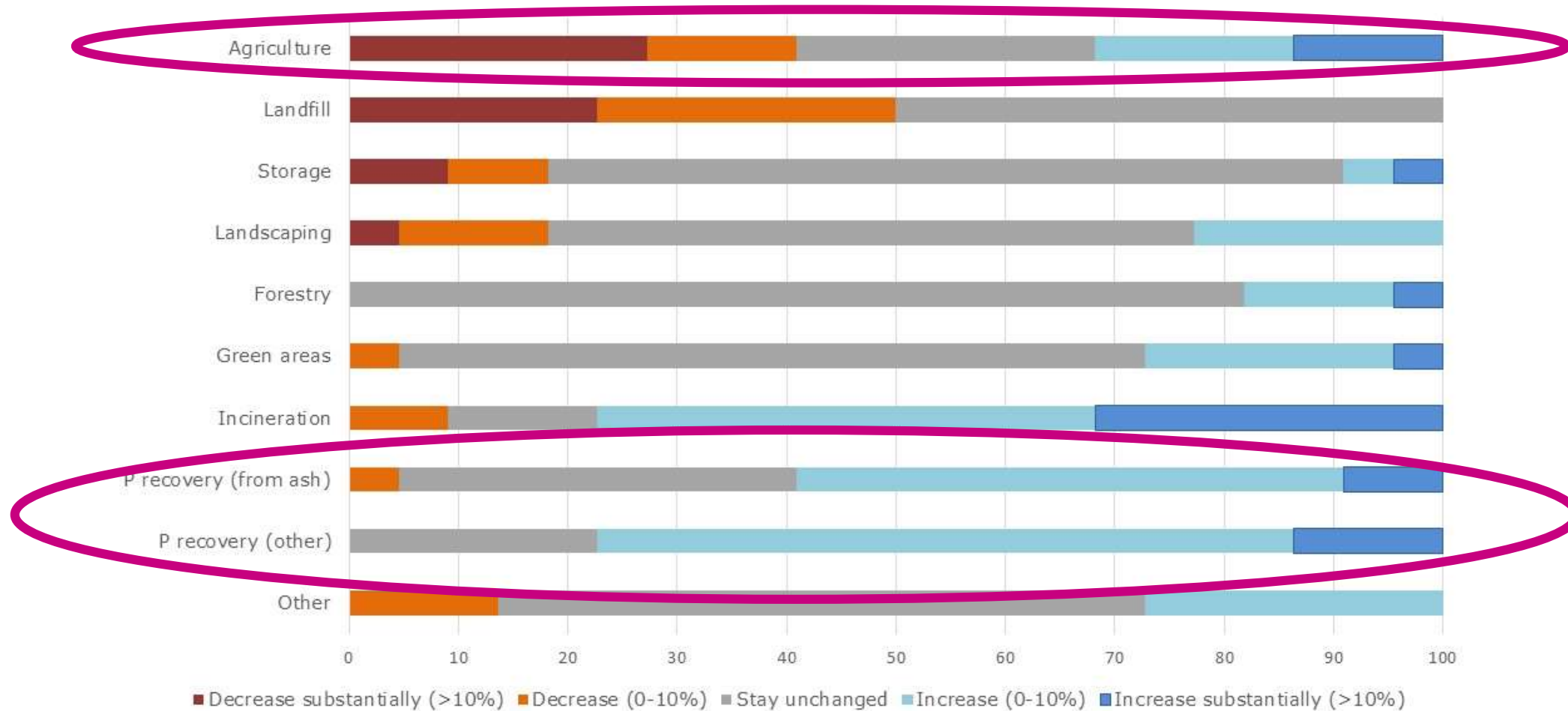


Sludge destination in Europe

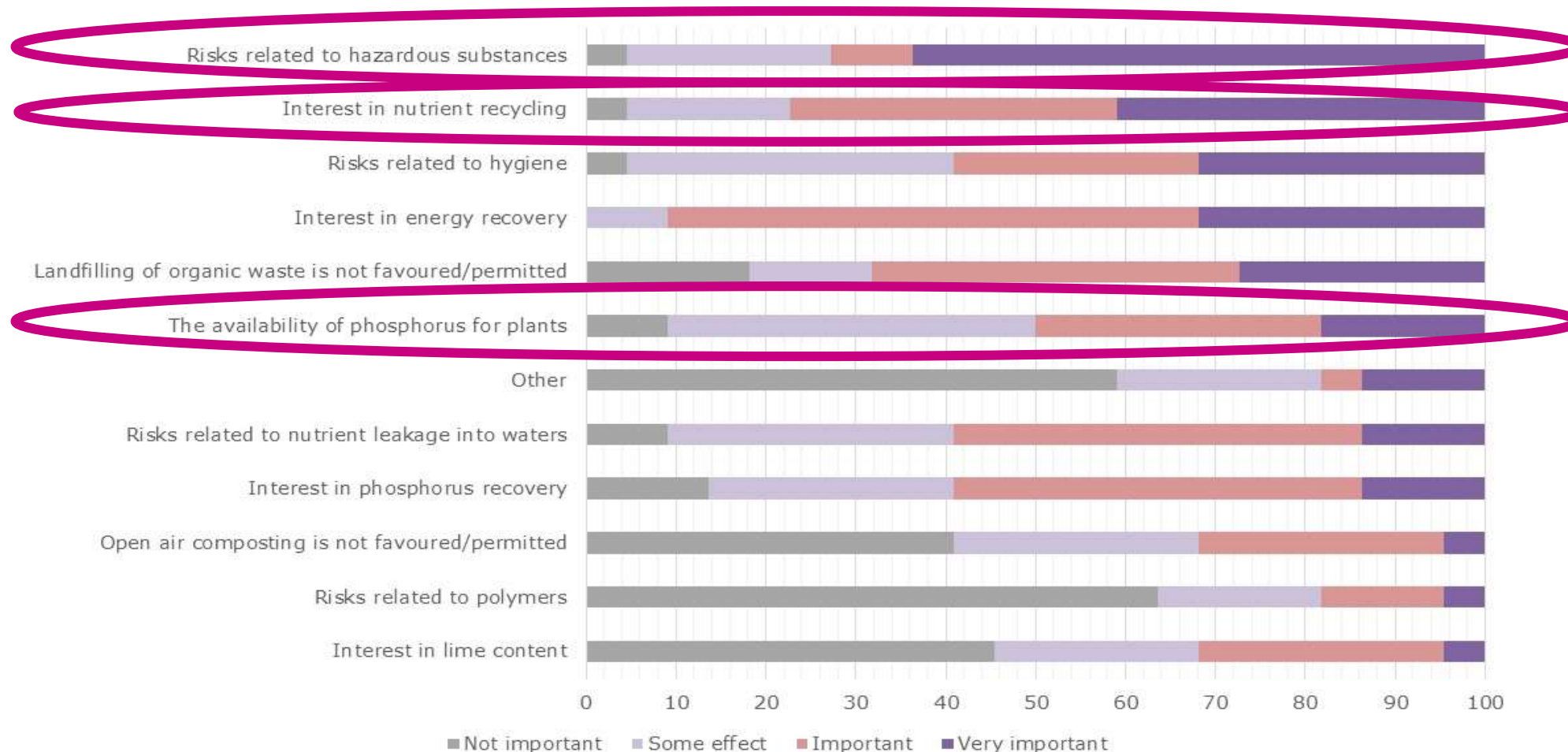
~Extensive survey with EurEau members in 2017



Trends for the future of sludge end-point



Driving forces for sludge destination



Sludge destination in Europe

- ~ A lot of sludge is used in agriculture
- ~ Tendency to go for less use due to risks more than for nutrient content
- ~ go for incineration and energy recovery?
- ~ Less technological and easier to handle
- ~ Evolution of regulatory framework towards P recovery (DE, AT, SE(?))
- ~ Recycled P market?

Some examples in Mideterranean region

~ Spain

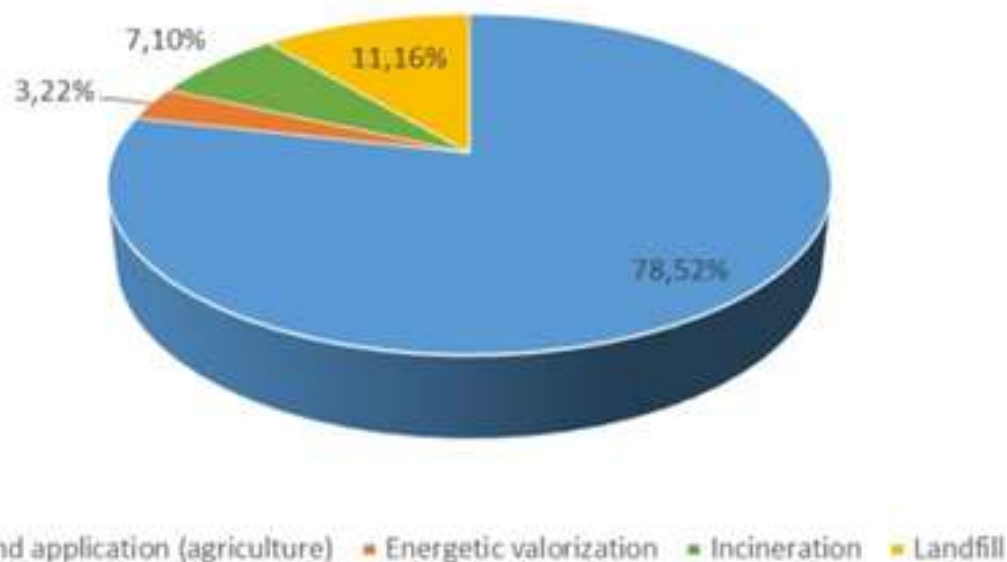
~ 1.5 million tons of dry
matter/year

~ alkaline pH soils

~ deficiency of organic
matter

~ low contents of heavy
metals in sludge

Final disposal of sewage sludge



Some examples in Mediterranean region

~ Greece

~ Larissa WWTP

~ **Design data:** 225.000 pe
40.000 m³/day

~ **2016 data:** 145.000 pe
26.200 m³/day



Some examples in Mediterranean region

- ~ 4.800 tn/year (45% DS) applied to farmlands of the area
- ~ The farmland application: dosage 3,4 tn/m² (average)
- ~ Crops: Wheat, barley, cotton, corn

Application Overview:

- ~ Period of action: 9 years (2010-2018) and still on-going
- ~ Total amount of DS disposed on land: 19.440 tn
- ~ Total amount of Nutrients returned to land:
372 tnP, 836 tnN
- ~ Total Cost for DEYAL: 10 €/tn (wet sludge)



Some examples in Mediterranean region

~ Greece

~ Thessaloniki WWTP



~ **Design data:** 1.333.000 pe
296.000 m³/day

~ **2017 data :**
160.000 m³/day



Some examples in Mediterranean region

- ~ Limed sewage sludge (aprox. 50% DSS) are applied annually to farmlands of the area
- ~ Application depends on the farmers' annual needs and interest
- ~ Average dosage 2,5 tn /m²
- ~ Crops: Wheat, cotton, corn, rapeseed

Application Overview:

- ~ Period of action: 8 years (2011-2018) and still on-going
- ~ Total amount of DS disposed on land: 62.222tn
- ~ Total amount of Nutrients reused on land: 622tn P, 2.675 tn N
- ~ Total Cost for EYATH SA: 17,9 €/tn (wet sludge)



Regulatory framework (Greece)

Greek Common Ministerial Decision 80568-4225-91: "Methods, Terms and Limitations for the Agricultural Application of Sludge Deriving from the Treatment of Urban Wastewater"

1. Agricultural Soil Sampling and Analysis (from the scientific staff of the National Agricultural Institute)
2. Sewage Sludge Analysis
3. Application procedure to the Regional Governmental Authority (RGA) that includes a complete data file for each farming activity
4. Permit for a specific amount of biosolids is out after on site auditing by RGA
5. The exact amount of biosolids is transferred to the farm, mechanically spread, distributed and finally homogenized with the soil
 - The farmer is responsible for the distribution and the homogenization procedure as well as for full compliance with the permit provisions.

Conclusion

- ~ Sludge destination: **return to land** for the vast majority
- ~ New routes to be developed in the future with **P recovery pushed by regulatory framework**
- ~ Need for a functioning **recycled P market**
- ~ Important for the Waste Water Sector: **Leave all doors open, we will always produce sludge**

Thank you for your attention

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