Strategies towards a sustainable phosphorus management in Austria

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Background

- 8.7 million inhabitants
- ~90% phosphorus removal in WWTPs
- ~7,000 tonnes of phosphorus in sewage sludge
- limited agricultural use of sewage sludge (17%)
- increasing co-incineration (50%)
- diverse handling of sludge situation in different federal states
Wastewater Treatment Structure

WWTP > 20.000 PE treat ~85% of WW
WWTP > 50.000 PE treat ~65% of WW

Source: Überreiter et al. (2016)
Early efforts to improve P sustainability

...driven by experts of wastewater and waste management in a joint effort ‘Sewage sludge as a resource – position paper’

...accompanied by research projects ‘Austrian phosphorus budget’ ‘Integrated comparative assessment of P recovery technologies’
The federal waste management plan

Draft published in early 2017

- ‘Master plan’ for the coming 6 years
- No legally-binding character
- Revision of sewage sludge management strategy
- Stakeholder involvement?

Exit strategy for agricultural sewage sludge application of WWTP >20,000 PE proposed

Due to exit P recycling from WWTPs >20,000 PE should be implemented (from ash, with exception <50,000 PE)

→ Draft plan subjected to open review process
Towards goal oriented approach

‘Use of P in sewage sludge currently insufficient’

Goal to subject between **65 and 85%** of sludge to P-recovery by 2030

‘Extension of agricultural sewage sludge application not future oriented’

‘Mono-incineration most-promising approach, but other approaches might pose viable alternative strategies’

Further **system analysis** and **stakeholder involvement** is needed
Project StraPhos (German)

- ‘Sustainable Strategies for an Austrian Phosphorus Management’
- 10/2017 – 10/2020
- 2 main goals:
  - Increasing **knowledge-basis** on economic and ecological effects excited by different strategies
  - Increasing the **involvement** of political players and relevant **stakeholders** to find a common solution
Technical Aspects

- In depth evaluation of status quo
- Evaluation of different P-recovery strategies

**Economic Evaluation**
- Regional WW treatment infrastructure and sludge disposal

**Ecological Impact**
- Characteristics of recovery and sludge treatment technologies (minimum sizes, recovery potentials, ...)

- Illustration of required infrastructure
- Deduction of adequate management strategies
Example: Finding ‘P-Clusters’

Where?
What quantity?
What quality?
Adequate management strategies?

- **Aligned** with other goals for wastewater treatment improvement (energy efficiency, pollutant removal, synergies?, ...)  
  - 20 g/kg TS? (impact anaerobic digestion, additives)  
  - Recovery rate for sludge? (processes that recover from effluent?)

- Increases **autonomy** from PR market

- Promotes **economic recovery**

- Ensures that products can be **integrated** into the existing market
Stakeholder dialogue

- Individual discussions with federal states
- Open forum with representatives from all sectors
Next steps

- **Background Information Data Base** → Transparent discussions
- **Aid Implementation** → Building strategies before building legislation
- **Evaluate Control Mechanisms** → Ensure that desired system is implemented
Thank you for your attention!