



Strategies and Reuse Initiatives

Norway



Phosphorous balance in Norway

- Report from May 2015
 - Only half of the phosphorous in fertilisers are utilised by plants
 - Nearly half will be stored in soil, less available by time
 - Some 5% escapes into recipients
- We recommend to establish ambition level/s
 - We are not ready to establish a P-platform

Key question: Why circulate?

- Environment? Yes, but this is not a strong factor
 - Cd in chemical fertilisers is an issue
 - More for motivation for sludge reuse
 - To reduce peat-production
- Because alternative use of sludge is more expensive and less sustainable
- Because we are producing more and more sludge and are struggling finding markets

Key question: Where is the market?

- 2/3 of the market is fields for production of grains
 - Phosphorous is a by-product, partly not wanted by the farmers
 - Nitrogen, lime and/or soil-conditioner are motivation factors
- 1/3 of the market is green areas
 - Phosphorous is not important, partly sludge contains too much
 - We already utilise nearly all our sludge as a resource
- There is a small tendency for an increased demand from soil producers (parks, private gardens, roads)

Phase II. Establish a basic for ambitions

- We launched in June a phase II
 - To establish a basic for defining ambition levels
- A Report should be ready early next year
 - How to improve plant availability in sludge or how to increase the demand for sewage sludge
 - Options for recycling of sludge from fish farms
 - Identifying market opportunities for P-sources in general

Other initiatives

- Workshop on Plant availability
- Norwegian wastewater sludge has high concentrations of Al or Fe
 - And hence low plant uptake rates
- The outcome is a better understanding of how to improve uptake rates
 - Use less chemicals, improve the treatment processes
 - Implement optional treatment, more filtration less precipitation
 - More biological P-removal?

Other initiatives

- Two treatment plants
 - Biological P-removal, improved process
 - Production of an organic fertiliser based on bio-sludge
- New regulations of organic soil conditioners/fertilisers
 - Will probably make it more difficult to utilise sludge, as well as manure and all organic soil products
 - There is mostly too much P in the soil already

Now what?

- Based on the report we will work on the issue; should we establish an ambition level for recycling of phosphorous
 - Include an assessment of how much priority we should give the issue
- Cooperate with the industries and find good solutions for utilisation of sludge
 - Improve P-availability
 - Remove P from sludge
 - Find or develop markets

When?

- Significant results may be expected by the end of 2017
 - A new strategy for wastewater treatment
 - A new strategy for sludge in general
 - A strategy for phosphorous especial