

BAVARIAN PHOSPHORUS STRATEGY

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BACKGROUND/PURPOSE OF THE WORK

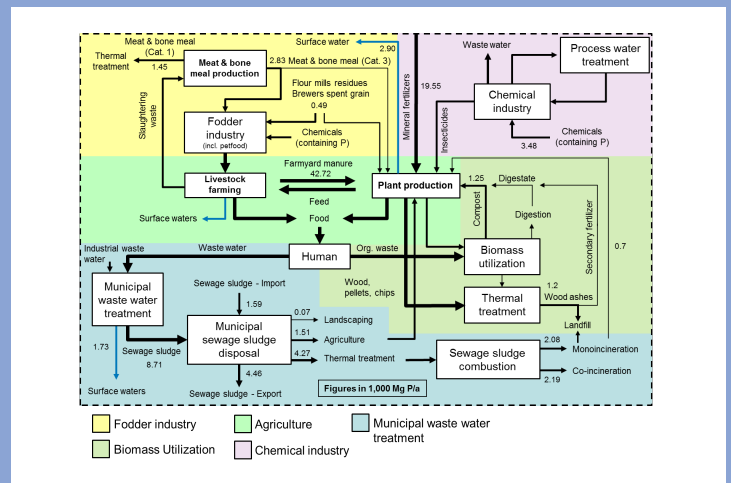
Phosphorus is an essential and geologically limited resource which is not suitable in main applications. Bavaria has no natural phosphate deposits therefore it is dependent on imports. Within the Bavarian Phosphorus Strategy Fraunhofer UMSICHT, Institute branch Sulzbach-Rosenberg, developed basics and recommendations for a sustainable Phosphorus management in Bavaria. The total use of phosphorus in Bavaria was estimated about 72.900 Mg P/a (2012/13). Relevant material flows were determined bearing a recovery potential of some 60 to 80 % of mineral phosphate fertilizers.

APPROACH

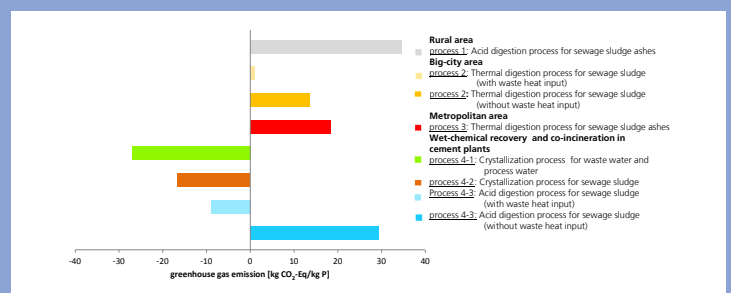
- Evaluation of the phosphorus potential of different material flows
- Determination of six relevant and promising phosphorus recovery processes for Bavaria
- Technical, environmental and economic assessment of these scenarios
- Development of political and flanking recommendations for the implementation of a sustainable phosphorus management in Bavaria

RECOMMENDATIONS

- Concrete formulation of targets regarding the phosphorus recycling
- Intensive use of the important phosphorus material flows (waste water management and animal by-products) for the increase of the phosphorus recovery potential
- Rapid initiation of phosphorus recycling by the realization of scenario 4-3
- Combination of scenario 1,2 and 3 for a long-term efficient entire Bavarian solution
- Use of political and flanking recommendations for the advancement of sales market for secondary phosphates



Phosphorus material flow model for Bavaria



Greenhouse gas emissions from different processes

Technical Recommendations	Political Recommendations	Flanking Recommendations
Implementation of recovery scenarios	Defined targets and control	Expert talk
Promoting incineration of sewage sludge	Mandatory blending	Avoidance of phosphorus effluent
Mono-landfill of ashes	Obligation to recover phosphorus	Support of authorisation
Research and development	Market regulations	Organic farming
Use of animal by-products category 1	Certificate models	Monitoring/ information

Recommendations for the Bavarian Phosphorus Strategy



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