P-TRAP – Reducing diffuse phosphorus input to surface waters

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Phosphate (P) as an essential resource for food production is becoming scarce. Its uncontrolled loss from agricultural areas is in conflict with the principles of a circular economy. Enhanced loading of surface waters with P is the main cause for eutrophication and presents a key challenge in meeting the objectives of the EU Water Framework Directive. Understanding and controlling environmental P fluxes therefore is key to target both problems, to develop new methods and approaches to manage environmental P fluxes, and to improve surface water quality.

In March 2019 the EU Marie Sklodowska-Curie Innovative Training Network P-TRAP has been launched. P-TRAP establishes a framework of partners from multiple science and engineering disciplines. Integration of non-academic partners from various stakeholder groups into the P-TRAP consortium paves the way for direct implementation of the acquired knowledge. The project is targeting the diffuse flux of phosphate (P) into surface waters, i.e. the problems of understanding and controlling environmental P fluxes. P-TRAP aims to develop new methods and approaches to trap P in drained agricultural areas and in the sediments of eutrophic lakes. Trapping of P involves the application of iron(Fe)-containing by-products from drinking water treatment. P-TRAP aspires the ideas of a circular economy and aims at recovering the retained P in agricultural systems. Novel microbial technologies will be developed to convert P-loaded Fe-minerals into marketable fertilizers whose suitability will be evaluated. The P-TRAP technologies have in common that they rely on the naturally strong connection between P and Fe and the innovative P-TRAP strategies will be underpinned by process-orientated investigations on the behaviour of P during the transformation of Fe minerals. The latter are key in trapping and recycling of P in agricultural systems and lakes. Here we will present the structure and the planned research of the project, including a first overview of achievements of the first two years.