

# PHIGO Project - A Zero Waste Oriented Approach for Optimized Energy Production and Efficient Phosphorus Extraction from Biowaste incineration

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## Abstract

Today, the EU's need for phosphorus is almost totally dependent on imports from Kazakhstan (71%), Vietnam (18%), and China (9%). Due to its economic importance and supply risk, the EU included phosphorus (P) and phosphate rocks (PR) in the "2020 List of critical raw materials (CRM) for the EU". One of the most sustainable options to secure the future of the EU P supply is to recover P from the food production and consumption chain.

A substantial P-source is the biowastes from the poultry litter. For example, with more than 375 million laying hens in the EU, which excrete between 0.10 and 0.45 kg P<sub>2</sub>O<sub>5</sub> per chicken/year, one may estimate that there are about 16,350-73,575 tons of P available only in the hens' manure, which corresponds to about 10-15% of all P needed in the EU and UK. The incineration of this biowaste will enrich the P content by 6-7 times to P-rich ashes, and producing green energy. This approach has been extensively investigated in the ongoing ERA-MIN3 project, PHIGO.

The PHIGO project consists of three main processing parts:

1. Optimizing the incineration step for green energy production and the enrichment of the P-content in the generated ashes
2. Developing a sustainable technology for efficient P-extraction from the P-enriched ashes,
3. Valorization of the oxide residue after the P-extraction step

The overview of the PHIGO concept is given in Figure 1. The major project tasks and the project structure are shown in Figure 2. The major outcomes from each WPs will be detailed and explained in this poster presentation.

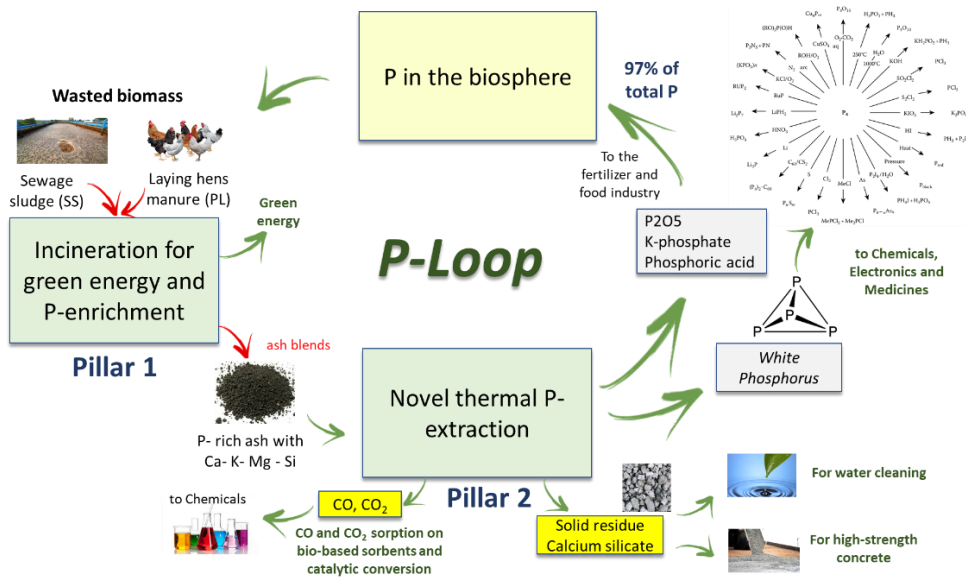


Figure 1. The P-Loop in a sustainable EU P-strategy according to PHIGO

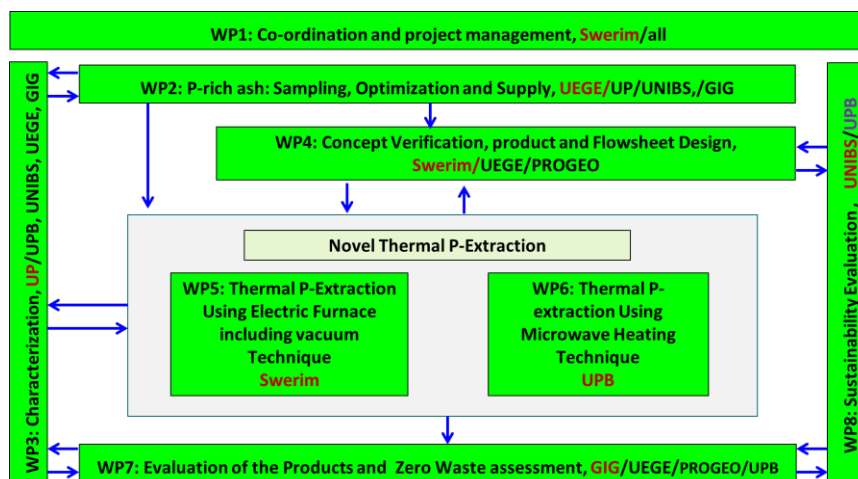


Figure 2. The WP and partners' structure.

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