Promoting Resource-Oriented Sanitation in Peri-urban Ethiopia through the Production of Struvite from Digested Sludge Filtrate Process


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Project Motivation
- To an average farmer, Phosphorus and Nitrogen are essential for the healthy abundant growth of crops.
- The removal efficiency Nitrogen and Phosphorus remains to be lower than the expected performance during design – this paves an opportunity for recovery of these nutrients via struvite production.

Background
- In the domestic wastewater community, phosphorus and nitrogen are pollutants that require proper removal prevent eutrophication.
- Domestic sewage offers a great potential for the recovery of phosphorus and Nitrogen, thereby closing the food-waste cycle.

Methods
- Study site survey and documentation of the WWTPs
- Physico-chemical analysis of the wastewater in different fractions

Results
- The influent domestic wastewater from Kara Kore condo contains an average BOD and COD of 172 ± 24 and 600 ± 11 mg/l, respectively.
- The Detected heavy metals in the influent domestic wastewater include (in mg/l) Cu 0.64 ± 0.06, Cr 0.7 ± 0.04, Zn 0.47 ± 0.06, Pb 0.07 and Ni 0.04
- Total Nitrogen, and total Phosphorus levels are beyond the permitted emission levels in the effluents.

Preliminary Conclusion and recommendation
- The removal efficiency Nitrogen and Phosphorus remains to be lower than the expected performance during design – this paves an opportunity for recovery of these nutrients via struvite production.
- The effect of heavy metals in the struvite production process and its safe application should be evaluated.