

Peer Review

Review of: "Phosphorus Recovery Potential from Decentralised Wastewater Treatment Systems in India: A Constrained Mass-Balance Study of Auroville"

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The study tried to model the closed system of municipal wastewater treatment consisting mainly of settling and anaerobic digestion. Many basic concepts are missing in the methodology. The assumptions made on the recovery of phosphate through struvite formation lack data on the available $\text{NH}_4\text{-N}$, which is the parameter that had to be monitored instead of TKN to produce struvite. No precise and clear technologies were mentioned to separate struvite from sludge and anaerobic reactors, for which no sludge wasting was described or shown on the treatment train. These modelling efforts require confirmation through on-field analysis at internal points and wasted sludges, even at minimal numbers. Anaerobic processes convert org-P to ortho-phosphate, and phase transfer to sludge is minimal at the synthesis ratio and otherwise depends on the availability of Ca and Mg in the wastewater for settling out as struvite. Nitrogen species also need to be monitored as oxidized forms (NO_2^- , NO_3^-) to complete the mass balance on total nitrogen. The occurrence of denitrification is not clear, as only aeration is applied in the vortexes. As summarized, the assumptions made within the system need to be confirmed in such a modelling study. The basic removal mechanisms need to be examined in the system regarding P and N.

Declarations

Potential competing interests: No potential competing interests to declare.