



## For Immediate Release

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**Contact:** Meeri Karvinen  
Vesitalo, Aalto  
Espoo, Finland

**Phone:** (+358) 04071884  
Meeri.karvinen@aalto.fi

**Emails:** Hanna.lintukorpi@aalto.fi  
Nabila.nahar@aalto.fi  
Qalandar.hussaini@aalto.fi

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## WASTE TO RESOURCE

### CIRCULAR ECONOMY SOLUTIONS FOR HSY'S WATER TREATMENT WASTE

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**Helsinki, Finland+ – June 7, 2024** – HSY (Helsinki Region Environmental Services Authority) is poised to significantly decrease the water footprint of the Helsinki region without reducing water usage. By upgrading the existing filtering systems at the Pitkääkoski and Vanhakaupunki water treatment plants (WTP), HSY could save over 5 million bottles worth of water each day. Approximately 3% of water entering the plants is used for filter backwashing and is subsequently wasted to the Viikinmäki wastewater treatment plant (WWTP) for treatment with domestic wastewater. This backwash water, however, consists of 99% water and only 1% contaminants.

Our team recommends that HSY construct a new system to clean backwash water at the WTPs and recycle the cleaned water back to the start of the plant, thereby conserving water in the treatment process. This recommendation arises from a comprehensive study involving a literature review and comparison of three beneficial options for handling water treatment waste: (1) sludge mixing at the WWTP, (2) backwash water treatment and recycling, and (3) sludge recycling and reuse.

The first and third options investigate treating water treatment sludge collected from the sedimen-

tation basins. Sludge differs in quality from backwash water as it relies heavily on raw water quality and the treatment coagulant. Remaining coagulant in the sludge can be utilized a second time by recycling and reusing it onsite at the WTP or as a coagulant addition at the WWTP.

(1) Sending sludge to the WWTP, or sludge mixing, is in practice at both treatment plants but its affects have not been yet studied. The literature review showed that water treatment sludge does not generally negatively impact wastewater treatment. In fact, at high concentrations sludge mixing can improve phosphorous removal. The main drawback is the high energy consumption required to pump sludge over long distances. Therefore, decreasing water volume and increasing concentration of sludge sent to the WWTP through the proposed backwash recycle project will improve sludge mixing. We also recommend that HSY conduct a wastewater pilot project to investigate the specific effects of sludge mixing on their treatment processes.

(2) Backwash recycling is commonly practiced at many treatment plants, and with advanced treatment options like ceramic membranes, would not negatively impact the treatment process and resulting water quality. Implementing this technology would result in reduced pumping energy use and water extraction from Lake Päijänne.

(3) While sludge recycling is currently under research and testing by manufacturers, it remains in its infancy. Due to the lack of cost and applicability projections, this option was rated less favorably compared to the first two in our final comparison. We recommend that HSY reconsider this option in the future as more research becomes available.

HSY's commitment to sustainable water management practices positions them as a leader in environmental stewardship. By adopting backwash water treatment and recycling and optimize sludge mixing, HSY can achieve significant water savings, reduce chemical use, and contribute to the overall sustainability of the Helsinki region. This forward-thinking approach not only conserves vital water resources but also sets a benchmark for other regions to follow.



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