

Wastewater treatment for the circular economy

Interview with Koen Maathuis, Advisor circular Economy at Waternet



Koen Maathuis

The WaterProof project pursues a holistic approach in which municipal wastewater and the resulting CO₂ emissions are to be used to improve wastewater treatment and make it more sustainable. For this, WaterProof aims at developing an electrochemical process that converts CO₂ emission captured from consumer waste incineration and wastewater treatment facilities into formic acid. This formic acid is used for the generation of acidic deep eutectic solvents (ADES), that can be applied to recover precious metals from wastewater sludge and incineration ashes. A by-product of the electrochemical process are peroxides that can be applied to remove pharmaceuticals and pesticides from wastewater.



How do wastewater treatment plants contribute to greenhouse gas emissions?

Using CO₂ from waste and wastewater facilities
Wastewater treatment plants contribute considerable to greenhouse gas emissions.

Besides CO₂, there is methane (CH₄) and nitrous oxide (N₂O) being produced in wastewater treatment plants.

What are the main challenges facing wastewater treatment in the EU, particularly in terms of sustainability and resource recovery?

Many resources and waste streams are still considered 'waste'. This makes it very difficult to recover the resources and reuse them as raw materials. The waste-status on, for example, effluent (treated wastewater), makes it difficult to reuse the effluent as a source for industrial

water. Another example is the permitting of decentralised biodigesters, of which the digestate cannot be discharged into the sewer system, because of the rules set in the Landelijke Afvalbeheerplan (LAP 3).

How do you ensure that your plant complies with EU regulations, and what steps are being taken to make the treatment process more sustainable?

Waternet employees are actively involved in various interest groups related to wastewater management, to remain up-to-date with national and EU-regulations. As a responsible, progressive and ambitious government agency, we keep track with latest regulations. As we collect our

own levies and taxes, we have sufficient financial means to comply with legislation. The Urban Waste Water Treatment Directive states that all treatment plants need to have an extra treatment step added to the current situation in 2040 and Waternet is now planning for this.