



RAW MATERIALS FROM SEWAGE - LEGISLATION

UNITED KINGDOM CIRCULAR

In December 2018, the UK government published its Resources and Waste Strategy. This outlines its policy direction on minimising waste, promoting resource efficiency, and moving towards a circular economy. In April 2019 the English and Welsh Water Companies, made a Public Interest Commitment that committed the sector to net zero emissions by 2030. Resource recovery from sewage is likely to be a key enabler to deliver this commitment. Better aligned waste policy and regulation, for example relating to 'End of Waste' criteria may be required for Water Companies to maximise the opportunity associated with recovery of materials from sewage.

SEWAGE IS VALUABLE

A biocomposite made from recycled toilet paper? Yes you can! Raw materials in sewage can be used for all kinds of applications. A few examples:

- Application of phosphate as a fertilizer.
- Sewage sludge to produce biogas or as a raw material for the cement industry.
- Use of lipids for biodiesel production.
- Activated carbon made from screenings for the removal of micro pollutants from sewage.
- Making degradable plastics (PHA) from fatty acids.

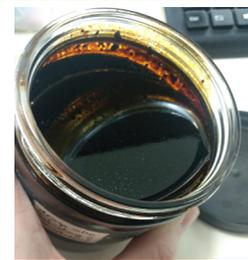
LEGAL FRAMEWORK

The UK water and sewerage industry was privatised in 1989 with a regulatory framework to ensure that consumers receive high standards of service at a fair price, and an environmental regulation to ensure the industry complies with national and EU legislation. Following the UK leaving the EU, The Environment Bill will bring environmental protections and recovery into UK law. The Bill includes the establishment of the Office for Environmental Protection to replace the role of the European Commission (EC).

Regarding recovery of material from sewage, wastewater is "waste" within the scope of the Waste Framework Directive (WFD). The WFD defines waste as "any substance or object which the holder discards or intends or is required to discard". Discarded means "the disposal and recovery or recycling of an object or substance". An End of Waste (EoW)



Bio char



Bio oil



Bioplastic

status can be achieved by complying with specific criteria established by the EC or evidencing that requirements to demonstrate EoW have been met.

TOP 4 PRACTICAL CHALLENGES

Challenges for making valuable products from sewage water is the policy and legal framework in the UK.

1. The process to achieve EoW status for a material recovered from sewage is complex and time consuming. Multiple applications may be required for very similar materials, for example different formulations of fertilisers. This could hinder market uptake.
2. There is no generic UK end of waste regulation for resources from sewage (currently, specific EoW criteria only exist for iron, steel, aluminium scrap, glass cullet and copper scrap).
3. Without EoW in place it is difficult to develop a market for a recovered material, and without a market for the recovered material it is difficult to make a business case for investment in technologies/processes to extract the material.
4. There are no directive incentives or concrete goals for resource recovery from sewage and as a result no direct necessity to realise resource recovery in the short term. Carbon targets should help but specific targets/incentives for example on nutrient recovery may stimulate investment.

MORE INFORMATION

For more information please contact Jappe de Best, Centre of Expertise Biobased Economy/Avans Hogeschool - jh.debest@avans.nl. Or visit the website www.nweurope.eu/wow.

WHICH ACTIONS ARE NEEDED!

SHORT TERM (< 1 YEAR)

1. Seek to clarify and simplify how to achieve product status for recovered materials from sewage (for example under Urban Wastewater Treatment Directive rather than the WFD).
2. Assess the value (including financial and carbon) of potential products, the cost of recovering them and the technological readiness to recover as a way to prioritise what the industry focusses on.
3. Learn from existing facilities. For example analyse sewage characteristics and current infrastructure data to identify gaps and potential opportunities

MEDIUM TERM (1-3 YEAR)

1. Formulation of national goals/incentives for use of recovered materials to stimulate the market for the use of these materials and a greater uptake of resource recovery processes.
2. Implement a route -map for resource recovery from sewage (RRS)
3. Identify future project(s) to be a RRS demonstrator.
4. Develop a strategy to set a nominal 20 year vision for RRS including a rethinking of the local and regional infrastructure network and influencing the amount of resource recovered.