

Call for a European commitment to better reuse resources and energy from waste water

Public statement

The current geopolitical situation and the objective to transition to a climate-neutral society by 2050¹, make it urgent to **reuse the renewable and continuous supply of resources and energy which pass through our waste water systems.**

The water used by households is collected and conveyed away from the population by sewers to a waste water treatment plant (WWTP) where it is treated to remove organic matter and nutrients so as to protect human health and the environment. Waste water contains many valuable resources, most notably **nutrients for fertilisers** (nitrogen and phosphorus), **water** and **energy**. These valuable resources are in increasing demand as Europe seeks to become less dependent on imported energy and fertilisers.

The reuse of **nutrients** and **bio-organic** material is essential to maintain food production. For example, nitrogen and phosphorus are already recycled through use of sludge in agriculture. The reclamation of additional nitrogen can be part of the solution to address the steeply increasing costs for ammonium-based fertilisers derived from fossil fuels, which has the additional benefit of reducing the carbon emissions associated with producing nitrogen fertilisers.

Recycling **phosphorous** in various forms can decrease our dependency on a very limited number of countries that supply the world with mineral phosphate rocks. Phosphorus is on the EU critical material list.

Energy recovery from waste water – facts & figures

- **Heat:** with billions of tonnes of waste water collected in 3.2 million km of pipes, the potential for heat capturing from waste water is quite substantial and more urban districts use this energy to heat buildings².
- **Biogas:** recovered from sludge digestion and used on site.
- **Biomethane:** upgraded from excess biogas to be injected into the municipal grid or to fuel vehicles.
- **Hydrogen:** potential to produce green hydrogen.
- **Kinetic:** the movement of water to generate electricity (not yet exploited from waste water).
- **Carbon source:** for heat in cement kiln.

¹ Regulation (EU) 2021/1119 of the European Parliament and of Council of 30 June 2021 establishing the framework for achieving climate neutrality and amending Regulations (EC) No 401/2009 and (EU) 2018/1999 ('European Climate Law').



In addition, waste water and the treatment processes have raw **energy** potential, which can be reclaimed in various forms (see the box for examples^{2,3}). Climate change adaptation is already showing the need to **reclaim treated waste water** for different sectors, to maintain the availability of fresh water resources for essential uses.

Finally, emerging technologies enable the recovery of new secondary raw materials⁴ (for example **cellulose, algae, polymers**) that are of high purity and could be granted an end-of-waste status, ready for reuse.

We could go further

Waste water treatment plants are energy generators, thanks to the biogas released in the treatment process. Through investment, we could capture even more of this **natural and renewable energy source** and contribute even more to the REPower EU objectives⁵. This would provide energy and reduce Green House Gas (GHG) emissions. Innovation and investment in upgrading or building new WWTP have the potential to improve the situation even further, as not all sewage sludge is currently digested to make biogas and it can also be generated from other stages/types of treatment. Generating more and capturing more would both contribute to the REPower EU objectives⁶.

The potential of **heat and kinetic energy recovery from waste water systems** is still under-exploited today. It is even possible to capture the **carbon dioxide** (for example, from the engine exhausts post-digestion, or from the purification unit of the biomethane production) for onward use.

Building for the long-term

Waste water is part of the solution for the long-term, as it contains renewable, critical resources which are supplied continuously. However, the water sector cannot act alone; **we need the support of the European institutions, industry and academia to enable a systemic change and the financial resources to implement these changes.**

Most recovered resources have a local market and local specificities, so we need **new business models and new partnerships** (including consumer and community awareness) to enable a circular future. Additionally, the **financing and legal mechanisms must allow for quick investment** and sustainable operations over time, with a **market price for recovered resources.**

New technical solutions need to reach the market to offer a large choice to operators i.e. **support for research and innovation is essential.**

As revealed by the UWWTD evaluation⁷, the water sector does not have **the financial resources to make this shift alone**, especially at the speed required; **we need to ensure**

² www.eureau.org/resources/briefing-notes/5629-briefing-note-on-sludge-management/file.

³ www.eureau.org/resources/publications/eureau-publications/5824-europe-s-water-in-figures-2021/file.

⁴ www.eureau.org/news/606-valuing-our-recyclable-materials.

⁵ ec.europa.eu/commission/presscorner/detail/en/IP_22_3131.

⁶ COM(2022) 230 final REPower EU plan.

⁷ ec.europa.eu/environment/water/water-urbanwaste/pdf/UWWTD%20Evaluation%20SWD%20448-701%20web.pdf (Section 5.1, p44).



the sustainability of the investment by covering the operating cost with a fair price.

Finally, as we are a heavily regulated sector, we have the chance to develop an enabling regulatory framework with the revision of the Urban Waste Water Treatment Directive (UWWTD) that will allow operators to achieve both environmental objectives and supply renewable, and critical resources, continuously to the economy.

Now is the time

We need to act now to stimulate the recovery of energy and nutrients from urban waste water. **We ask the European Commission, Member States, industry and academia to:**

1. **Create a market by aligning circular and environmental legislation** (REACH, Waste Directive, UWWTD, Fertilising Products Regulation, circular economy initiatives) to build a market for recovered resources and a level playing field for recovered energy and materials such as nutrients and organic material, compared to fossil fuel and primary minerals.
2. **Ensure control at source becomes a reality**, to allow recovered materials to be of a high, environmentally safe quality. Producers need to share the responsibility for source control.
3. **Stimulate research and innovation**, pilot projects and demonstration projects, via R&D funding instruments to develop technologies aimed at the reclamation of energy and resources from municipal waste water, and the creation of a Community of Practice.
4. **Enable** waste water operators to access financing to accelerate the application of technologies to recover energy and nutrients.
5. **Support** energy and climate audits for urban waste water treatment plants to identify measures to recover energy and reduce climate effects while achieving their environmental objectives.
6. **Create** an environment where the supply of recovered resources is readily met with demand for these resources within the economy, public acceptance and a more resilient future.



About EurEau

EurEau is the voice of Europe's water sector. We represent drinking water and waste water operators from 30 countries in Europe, from both the private and the public sectors.

Our members are 35 national associations of water services. At EurEau, we bring national water professionals together to agree European water sector positions regarding the management of water quality, resource efficiency and access to water for Europe's citizens and businesses.

With a direct employment of around 476,000 people, the European water sector makes a significant contribution to the European economy.