Introduction

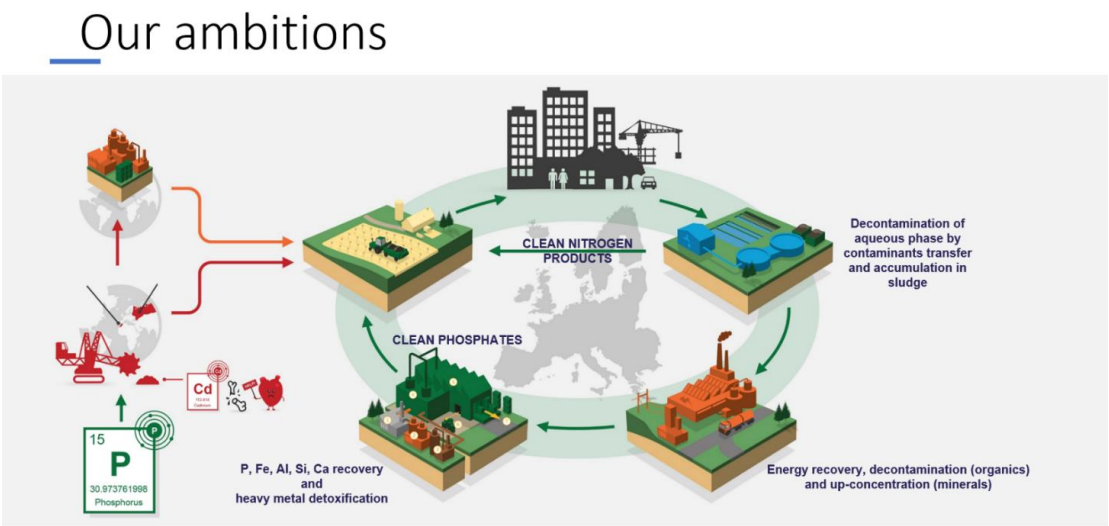
For the EU to become more self-sufficient, and to have a stable production of fertilisers and feed, we need to take advantage of the resources that can be recovered by wastewater treatment plants. This is a key change, needed for the EU to become less dependent on mining and imports from countries outside the EU. Recovering nutrients from wastewater will also decrease the carbon footprint since the current linear mining production of fertilisers is strongly dependent on the use of fossil fuels. But there are legislative barriers that need to be handled before wastewater treatment plants can be considered resource plants.

One such obstacle is the so-called waste hierarchy, which has governed waste treatment in the member states for the last 50 years. It was invented as an end-of-pipe solution in the linear economy with the main aim to reduce the amount of waste. Waste should, according to the hierarchy, be minimised to the greatest extent possible and end-of-life items must be prepared for reuse. When those options are exhausted, as much of the material as possible should be recycled. All the materials that cannot be recycled should be incinerated, to create energy. The residues that absolutely cannot be used in any of these steps are then deposited as a last resort. But this blunt tool has played out its role in the transition to a circular economy.

Recycling materials reduces the demand for the extraction and process of virgin materials, which presents a key path to reducing greenhouse gas emissions. This will, however, not happen when waste is directed by the waste hierarchy invented for a linear system. Today, about half of the global emission of greenhouse gases and about 90% of the challenges related to water stress and loss of biological diversity are related to the extraction and processing of virgin materials. The greenhouse gases from global waste management are estimated to be 3-5% of the total greenhouse gas emissions. With the waste hierarchy as a legal and guiding tool, only 8,6 billion tons out of the about 100 billion tons of material entering the global economy are recycled materials.

Enormous opportunities are created by considering wastewater treatment plants as resource plants. Phosphorus, listed by the EU as a critical raw material (CRM), can be recovered from sludge and brought back into the loop, securing an endless supply. Today, the EU is largely (92%) dependent on imports as most mines are located outside Europe (incl. Russia). The limited availability of scarce resources, the large ecological footprint from mining, geopolitical instability in the source countries, long transport and health issues from cadmium contamination create a need for **the safe recycling of phosphorus.** Nitrogen can be captured from wastewater streams and used to produce fertilisers, replacing today's greenhouse gas-heavy production, which is dependent on natural gas supply. **In this way, the wastewater treatment plants of today will be the resource plants of tomorrow.**

The waste hierarchy does not take the resources that can be extracted from waste into consideration, which results in a large part of the resources being lost. In a circular economy, yesterday's waste actors play an important role in separating valuable resources from dangerous substances and ensuring that only the desired raw materials with high-quality fulfilling product standards are circulated. **The waste hierarchy drives businesses to a waste logic, with a focus on treating waste. We need to change this and go from waste logic to product logic.** The hierarchy contradicts the use of incineration and other key treatment steps to reach high-quality products that can truly replace virgin materials. In our opinion, incineration (or other ways of oxidising the organics in the sludge to get a concentrated mineral residue) in combination with chemical recycling could be used to detoxify the sewage sludge into sustainable raw material (feedstock for production) or final products thereby preventing extraction and processing of virgin phosphorus. This is, by far, the greatest advantage for wastewater treatment plants and gives less adverse effects on the environment. Other methods than incineration can, however, be used to detoxify the sludge and extract nutrients and transform them into high-quality products. The legislation should be neutral to what type of technology is used, not driven by the waste hierarchy. The driver should be the results: nutrients are recovered in a form and at a quality that leads to the replacement of virgin materials.



The Urban Wastewater Treatment Directive

Article 1 Subject matter

The European Commission	Ragn-Sells
This Directive lays down rules on the collection, treatment, and discharge of	This Directive lays down rules on the collection, treatment, and discharge of

wastewater to protect the environment and human health while progressively eliminating greenhouse gas emissions and improving the energy balance of urban wastewater collection and treatment activities. It also lays down rules on access to sanitation, on transparency of the urban wastewater sector and on the regular surveillance of public health relevant parameters in urban wastewaters.	wastewater to protect the environment and human health while progressively eliminating greenhouse gas emissions and improving the energy balance of urban wastewater collection and treatment activities. It also lays down rules on access to sanitation, on transparency of the urban wastewater sector and on the regular surveillance of public health relevant parameters in urban wastewaters. ***It also introduces requirements for wastewater plants to transition to resource hubs, providing reclaimed water, energy, nutrients, and organic materials.***

Ragn-Sells supports the overall ambition to introduce stricter emission requirements and to increase the recovery of essential nutrients. We do, however, see the need for a more ambitious holistic legislative change to unlock the full potential of resource recovery from wastewater treatment plants. As stated by the European Environment Agency in its report on urban wastewater treatment plants, these facilities could, with the use of new techniques and innovation," act as resource hubs providing reclaimed water, energy, nutrients and organic materials for reuse, recycling and recovering". In line with the EEA's recommendations, the Directive should introduce requirements for the member states to facilitate the transition of wastewater treatment plants to resource hubs.

Article 2. Definitions

The European Commission	**Ragn-Sells**
(14) 'sludge' means any solid, semisolid, or liquid waste resulting from the treatment of urban wastewater;	NEW (inserted between current article 6 and 7) 'reject water' means water originating from the dewatering of digested sludge; (14) 'sludge' means any solid, semisolid, or liquid waste

	resulting from the treatment of urban wastewater, ***like reject water***;

Ragn-Sells consider it important to include reject water in the list of definitions, as it constitutes an important source of nitrogen. We also strongly agree with the Commission's definition of 'sludge' in article 2.14. We do however find it important to specify reject water in the paragraph.

Article 10. Minimum requirements for producer responsibility organisations

The European Commission	**Ragn-Sells**
1. Member States shall take the necessary measures to ensure that any producer responsibility organisation established under Article 9(4): (a) has a clearly defined geographical coverage coherent with the requirements set out in Article 8; (b) has the necessary financial and organisational means to meet the extended producer responsibility obligations of the producers; (c) makes publicly available information about: (i) its ownership and membership; (ii) the financial contributions paid by producers; (iii) the activities that it undertaks every year, including clear information on how its financial means are used.	

2. Member States shall establish an adequate monitoring and enforcement framework to ensure that producer responsibility organisations fulfill their obligations, that the financial means of producer responsibility organisations are properly used and that all actors having extended producer responsibility report reliable data to the competent authorities and, when requested, to the producer responsibility organisations. 3. Where, in the territory of a Member State, there are multiple producer responsibility organisations, the Member State concerned shall appoint at least one body independent of private interests or entrust a public authority to oversee the implementation. 4. Member State shall ensure that the producers established on the territory of another Member State and placing products on its market: (a) appoint a legal or natural person established on its territory as an authorised representative for the purposes of fulfilling the extended producer responsibility obligations on its territory; or (b) take equivalent measures to point (a). 5. Member States shall ensure a regular dialogue between relevant stakeholders involved in the implementation of extended producer responsibility, including producers and distributors, producer responsibility organisations, private or public operators of urban wastewater	

treatment plants local authorities and civil society organisations.	

Ragn-Sells strongly supports the Commission's ambition to enhance the obligations of polluters to pay for what they emit. Today, instead of the costs being borne by a producer who uses a dangerous substance, the substances follow along the value chain and, if lucky, they end up in a waste management system with a responsible recycler. Most of the substances, however, end up in the environment, forcing the general public to pay for the greatly increased waste management or clean-up when the levels of unwanted substances locally become high. When recycling companies are forced to deal with polluted waste streams, the recycled material also becomes more expensive, which again leads to the industry choosing virgin materials and the transition to a circular society is stopped.

The waste management infrastructure is sometimes connected to the urban wastewater infrastructure (through the sewer systems, i.e waste management plants send their wastewater to the sewer systems). The case of PFAS is, therefore, very relevant to the waste management sector. PFAS is present in the current waste flow and will most likely be present for decades to come. The cost of removing one gram of PFAS is many times higher than the cost of adding PFAS into a product. Today's waste management system is not designed to handle PFAS, nor do the current market prices for waste management services reflect the costs for extra PFAS cleaning. The presence of PFAS in products would, however, likely be reduced if producers who add PFAS to their products would be forced to bear the full cleaning costs. Such a liability mechanism would also increase the speed of detoxifying the ecosystems from PFAS.

The UWWD will lead to stricter effluent standards for anyone connected to the sewer system. The commission should consider expanding the producer responsibility system to cover the upstream cleaning before it becomes the wastewater treatment plants' problem. By expanding the producer responsibility, we can thus create cost-efficient cleaning of pollutants, such as PFAS, and address point sources in a cost-efficient way. There is a risk that grey zone actors will become more competitive, and society get the PFAS emissions into the waters anyway if stricter effluent limits on PFAS should be covered by waste management companies alone. Introducing a mechanism whereby actors using PFAS in their products bear some of the treatment costs would increase the speed of detoxifying our ecosystems, which would benefit more actors than just the treatment plants.

Article 11- Energy neutrality of urban wastewater treatment plants

The European Commission	Ragn-Sells
1. Member States shall ensure that energy audits of urban wastewater treatment plants and collecting systems are carried out every four years. Those audits shall be carried out in accordance with Article 8 of Directive 2012/27/EU and include an identification of the potential for cost-effective use or production of renewable energy, with a particular focus to identify and utilise the potential for biogas production, while reducing methane emissions. The first audits shall be carried out:	1. Member States shall ensure that energy audits of urban wastewater treatment plants and collecting systems are carried out every four years. Those audits shall be carried out in accordance with Article 8 of Directive 2012/27/EU and include an identification of the potential for cost-effective use or production of renewable energy, with a particular focus to identify and utilise the potential for biogas production, while reducing methane emissions. The first audits shall be carried out:
(a) by 31 December 2025 for urban wastewater treatment plants treating a load of 100 000 p.e. and above and the collecting systems connected to them;	(a) by 31 December 2025 for urban wastewater treatment plants treating a load of 100 000 p.e. and above and the collecting systems connected to them;
(b) by 31 December 2030 for urban wastewater treatment plants treating a load of between 10 000 p.e. and 100 000 p.e. and the collecting systems connected to them.	(b) by 31 December 2030 for urban wastewater treatment plants treating a load of between 10 000 p.e. and 100 000 p.e. and the collecting systems connected to them.
2. Member States shall ensure that the total annual energy from renewable sources, as defined in Article 2(1) of Directive (EU) 2018/2001, produced at national level by urban wastewater treatment plants treating a load of 10 000 p.e. and above is equivalent to at least:	2. Member States shall ensure that the total annual energy from renewable sources, as defined in Article 2(1) of Directive (EU) 2018/2001, produced at national level by urban wastewater treatment plants treating a load of 10 000 p.e. and above is equivalent to at least:
(a) 50 % of the total annual energy used by such plants by 31 December 2030;	(a) 50 % of the total annual energy used by such plants by 31 December 2030;
(b) 75 % of the total annual energy used by such plants by 31 December 2035;	(b) 75 % of the total annual energy used by such plants by 31 December 2035;
(c) 100 % of the total annual energy used by such plants by 31 December 2040.	(c) 100 % of the total annual energy used by such plants by 31 December 2040***;***

	(d) 125 % of the total annual energy used by such plants by 31 December 2050.

Ragn-Sells supports the Commission's ambition to promote energy neutrality for treatment plants. We do, however, strongly believe that wastewater treatment plants also can be used to produce more energy than they need for their operation, and thus contribute as energy plants. As suggested in article 1, the Directive should introduce requirements for the transition of wastewater plants to resource hubs. To enforce the plants to go beyond the production of their energy consumption, we suggest that the plants should produce 125 % of the total annual energy used by 2050.

When evaluating energy efficiency a broader system view should be applied not only to consider the wastewater treatment plants themselves. The energy and emissions saved through the recovery of resources, such as phosphorus and nitrogen, should be taken into consideration. By spending more energy in a wastewater plant, more resources could be recovered and thus, energy use and GHG be avoided elsewhere. To conclude, a wastewater treatment plant forced to be energy neutral might, however, risk sub-optimising the overall system. The benefits of the recovery of nutrients compared to linear production will only increase over time as ore grades go down and we resort to more contaminated deposits that will require more and more energy per unit of value that we want to extract. Current ore grades of phosphorus mined in the EU are less than 2% - the phosphorus levels in ashes are about 9%. More concentrated virgin ores are available – but they are also more complex and contain contaminants such as Uranium and Cadmium. Extraction and purification of phosphorus from increasingly more complex deposits of phosphorus will require more energy over time.

Article 20. Sludge

The European Commission	**Ragn-Sells**
1. Member States shall take the necessary measures to ensure that sludge management routes are conform to the waste hierarchy provided for in Article 4 of Directive 2008/98/EC. Such routes shall maximize prevention, re-use and recycling of resources and minimize the adverse effects on the environment. 2. The Commission is empowered to adopt delegated acts in accordance with the procedure referred to in Article 27 to	1. Member States shall take the necessary measures to ensure ~~that sludge management routes are conform to the waste hierarchy provided for in Article 4 of Directive 2008/98/EC. Such routes shall maximize prevention, re-use and recycling of resources and minimize the adverse effects on the environment~~ ***the phosphorus in sewage sludge in first hand is recovered and recycled to high quality products or to a raw material for***

supplement this Directive by setting out the minimum reuse and recycling rates for phosphorus and nitrogen from sludge, in order to take into account available technologies for phosphorus and nitrogen recovery in sludge.	***further processing to prevent virgin phosphorus from being extracted.*** 2. The Commission is empowered to adopt delegated acts in accordance with the procedure referred to in Article 27 to supplement this Directive by setting out the minimum reuse and recycling rates for phosphorus and nitrogen from sludge ***and wastewater (for example from reject water)*****,** in order to take into account available technologies for phosphorus and nitrogen recovery in sludge ***and wastewater***. ***Minimum recovery rate of phosphorus from sewage sludge should be set to 65% and 15% for nitrogen from wastewater.***

If managed correctly, increased chemical recycling of phosphorus could become an important component of circular sustainable sludge management. The highest value for society and the environment would be to prevent virgin phosphorus from being extracted, by closing the phosphorus cycle. A sustainable method for this is by detoxifying sewage sludge, followed by the recovery of high-quality phosphorus. This can be done by using treatment methods like incineration in combination with chemical recycling. Incineration destroys all organic contaminants, microplastics and pathogens and creates ash, a mineral concentrate, that can be transported and that is a valuable raw material for further extraction of phosphorus and other valuable elements. Chemical recycling has the role of recovering phosphorus into a clean recycled product, free from contaminants like cadmium.

This solution is, however, not in line with the waste hierarchy, as the hierarchy contradicts the use of incineration. Ragn-Sells, therefore proposes to remove reference to the waste hierarchy in Article 20, as it is not clear how it applies to sewage sludge and instead risks introducing further barriers to new valuable circular solutions that could replace the mining of virgin raw materials.

In our opinion, incineration in combination with chemical recycling should be used to detoxify the sewage sludge into sustainable raw material (feedstock for production) or final products, and thereby prevent extraction and processing of virgin phosphorus. This is, by far, the greatest advantage for wastewater treatment plants and gives less adverse effects on the environment.

Article 22. Information on monitoring of implementation

The European Commission	Ragn-Sells
1. Member States, assisted by the European Environment Agency (EEA), shall:	1. Member States, assisted by the European Environment Agency (EEA), shall:
(a) by 31 December 2025, set up a data set containing information collected in accordance with Article 21 including information concerning the parameters referred to in Article 21(1), point (a), and the results of the tests with regard to the pass/fail criteria established in Part D of Annex I and update that data set annually thereafter;	(a) by 31 December 2025, set up a data set containing information collected in accordance with Article 21 including information concerning the parameters referred to in Article 21(1), point (a), and the results of the tests with regard to the pass/fail criteria established in Part D of Annex I and update that data set annually thereafter;
(b) by 31 December 2025, set up a data set indicating the percentage of urban wastewater which is collected and treated in accordance with Article 3 and update that data set annually thereafter;	(b) by 31 December 2025, set up a data set indicating the percentage of urban wastewater which is collected and treated in accordance with Article 3 and update that data set annually thereafter;
(c) by 31 December 2025, set up a data set containing information on measures taken to implement Article 4(4) and on the percentage of the urban wastewater load from agglomerations above 2 000 p.e. which is treated in individual systems and update that data set annually thereafter;	(c) by 31 December 2025, set up a data set containing information on measures taken to implement Article 4(4) and on the percentage of the urban wastewater load from agglomerations above 2 000 p.e. which is treated in individual systems and update that data set annually thereafter;
(d) by 31 December 2025, set up a data set containing information on the number of samples collected and the number of samples taken in accordance with Part D of Annex I that have failed;	(d) by 31 December 2025, set up a data set containing information on the number of samples collected and the number of samples taken in accordance with Part D of Annex I that have failed;
(e) by 31 December 2025, set up a data set containing information on green house	(e) by 31 December 2025, set up a data set containing information on green house gas

gas emissions with a breakdown between different gasses and on the total energy used and renewable energy produced by each urban wastewater treatment plant of 10 000 p.e. and above as well as a calculation of the percentage of achievement of the targets set out in Article 11(2) and update that data set annually thereafter;	emissions with a breakdown between different gasses ***(including methane and nitrous oxide)*** and on the total energy used and renewable energy produced by each urban wastewater treatment plant of 10 000 p.e. and above as well as a calculation of the percentage of achievement of the targets set out in Article 11(2) and update that data set annually thereafter;
(f) by 31 December 2025, set up a data set containing information on measures taken in accordance with point 3 of Annex V and update that data set annually thereafter;	(f) by 31 December 2025, set up a data set containing information on measures taken in accordance with point 3 of Annex V and update that data set annually thereafter;
(g) by 31 December 2025, set up a data set containing the monitoring results referred to in accordance with Article 17(1) and (4) and update that data set annually thereafter;	(g) by 31 December 2025, set up a data set containing the monitoring results referred to in accordance with Article 17(1) and (4) and update that data set annually thereafter;
(h) by 31 December 2025, set up a data set containing the list of areas identified as sensitive to eutrophication in accordance with Article 7(2) and update that data set every 5 years thereafter; (e) by 31 December 2030, set up a data set containing the list of areas identified as areas where the concentration or the accumulation of micro-pollutant represents a risk for human health or the environment in accordance with Article 8(2) and update that data set every 5 years thereafter;	(h) by 31 December 2025, set up a data set containing the list of areas identified as sensitive to eutrophication in accordance with Article 7(2) and update that data set every 5 years thereafter; (e) by 31 December 2030, set up a data set containing the list of areas identified as areas where the concentration or the accumulation of micro-pollutant represents a risk for human health or the environment in accordance with Article 8(2) and update that data set every 5 years thereafter;
	NEW () by 31 December 2025, draft emission reduction action plans, clearly stating how they are planning to reduce such emissions. These plans should be revised annually.
(j) by 12 January 2029, set up a data set containing information on measures taken to improve access to sanitation in accordance with Article 19, including information on the share of their	

population that has access to sanitation and update that data set every 6 years thereafter. 2. Member States shall ensure that the Commission and the EEA have permanent access to the data sets referred to in paragraph 1. 3. The information reported by Member States in accordance with Article 5 of Regulation (EC) No 166/2006 shall be taken into account for the reporting required under this Article. With regard to the information referred to in paragraph 1, the EEA shall provide the public with access to relevant data through the European Pollutant Release and Transfer Register established under Regulation (EC) No 2006/166. 4. The Commission is empowered to adopt implementing acts specifying the format of the information to be provided in accordance with paragraph 1. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 28(2).	(j) by 12 January 2029, set up a data set containing information on measures taken to improve access to sanitation in accordance with Article 19, including information on the share of their population that has access to sanitation and update that data set every 6 years thereafter. 2. Member States shall ensure that the Commission and the EEA have permanent access to the data sets referred to in paragraph 1. 3. The information reported by Member States in accordance with Article 5 of Regulation (EC) No 166/2006 shall be taken into account for the reporting required under this Article. With regard to the information referred to in paragraph 1, the EEA shall provide the public with access to relevant data through the European Pollutant Release and Transfer Register established under Regulation (EC) No 2006/166. 4. The Commission is empowered to adopt implementing acts specifying the format of the information to be provided in accordance with paragraph 1. Those implementing acts shall be adopted in accordance with the examination procedure referred to in Article 28(2).

Ragn-Sells strongly approve the introduction of extended monitoring of greenhouse gas emissions. The wastewater treatment plants have the potential to eliminate the emissions of gases dangerous to the environment. With Ragn-Sells solutions, it would be possible to avoid emissions of methane and nitrous oxide, by the recovery of nitrogen from the wastewater. This nitrogen can instead be used as fertilisers.

To speed up the alleviation of these emissions in the atmosphere, we propose the introduction of requirements for the member states to draft emission reduction action plans, clearly stating how they are planning to reduce such emissions.

The Weser ruling – Necessary adaptation of urban wastewater collection and treatment infrastructures in the leaked draft of the legislation. Later deleted in the proposal.

The European Commission	**Ragn-Sells**
	Member States shall take all necessary measures to anticipate and adapt their urban wastewater collection and treatment infrastructures to address increased loads of domestic wastewater, including the construction of new infrastructures where necessary. All precautionary measures shall be taken to avoid deterioration of ecological and of chemical status of affected water bodies. Member States shall be considered to comply with the objectives set out in Directive 2000/60/EC if all following criteria are met: (a) alternative ways to address the increase in domestic wastewater loads, including the consideration of alternative points of discharge of domestic wastewater, would not produce more environmental benefits or they would involve excessive cost; (b) all technically feasible mitigation measures are set out in the authorisation of a wastewater treatment plant referred to in Articles X and Y and effectively implemented to minimise the impacts from urban wastewater on the affected water bodies including where so required more stringent emission controls, with the aim of meeting the objectives set out in Directive 2000/60/EC and the environmental quality standards set in accordance with Directive 2008/105/EC.

	Compliance with these criteria shall be demonstrated in the relevant River Basin Management Plans developed under Directive 2000/60/EC.

As a result of the Court of Justice of the EU's so-called "Weser Ruling"[1] during the implementation of the Water Framework Directive, initiatives to improve, develop, and expand wastewater treatment plants might today be stopped, even though the net impact would be positive for the climate and the environment at large. For all its good intentions, the ruling has set a precedent that severely limits the possibilities to transform wastewater treatment plants into resource plants. As such, the ruling poses a major obstacle to the roll-out of innovative technologies that would increase overall sustainability and benefit our societies. These undue legislative barriers prohibiting the expansion and development of wastewater treatment plants must be removed. Ragn-Sells believes that a more holistic framework to assess the environmental impacts of nutrient recycling is needed at the EU level.

We strongly support Svenskt Vatten, the association representing the water supply and wastewater services of Sweden's municipalities, opinion and amendment. Svenskt Vatten believes that the directive's most serious shortcoming is the lack of rules that protect the environment and societal costs from the negative consequences of the degradation ban in the EU's water directive after the EU Court's Weser Ruling. The proposal contains requirements that could have a huge negative impact on the environment and the climate. Without such rules, we note that it will be very expensive and difficult for water and sewage operations in Swedish municipalities in the coming decades to meet all the requirements. The sewage directive causes an investment hump that becomes contemporary with the costs of implementing the EU's drinking water directive and adapting the country's urban areas to the climate. Svenskt Vatten's calculation of the investments in the year 2021 for Swedish water and sewage was 21 billion per year.