

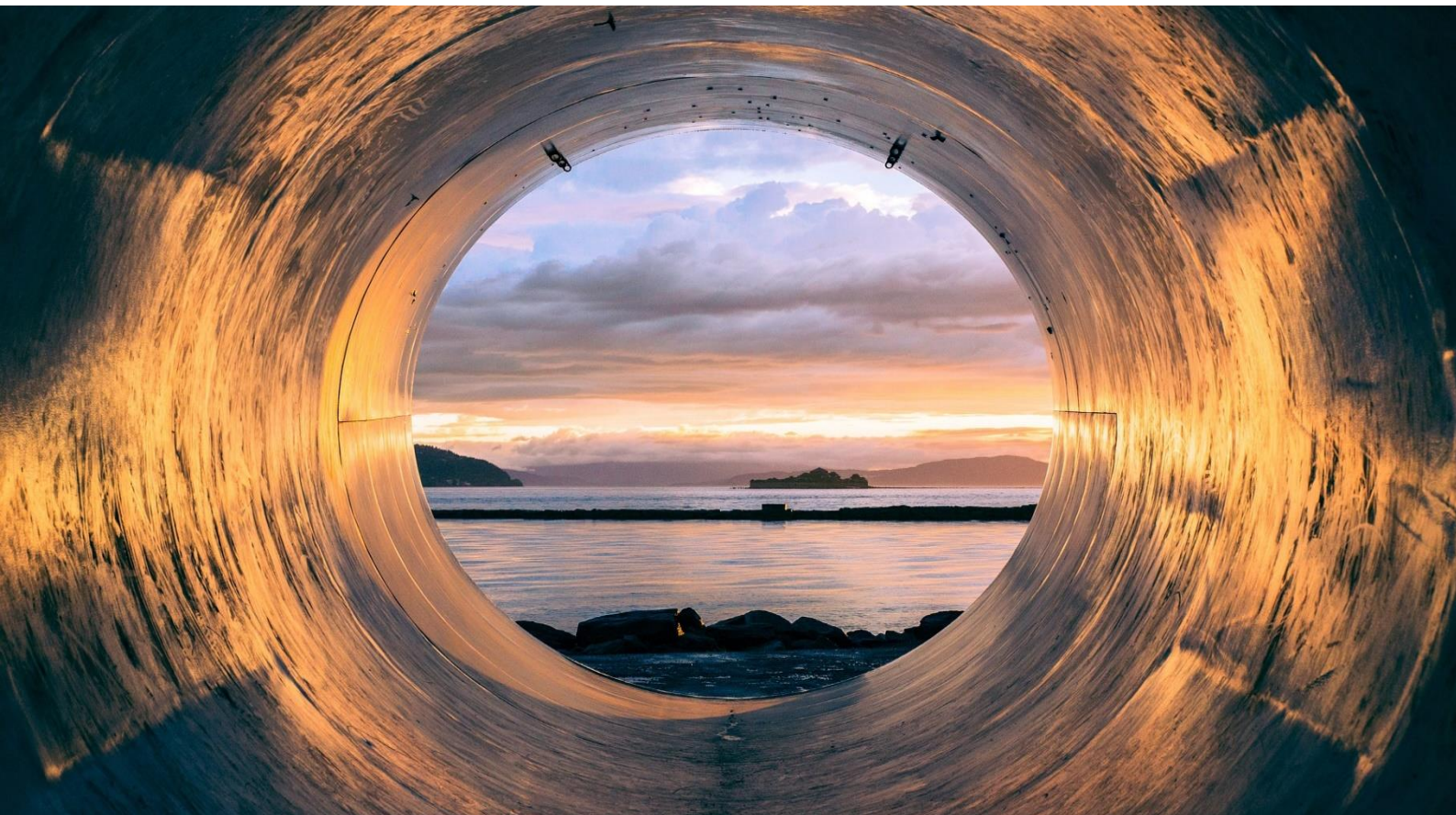


# Webinar Wastewater and sludge management for the circular economy in the Western Balkans

September 22, 2020

*Executive summary*

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## Introduction

Over the past decades, the wastewater paradigm in the Netherlands has shifted from linear to circular, putting the emphasis on closing cycles and recovering energy, water and nutrients. The recently adopted European Green Deal, which seeks to make the European Union climate neutral by 2050, may offer new opportunities for Western Balkan countries that are actively working on improving wastewater and sludge management.

To explore these opportunities, the Netherlands Water Partnership (NWP), with the support of the Partners for Water Programme, has hosted a webinar on 22 September on the topic of 'Wastewater and sludge management for the circular economy in the Western Balkans'. The webinar opened with an introduction from NWP on the topic of circular wastewater and sludge management, and a short presentation of a research conducted by MSc students of Wageningen University & Research on sustainable sludge treatment in the Netherlands. What followed were three presentations of wastewater and sludge management experts offering insights on resource recovery and wastewater management, respectively from Royal HaskoningDHV, KWR Water Research Institute and the SCAWA Unit of the World Bank. The webinar ended with an open discussion with participants on the topic.



# Webinar Programme



## 14:00 Opening by NWP

Introduction - Meeting Goals – Partners for Water in the Balkans – WUR students research

## 14:15 Production of resources from wastewater and sludge

By Paul Roeleveld, Director Business Development and Innovations, Royal HaskoningDHV

## 14:25 Wastewater treatment for the future: production/recovery of energy, water and materials

By M.d.C. (Maria) Lousada Ferreira, PhD, Scientific researcher – Water Technology, KWR Water Research Institute

## 14:35 Wastewater management in Southeast Europe – World Bank experiences

By Stjepan Gabric, Senior Water and Sanitation Specialist, SCAWA, World Bank

## 14:45 Discussion and Q&A

## 15:00 Concluding remarks by NWP

## Executive summary of presentations

### Opening by NWP

**By Darja Kragić Kok and Jara Bakx, Netherlands Water Partnership**

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NWP) is the largest network of Dutch organisations in the water sector. It is the first point of call for anyone seeking Dutch water expertise. NWP gathers knowledge when there is too much, too little or too polluted water. Through the Partners for Water programme of RVO.nl, and with the support of the regional Embassies of the Netherlands, NWP organises activities in the Western Balkans countries. This webinar explores different options to close the cycles through wastewater and sludge management, for the creation of a circular economy in the Western Balkans. There is great potential to recover resources from waste water, such as phosphorus, and the designing out of waste and pollution. NWP has therefore gathered three speakers specialised in the recovery of resources from wastewater and sludge to share their knowledge, analyse common challenges and offer solutions specific to the needs of the Balkan region. To further contribute to this relevant topic, a group of seven multi-disciplinary MSc students from Wageningen University & Research have executed an academic consultancy training (ACT), to explore sustainable sludge treatment options as used in the Netherlands. NWP is continuing the development of students' ACT report (the link to the brochure with the summary can be found below ACT 2020).

### Production of resources from wastewater and sludge

**By Paul Roeleveld, Royal HaskoningDHV**

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Over the past few decades, humans have moved from treating wastewater as something to dispose off towards treating it as a valuable resource for water, energy, biosolids and nutrients.

This has led to the Netherlands increasingly referring to wastewater treatment plants (WWTPs) as energy factories, nutrients factories and/or water factories since 2010 (please see link below STOWA 2010), highlighting the potential of recovering resources from wastewater and sludge. There are six main resources presented at the webinar which Royal HaskoningDHV recovers: (1) water, for the improvement of nature and environment and for use in agriculture and industry, (2) biosolids, as nutrient and carbon source for agriculture and as liming material, (3) energy, through the production of electricity or green gas from biogas, or the obtainment of heat for surrounding customers, (4) phosphorus, as fertiliser in agriculture, raw source for the phosphorus industry, or to reuse as flame retardants, (5) cellulose, as source for the production of volatile fatty acids (VFAs) and ethanol, or as filler in road construction, and (6) biopolymers, as a bio stimulant for agriculture, as binding agent for composite building materials, and as a coating agent for different applications.

## Wastewater treatment for the future: production/recovery of energy, water and materials

**By Maria Lousada Ferreira, KWR Water Research Institute**

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What will be the future of wastewater treatment, in our quest towards a water-wise world? KWR contributes to the relevant topic of resource recovery from wastewater and sludge through the research and development of practical solutions and the collaborative implementation of innovative technologies. For instance, KWR was commissioned by the greenhouses at the vicinity of WWTP Harnaspolder, the Netherlands, to propose alternative water sources. KWR developed an effective and profitable plan to reuse the WWTP treated effluent into the neighbouring greenhouses. Moreover, KWR has collaborated, amongst others with Royal HaskoningDHV, in a project converting a WWTP into a sustainable resource recovery factory. By pre-treating the raw wastewater, using forward osmosis to concentrate organic material, the process of obtaining biogas through the use of anaerobic digestion (AD) has proved to be much more efficient. The use of AD prevents the loss of nutrients, therefore producing a more concentrated stream going into post-treatment to recover these nutrients. Forward osmosis produces water with reusable quality. Lastly, KWR is involved in pre-feasibility studies abroad, strategically defining to select innovative technologies for wastewater treatment, water reuse and resource recovery in new WWTPs.

## Wastewater management in Southeast Europe – World Bank Experiences

By **Stjepan Gabric, World Bank**

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The World Bank has a long history of involvement in the wastewater treatment sector of Southeast Europe through analytical works, investment projects, advisory services and regional capacity-building programmes. The EU Urban Waste Water Treatment Directive (UWWTD) has been a key driver for urban wastewater sector transformations in the region. In 2017, the World Bank published a report (please see link below IAWD & WB 2017), studying the results of EU accession, and thus the implementation of the UWWTD, for the wastewater sector in the Danube region. For instance, all EU member countries in the region that were part of the study managed to decrease load emissions, resulting in a significant improvement of surface water quality. Substantial investments in the sector are, however, needed to comply with all the UWWTD requirements. To fill the financial gap, the World Bank has been involved in multiple lending projects for the financing of wastewater infrastructure (e.g. in Croatia) and advisory services to address the challenges in meeting the UWWTD requirements (e.g. in Romania). Moreover, the World Bank and IAWD are implementers of the [Danube Water Programme](#) (DWP) for capacity-building and knowledge sharing for the water-supply and sanitation sectors in the region. The World Bank aims to further contribute to the creation of a circular economy, improve resilience in the region and stimulate water security.

### Additional Links

- Interested to receive water-related news from the Balkans a few times per year? Subscribe to the Newsletter of the Partners for Water Balkan Focus [here](#).
- ACT (2020) Wageningen University Academic Consultancy Training on Circular Sludge Treatment Options, the brochure with the summary can be downloaded [here](#)
- STOWA (2010) NEWS: The Dutch Roadmap for the WWTP of 2030 (Download the report [here](#)),
- IAWD & WB (2017) Wastewater Management in the Danube Region: Opportunities of EU Accession (Download the report [here](#) )
- RVO.nl, together with Embassies of the Netherlands in Albania, Bosnia and Herzegovina, North Macedonia and Serbia, initiated a study to explore business opportunities for Dutch organisations in the field of wastewater and flood management in the Western Balkan region. You can download the study [here](#).



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