



Applying Intelligence in the Circular Economy

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Overview

Successful strategies for the development of the circular economy must involve a joint effort by governments, investors, NGOs, and water users in agriculture, industry and cities to match social and environmental priorities with a rational economic framework for decision making.

WEX Global 2019 will continue our examination of the ways in which forward-looking institutions and companies are implementing the circular economy by connecting the individual pillars of water, energy and waste within the wider context of industries, municipalities and civil society.

WEX Global Speakers to-date include:

- **Mohsen Mortada** Cole Engineering – **Canada**
- **Dr Dirk Wittenberg**, General Manager, Remondis Aqua International – **Germany**
- **Truls Klavestad**, Sales Manager, Filtralite – **Norway**
- **Miguel Angel Sanz**, Director of Strategic Development, Suez Treatment Infrastructure & President IDA – **France**
- **Dr Ralf Bufler**, CDM Smith Europe, Managing Director – **Germany**
- **Juan Manuel Revuelta**, Executive Director, Finnova Foundation - **Belgium**
- **Lyubomir Filipov**, Strategic Partnerships and project Director, Veolia – **Bulgaria**
- **Alberto Carvalho Neto**, General Manager, BEWG – **Portugal**
- **Albin Kaelin**, CEO, Environmental Protection Encouragement Agency - **Switzerland**
- **Mark Barnett** President, The National Water Commission - **Jamaica**
- **Eryl Edwards**, Commercial Manager, BESIX Concessions and Assets - **UAE**
- **Jim Southworth**, Managing Director, Blu-3 - **UK**
- **Professor Abdul Aziz Al-Turbak** Dean of Engineering, KSU **Saudi Arabia**
- **Enrique Cifres**, Managing Director, eWater Consult – **Spain**
- **Janos Gombaszogi**, Azersu Project Responsibility, Budapest Waterworks - **Hungary**
- **Paul Horton** CEO, Future Water Association -**UK**
- **Jon Brigg** Manager of Innovation and Head of Circular Economy, Yorkshire Water - **UK**
- **Ryan Welsh** Supervising Engineer, City of Cincinnati – **USA**
- **Joao Simao Pires**, Executive Director, Portuguese Water Partnership - **Portugal**
- **Marlon Daniels**, Executive Director Commercial Services, Guyana Water Inc - **Guyana**
- **Pedro Carreira**, CEO, Ausseur & Vic, - **France**
- **Omar Hamoud** President & CEO, APG–Neuros - **Canada**
- **Nuno Broco** Director of Engineering, ADP – **Portugal**

- **Oliver Grievson**, Flow Compliance and Regulatory Efficiency Manager, Anglian Water – **UK**
- **Dobromir Simidchiev** Chief Executive Officer, Hydrolia Water Works - **Bulgaria**
- **Hans-Ulrich Buchholz** L'Oréal, Head of Environmental Compliance - **France**
- **Hocine Rizou** Director General, Algerian Energy Company - **Algeria**
- **Mohammed Taibi** Project Director, Algerian Energy Company - **Algeria**
- **Frank Rogalla** Head of Innovation, FCC Aqualia - **Spain**
- **Roberto Zocchi** European Business Director, WRC - **Italy**
- **Pavel Policar** Chairman, Czech Water – **Czech Republic**
- **Andrew Donnelly** Advisor to the Board, Head of Network Monitoring, EPAL - **Portugal**
- **Sahana Singh** Editor, Asian Water Magazine - **Singapore**
- **Tadeusz Krezelewski** President, Krevox – **Poland**
- **Seyedhossein Sajadifar**, Deputy of Engineering and Development on Economic Affairs, NWWEC – **Iran**
- **Khaled Zaabar**, Director of Energy Management, Sonede - **Tunisia**
- **Farda Imanov**, Deputy Director, Azersu JSC - **Azerbaijan**
- **Michael Botse Baidoo** Chief Manager Project Planning and Development, Ghana Water Company - **Ghana**
- **Kevin Woodward** OT Strategy Manager, United Utilities - **UK**
- **Mihai Banciu** Project Implementation Unit, SC Apa Canal SA Sibiu – **Romania**
- **Marek Gromiec**, Special Advisor on Environment to the Polish Senate - **Poland**

1. Rational Economics and the Circular Economy

There are many areas such as water reuse, the development of bio-refineries and the integration of renewable technologies where the water sector can be seen to be taking a leading in implementing the circular economy. However, it could be argued that progress has been hampered by a lack of a rigorous analytical framework to facilitate investment into the sector, particularly on measures of efficiency and water productivity. When planning new initiatives, is it enough to simply tick the circular economy box or do we need to introduce financial benchmarks to facilitate decision-making that will deliver outcomes which are both environmentally and economically sustainable?

2. Special Focus: A New Solution for Financing Water and Energy Infrastructure in the Circular Economy

Closing the funding gap for water and renewable energy generates endless debate but few truly effective solutions. The guiding mantra has become that “the user must pay” but are tariffs based simply on consumption compatible with the values of the circular economy?

WEX Global 2019 in association with Prana Sustainable Water (PSW) will be demonstrating an innovative working model that has the potential to make an important contribution to finance infrastructures within a true circular economy framework.

We will examine revolutionary solutions using the latest smart technologies to ensure money follows the flow of the water in the circular economy to the benefit of people, industry, civil society, investors and policy makers.

The transformation of wastewater treatment plants into “bio-refineries” that deliver products such as clean water, energy, fertilizers, bio-cements etc., offers a disruptive proposition to finance utilities.

The Wastewater Reuse and Energy Exchange (W2AREX) is a matching platform developed to manage risk, encourage investment, create new water resources, raise living standards, reduce costs and enable wastewater suppliers to reap the financial benefits of bio-refining

For the first time ever, the W2AREX will be functioning at WEX Global 2019 as a physical market place where operators of bio-refineries can meet real buyers of their products on a specially created trading floor.

This exciting event will be complemented by the involvement of leading companies, institutions and international experts in special sessions created to examine the practicalities of making the benefits of the circular economy available to all. Combining the expertise of both financial specialists and leaders in wastewater treatment these sessions will examine:

- Practical steps to establish a wastewater market place
- Comparison with other wastewater infrastructure funding solutions including green bonds
- Case Studies of real impacts
- Wastewater valorization up and downstream of recycling prior to the infrastructure set-up
- Wastewater value benchmarks and opportunities in the circular economy for increasing returns on investment in wastewater bio-refineries
- The role of smart technology and digital infrastructure in achieving sustainable growth
- The scale-up of clean technologies via the W2AREX

- Water interdependency stress-test and storm and run-off wastewater opportunities for insurers, energy providers and other stakeholders
- The correlation of infrastructure finance with commodity trade finance based on treated wastewater
- Carbon emissions compensation and schemes via wastewater recycling
- Wastewater monetization within the context of phosphorus recovery
- Next generation bio-refineries as distribution and exchange hubs for green mobility (e.g. biofuels from algae grown on wastewater) and for vital needs

More information about W2AREX can be found at:

<https://www.pranasustainablewater.ch/en/advantages/marketplace.php>

3. Tackling Climate Change and Building Resilience in the Smart City

Cities across the world must intensify their efforts to handle the increasingly complex challenges caused by climate change. As population and urbanization increases, cities are transforming into Smart Cities with the help of the Internet of Things. Water is one of the vital resources for existence of human life and so smart water management systems have a key role to play in the development of the smart city and the building of resilience

- Challenges of implanting a smart city framework
- What are the technologies and platforms required for a smart environment
- Designing the architecture for smart water management
- Implementing smart water monitoring systems
- Financing smart city development

4. Water Cycle Management and Water Reuse

The implementation of new water reuse projects is a clear example of how the circular economy is creating new water for both potable and non-potable water applications in agriculture, the urban environment and particularly for industries. New initiatives are becoming increasingly important components of an integrated approach to water resource management.

5. Integrating Action on Water, Energy and Waste in the Circular Economy

Water, Energy, and waste policies should be inextricably linked as all have considerable environmental impacts. The challenges of producing and using energy and water resources sustainably and protecting our natural environment equally represents an opportunity to pursue sustainable economic growth.

6. Circular Economy Strategies in Energy Positive Treatment Plants

The drive towards energy positive wastewater treatment and carbon neutral water plants is one of the key areas where the water sector is combating climate change by developing innovative solutions to reduce greenhouse gas emissions, to optimize energy consumption & production and to encourage the use of high-potential renewables.

- What are the approaches most likely to produce a quantum leap in the energy performance of wastewater treatment facilities
- How drinking water facilities help in minimizing water tariffs and optimizing energy consumption
- What is the potential impact on reducing CO2 emissions by producing renewable energy sources such as biomethane from wastewater treatment?

7. Improving Energy Efficiency in Water and Wastewater Treatment – Sponsored by APG Neuros

Strategies for optimising process efficiency will become increasingly important for both municipalities and industrial water users. The vast consumption of energy by water and wastewater treatment plants alone is driving the need for innovation in the more imaginative and efficient use of resources.

8. Bio Solids and the Circular Economy

The Circular Economy has become an important strategic objective for both utilities and businesses alike. linking both sustainability and economic objectives with environmental obligations. The handling of bio solids provides clear examples of the circular economy in practice. The sector has an important role as a driving force to secure development through ambitious strategies, plans and investments in infrastructure and advanced wastewater treatment. Technology development is generating significant beneficial effects in terms of new possibilities and business opportunities for industries and utilities

9. Applying Circular Economy Solutions in Industrial Wastewater

There is now a widespread recognition that water scarcity is one of the top five global risks for businesses. Every sector is impacted from technology, pharmaceuticals, consumer goods, power, food and beverage, construction through to mining. Solutions do exist and smart companies are increasingly looking to implement programs that will not only mitigate their exposure to water shortages but also have a positive impact on the bottom line.

- Water as a risk for your long-term business
- What is driving business interest in improved wastewater management practices?
- What are the biggest challenges in water and effluent treatment?
- Strategies for prioritising energy, reuse and resource recovery as part of a circular economy strategy
- How do requirements vary from region to region and how do you coordinate a global view?

10. Decentralised Wastewater Treatment

Decentralized wastewater treatment is increasingly being seen as a smart alternative for communities or institutions considering new systems or expanding existing wastewater treatment systems. These systems are a part of permanent infrastructure and can be managed as stand-alone facilities or be integrated with centralized sewage treatment systems.

- How scalable are decentralised solutions?
- What are the criteria which need to be considered when establishing suitability?
- What role can they play in achieving greater sustainability?
- What are the economic benefits?

11. Data Centres and Water Utilities: Matching Supply and Demand – Sponsored by Blu-3

The ever-growing demand for data capacity worldwide presents the water sector with both huge challenges and fantastic opportunities. A 100-megawatt Data Centre requires on average 100,000 litres of water per minute for cooling alone. The big 4 data companies, Google, Amazon, Microsoft and IBM are currently delivering 20 megawatts of data facility per month globally which in terms of water demand is like building a city the size of Miami.

Ensuring water security creates huge capacity building challenges for both utilities and operators alike. However, the colocation of Water Utilities and Data Centres is also a potential marriage made in heaven affording the opportunity to build circular economy clusters on brownfield sites where integrated benefits in terms of reuse of water and energy can be shared between many partners.

Forward looking organisations like Yorkshire water are already leading the way with plans to develop circular economy clusters around their WWTP. Will other utilities overcome their risk averse nature and wake to the new opportunities?

12.The Innovations Forum– Sponsored by aqualia

An interactive forum featuring short presentations of 6 innovative technologies from invited companies. Each presentation will be followed by questions, analysis and debate involving both the audience and a panel of distinguished experts. The panel will ultimately decide upon the winner of the Aqualia Innovation Award at WEX Global to be presented at the Gala dinner to be held on 05/03/19.

13.BIMS and the Water Sector

Water has been slower to embrace BIMS than many other infrastructure sectors although this is now changing with studies showing that in some areas such as the use of 3D modelling for the operation of completed facilities integrated with asset management the water sector is now leading the way.

There is an increasing awareness that BIMs in the water sector leads to higher levels of client satisfaction by improving critical aspects of the project design and delivery process. In this respect improved collaboration is viewed as the top business benefit but their significant advantages in driving rational economic decision making and control of costs on new projects.

14.Improving Asset Management Using Intelligent Monitoring Solutions

Improvements in water asset management and operations efficiency are critical to meeting population and climate challenges. Leaking pipes and ageing infrastructure require more energy and money to deliver drinking water to the consumer and wastewater to the treatment plant. Deferred investment in existing assets increases risk of catastrophic failures and public health emergencies. How can the public utilities take

a proactive approach to re-investment and deliver the best long-term solutions for their ratepayers?

15. Networks International: The Regional Reality Now and in the Future

While it is always important to be aware of where the market is moving, more often than not the reality of infrastructure in-country, along with how the funding and regulatory set-up is played out at ground level, is more relevant to utilities trying to optimize networks and to innovative suppliers trying to create products and services to assist them in this. Often, assumptions are made by new technology supplier companies that other countries are the same as their own – usually they are not. Find out how and why in this unique session!

Utility leaders from a range of different countries will explain to you how water networks are usually set up and what are the dominant trends , challenges and drivers.

16. Desalination in the Circular Economy

Technology advances have made desalination a more sustainable and affordable solution for producing new water resources for the circular economy. As a result, desalination is moving away from the sea and is now seen as a solution for both industrial wastewater treatment and inland utilities reliant upon groundwater supplies. What are the developments which are pushing the boundaries of desalination and can it now be an enabler of circular economy practises?

- Increasing freshwater yield from the brine flow
- Potential impact on costs and environmental damage of reducing waste brine in industrial water applications
- New technologies such as humidification/dehumidification and their effect on treating industrial waters with high organic content (as in oil and gas) likely to foul the RO membranes in traditional processes
- integration of precipitation into both membrane and thermal desalination processes to reduce scale
- The role of digital technology and smart monitoring
- How the adoption of new business models such design-build-operate which prioritises whole life costs over lower capital expenditure in the municipal and industry sectors will accelerate the adoption of new technologies

17. Regional Business Forums

Our regional business forums will offer overview of the business climate and opportunities in water and energy in the following 7 different regions of the world:

1. Asia
2. The Middle East
3. Central and Eastern Europe
4. Central Asia
5. Africa
6. North America
7. Latin America

Each forum will examine:

- Given the failure of private finance to fill the funding gap is the only answer to increase public investment in water and sewerage infrastructure?
- Does using public resources to stimulate private sector investment through “blended finance” mechanisms work or is it better to simply invest government funds in water directly?
- Are tariff increases to achieve full cost recovery a realistic option where it impacts most on the poorest members of society?
- How can issues relating to water supply and sanitation be integrated with the climate change agenda?
- What are the technologies needed to drive improvement in efficiencies in the Utilities sector?