

SDC RésEAU Circular Economy Webinar, 4 October, 2021

SDC's water network, the RésEAU, held a webinar on 4 October, 2021 to discuss the topic: '**Capitalising on circular economy principles to tackle challenges in the water sector and beyond**', inspired by a Trend Sheet of the same name from the [Trend Observatory on Water](#). The webinar included the following panel:

Presenters



Annika Kramer
Head of Programme
Water
Adelphi



Kees Roest
Senior Scientific
Researcher
Energy & Circular Systems
KWR



Miriam Otoo
Senior Associate
Water Resources &
Infrastructure
Tetra Tech ARD



Johan Gély
Head of Cooperation
SDC South Sudan

Discussant

Key Takeaways

- A Circular Economy (CE) approach is not only crucial for sustainable management of water resources, but also presents real potential for medium and long-term economic, social and governance advantages
- In the Global South, there are significant challenges relating to existing infrastructure that create additional barriers to effective CE implementation
- Despite the above, there are actually many similarities to CE challenges and potential solutions around the world

Framing the discussion

Setting the stage, Annika Kramer – one of the Trend Sheet's authors – outlined the principles associated with a Circular Economy (CE) approach, describing some of the implications for the water sector. As articulated by the Ellen McArthur Foundation, a CE approach follows three core principles:

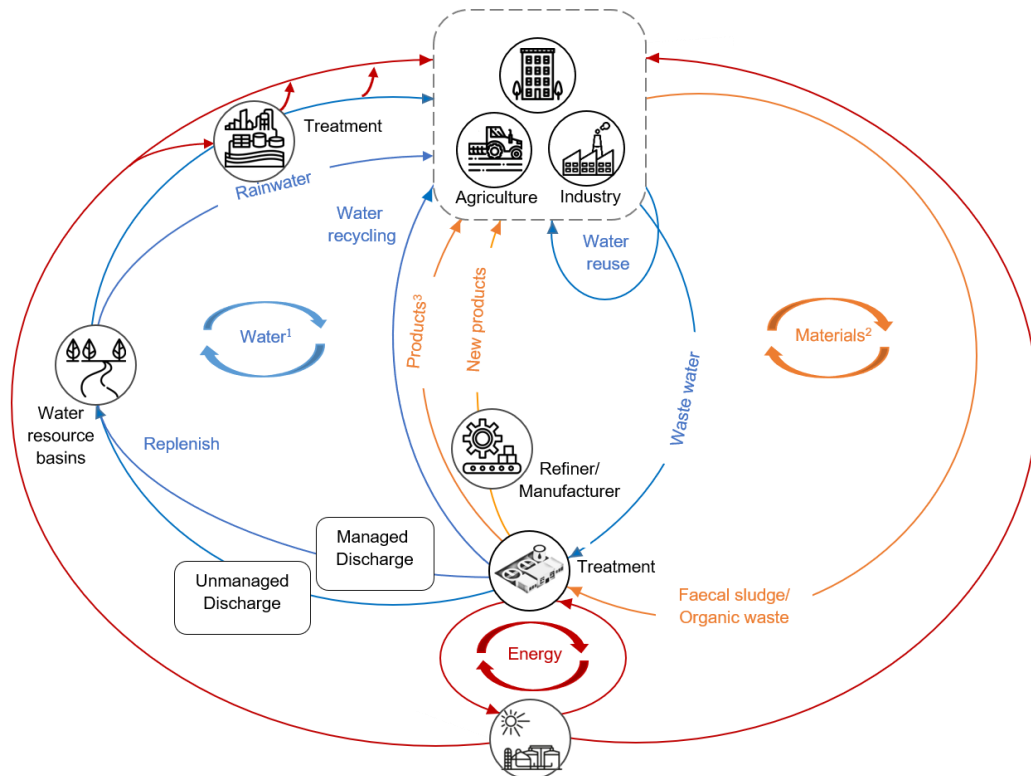
- Designing out waste and pollution (Avoid & Reduce)
- Keeping products and materials in use (Reuse, recycle & Recover)
- Regenerating natural systems

Regarding the first bullet, activities relevant to the water sector include: the use of water-less technologies, water conservation and efficiency measures, as well as reducing chemical and energy use.

In terms of reusing, recycling and recovering, there are: reusing water effluent (e.g. irrigation, industrial use); recycling human waste/faecal sludge for composting or energy use, and; recovering nutrients, metals, energy from waste water, faecal sludge or further processing.

The regeneration of natural systems can come from pollution prevention, recharging natural water bodies and related ecosystems with reclaimed water, or using nutrients from sewage and faecal sludge for soil regeneration.

Annika went on to emphasize the systemic nature of how CE principles should be understood and applied:



The Circular Water and Sanitation Economy System. Credit: adelphi, 2020

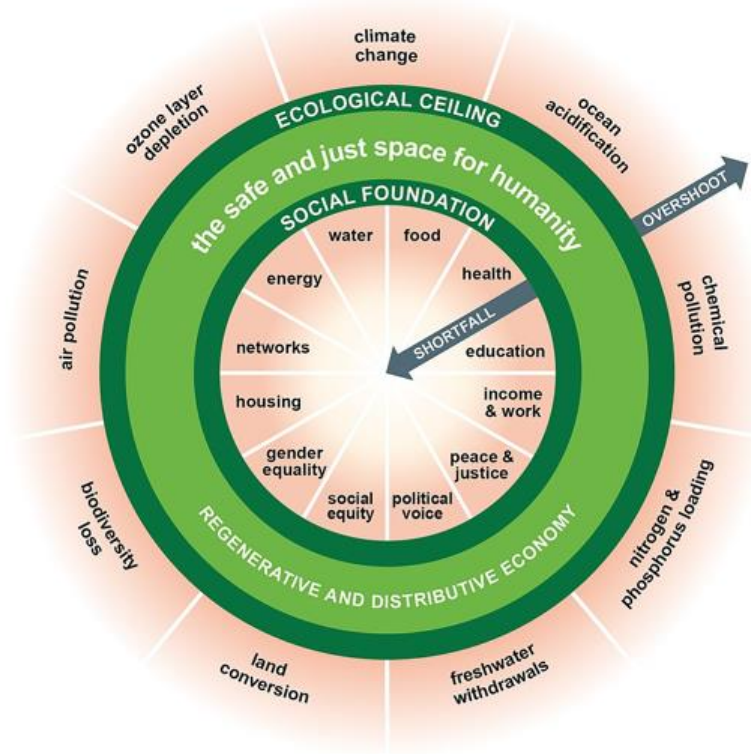
Thus, the flows (and channels) of energy, water, waste and other resources within a system must be taken into account when designing and implementing water and/or sanitation-related solutions, in order to understand and respond to opportunities for strengthening a CE approach and avoid related pitfalls.

Experiences from a European context

The second presenter on the panel, Kees Roest, provided some insights from applied research he is involved with aimed at achieving a [fully circular urban water cycle by 2050 in the Netherlands](#). Aside from exploring new technology solutions, the research is taking a comprehensive look at how water is currently managed (and by whom), what a CE in that context would look like, and what measures need to be taken to get there by 2050.

It is about transforming water management such that it is as resource efficient as possible (not only in terms of energy/resource expenditure, but also effective use of waste generated along the way), has a minimal environmental impact, and is socially responsible.

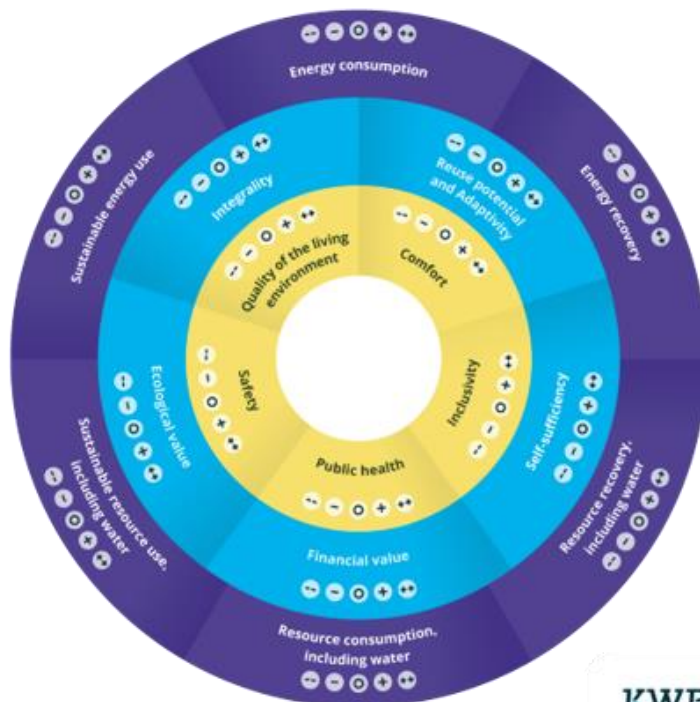
Kees also explained how the research team’s efforts to operationalize their discussions led them to a helpful conceptual tool, the Social and Planetary boundary ‘doughnut’ created by Kate Raworth:



Credit: Doughnut Economics, Kate Raworth, 2017

The goal is to achieve a ‘sweet spot’ of sustainability within the bounds of the social aspects (i.e. basic rights everyone should be in a position to enjoy) and the ecological boundaries within which a system must stay to be environmentally sustainable.

Based on this conceptual framework, the research team created a water sector dashboard, to facilitate consideration of the wide variety of things to consider in applying a CE approach in the water sector:



New dashboard model for the water sector. Credit: KWR, 2020

The outer ring describes physical characteristics (energy and substance flows). The middle ring describes other characteristics of the system that need to be taken into account to maintain a good position in the sweet spot (e.g. financial and ecological value, degree of integration, self-sufficiency, reuse potential and adaptivity). Finally, the inner ring includes socially valued aspects.

Of course, making progress in the real world is more than just coming up with compelling models. The CE by 2050 project also involves a range of meetings with various stakeholders, as well as taking a backward planning approach (looking at where you want to be, and then working back from there to what the current situation is) designed to highlight key activities and milestones in the effort to achieve a CE of water.

All in all, Kees's presentation helped to anchor the webinar with a practical and well-advanced case study.

Bringing in the development sector

The next speaker, Miriam Otoo, presented CE topic from a development perspective. Two of the biggest challenges in this context are increasing rates of urbanization and increasing water scarcity (exacerbated by climate change, and not only due to insufficient quantity, but also poor water quality). These challenges put extra pressure on people and communities regarding water use and management. Added

to this is high rates of pollution of water sources in the Global South, due to such things as non-existent or malfunctioning wastewater treatment plants, and severe pollution – particularly in urban areas – which contribute to poor quality of groundwater. So, the overall lack of infrastructure is key to an understanding of current conditions. This multiplicity of barriers also means that so far in the Global South, initiatives aimed at developing a CE approach tend to be pilots only and are not being brought to scale.

Miriam pointed to the vast and largely untapped potential of water and sanitation-related waste as sources of energy, nutrients, biosolids, animal feed, and water reuse. However, she also highlighted a variety of obstacles to scaling CE approaches in development contexts, as it is not only about technology solutions, but creating an enabling environment, including:

- Business modelling
- Relevant legal and regulatory frameworks
- Financial information and financing mechanisms
- Clear opportunities for public-private partnerships

Taking the conversation into more concrete territory, Miriam presented two African cases, one in Ghana involving nutrient recovery from faecal sludge, and the other from East Africa involving energy recovery. Discussing the first case, Miriam emphasized the importance of not only looking at the outputs side, but to take all the elements of the value chain into account, as well as the interests of the different (private and public) actors, if the results are going to be sustainable. Especially in the case of the private sector, reliable revenue generation is a precondition for serious engagement and commitment, though this is only one factor amongst many.

The second case aimed at energy recovery, was implemented in a context where low-income households depend on solid fuel (wood, charcoal) for cooking and heating, a significant contributor to deforestation, particularly in peri-urban areas. In the East African context, there was a strict regulatory response that had a severely negative impact on the charcoal industry, but at the same time, it created opportunities for CE products (e.g. waste-based fuel briquets). In this case, there is also an excellent opportunity for poverty alleviation – also for women and youth who tend to be marginalised groups – as such fuel can be produced at a very small scale, so the barriers to entry are small.

Miriam rounded off her presentation with several key action research questions in order to better understand the potential of CE in the water sector in the Global South:

Scaling CE innovations will require more action research...

Circular Economy research

Huge data and definition challenges

- What **financing mechanisms** truly work for CE? Is there potential for blended financing options?
- What are the **legal and regulatory frameworks, decision support tools** that support sustainable and equitable CE models?
- Can we truly **reverse the economics of sanitation** with integration of circular economy innovations?
- CE interventions are 'economically' viable. Are they **financially viable** to attract private sector investment?

Gaining further insight into the above topics – along with improvements across the board in capacities, regulatory environments and increased knowledge and awareness amongst populations more generally – will contribute to more successful and sustainable CE initiatives.

A reaction from the RésEAU perspective

Following the three presentations summarised above, Johan Gély contributed his thoughts as a member of the RésEAU and a development practitioner. A variety of issues resonated with Johan from the presentations, including:

- There are many challenges/specificities in the Global South, and even more so in fragile contexts, but there are still CE opportunities in these countries. We have to be careful to contextualize, fine-tune for different country situations.
- The principles that apply in Europe or North America could be transferred to some extent to the Global South (with some adjustments).
- Regarding research: There are opportunities to develop further research partnerships, with multinational companies, but also with social entrepreneurs. One example could be cities in different parts of the world partnering together.
- How can we accelerate transfer of current experience with respect to roadmapping, scorecarding, policy development, etc., to the Global South?
- We need to go to scale, but at the same time, we need to be extremely clever when it comes to design of the partnerships, of the institutional frameworks, the normative and policy frameworks. This requires innovation, but there is a lot of energy in many countries to tap into.
- In terms of marketing, partnerships with big companies that are professional in terms of marketing, can help social entrepreneurs, also with advocacy and awareness building.

- Regarding financing, again we are seeing more and more bonds as financing mechanisms. Why not start thinking of this kind of mechanism for some of the funding? With this and other mechanisms requiring investment, donors as well as multinationals should together take on at least part of the risks of developing them. We should not expect local authorities to do all of it.

Further discussion

Based on Johan's comprehensive targeting of key issues, there were several reactions from the panel....

Kees pointed out that the topics relevant to the Global South are largely also valid for Europe and The Netherlands for example, because legal frameworks and organisation are missing. Existing legislation is made for linearity. And if you want to reuse components from sources that are used, they also have pathogens and contaminants, for which guidelines need to be created around safe usage. There are also similarities regarding cooperation and collaboration. If you want to close cycles, it is not done by a single organisation. You need to work together, and by doing this to share the benefits as well as the less desirable aspects (e.g. paying for it).

Miriam also responded to a number of the points raised by Johan, including: it is difficult to establish partnerships and to focus on the sustainability aspect. It is more than having an MOU to agree to do research. Funds also need to be invested, not only by governments but also the private sector; regarding bonds, there is great potential there, but there is limited clarity in the water sector how they could be most effectively used. We need to invest time, in order to understand what works and what does not.

Finally, the question came up about what practical steps can be taken in the short term to generate more momentum. Miriam mentioned that, regardless of the market, of the technologies, we need a supportive regulatory and legal framework. Without that, private sector companies will not invest, as the risk is too high. So, it's important that we hold governments accountable to enable this.

Annika also fully agreed about the importance of looking at the legal and regulatory environment as an immediate opportunity, and mentioned we should not overburden CE efforts with expectations of generating economic benefits, but rather see it as an opportunity to bring environmental and social benefits, even if the economic benefits alone do not fully cover the costs.

Kees mentioned that we can find existing opportunities. For example, if you have water stress, then used water can be extremely helpful, so there can be real incentives to move to a CE approach.

Webinar Resources

The recording of the webinar, as well as the presentations, are available on:

- The RésEAU website: <https://www.shareweb.ch/site/Water/reseau-resources/webinars>
- The Trend Observatory website : <https://hazu.swiss/bk4xjRWQgv5omi9WdLoQ>