

Background

The Dresden Nexus Conference (DNC), since its inception in 2015, creates dialogue on nexus thinking that fosters research and capacity development activities in the sustainable and integrated management of water, soil, and waste. Water and soil play prominent roles as critical environmental resources in our societies and supply chains; the availability and quality of these resources are increasingly threatened by rapid urbanisation and modern lifestyles. The addition of waste as a resource makes DNC unique among other recent nexus discussions.

Furthering nexus thinking requires looking in-depth not only at the sciences, but also at the science-policy interface, implementation, monitoring, and real-world cases. This requires modelling at various spatiotemporal scales, applying management strategies under different governance contexts, and dealing with the trade-offs between ecosystem functions and services to integrate the role of institutions in policy and decision making. To accomplish all the above, DNC brings together experts from the sciences and practice as well as decision- and policymakers from different fields and various organisations including universities, United Nations (UN) agencies, governmental ministries, the private sector, and civil society from around the world. There was a clear consensus among those who attended DNC2015 and DNC2017 that nexus thinking could play a pivotal role in maximising the environmental resources use efficiency, especially under the conditions of global change.

Circular Economy in a Sustainable Society: Focus of DNC2020

The third DNC is planned to take place in June 2020 under the theme “Circular Economy in a Sustainable Society”. With this theme, DNC2020 envisions to promote the resource perspective of waste in a circular economy with an emphasis on the social dimension. It is interesting to note that both nexus and circular economy concepts were born in the 1980s. However, the close relevance of the two concepts was not noticed until nexus thinking began to absorb the role of waste in the past few years.

With the underlying objective to create systems and products that enable longer lifespans, optimal use, refurbishment, remanufacturing, and recycling, circular economy captures the importance of waste minimisation and utilisation. It is also important to understand that the

optimal utilisation of materials promoted in circular economy mimics cycling in natural ecosystems. The concept of waste does not exist in a natural ecosystem as 'waste' is always transformed by nature into nutrients and soil organic matter for subsequent uptake. These natural transformation mechanisms are complex, but they could guide us to find more sustainable solutions for recovery, recycling, and reuse. The key to the sustainable management of the modern-day wastes may very well depend on how well we understand these natural transformation processes, with the help of the advances in the sciences and technology.

We generate waste during the production, processing, and consumption of other resources. Waste produced by one resource sector could become a raw material for another resource sector. One example is wastewater which is already used to irrigate over 20 million hectares of agricultural land in water-stressed areas around the world. Another example is phosphorus recycling from various sources including wastewater. A not less significant example is applying solid waste-derived compost or other bio-based materials (e.g., sewage sludge, biochar, plant ashes) to soils for improving both the amounts and quality of soil organic matter. These types of interventions support not only food production but also hydrological ecosystem services (i.e. drinking water purification, water retention), biodiversity, and climate change adaptation. These examples demonstrate how waste forms a positive link with water resources management as well as food production. Waste also plays the role of a raw material for energy production in the waste-to-energy and biogas plants around the world.

However, we still have many unanswered questions that may inhibit the circular economy concept getting into a wider audience. One question that comes up often is if the concept can be extended to cover the whole economy, especially when we are still divided, socially and economically, as the Global North and the Global South. While the socioeconomic aspect and technologies might be different from North to South, most resource streams in the current economy do not necessarily follow the same boundaries and often extend to a global or at least to a regional level. Another important question is about the capacities of current establishments to absorb the new concept. Are we able to accommodate the circular economy concept within the existing institutional and governance structures? If not, what changes

should we consider and how do we execute them? These questions go certainly beyond the sciences and technology and clearly remind us about the extensive changes that we need to make in our own thinking to transition from a linear to a circular model.

By considering the maximisation of synergies, minimisation of trade-offs, and enhancement of resource use efficiency, there could be a lot that nexus thinking can offer to solve some of the above issues and hence, accelerate the transition towards a circular economy. In this context, DNC2020 intends to find answers to the following overarching question:

Which suitable concepts does nexus thinking offer to support the transition towards a circular economy?

The concept of circular economy has gained global attention. Many UN Member States view it as a mechanism to support the 2030 Agenda for Sustainable Development and its 17 Sustainable Development Goals (SDGs). In this respect, DNC2020 can be instrumental in helping Member States achieve the SDGs. Therefore, while answering the above question, DNC2020 will place an emphasis on how the Nexus Approach to water, soil, and waste in the context of a circular economy can help achieve the SDGs. DNC2020 will directly address, among others, Goal 2 (*Zero hunger*), Goal 6 (*Clean water and sanitation*), Goal 7 (*Affordable and clean energy*), Goal 11 (*Sustainable cities and communities*), Goal 12 (*Responsible consumption and production*), and Goal 13 (*Climate action*).