

WEF NEXUS

Second winter school on water-energy-nexus successfully concluded

Professionals and emerging scientists in the agriculture, energy and water sectors representing SADC, the US, Italy and the Netherlands gathered at the University of Pretoria for the second water-energy-food (WEF) nexus winter school, held from 8 – 12 August. Mpho Kapari, Luxon Nhamo, and Samkelisiwe Nhlophe-Ginindza reports.

The idea for a WEF nexus winter school first arose in 2020, but plans were scuppered by Covid-19 and the resultant lockdown restrictions. Attended by more than 80 participants, the first winter school was held virtually in 2021. The subsequent relaxation of Covid-19 restrictions allowed the water utilisation in agriculture business unit from the Water Research Commission (WRC) to host the second winter school physically, in collaboration with its strategic partners, the Centre for Transformative Agriculture and Food Systems (CTAFS) of the University of KwaZulu-Natal (UKZN), IHE Delft Institute for Water Education, WaterNet and Global Water Partnership Southern Africa (GWPSA). Other partners include the One CGIAR Nexus Gains Initiative, Jones and Wagener Engineering Associates and the WEF Nexus in Africa Initiative.

Several presenters, mentors, participants (students and working professionals), and assistants attended the winter school. The school offered delegates the opportunity of mentorship, engagement and sharing knowledge on the WEF nexus. The WEF nexus refers to the inter-linkages between water security, energy security and food security and how the actions in any one particular area can have effects in one or both of the other areas. The goal is to drive the holistic comprehension and recognition of this interconnection in order to create and maintain the balance between the three.

As such, the WEF nexus winter school has now formed an integral part of the WEF-Nexus capacity-building development programme. The school is seen as an introductory and foundational course for the comprehension of WEF-nexus concepts and tools. Its objective is to showcase tools for the assessment of trade-offs and synergies in the water, energy, and food sectors. This was introduced on the first day of school where the significance of the nexus was emphasised while referring to the *Limits to Growth* warning regarding the fact that the earth's carrying capacity will eventually be exceeded. It was a hands-on experience for all the participants, focusing on indicators and applications in real-world contexts and countries.

All the participants were divided into five groups, and each was given a country to focus on and to later provide feedback to the rest of the class. This sparked great engagement in the room, the conversation was mainly focused on the reasons why various countries' WEF-Nexus was weaker than others.

The second day was spent with participants tasked to develop a conceptual map based on the case study of their choice. In this case, each participant was expected to relate the WEF-nexus and United Nations Sustainable Development Goals (SDGs) with case studies. The third day was spent on field visits to WRC-funded projects by the Agricultural Research Council (ARC) in Roodeplaat and Silverton. Among others, principal researcher, Dr Nadia Araya, provided a demonstration and presentation of hydroponics to the attendees. The delegates were also treated to a demonstration of the production of biogas as a source of energy.

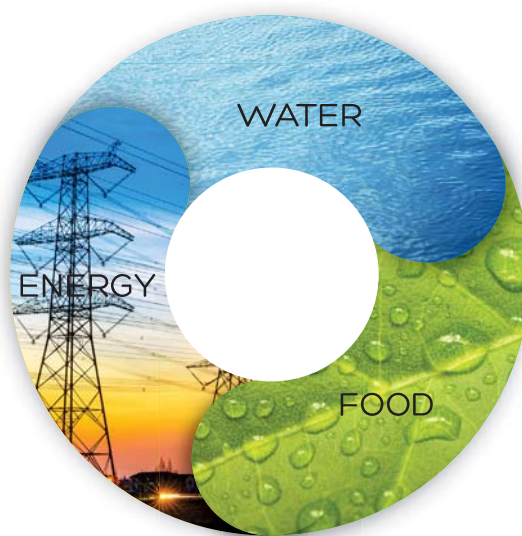


Figure 1: A schematic representation of the Water-Energy-Food nexus.



From left: Dr Luxon Nhamo (WRC), Prof Stanley Liphadzi (WRC), Prof Tafadzwanashe Mabhaudhi (UKZN), Dr Jennifer Molwantwa (WRC), and Prof Sylvester Mpendeli (WRC) at the launch of the book, *Water Energy Food Nexus Narratives and Resource Securities. A Global South Perspective*.

The week also included the launch of the book, *Water Energy Food Nexus Narratives and Resource Securities. A Global South Perspective*. The book, available from Elsevier (<https://doi.org/10.1016/C2020-0-03951-4>) provides a synthesis on the WEF-nexus, focusing primarily on the global south. By presenting concepts, analytical tools, and case studies, the book serves as a practical resource for researchers, policymakers, and practitioners in sustainability and functional roles across all three sectors. The WRC takes pride in spearheading WEF-nexus research, having support research in this realm since 2012. Since then, the focal point has been to integrate SDGs, human and livelihood impacts, and WEF-nexus drivers with the concept itself. As such, during the exercises in the masterclass, each participant was advised to include these in their conceptual models. Also, research findings have guided policy and decision-making to develop coherent strategies needed for transformative resource management and development. This culminated in a mini-summit on the final day, moderated by GWP-SA, where participants presented their country's case studies and policy recommendations. This closes the learning circle of WEF-Nexus concepts, tools, discourse, and their applications to inform policy and investment plans. As it stands, WRC mandate is beginning to move from theory to practice and it seems the winter school is just the beginning.

What is the water-energy-food nexus?

The water-energy-food (WEF) nexus is part of a movement towards more integrative thinking around water resource management. In essence it is a framework that captures the inter-relations, synergies and trade-offs between the demand on water, energy and food, in the context of the emerging constraints of sustainable development in particular regions or systems. Nexus thinking is based on a systems approach and often uses the socio-ecological system as a primary point of reference. The WEF nexus is argued to be valuable for understanding complex systems, and for decision-making to achieve macro-scale sustainable development. However, the ultimate measure of success for achieving sustainable development is measured at a different scale, namely, the improved livelihoods and wellbeing of individuals and households.

Source: www.acdi.uct.ac.za