

Abstract

The Food–Energy–Water Nexus and a Circular Economy

The Food–Energy–Water Nexus is used to describe the complex interconnected nature of food, energy and water resources, each a complicated system. Addressing the Nexus challenge requires considering the interactions between multiple dimensions and scales. Given abundant resources, economic growth has been based on the linear model of taking these and other resources, using the resources, and disposing of the waste streams and products when no longer needed. There is growing recognition that food, energy, and water resources must be managed as an integrated system. The circular economy is used to describe an alternative to the linear model and seeks to remove waste. Similar to the Nexus, there is a growing recognition that there are environmental and business benefits by moving away from the linear economy model and reinventing the value proposition. Addressing the challenges associated with the Nexus and a circular economy will lead to technology innovation and innovations in business, social, and institutional structures. What are the lessons from thinking about the Nexus and a circular economy? What are the implications for process design, plant design, infrastructure, business markets, and institutions? How will we respond?