Benefit of System Science: The Case of Global Energy and Water Security

Pavel Kabat

Director General of International Institute for Applied Systems Analysis (IIASA), Austria, kabat@iiasa.ac.at

ABSTRACT: Narrowly focused, single-disciplinary science alone cannot adequately underpin policies and solutions to resolve major sustainability challenges. One example of the system's approaches is the IIASA's Global Energy Assessment (GEA), multidisciplinary study, whose findings were released during Rio+20 summit in 2012, and which became a major scientific underpinning of the Sustainable Development Goal (SDG) nr. 7 – Affordable and Clean Energy, adopted by the UN General Assembly in September 2015. The GEA links energy to climate, air quality, human health and mortality, economic growth, urbanization, water, land use, and other factors. The GEA scenarios find that energy access for all (by 2050) is possible with co-benefits of limiting warming to 2°C, improving air quality and human health, and stimulating economic growth within a green, inclusive economy framework. Next to GEA, other system-analytical approaches will be presented, including water-energy-food-environment nexus and human capital-education-demography nexus.