

Multi-scale water-energy-food nexus in Asia

Makoto Taniguchi*

Water, energy, and food are the most fundamental resources for human beings and sustainable society, and these resources are interlinked each other. Therefore, we need integrated management and governance for the water-energy-food (WEF) nexus by increasing synergies and reducing trade-offs among the three resources. In addition to these, three resources are connected in multi-spatial scale, such as local, national, regional and global, through food and energy trades, therefore we need multiscale analyses for sustainable resources management. Water footprint and energy footprints through food trade are one of the tools for understanding how each area is inter- and intra- connected on WEF nexus. Belmont Forum SUGI project "METABOLIC" are going to establish three databases of resources, interlinkage, and scenario in multi-spatial scale including Kyoto city, Kyoto prefecture, Kansai area with 7 prefecture, Japan, and Asia. A nexus model to analyze the change of the nexus structure has been made, and assessment of the changes in three resources, carbon emission, environmental and economic impacts are analyzed.

* Research Institute for Humanity and Nature, Kyoto Japan