

Groundwater management for global sustainability

*Makoto Taniguchi¹

1. Research Institute for Humanity and Nature

Groundwater management is important for global sustainability, because of not only large groundwater footprints through global trade of agricultural/industrial materials, but also climate change impacts on groundwater resources directly and indirectly, and carbon emissions through human activities using groundwater. Interactions between groundwater-food-energy nexus and environmental/economical impacts under the conditions of climate change and urbanization, are essential for global sustainability as the center of information among nature, society and humanity. Natural and social tipping points related to groundwater such as land subsidence and saltwater intrusion, regime shifts, and resilience, are the keys for the future of hydrogeology and a sustainable society. Sustainable groundwater management has cultural dependency because of differences in hydroclimate, hydrogeology, water management, and water culture in each area. Therefore, an interaction between humanity and nature is the most important for finding solutions of groundwater management towards sustainability for the current complicated and wicked global environmental problems.

Keywords: groundwater management, global sustainability, groundwater-energy-food nexus