

Managing Urban Water: Addressing impacts from climate change and urbanization

Srikantha Herath,

Academic Program Director, United Nations University Institute for the Advanced Study of Sustainability (UNU-IAS)

Urbanization can increase considerably the frequency and magnitude of floods compared to pre-urbanized states. This is due to increased flow speeds, which make the water accumulate rapidly in urban streams, and increased flow volumes due to the loss of pervious areas and infiltration capacity. Addressing these increased flood risks has been a difficult and costly task with many cities resorting to expensive underground infrastructure. Climate change is now also contributing to additional increases of peak discharge that in turn increase flood risk. On the other hand, source controls that seek to retain water at different locations in the catchment and infiltrate through green infrastructure can offset changes to hydrologic cycle and reduce flood peaks. At the same time they help to recover the local water cycle and contribute to the long-term stability of earth system processes. Due to their potential for up-scaling, these approaches are gaining popularity around the world with USA, Singapore and many other European countries embarking on specific programmes. In Japan, these activities focus on preserving the water cycle. Even though they have started more than 30 years ago, many obstacles prevent their widespread adoption. This presentation explores sustainable approaches for the combined operation of centralized and decentralized systems, addressing three dimensions of sustainability and water cycle stability. It discusses the importance of community participation and what incentives can be used to enhance distributed onsite approaches for water management that can be up scaled-up for flood disaster risk reduction and amenity improvements.



Srikantha Herath is Academic Director and Senior Academic Programme Officer at the Institute for the Advanced Study of Sustainability, United Nations University (UNU-IAS). He is also a Visiting Professor at the Integrated Systems for Sustainability Science (IR3S), University of Tokyo. His previous positions include Associate Professor and Guest Foreign Professor at University of Tokyo (1991-2002), senior research engineer in industry, Tokyo (1988-1991), Research Associate in Asian Institute of Technology, Thailand (1983-1984) and civil and irrigation engineer in Sri Lanka (1980-1981). He engages in research and education in water security, climate change and disaster risk reduction. Current research topics include impacts of global change on urban hydrology, flood forecasting, analysis and damage estimation, sediment transport and water cycle change. One of his major activities is the coordination of the University Network for Climate and Ecosystems Adaptation Research (UNCECAR), which is a coalition of over 20 leading universities of Asia Pacific, engaged in the joint development of educational, research and training programs for building resilience to address adverse global change impacts.