

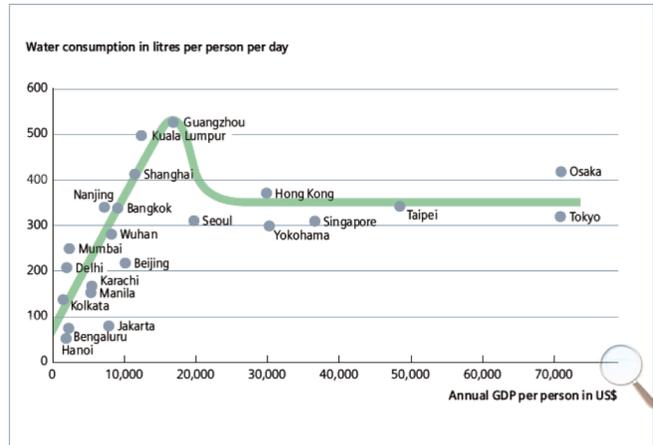
# SAI – Urban Water Challenges – Panelist Summary

Presenter – Peter Rogers, School of Engineering and Applied Sciences, Harvard University  
 Presentation Title - Water for Sustainable Urbanization in the Greater Mekong Region

## Presentation Overview

- Globally speaking, cities and industry use very little of the total available water, but the agricultural activities that support the populations in cities use significant amounts of waters
  - Water use in Asian cities varies considerably. Several poorer cities in Asia use more water per person per day than cities that are relatively wealthier.
  - The environmental footprint of an individual person has changed significantly since the Neolithic period.
  - UN has predicted large growth for Asian megacities, though many of these have been overestimated (World Bank, World Development Report, 2009, p 199)
  - The true need for water – including the water needed for agriculture outside of a city to support its population has too often been ignored.
  - Using a nexus perspective to look at water use in cities opens the analysis to include water use for food (agriculture) and energy production.
- Schematic for Urban Water, Food, Energy Nexus**
- Through applying technological and engineering solutions, meeting the needs for urban water (supply and sanitation) can be met – but this is a very small portion of all the water required – regional agricultural water needs must be considered

## Tipping point in water consumption



[Asian Green City Index, 2011](#)

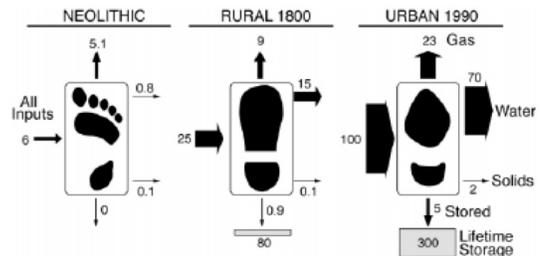
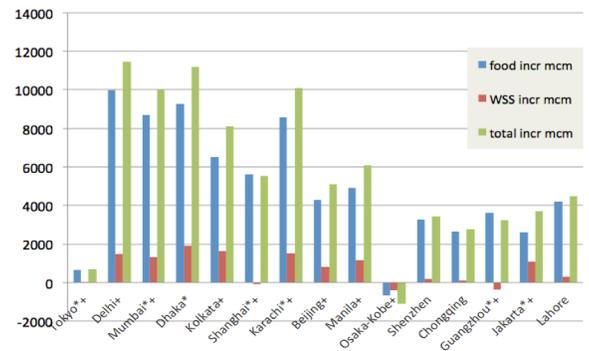


Figure 3 Material budget (tons per year) for an individual human from the Neolithic present. Lifetime storage includes built structures and artifacts. Adapted from Reference 6 and 233.

Decker et al, Energy and Material Flow through the Urban Ecosystem, Ann. Rev. Energy Environ, 2000, 25:685-740



Asian megacities: Incremental water needed for food and MWS from 2010-2025.

### **Key Questions/ Challenges Identified**

- In the Greater Mekong region there are serious limits on water availability, hence the need to conserve water in this sector. This may be quite difficult given the pressures to expand the actual quantities of water supplied, broaden the coverage of the systems and meet the increasing demands for food.

### **Suggested Solutions and Pathways**

- Seek acceptable pathways to improve agricultural water use efficiency– a 10% increase in efficiency for agriculture will double the amount of water than can be made available to cities.
- In some instances, energy and money can effectively create more water – desalination and other technologies and infrastructure investments can increase the amount of water available to cities.

### **Key References**

Olli Varis, "Megacities, Development and Water," *Water Resources Development*, Vol. 22, No. 2, 199-235, June 2006.

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Abel Wolman, the Metabolism of Cities, *Scientific American*, Sept. 1965, pp. 179-190