

Energy Consumption in China's Urban Water Supply System

Authors : Kate Smith, Shuming Liu, Yi Liu, Dragan Savic, Gustaf Olsson, Tian Chang, Xue Wu

Abstract : In a water supply system, a great deal of care goes into sourcing, treating and delivering water to consumers, but less thought is given to the energy consumed during these processes. This study uses 2011 data to quantify energy use for urban water supply in China and investigates population density as a possible influencing factor. The objective is to provide information that can be used to develop energy-conscious water infrastructure policy, calculate the energy co-benefits of water conservation and compare energy use between China and other countries. The average electrical energy intensity and per capita electrical energy consumption for urban water supply in China in 2011 were 0.29 kWh/m³ and 33.2 kWh/cap•yr, respectively. Comparison between provinces revealed a direct correlation between energy intensity of urban water supply and population served per unit length of pipe. This could imply energy intensity is lower when more densely populated areas are supplied by relatively dense networks of pipes. This study also found that whereas the percentage of energy used for urban water supply tends to increase with the percentage of population served this increase is slower where water supply is more energy efficient and where a larger percentage of population is already supplied.

Keywords : china, electrical energy use, water-energy nexus, water supply

Conference Title : ICSR2020 : International Conference on Scientific Research and Development

Conference Location : Chicago, United States

Conference Dates : December 12-13, 2020