Physical risk assessment for urban water supply in a developing country: a case of Mega City Dhaka

ABSTRACT

Water supply access in many developing countries is yet to fulfill Millennium Development Goals. Many local governments are incapable of managing their water resources either due to funding constrains or lack of adequate work force. This often results into poor services with low quality, insufficient and inconsistent delivery of water, leakage and wastage creating water shortages. The water stress resulting from urbanization is more acute in terms of Dhaka city due to its capital city-centric development strategies attracting rural-urban migration, which have resulted into an unplanned horizontal and vertical expansion of the city without having facilities for relevant infrastructures. Therefore, it is important to carry out a risk assessment on existing water supply distribution systems to address the challenges of frequent leaks contributing to cross contamination and system loss arising from unplanned development and aging of pipes. The objective of this study is to identify the physical risk for various zones under Dhaka City based on existing distribution systems and its susceptibility to leakage. The assessment requires analyses of distribution system, its length, number of leaks in the pipes detected every month, population density, number of consumers, characteristics of areas whether industrial or residential areas, low lying and vulnerable to flooding. The study finds that Zone IV possesses a very high risk due to an average leak of 93 per month with 1,571,960 people are exposed to vulnerability while Zone II, III, V, VI having average monthly leaks of 39, 36, 26, and 34 respectively are high risk zones.

Keyword: DWASA; Risk assessment; Water supply; Flood