

Rainwater Harvesting is an Effective Tool for City's Storm Water Management and People's Willingness to Install Rainwater Harvesting System in Buildings: A Case Study in Kazipara, Dhaka, Bangladesh

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Abstract : Water is essential for life. Enormous quantities of water are cycled each year through hydrologic cycle but only a fraction of circulated water is available each year for human use. Dhaka, the capital of Bangladesh is the 19th mega city in the world with a population of over 14 million (World City Information, 2011). As a result the growth of urban population is increasing rapidly; the city is not able to manage with altering situations due to resource limitations and management capacity. Water crisis has become an acute problem faced by the inhabitants of Dhaka city. It is found that total water demand in Dhaka city is 2,240 million liter per day (MLD) whereas supply is 2,150 (MLD). According to Dhaka Water Supply and Sewerage Authority about 87 percent of this supply comes from groundwater resources and rest 13 percent from surface water. According to Dhaka Water Supply and Sewerage Authority it has been found that the current groundwater depletion rate is 3.52 meter per year. Such a fast depletion of the water table will result in intrusion of southern saline water into the groundwater reservoir, depriving this mega city of pure drinking water. This study mainly focus on the potential of Rainwater Harvesting System(RWHS) in Kazipara area of Dhaka city, determine the perception level of local people in installation of rainwater harvesting system in their building and identify the factors regarding willingness of owner in installing rainwater harvesting system. As most of the residential area of Dhaka city is unplanned with small plots, Kazipara area has been chosen as study area which depicts similar characteristics. In this study only roof top area is considered as catchment area and potential of rainwater harvesting has been calculated. From the calculation it is found that harvested rainwater can serve the 66% of demand of water for toilet flushing and cleaning purposes for the people of Kazipara. It is also observed that if only rooftop rainwater harvesting applied to all the structures of the study area then two third of surface runoff would be reduced than present surface runoff. In determining the perception of local people only owners of the buildings were surveyed. From the questionnaire survey it is found that around 75% people have no idea about the rainwater harvesting system. About 83% people are not willing to install rainwater harvesting system in their dwelling. The reasons behind the unwillingness are high cost of installation, inadequate space, ignorance about the system, etc. Among 16% of the willing respondents who are interested in installing RWHS system, it was found that higher income, bigger size of buildings are important factors in willingness of installing rainwater harvesting system. Majority of the respondents demanded for both technical and economical support to install the system in their buildings. Government of Bangladesh has taken some initiatives to promote rainwater harvesting in urban areas. It is very much necessary to incorporate rainwater harvesting device and artificial recharge system in every building of Dhaka city to make Dhaka city self sufficient in water supply management and to solve water crisis problem of megacity like as Dhaka city.

Keywords : rainwater harvesting, water table, willingness, storm water

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