Social Impacts on Rainwater Harvesting – A Case Study in Anuradhapura and Kegalle

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Water scarcity is a global issue with the increasing population. Rainwater harvesting is considered as an environmental friendly, sustainable source of water which can be used for domestic and drinking purposes. Sri Lankan government has framed rules and policies supporting the installation of rainwater harvesting systems, however, implementation and operation of these require the acceptance and willingness of general public. This research focuses on the social impacts on the rainwater harvesting systems installed in dry and wet zones in Sri Lanka. Both, water quality (Physical, Chemical, Bacteriological) and factors affecting it were assessed through the study. The samples were collected from rainwater harvesting systems at Kegalle and Kebithigollewa regions, 30 from each while conducting a questionnaire survey simultaneously. pH values were varied between 5.53-7.19 in Kebithigollewa and 6.49 – 9.55 in Kegalle, may be due to the reactions in the tank material, ferrocement and plastic. All the tested chemical parameters of rainwater samples were within the limits of SLS 614: 2013 guidelines. Total coliform was detected in 50% of Kebithigollewa samples and 100% of Kegalle samples, which may be due to wrong water quality and quantity management practices. Social survey analysis revealed that microbiological parameters were affected mainly by the cleanness level of roof catchment area and atmospheric conditions, such as dust in the environment. Consumers in Kegalle region hesitate to drink rainwater due to lack of confidence as a drinking source. Harvested rainwater can be of consistently high quality through the selection of appropriate catchment, storage materials and the application of post-cistern treatment. A water safety plan should be implemented on rainwater harvesting systems to identify the risks, to improve the water quality and to mitigate quality degradation. A social awareness programs can be recommended to increase the rainwater consumption and willingness.

Keywords: Rainwater harvesting, Water quality, Social survey, Dry and wet zones, Water safety plan