

Water demand management: a review on the mechanisms to reduce water demand and consumption

ABSTRACT

Securing water supplies in urban areas is a major challenge for policy makers, both now and into the future. In mitigating threats of a water shortage, a number of initiatives and programs have been implemented, which includes water demand management (WDM). A number of studies have analyzed the usage of various mechanisms to manage water demand. In this paper, we review the implementation and the effectiveness of the mechanisms of price, technology, communication /education and restriction in reducing domestic water demand. Based on the review, we have found that the effectiveness of the mechanisms varies from one mechanism to another, where rainwater harvesting system was found to yield the greatest water demand reduction, while communication/education yields the lowest. Despite the different approach, most of the cities reviewed used integrated implementation of the mechanisms to reduce water demand, which shows that the mechanisms need to be combined in order to maximise water demand reduction. However, currently there are still very limited studies conducted on the effective implementation of integrated mechanisms. Thus, more work is needed in order to strategize the usage of these mechanisms in maximising water demand reduction. It is expected that this study can assist water authorities in designing and conducting an effective WDM program in order to maximise water demand reduction.

Keywords: Water Demand Management; Price; Technology; Restriction; Communication; Education; Mechanisms; Sustainability; Sustainable City