

WWCH 2017 PROBLEM DESCRIPTION

Problem Title

How can rainwater harvesting be implemented to obtain an alternative water resource in Ho Chi Minh metropolitan area, Mekong delta?

Contact Information

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1. Basic information

Ho Chi Minh City, Mekong delta, Vietnam

Ho Chi Minh City is a metropolitan city with close to 10 million of population. It is the largest city in Vietnam with very rapid economic growth, contributing up to 37% of the national GDP yearly. It is located in southern Vietnam at latitude of 10°N and altitude close to the sea level. The Ho Chi Minh metropolitan area has a land area of 2095 km² and a quite high population density of around 4000 capita/ km². It has a tropical climate with an average daily highest temperature of >30 °C year round. It receives a plenty of precipitation of around 2000 mm/ year. Despite the relatively high precipitation rate and the presence of an abundant surface water source, Dong Nai and Saigon rivers, they have been suffering from water quantity and quality problems because of the saltwater intrusion and the high population density, inadequate wastewater management, and loadings from non-point pollution sources. Further, the demand from industries, businesses, and households surpasses the current supply distribution capacities with the problem going to be exacerbated in the future with ever increasing demand for water.

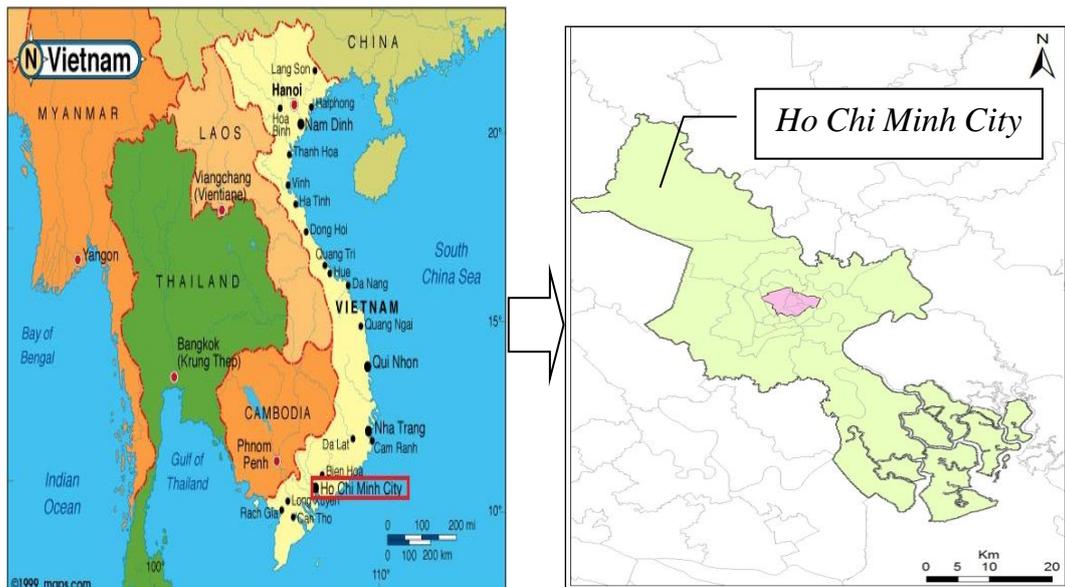


Figure 1. Map of Ho Chi Minh City

2. Water Circumstances (Optional)

The Dong Nai and Saigon rivers, the city's main tap water sources, are seriously polluted by the release of industrial wastewater, domestic sewage, surface runoff, and saltwater intrusion recently. The metropolitan area uses 2.2 billion liters of water every day, which cannot be fully supplied by the current water supply infrastructure. It is claimed that urban water supply service can only satisfy 77% of urban residents and 21% of suburban dwellers. Therefore, groundwater exploitation is widely in practice in the area, depleting the supplementary source and causing land subsidence. Groundwater in the area is also quite often found to be seriously polluted.

3. Problem description

Because of the limitation of the major water sources in the Ho Chi Minh metropolitan area in terms of both quantity and quality, it is of urgency to find an alternative water resource that can support the large population in the area. The water problem in the metropolitan area is threatening the public health of the residents and causing many serious economic and social conflicts. Even with the currently produced, low quality of tap water, the water supply is quite often suspended because of the saltwater intrusion to the rivers. From Jan 25 to Mar 24 in 2017 water collection from the Saigon river was suspended for 15 times.

Rainwater harvesting has been suggested as a way to obtain alternative water resource in the region. Vietnam has a tradition of rainwater harvesting, so it can be easily accepted in its culture. The Ho Chi Minh metropolitan area receives a relatively high yearly precipitation of around 2000 mm. Rainwater is a water resource with reliable quality as it has a limited contact with pollution sources in regions affected by humans. However, to use harvested rainwater as a substitute for tap water, a large and clean collection surface is required, which is hardly applicable in the highly populated and urbanized area. To use rainwater as a water resource for domestic use, a technological breakthrough to place a large collection surface in the populated region and to maintain its cleanness is needed.