World Academy of Science, Engineering and Technology
International Journal of Environmental and Ecological Engineering
Vol:17, No:01, 2023

The Ideal for Building Reservior Under the Ground in Mekong Delta in Vietnam

Authors : Huu Hue Van

Abstract : The Mekong Delta is the region in southwestern Vietnam where the Mekong River approaches and flow into the sea through a network of distributaries. The Climate Change Research Institute at University of Can Tho, in studying the possible consequences of climate change, has predicted that, many provinces in the Mekong Delta will be flooded by the year 2030. The Mekong Delta lacks fresh water in the dry season. Being served for daily life, industry and agriculture in the dry season, the water is mainly taken from layers of soil contained water under the ground (aquifers) depleted water; the water level in aquifers have decreased. Previously, the Mekong Delta can withstand two bad scenarios in the future: 1) The Mekong Delta will be submerged into the sea again: Due to subsidence of the ground (over-exploitation of groundwater), subsidence of constructions because of the low groundwater level (10 years ago, some of constructions were built on the foundation of Melaleuca poles planted in Mekong Delta, Melaleuca poles have to stay in saturated soil layer fully, if not, they decay easyly; due to the top of Melaleuca poles are higher than the groundwater level, the top of Melaleuca poles will decay and cause subsidence); erosion the river banks (because of the hydroelectric dams in the upstream of the Mekong River is blocking the flow, reducing the concentration of suspended substances in the flow caused erosion the river banks) and the delta will be flooded because of sea level rise (climate change). 2) The Mekong Delta will be deserted: People will migrate to other places to make a living because of no planting due to alum capillary (In Mekong Delta, there is a layer of alum soil under the ground, the elevation of groundwater level is lower than the the elevation of layer of alum soil, alum will be capillary to the arable soil layer); there is no fresh water for cultivation and daily life (because of saline intrusion and groundwater depletion in the aquifers below). Mekong Delta currently has about seven aquifers below with a total depth about 500 m. The water mainly has exploited in the middle - upper Pleistocene aquifer (qp2-3). The major cause of two bad scenarios in the future is over-exploitation of water in aquifers. Therefore, studying and building water reservoirs in seven aquifers will solve many pressing problems such as preventing subsidence, providing water for the whole delta, especially in coastal provinces, favorable to nature, saving land (if we build the water lake on the surface of the delta, we will need a lot of land), pollution limitation (because when building some hydraulic structures for preventing the salt instrutions and for storing water in the lake on the surface, we cause polluted in the lake)..., It is necessary to build a reservoir under the ground in aquifers in the Mekong Delta. The super-sized reservoir will contribute to the existence and development of the Mekong Delta.

Keywords : aquifers, aquifers storage, groundwater, land subsidence, underground reservoir
Conference Title : ICGAS 2023 : International Conference on Groundwater and Aquifer Storage
Conference Location : London, United Kingdom
Conference Dates : January 23-24, 2023