

Flood Prevention Strategy for Reserving Quality Ground Water Considering Future Population Growth in Kabul

Authors : Said Moqem Sadat, Saito Takahiro, Inuzuka Norikazu, Sugiyama Ikuo

Abstract : Kabul city is the capital of Afghanistan with a population of about 4.0 million in 2009 and 6.5 million in 2025. It is geographically located in a narrow plain valley along the Kabul River and is surrounded by high mountains. Due to its sharp geological condition, the city has been suffering from floods caused by storm water and snow melting water in the rainy season. Meanwhile, potable water resources are becoming a critical issue as the underground water table is decreasing falling rapidly due to domestic usage, industrial and agricultural activities usage especially in the dry season. This paper focuses on flood water management in Kabul including suburban agricultural area considering not only for flood protection but also: 1. To reserve the quality underground water for the future population growth. 2. To irrigate farming area in dry season using storm water ponds in rainy season. 3. To discharge city contaminated flood water to the downstream safely using existing channels/new pipes. Cost and benefit is considered in this study to find out a suitable flood protection method both in rural area and city center from a view point of 1 to 3 mentioned above. In this analysis, cost mainly consists of lost opportunity to develop lands due to flood ponds in addition to construction and maintenance one including connecting channels for water collecting/discharging. Benefit mainly consists of damage reduction of flood loss due to counter measures (this is corresponding cost) in addition to the contribution to agricultural crops. As far as reservation of the ground water for the future city growth is concerned, future demand and supply are compared in case that the pumping amount is limited by this irrigation system.

Keywords : cost-benefit, hydrological modeling, water management, water quality

Conference Title : ICLMED 2016 : International Conference on Land Management and Economic Development

Conference Location : Montreal, Canada

Conference Dates : July 14-15, 2016