

Climatic Change Impacts on the West Bank Groundwater Resources

(The Case of Eastern Basin)

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Abstract

Recently, the climatic change is becoming a vital aspect which affects water system (both surface and ground) which in turn has a severe impact on the yield of the wells and springs which are used for water supply. This aspect could highly affect the inter-annual variability in the recharge of the ground water aquifers. The inter-annual variability emerges as a major control on the reliable output of the springs as it has been noticed in many springs especially in the summer (dry period) and in different places. The main aim of this Paper is to highlight the impact of the climatic change on the West Bank ground water resources (the case of Eastern Basin).

The only source for water supply in the West Bank is groundwater. Within the West Bank there are three groundwater basins, Eastern Basin, Western Basin and Northeastern Basin. None of these basins fully within the West Bank political boundaries however, the Recharge areas of all basins are within West Bank boundaries. The main aquifer system in these basins is the Cretaceous Limestone aquifer systems, the aquifers are karst faulted system.

The aquifer systems rely on recharge from rainfall, the aquifer outcrops mainly along the Ramallah-Hebron Anticline where the highest rainfall occurs. Average rainfall on the highlands ranges from 500 to 700 mm/year. In the last five years, rainfall dropped significantly, total average annual rainfall dropped by 20 to 30 %. As a result significant drop in the water table was noticed in the well fields, around 5 to 10 m drop in water elevation at some wells due to recent drought. The average recharge volume from rainfall has dropped by 10 to 20 %.

On the other Hand, water demand in the West Bank is expected to increase substantially in the future. For example, the estimated domestic water demand for the West Bank is expected to grow by more than 50% until year 2020. According to the 1993 Oslo Accords between Palestinians and Israel, the Palestinians may obtain additional volumes of water from the Eastern Aquifer Basin to cover part of the demand. In the light of this, the Eastern Basin will suffer from severe drawdown which will lead to deterioration in the water quality such as drop in water table and salinity increase. Therefore, it is highly recommended to apply a long-term management plan for water extraction and to conduct a regular monitoring program on both water elevations and water quality in order to sustain this source.