

Use of GIS in defining the management strategies for groundwater resources of Quetta valley, Pakistan

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Pakistan is blessed with a variety of topographic features ranging from higher mountains and steep slopes in the north, to the coastal areas in the south, including plains, plateau and deserts in between. Pakistan has plenty of valuable natural resources like lush green forests, rivers, lakes, fertile land, natural gas, and mineral deposits. These resources play a vital role in the economy of the country. Among the natural resources, water is most important for life and, being the main water source, groundwater management needs special attention. Conventional approach adopted to suggest management strategies for groundwater resources failed to provide sustainable solutions, therefore, professional approach for management and conservation of groundwater is urgently needed and required. Geographic Information System has become an essential tool for studies, where real world application is required using real time data.

This report deals with the spatial information about water table and temporal changes that occurred in groundwater regime between 1967 and 2007 in the Quetta valley of Baluchistan province. Real time data have been used in assessing the qualitative and quantitative changes in water table with respect to time and space. Results of the analysis show that water table in more than 80% of the area has gone down and in some areas it has dropped more than 100 ft. Continuous over-draft has resulted in excessive groundwater abstraction and presently only 20-30% of the farmers have reach to the groundwater. Geographic Information System is the only tool that can display “what is happening where?” in this alarming situation.