

## **Rainwater harvesting for agriculture development in Barani southern district Karak, Khyber Pakhtunkhwa, using geospatial technology**

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Water acts as the most necessary feature in daily lives which is reducing at a higher rate in both rural and urban sectors and the reason is rapid growth in farming and household necessities. Hydrological modelling subsurface water acts as the most important feature because of shortage in better quality groundwater and larger use for household, farming and commercial utilization. This study is mainly focused on rainwater harvesting in southern District of Khyber Pakhtunkhwa District Karak. Water is the main problem of District Karak that is why the agriculture productivity is less than amount of available land for crops. The study is also focused on agriculture development by proposing different sites for rainwater harvesting using latticed technology GIS and RS. The research is based on both lab work and field work. A field survey has been arranged to verify all the results using handheld GPS; the lab work includes all the analysis done by ArcGIS software and other Geospatial software. Meanwhile allocating appropriate scoring the considered variables based on accessibility, condition of the locality has been shown in map. Final statistics of the weighted overlay is categorized into five grades including poor, low, good, high and lastly the very high grade. The analysis reveals that 95.205518 sq.km area contains very high, 877.0313 sq.km consist of high, 1286.237563 sq.km include good, 351.079124 sq.km contains poor potential to suitability according to rainwater. This work is strongly recommended to Soil and water conservation department because they have the mandate to harvest rainwater. Designers, developers and administrators can be equally benefited from processed maps to allocate Dam, conservation structures and check dam sites within national water policy.

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