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Site Suitability Analysis for Multipurpose Dams Using Geospatial Technologies

Authors : Saima Iftikhar Rida Shabbir, Zeeshan Hassan

Abstract : Water shortage, energy crisis and natural misfortunes are the glitches which reduce the efficacy of agricultural ecosystems especially in Pakistan where these are more frequent besides being intense. Accordingly, the agricultural water resources, food security and country's economy are at risk. To address this, we have used Geospatial techniques incorporating ASTER Global DEM, Geological map, rainfall data, discharge data, Landsat 5 image of Swat valley in order to assess the viability of selected sites. The sites have been studied via GIS tools, Hydrological investigation and multiparametric analysis for their potentialities of collecting and securing the rain water; regulating floods by storing the surplus water bulks by check dams and developing them for power generation. Our results showed that Siat1-1 was very useful for low-cost dam with main objective of as Debris dam; Site-2 and Site 3 were check dams sites having adequate storing reservoir so as to arrest the inconsistent flow accompanied by catering the sedimentation effects and the debris flows; Site 4 had a huge reservoir capacity but it entails enormous edifice cost over very great flood plain. Thus, there is necessity of active Hydrological developments to estimate the flooded area using advanced and multifarious GIS and remote sensing approaches so that the sites could be developed for harnessing those sites for agricultural and energy drives.

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