

## **IMPACT OF BUILT ENVIRONMENT ON SURFACE RUNOFF: A CASE STUDY OF PESHAWAR, PAKISTAN**

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### **Abstract**

This paper attempts to explore the challenging research area of the expansion of built environment, its trend and impacts on the increase of surface runoff generation in district Peshawar, Pakistan. The study area has been experiencing rapid population growth and urban expansion which has been continuously consuming the fertile farmland and replacing the natural ground by impermeable surfaces. The required data for this study was acquired through primary and secondary sources from various organizations. Remote Sensing (RS) and Geographical Information System (GIS) methods were used to monitor and detect the development of built environment and its probable impacts on the accelerated surface runoff. Analysis reveals that Physical, infrastructural and socio-economic developments were identified as the major factors of land take and conversion of natural ground into Impervious Surface Cover (ISC). Such alterations have been producing negative effects on urban environs and water resources of the study area. Findings of the study further reveals that population of Peshawar has increased from 1.113 million in 1981 to 4.2 million in 2017. Rapid population growth is responsible for the increase of built-up areas, urban expansion and infrastructural developments, during the study period (1981-2014) have increased the impermeable surfaces from 3.70 % to 16.27 %. As a result, it has also intensified the surface runoff which has in certain cases created urban and flash floods. Rapid urban growth and the resultant physical and infrastructural developments need to be properly checked and monitored so that its adverse impacts on surface runoff generation could be minimized.

**Keywords:** Built environment, ISC, population growth, urbanization, RS, GIS, Surface runoff.