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### Impacts of climate change on the water resources of Azad Jammu & Kashmir, Kashmir Himalaya

Sardar Muhammad Rafique Khan  
Climate Change Center, Pakistan

The Himalayan region is one of the important global freshwater resources. The frequency and intensity of the current extreme weather events and new vulnerabilities with differential spatial and socio-economic impacts on communities are expected to increase as a result of climate change. The impact would be particularly disastrous for developing countries like Pakistan. The consequences of this change in global climate are already being witnessed in the Himalayan glaciers and glacial lakes. The Himalayan glaciers are retreating at rates ranging from 159 to 309 ha per year, resulting into disappearance of many small glaciers. As a result of retreating glaciers, the lakes are growing in number and size in the Himalaya. Identification of these glaciers and glacial lakes in the mountainous terrain of Azad Jammu & Kashmir (AJ&K) was made with the help of image interpretation techniques of remote sensing which was physically verified in most of the areas. A comparison was made on the basis of data taken from 2000, 2010 and 2017 images. The study revealed that the area of the glaciers have reduced from 15111 ha to 11350 ha from 2000 to 2017 with a total decrease of 3741 ha in last 17 years at the rate of 220 ha per year. The current rate of glacial retreat can result into vanishing of these water resources in next 51 years. Presence of these glaciers and glacial lakes has been observed dominant over 3500-4500 m elevation range in Neelum district of AJ&K. Other than the glaciers, the number of glacial lakes has increased from 50 (499 ha) to 60 (556 ha) from 2000 to 2017 in the study area, where 03 lakes are declared with most potential threat of GLOF in near future for the lives and livelihoods of mountain communities. In order to conserve these important mountain resources for future use and to protect the mountain inhabitant communities from the threat of GLOFs, effective measures and regular monitoring is required which will help in water resource management and disaster management, especially in the context of climate change in the Himalaya.

#### Biography

Sardar Muhammad Rafique Khan has recently completed his PhD from University of Azad Jammu & Kashmir, Muzaffarabad, Pakistan. He is the Deputy Director at Climate Change Center of Planning & Development Department, Government of Azad Jammu & Kashmir, Pakistan. He has published more than 05 papers and has contributed as co-author in development of AJ&K climate change policy, strategies and action plans for the state of Azad Jammu & Kashmir.

ddcccjkk@gmail.com

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