

PRESENT STATUS AND PROBLEMS OF HYDROLOGY OF THE MOUNTAINOUS AREAS OF PAKISTAN

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The hydrology of the mountainous areas of Pakistan and related problems have been studied. About 60 percent of the area of Pakistan is covered by mountains. Most mountainous areas lie in the Indus river basin which occupies a major part of Pakistan. The water resources of Pakistan mainly depends upon the Upper Indus river system. The Upper Indus river basin is a part of the Hindu Kush-Karakoram-Himalayan range of mountains. The main objective of the study is to look into the Indus basin in general and the upper Indus basin in particular to study the status and problems of hydrology in the area.

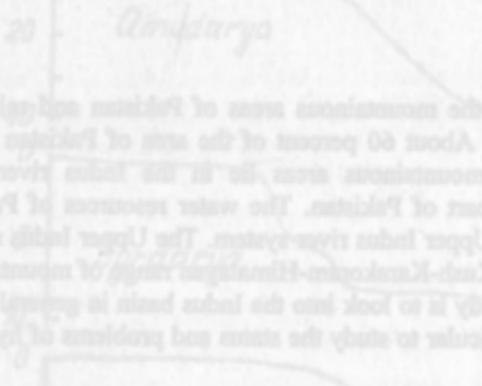
The mountainous regions of Pakistan may be divided into two main weather systems: the monsoon and the westerly waves. Meteorologically, Pakistan lies in the tropical region. Snowfall occurs during the winter season on all mountainous regions with altitudes above 7,000 feet. However, under conditions of cold air flow, snowfall may also occur at altitudes of from 4,000 to 5,000 feet. Snowfall on the mountains starts towards the end of November, and may continue till March at high altitudes only. However, at altitudes of more than 6,000 feet, snowfall may occur even during the summer months. The glacier cover of the mountainous headwater of the Indus is not more than 5 per cent. For the main streams (above Attock), it amounts to approximately 10 per cent. About 70 to 80 per cent of the annual flow of the Indus river is due to snow and glaciermelt.

The problems of Pakistan's mountainous regions resemble those of other countries in the region to a great extent. They are related to hydrological

disasters, poor accessibility, unfavourable climatic conditions, poor management, financial constraints, lack of technical support, etc. The study discusses these problems and their possible solutions.

The present status of mountain hydrology has been reviewed in detail. Various technical projects currently underway for the development of the area, initiated by different agencies in Pakistan, have been discussed. On the basis of this review, shortcomings and problems of the current projects are indicated and preliminary conclusions are drawn for the solutions to these problems. The study may provide guidelines for future planning and development in the mountainous areas of Pakistan.

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The mountainous regions of Pakistan may be divided into two main weather systems: the monsoon and the westerly waves. Meteorologically, Pakistan lies in the tropical region. Snowfall occurs during the winter season on all mountainous regions with altitudes above 7000 feet. However, under conditions of cold air flow, snowfall may also occur at altitudes of from 4000 to 5000 feet. Snowfall in the Himalayas starts towards the end of November and may continue till March at high altitudes only. However, at altitudes more than 6000 feet, snowfall may occur even during the summer months. The glacier cover of the mountainous highlands of the Indus is not more than 5 per cent. For the main streams (above Attock), it amounts to approximately 10 per cent. About 70 to 80 per cent of the annual flow of the Indus river is due to snow and glaciers.

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