

**GOVERNMENT OF INDIA
SCIENCE AND TECHNOLOGY
LOK SABHA**

STARRED QUESTION NO:450

ANSWERED ON:27.04.2005

SHRINKING OF GLACIERS OF HIMALAYAS

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Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

- (a) the approximate number of glaciers in the Indian region of the Himalayas ;
- (b) whether the Glaciers in the Himalyan region are shrinking gradually;
- (c) if so, whether the Government has conducted any study in this regard;
- (d) if so, the outcome thereof ;
- (e) the details of the programmes launched as per the recommendations of Dr. Arunachalam Committee report;
- (f) the extent to which such programmes have achieved their aims and objectives; and
- (g) the steps taken or proposed to be taken by the Government to prevent fast melting of glaciers?

Answer

MINISTER OF STATE (INDEPENDENT CHARGE) OF THE MINISTRY OF SCIENCE & TECHNOLOGY AND MINISTER OF STATE (INDEPENDENT CHARGE) OF THE DEPARTMENT OF OCEAN DEVELOPMENT (SHRI KAPIL SIBAL)

(a) to (g): A statement is laid on the 'Table of the House'.

STATEMENT AS REFERRED IN REPLY TO PARTS (a) to (g) OF LOK SABHA STARRED QUESTION NO. 450 FOR REPLY ON 27.04.2005 REGARDING "SHRINKING OF GLACIERS OF HIMALAYAS"

(a) Indian Himalayan region contains about nine thousand glaciers.

(b) Yes Sir, the Glaciers in the Himalayan region are melting gradually. The studies carried out have indicated that Glaciers in Himalayan Region are passing through a phase of recession. It is a well established fact that glaciers in general recede or build up in response to various natural causes including variations in the microclimate of the region in which they are located. Presently, the earth's glaciers are passing through an interglacial phase whereby the ice bodies throughout the world are shrinking. The recession of glaciers is a natural process sensitive to climatic fluctuation. The factors known to cause enhancement in the rate of recession of the glaciers world over may be subnormal snowfall, global warming, less severe winter, or a combination of all of them induced by various natural and anthropogenic factors. The recession of Glaciers is a cyclic process and, presently we are in an interglacial phase of their recession.

(c) to (d) The studies carried out by Geological Survey of India in the Himalayan Region from the beginning of twentieth century, still continuing, have indicated that the majority of Glaciers in Himalayan Region are passing through a phase of recession which is a world wide phenomenon. The rate of recession in different climatic zones of the Himalaya is found to be different in different years. The rate of ice cave retreat in the Gangotri glacier during 1935, 1956, 1962, 1971, 1973 to 1977, 1990 and 1996 have been 10.15M for Larger ice caves, 27.33M, 30.84M and 28.33M, for three different categories of small ice caves respectively. The area vacated by these Glaciers studied by Geological Survey of India, however, has shown increase in the average rate of recession and since 1935 these Glaciers have lost an area of 0.57 S.Q.K.M Wadia Institute of Himalayan Geology has conducted the study to monitor the shrinkage of Dokriani Bamak Glacier in Uttarkashi District of Uttaranchal. According to this study Dokriani Bamak Glacier is receding at an average rate of 17 meters per year and the glacier volume has reduced by 20% from 1962 to 1995 due to this shrinkage.

(e) to (f) The Department of Science & Technology initiated an R & D programme on Himalayan glaciology as per the recommendations of Dr V.S.Arunachalam Committee. The programme is continuing since 1986-87. This programme envisages studies on understanding the behaviour of glaciers and their interaction with climate and hydrological system. Initially, 10 expeditions were taken to various Glaciers to collect multidisciplinary data for specific studies on geomorphology, geochronology, mass-balance, sediment load and snow-melt runoff. During the last two decades such studies have been carried out on two major glaciers namely, Gangotri Glacier and Dokriani Bhamak Glacier. The broad areas of study carried out include remote sensing, microwave remote sensing, isotopic and chemical studies, palaeo-climate / climate change, monitoring and modelling of melt runoff, microbial biodiversity and environmental quality studies. The programme has been very successful in generating valuable data and creating infrastructure facilities on Glacier sites for their monitoring as also in imparting training to young researchers.

(g) The measures to reduce the recession of glaciers due to anthropogenic reasons include conservation activities such as afforestation, removal of garbage, restrictions on human interference on glaciers and promotion of sustainable eco-tourism.