GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION No. 664
TO BE ANSWERED ON WEDNESDAY, 3RD DECEMBER, 2025

ADVERSE EFFECTS OF CLIMATE CHANGE ON HIMALAYAS

664. DR. INDRA HANG SUBBA:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether there is any existing scheme of the Government for investigation and study of adverse effects of climate change on Himalayas and if so, the details thereof;
(b) the measures taken/being taken to monitor glacier retreat in the Himalayas;
(c) the details of the number of national institutions and universities that have been involved/funded by the Government in studying Himalayan glaciers;
(d) the details of the number of glaciers in Sikkim that have been monitored in real time; and
(e) whether the Government has established/proposed to establish any Center of Excellence for study of Himalayan glaciers and if so, the details thereof?

ANSWER
THE MINISTER OF STATE (INDEPENDENT CHARGE) FOR
MINISTRY OF SCIENCE AND TECHNOLOGY
AND EARTH SCIENCES
(DR. JITENDRA SINGH)

(a) Yes Sir. The Ministry of Earth Sciences (MoES) through its autonomous institute, the National Centre of Polar and Ocean Research (NCPOR), has been monitoring Himalayan glaciers under the Cryosphere and Climate program, a component of the Polar Science and Cryosphere Research (PACER) sub-scheme. Under this program, NCPOR has been systematically monitoring limited representative glaciers in the western and eastern Himalaya to understand differential glacial response due to climate change and its impact on downstream hydrology.

Department of Science and Technology (DST) has supported various research & development projects for studying Himalayan Glaciers under the National Mission for Sustaining Himalayan Ecosystem (NMSHE) and National Mission on Strategic Knowledge for Climate Change (NMSKCC). Recently, the National Glacial Lake Outburst Floods (GLOF) Risk Mitigation Programme (NGRMP) phase -I was initiated by NDMA for implementation initially in four states (Himachal Pradesh, Uttarakhand, Sikkim and Arunachal Pradesh) and two UT (J&K and Ladakh). NGRMP has a provision to establish many Early Warning Systems in above said states for strengthening the mechanism to enhance GLOF resilience through local–level interventions.

(b) Several Indian institutes/universities/organizations funded by the Government of India through Ministry of Earth Sciences (MoES), Department of Science & Technology (DST), Ministry of Environment, Forest and Climate Change (MoEFCC), Ministry of Mines (MoM) and Ministry of Jal Shakti (MoJS) monitor Himalayan glaciers for various scientific studies including glacier retreat and have reported accelerated heterogeneous mass loss in Himalayan glaciers. The mean retreat rate of Hindu Kush Himalayan glaciers is 14.9 ± 15.1 meter/annum (m/a); which varies from 12.7 ± 13.2 m/a in Indus, 15.5 ± 14.4 m/a in Ganga and 20.2 ± 19.7 m/a in Brahmaputra River basins (the figure after ± are the standard deviations or spread in the data). However, glaciers in the Karakoram region have shown comparatively minor length change (-1.37 ± 22.8 m/a).

MoES through its autonomous institute, the National Centre for Polar and Ocean Research (NCPOR) has been monitoring six glaciers in the Chandra basin (2437 km^2 area) in western Himalaya since 2013. A state-of-the-art field research station 'Himansh' established in Chandra basin and operational since 2016 for conducting field experiment and expeditions to glaciers. The glacier inventory prepared by NCPOR for the Chandra basin shows that it has lost about 6% of its glacial area during last 20 years. Annual rate of retreat of Chandra basin glaciers varies from 13 to 33 meter/year during last decade.

(c) Over more than 20 national institutions/ state and central universities are currently conducting research on Himalayan glaciers including National Centre for Polar and Ocean Research (NCPOR)-MoES, Geological Survey of India (GSI), Wadia Institute of Himalayan Geology (WIHG), Indian Institute of Remote Sensing (IIRS), G.B. Pant National Institute of Himalayan Environment (GB-NIHE), Centre for Cryosphere and Climate Change Studies (C4S) at National Institute of Hydrology (NIH), National Remote Sensing Centre (NRSC), Divecha Centre for Climate Change, Indian Institute of Science (IISc), Jawaharlal Nehru University (JNU), University of Kashmir (UoK), University of Delhi, University of Lucknow, Various Indian Institute of Technologies (IITs) (Bombay, Roorkee, Ropar, Bhubaneswar, Indore), Various Indian Institute of Science Education and Research (IISER's) (Pune, Bhopal), Sikkim University, Centre for Earth Science and Himalayan Studies (CES & HS), Nagaland University, Central University of Rajasthan, Hemvati Nandan Bahuguna Garhwal University, Tezpur University.

(d) Two glacial lakes (South Lhonak and Shako Cho) have been monitored in real time in Sikkim.

(e) Yes Sir. Three Centers of Excellence (CoE) for Glacial Studies were established at the Universities of Sikkim, Tezpur and Kashmir by the Department of Science & Technology (DST), Govt. of India under the National Mission for Sustaining the Himalayan Ecosystem (NMSHE).

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