

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 1792
TO BE ANSWERED ON WEDNESDAY, 13TH DECEMBER, 2023**

RISE IN EARTH TEMPERATURE

1792. SHRIMATI QUEEN OJA:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government has taken any steps to limit the Earth's temperature that is to rise by 1.5 degree celsius by the end of 2023;
- (b) if so, the details thereof and if not, the reasons therefor;
- (c) whether the main impact of rise in temperature is severe drought, heat waves and less rain, if so, the details thereof;
- (d) whether it is true that if the temperature of the Earth rises the ice glaciers will melt and is likely to prove as a big danger for human life; and
- (e) if so, the facts thereof?

**ANSWER
THE MINISTER OF EARTH SCIENCES
(SHRI KIREN RIJJU)**

- (a)-(b) The Government has taken due note of the rise in temperature of the planet. Ministry has assessed the impact of climate change across the country covering all aspects of regional climate change

To hold the planet's long-term average temperature to below the 1.5-degree threshold, the world will have to reach net zero emissions by the year 2050, according to the Intergovernmental Panel on Climate Change (IPCC). Despite not being a significant contributor to the problem of climate change, India has demonstrated a proactive stance by surpassing its fair share of efforts to address this global issue. The Indian government remains steadfast in its commitment to combat climate change through various programs and initiatives, such as the National Action Plan on Climate Change (NAPCC) and State Action Plan on Climate Change (SAPCC). These plans encompass specific missions in areas like solar energy, energy efficiency, water conservation, sustainable agriculture, health, Himalayan ecosystem preservation, sustainable habitat development, Green India, and strategic knowledge for climate change. The NAPCC serves as a comprehensive framework for all climate-related actions. Additionally, India has taken a proactive role in fostering international collaborations through initiatives such as the International Solar Alliance and the Coalition for Disaster-Resilient Infrastructure.

- (c) The IPCC Assessment Report 6 (AR6) documents that temperature rise to date has already resulted in profound alterations to human and natural systems, including increases in droughts, floods, extreme weather; sea level rise; and biodiversity loss which are causing unprecedented risks to vulnerable persons and populations. Even the MoES assessment report documents that the surface air temperature over India has risen by about 0.7 °C during 1901–2018 which is accompanied with an increase in atmospheric moisture content. The sea surface temperatures in the tropical Indian Ocean have also increased by about 1 °C during 1951–2015.
- (d) Yes Sir. Glaciers are highly sensitive to temperature changes, and rising temperatures will enhance glacier melt.
- (e) The melting of glaciers can have significant implications for human life and the environment, such as water availability, rising sea levels etc. Melting glaciers can initially increase water flow, but reduced glacier mass can lead to decreased water availability later, affecting agriculture, drinking water, and ecosystems dependent on consistent water sources. Increased glacier melt may also trigger several hazards like snow-ice avalanches, debris-flows, glacial lake outburst floods (GLOFs), resulting in devastating flash floods downstream.

Several Indian institutes/universities/organizations funded by the Government of India monitor Himalayan glaciers and have reported accelerated heterogeneous mass loss as given below:

- 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 glacier inventory prepared by National Centre for Polar and Ocean Research (NCPOR) for the Chandra basin shows that it has lost about 6% of its glacial area during last 20 years and 2.4 meter water equivalent (m.w.e.) to 9 m w.e. ice mass during 2013-2021.
- The glaciers in Bhaga basin lost huge ice mass in the range 6 m.w.e. to 9 m.w.e. during 2008-2021. Annual rate of retreat of Chandra basin glaciers vary from 13 to 33 meter/year during last decade.
- Glaciers in the Garhwal Himalaya shows significant heterogeneities in glacier thinning and surface flow velocity patterns. The observed retreats are 15-20 m/year for the Dokriani Glacier in Bhagirathi basin, 9-11 m/year Chorabari Glacier in Mandakini basin, ~12 m/year at Durung-Drung and ~ 5.6 m/year at Pensilungpa glaciers in Suru basin.
