

GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 2751
ANSWERED ON 19/12/2024

RISE IN EARTH'S TEMPERATURE

2751. SHRI SANJAY KUMAR JHA:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether Government has taken any steps to help in limiting the earth's temperature likely to rise by 1.5 degree celsius by the end of 2024;
- (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 a fact that if the temperature of the earth rises the ice glaciers will melt and are likely to pose a grave danger to human life; and
- (e) 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)-(b) The ministry has noted the rise in the planet's temperature and 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 below the 1.5 °C 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 the 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, heatwaves, floods, extreme weather, sea level rise, and biodiversity loss, which are causing unprecedented risks to vulnerable persons and populations. Also, ministry's assessment report on climate change documents that the surface air temperature over India has risen by about 0.7 °C during 1901–2018, accompanied by an increase in atmospheric moisture content. The sea surface temperature in the tropical Indian Ocean increased by about 1 °C from 1951–2015.

- (d) Yes. 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 hazards like snow-ice avalanches, debris flows, glacial lake outburst floods (GLOFs), and 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 the National Centre for Polar and Ocean Research (NCPOR) for the Chandra basin shows that it has lost about 6% of its glacial area during the 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 the Bhaga basin lost a huge ice mass in the range 6 m.w.e. to 9 m.w.e. during 2008-2021. The annual rate of retreat of Chandra basin glaciers varied from 13 to 33 m/year during the last decade.
- Glaciers in the Garhwal Himalaya show significant heterogeneities in glacier thinning and surface flow velocity patterns. The observed retreats are 15-20 m/year for the Dokriani Glacier in the Bhagirathi basin, 9-11 m/year for the Chorabari Glacier in the Mandakini basin, ~12 m/year at Durung-Drung and ~ 5.6 m/year at Pensilungpa glaciers in Suru basin.
