GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION NO. 997
ANSWERED ON 13/02/2025

SCIENTIFIC STUDIES CARRIED OUT IN ARCTIC REGION

997. SHRI MILIND MURLI DEORA:

Will the Minister of **EARTH SCIENCES** be pleased to state:

(a) details regarding various scientific schemes and research carried out in the Arctic Circle, especially those towards tracking the patterns of Arctic ice melting;
(b) details regarding the implications for India's Third pole arising from the studies carried out regarding the rate of melting ice in the Arctic Circle;
(c) details regarding the total fund allocated and utilized for the purposes carrying out research in the Arctic Circle over the last five years; and
(d) the steps undertaken by Government in response to the research work carried out by our scientists in the Arctic Circle?

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

(a) The Ministry of Earth Sciences, through its autonomous institute, the National Centre for Polar and Ocean Research (NCPOR), Goa organizes the Indian Arctic expeditions and manages the Indian Arctic Research Station Himadri. Till date, 15 successful Indian Scientific Expeditions to the Arctic with participation from the academicians, scientists and researchers have been carried out. These expeditions are multidisciplinary and multi-institutional in nature.

Various atmospheric and oceanic measurements have been undertaken to understand the association between Arctic ice melt and Indian Monsoon through teleconnection.

India has deployed a mooring IND-Arc in the inner Kongsfjorden to measure the different oceanic parameters to understand the causes and changes in atmospheric and oceanic properties due to melting Arctic ice.

Indian scientists have participated in several scientific cruises to the Arctic Ocean in collaboration with the Norwegian Polar Institute (NPI) and the Korean Polar Research Institute (KOPRI) to study biophysical processes involved in and during the Arctic Sea ice melting.

Indian scientists conducted two field works in the Canadian High Arctic region in 2023 and 2024 to understand the role of permafrost as a potential reservoir of significant human health microbes.

More than 200 scientific research publications have come out and more than a dozen Ph.D. theses have been awarded/ongoing from the Indian Arctic Program since its inception.

(b) Both the regions - the Arctic and Himalayas - are climatically and ecologically sensitive and contain a large cryosphere (ice-covered regions). Global warming is adversely affecting both regions through ice melting. Various studies based on observational, modeling and past climate data from the Arctic have shown that Arctic sea-ice and Arctic temperatures are linked to the Indian monsoon through atmospheric and oceanic teleconnections. The linkage will cause disruption in the Indian monsoon, which in turn will affect the precipitation/snowfall over the Himalayas.

(c) The total amount of funding allocated and utilized for the purposes of carrying out research in the Arctic Circle over the last five years has been about Rs. 39.00 Crores.

(d) India's engagement with the Arctic region has been consistent and multidimensional. On 17 March 2022, India unveiled its Arctic policy document titled 'India and the Arctic: building a partnership for sustainable development'. The policy lays down six pillars: i) strengthening India's scientific research and cooperation, ii) climate and environmental protection, iii) economic and human development, iv) transportation and connectivity, v) governance and international cooperation, and vi) national capacity building in the Arctic region.

Implementation of India's Arctic Policy is overseen by an inter-ministerial Empowered Arctic Policy Group.

To expand India's scientific interests in the Arctic region, regular winter expeditions in the Norwegian Arctic has been initiated since December 2023 and scientific research and operations are carried out in Arctic by occupying the Indian research station Himadri for more than 300 days since December 2023.

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