GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SCIENCE AND TECHNOLOGY
LOK SABHA
UNSTARRED QUESTION NO. 2955
ANSWERED ON 17/12/2025

TECHNOLOGY DEVELOPMENT FOR DISASTER MANAGEMENT AND CLIMATE RESILIENCE

2955. SHRI ANUP SANJAY DHOTRE:

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

(a) whether the Government is leveraging science and technology to address health, agriculture, and environmental challenges and if so, the details thereof;

(b) whether technologies are being developed for disaster management and climate resilience and if so, the details thereof;

(c) the manner in which innovations are translated into affordable products and solutions for rural areas;

(d) the details of the role of Government in promoting Sustainable Development Goals through technology; and

(e) the details of outreach programs to increase public awareness of scientific advances?

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

(a) Government has launched nine (9) National Missions under the National Action Plan on Climate Change (NAPCC) for leveraging Science and Technology to address health, agriculture and environmental challenges. The NAPCC provides an overarching framework for all climate actions through the implementation of different National missions in specific thematic areas, including Solar energy, Energy efficiency, Water, Sustainable agriculture, Himalayan ecosystem, Sustainable Habitat, Green India, Strategic knowledge for Climate Change and Health.

Under NAPCC, the Department of Science and Technology (DST) is implementing two (2) National Missions, *viz*. National Mission for Sustaining the Himalayan Ecosystem (NMSHE) and National Mission of Strategic Knowledge for Climate Change (NMSKCC), which are dedicated to promote scientific research & other developmental activities in different thematic areas.

Under NMSKCC, Centres of Excellence (CoEs) have been established at International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), Hyderabad; Banaras Hindu University (BHU), Varanasi; Tamil Nadu Agricultural University (TNAU), Coimbatore and Indian Council of Medical Research – National Institute of Malaria Research (ICMR-NIMR), New Delhi for coordinated research on Agriculture, Health, Climate adaptation and Resilience. Furthermore, a Task Force project has been also supported to carry out research on Himalayan Agriculture under the NMSHE. In addition, the Department of Biotechnology (DBT) is supporting research for improving the crops and human health.

(b) A number of technologies are being developed for Disaster management and Climate resilience with Government support. DST and the Ministry of Earth Sciences (MoES) have supported research on Early Warning Systems for cyclones, floods, landslides, heatwaves, lightning, drought, and Glacial Lake Outburst floods (GLOFs). DST has also supported the bilateral (India-Dutch) collaborative projects focused on Floods and Drought extremities in both India and the Netherlands for the development of Digital Twins for Adaptive Urban Resilience to Water Extremities, Low-cost Disaster Emergency Services for Communities and AI enabled smart forecasting systems. Moreover, DST has established a dedicated CoE on Disaster Risk Reduction at Indian Institute of Technology, (IIT) Roorkee. Besides this, the Indian Council of Agricultural Research (ICAR) is promoting "smart technologies", precision farming, remote sensing, Geospatial tools, digital agriculture, and automation to make farming more efficient, resilient, and sustainable. Further, DST and DBT have also supported research projects for the development of Climate-Resilient varieties of rice and chickpea.

(c) Through various initiatives of the Government, innovations are being translated into affordable and accessible products for rural areas. DST and DBT promotes grassroot innovations into community solutions for Sanitation, Water, Energy, agriculture, and small-scale livelihoods to foster inclusive and sustainable rural development through society based programs. The Office of the Principal Scientific Adviser (PSA), implements an initiative, the Rural Technology Action Group (RuTAG) to adapt and deploy technologies tailored for rural needs e.g., affordable Water purifiers, Energy-efficient devices and Agricultural tools.

Besides this, the Government also supports startups and entrepreneurship through incubation networks under its various flagship programmes such as National Initiative for Developing and Harnessing Innovations (NIDHI), Atal Innovation Mission, S&T

Entrepreneurship Development initiatives, and Common Facility Centres.

(d) DST promotes Research in different sectors for improvement in livelihoods of weaker sections, expanding access to Water, Clean energy, Sanitation, infrastructure, and skills through technology intervention, which directly support multiple Sustainable Development Goals (SDGs). Another initiative 'Global Pilot Programme on STI (Science, Technology and Innovation) for SDGs' launched by the Office of the Principal Scientific Adviser (PSA), aims to prepare national and state-level roadmaps to drive SDG targets, prioritise key technologies for integration into planning.

(e) The Government of India has several outreach programs to increase public awareness of scientific advances. DST's National Missions on Climate Change, i.e., NMSHE and NMSKCC, have a dedicated mandate for capacity building and public awareness on the impact of climate change and related issues. Under these missions, State Climate Change Cells (SCCCs) have been established in 30 States/UTs to improve outreach and community awareness. Additionally, DST's CoEs on Climate Change are also mandated to conduct public awareness programs. Further, the National Council for Science & Technology Communication (NCSTC) of DST also implement programs to increase public awareness for scientific advancement through mass media, digital content, training of science communicators, and grassroot science-communication.

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