GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOK SABHA
UNSTARRED QUESTION NO. 4532
TO BE ANSWERED ON WEDNESDAY, 20th AUGUST, 2025

MAPPING OF LANDSLIDE PRONE AREAS

4532. ADV. ADOOR PRAKASH:

Will the Minister of Earth Sciences be pleased to state:

(a) the present status of the mapping of landslide prone areas in the country;
(b) the details of areas identified with risk category of the same, State wise;
(c) the details of measures taken/action plan proposed by the Government for high-risk areas considering the growing frequency of natural calamities; and
(d) whether the Government has any plan to provide special assistance to the States having high risk landslide prone areas 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) Being the nodal agency for landslide studies, Geological Survey of India **(**GSI) has completed the landslide susceptibility mapping under the National Landslide Susceptibility Mapping (NLSM) programme on 1: 50,000 scale for the entire landslide prone hilly/ mountainous areas of the country including the Himalayan region, the Tertiary Belt of North-eastern India and Western Ghats, spreading over parts of 19 states/ UTs covering an area of about 4.3 lakh sq. km. areas. The landslide susceptibility maps show the total area classified into high, moderate and low zones based on their relative likelihood of susceptibility to landslide initiation, and can be used as a vital geo-information tool for regional land-use planning in landslide prone fragile slopes. GSI also collected information on 91,000 historical landslides using both remote sensing (RS) and field-based source data. A total number of 33,904 landslides are field validated and the database is continuously being updated with the new landslide data collected year-wise as part of post-disaster studies. The landslide susceptibility map and the landslide inventory generated are uploaded in the GSI's National Geoscience Data Repository (NGDR) and Bhukosh map portal for free download by all the stakeholders. This is also available for viewing in GSI's Bhusanket portal as well as Bhooskhalan mobile app.

Building on the NLSM baseline, GSI has upscaled into meso-scale (1:10,000/1:5,000) landslide susceptibility mapping. This initiative focuses on completing 200 critical sectors identified through NLSM and state government consultations by 2028. By the end of field season 2024-25, GSI has completed work on meso scale (1:10,000) in 160 critical sectors/ localities. These high-resolution maps support planning in vulnerable hill regions, allowing for more informed decisions in infrastructure development, even aiding in implementing zoning regulations and ensuring community safety.

In addition, GSI has carried out a number of post-disaster landslide studies as well as detailed site-specific landslide investigations on 1:1000/2000 scale to suggest suitable remedial measures for landslides and unstable slopes. During last five years (2019-2024), GSI has carried out 45 detailed site-specific investigations of the chronic landslides across the country.

(b) The entire landslide prone areas of the country have been categorized based on the landslide susceptibility status. The state-wise details of landslide susceptibility status are provided in the table given below:

	area in 1000 sq. Km.					
State	**Low**	**Low %**	**Moderate**	**Moderate %**	**High**	**High %**
Andhra Pradesh	1	48	1	46	0	6
Arunachal Pradesh	33	47	27	38	10	15
Assam	21	87	3	11	1	2
Goa	3	71	1	26	0	3
Himachal Pradesh	17	41	12	30	12	29
Jammu & Kashmir (UT)	19	65	7	23	3	12
Karnataka	26	82	4	14	1	4
Kerala	10	52	7	35	3	13
Ladakh (UT)	17	42	15	37	8	21
Maharashtra	15	53	12	41	2	6
Manipur	13	54	7	28	4	18
Meghalaya	20	90	2	9	0	1
Mizoram	13	59	6	25	4	16
Nagaland	8	48	5	31	4	21
Sikkim	2	40	2	42	1	18
Tamil Nadu	8	75	2	19	1	6
Tripura	1	93	0	5	0	2
Uttarakhand	18	46	12	32	9	22
West Bengal	1	42	1	41	1	17
Total	**245**	**56**	**126**	**29**	**63**	**15**

(c) Considering the growing frequency of natural calamities including landslides, GSI is actively involved in developing Regional Landslide Forecasting System (RLFS) for landslide prone areas of the country in phased manner since 2020. This forecasting system is built on probabilistic rainfall thresholds, Numerical Weather Prediction (NWP) models and observed rainfall data for timely forecast/ warnings for rainfall induced landslides. For this purpose, GSI has collaborated with Indian Meteorological Department (IMD), National Centre for Medium Range Weather Forecasting (NCMRWF), National Remote Sensing Centre (NRSC) of ISRO and all concerned State Disaster Management Authorities (SDMAs) for data integration, forecasting and model validation.

In line with this effort, GSI, as part of the multi consortium LANDSLIP project, developed a prototype regional Landslide Early Warning System (LEWS) for India. Since 2025 monsoon, GSI has been providing operational and experimental landslide forecast bulletins for 21 districts in eight states. The State-wise details of districts where forecast bulletins are being issued during 2025 (both experimental and operational) are as follows:

State (No. of Districts)	District Name (s)
Operational forecast and ground testing	
West Bengal (02)	Darjeeling, Kalimpong
Tamil Nadu (01)	Nilgiris
Experimental forecast for ground testing (shared with SDMAS & DDMAs for testing purpose only)	
Sikkim (06)	Soreng, Pakyong, Mangan, Gyalshing, Gangtok, Namchi
Kerala (02)	Wayanad, Idukki
Karnataka (01)	Kodagu
Uttarakhand (04)	Rudraprayag, Chamoli, Uttarkashi, Tehri Garhwal
Himachal Pradesh (02)	Shimla, Kinnaur
Nagaland (03)	Peren, Dimapur, Kohima

(d) Yes. The Government of India does provide special assistance to states with high-risk landslide-prone areas. This includes financial support through the National Landslide Risk Mitigation Programme and the Aapda Mitra scheme implemented by the National Disaster Management Authority (NDMA), trains community volunteers in disaster response. It aims to equip volunteers with the skills to address immediate community needs after a disaster, focusing on disaster prone areas. The scheme is a central sector scheme, meaning it's fully funded by the central government.

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