GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOKSABHA
UNSTARRED QUESTION NO. 1820
TO BE ANSWERED ON WEDNESDAY, 27TH JULY, 2022

INCIDENTS OF LANDSLIDE

1820. DR. MANOJ RAJOR1A:
SHRI SUMEDHANAND SARASWATI:

Will the Minister of EARTH SCIENCES be pleased to state:

(a) whether the Government is paying paid any attention to the increasing number of landslide incidents occurring in the country in the recent past, State-wise;
(b) if so, the reasons thereof;
(c) the efforts being made by the Government to check the incidents of landslides at religious places like Kedarnath and Amarnath as there should be no loss of life or property; and
(d) whether the Government has conducted any study regarding the water retention capacity of the soil in different areas of the country 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)and (b) As per the inputs from Ministry of Mines, Geological Survey of India (GSI) has collected data of 3782 nos. of major landslides that occurred since 2015 to 2022 in different States/ UT, which have impacted lives and/ or infrastructure. These landslide data were collected by GSI through onsite field investigations under the Post-Disaster Studies programme taken up annually by GSI in all the landslide prone States/ UT as per GSI's Standard Operating Procedure, mainly in response to the requests received from the concerned State Governments.

The state-wise details of 3782 major landslide incidences, collected so far have been tabulated below. For all these landslides, during field validation, GSI collected vital preliminary geoparametric attributes for each of the landslides, including studying its impacts, future vulnerability, and indicating the requirements for future detailed geoscientific investigations, if any. All the above data are also used for updating GSI's existing national landslide inventory.

Landslides occurred and studied during last seven years	
State Name	**Number of landslides**
Arunanchal Pradesh	48
Assam	169

Meghalaya	48
Mizoram	15
Tripura	10
Manipur	21
Nagaland	36
Sikkim	31
Himachal Pradesh	101
Jammu & Kashmir (UT)	184
Uttarakhand	33
Karnataka	194
Tamil Nadu	196
Kerala	2239
Maharashtra	81
West Bengal	376
Total	**3782**

Besides the above, GSI has carried out the National Landslide Susceptibility Mapping (NLSM) Programme since 2014-15 and prepared 1: 50,000 scale landslide susceptibility mapping of the total area of 4.3 lakh sq. km. in different landslide prone States/ UTs (Annexure-I). During NLSM, GSI also collected historical information on **86459**nos. of landslides polygons using both remote sensing (RS) and field-based source data, out of which, **29738** landslides have already been field validated by GSI. This huge historical national landslide inventory is continuously being updated with the new landslide data collected year-wise as part of Post-disaster studies, as mentioned in the preceding para.

From the post disaster investigations of the landslides it is revealed that major trigger of landslides is due to unprecedented high rainfall. The other important geo-factors such as terrain character, slope forming material, geomorphology, land-use /land-cover in different terrain etc.are the preparatory factors for initiation of landslides. The anthropogenic causes such as unprotected slope cuts, blocking of drainages etc. has also been reported in many of the slides.

(c) Yes.GSI carried out various geoscientific studies around religious places like Kedarnath and Amarnath and the details are given below-

- National Landslide Susceptibility Mapping in 1:50,000 scale showing the areas prone to high, moderate and low susceptibility to landslides for the hilly areas (excluding permafrost regions) in J & K, Uttarakhand and Himachal Pradesh has been completed and shared with stakeholders and available for free download from the Bhukosh portal (www.gsi.gov.in).
- In 2013, GSI carried out reconnaissance geotechnical studies of landslide prone area along the Shri Amarnath Yatra routes (Pahalgam - Chandanwari - Shri Amarnath Cave and Shri Amarnath Cave – Baltal route) and the report was submitted to the authorities of Shri AmarnathJi Shrine Board (SASB).

Annexure-I

Status National Landslide Susceptibility Mapping (NLSM) Programme

State/ UT	Target area proposed (km^2)	Target area completed so far (km^2)	Landslide polygons mapped (Nos.)	Landslides field validated (Nos.)
Assam	24100	24144	527	598
Meghalaya	22020	22601	1525	791
Mizoram	21040	21864	4221	2003
Tripura	1300	1367	57	56
Manipur	22500	23250	2405	1548
Nagaland	16320	17294	2742	1554
Sikkim	4980	4979	3379	651
Himachal Pradesh	42100	42108	17127	6420
Jammu & Kashmir (UT)	28700	28890	7465	2174
Ladakh (UT)	40000	40065	838	166
Uttarakhand	39000	39009	14782	4927
Karnataka	30620	31323	1248	1278
Goa	3540	3546	76	76
Tamil Nadu	10080	10549	782	863
Kerala	19330	19301	1396	3016
Andhra Pradesh	1150	1124	29	29
Maharashtra	28190	29191	1134	1152
West Bengal	2970	2980	1554	1529
Arunanchal Pradesh	71210	71228	25172	907
Total	**429150**	**434813**	**86459**	**29738**

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