

**GOVERNMENT OF INDIA  
MINISTRY OF EARTH SCIENCES  
LOK SABHA  
UNSTARRED QUESTION No. 1803  
TO BE ANSWERED ON WEDNESDAY, July 27, 2016**

**VULNERABILITY TO LANDSLIDE**

**1803. SHRI R. PARTHIPAN:  
SHRI LAKHAN LAL SAHU:**

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

- (a) whether large parts of the country's land mass are vulnerable to landslide and land erosion;**
- (b) if so, the details thereof;**
- (c) whether any study has been conducted by the Government/NonGovernment agency in this regard;**
- (d) if so, the details thereof; and**
- (e) whether the Government has taken any precautionary measures and if so, the details thereof?**

**ANSWER**

**MINISTER OF STATE FOR MINISTRY OF SCIENCE AND TECHNOLOGY AND  
MINISTRY OF EARTH SCIENCES  
(SHRI Y. S. CHOWDARY)**

**(a-b) Yes Madam. Landslides are a common geomorphic hazards in Himalayan states which is generally triggered by heavy rainfall almost every year and also often by major earthquakes in this active Himalayan Fold-Thrust-Belt. Available landslide susceptibility and inventory maps along important pilgrimage routes, road-corridors, river basins and site-specific large scale (1:2000 or larger) landslide maps have already revealed that within these Himalayan states, parts of many mountainous tracts and locations are highly vulnerable and susceptible to landslides.**

**The highly unstable zones studied by Geological Survey of India (GSI) in various zones are given in Annexure-I.**

**(c-d) Yes Madam. GSI has launched a project to create a landslide compendium for north western Himalayas. The project started on 1 April, 2014. The details of project outcome are given below.**

- The compendium includes all major landslide studies carried out by GSI till 2013 in the North West (NW) Himalayas in the States of Uttarakhand, Himachal Pradesh and Jammu & Kashmir.**
- The type of information included in the compendium are (i) Landslide Susceptibility Maps on scale 1:50,000 covering parts of river basins such as Ramganga, Ganga, Yamuna, Bhagirathi, Sutlej, Beas, Ravi, Chenab river basin etc; (ii) Landslide Susceptibility Maps on scale 1:50,000/25,000/10,000 covering**

major towns such as Pithoragarh, Bageshwar, Joshimath, Vaishno Devi, Ranikhet, Shimla etc; (iii) Landslide Susceptibility Maps on scale 1:50,000 covering important pilgrimage road corridors such as Yamunotri yatra route, Gangotri yatra route, Kedarnath-Badrinath yatra route, Kailash-Mansarovar yatra route, Harkidun road, Narkanda-Rampur-Khab Road, Kangra-Dharmshala-Sihunta-Dalhousie Road, Kalka-Shimla Narrow Gauge Railway Route, Arakot-Rohru-Narkanda-Theog-Chail-Solan Road etc; (iv) site specific landslide investigations including detailed geological maps; (v) post disaster reconnoitry geological assessment of major landslide events including the recent 2013 Uttarakhand Disaster; and (vi) inventory of major landslides in a tabular form.

(e) **National Disaster Management Authority (NDMA) has published guidelines on Landslides and Snow Avalanches on its website. Following are the precautionary measures for landslides that are under wide circulation through print and visual media:**

- **Prepare tour to hilly region according to information given by weather department or news channel.**
- **Minimize movement around landslide path ways during rainy days or downstream valleys having past history of landslides.**
- **Keep drains clean,**
- **Inspect drains for - litter, leaves, plastic bags, rubble etc.**
- **Keep the weep holes open.**
- **Grow more trees that can hold the soil through roots and their by minimizing erosions.**
- **Identify areas of rock fall and subsidence of buildings, cracks that indicate landslides and move to safer areas. Even muddy river waters indicate landslides upstream.**
- **Notice such signals and contact the nearest Tehsil or District Head Quarters.**
- **Ensure that toe of slope is not cut, remains protected, don't uproot trees unless re-vegetation is planned.**
- **Listen for unusual sounds such as trees cracking or boulders knocking together.**
- **Stay alert, awake and active (3A's) during the impact or probability of impact and locate safe shelters**

**Unstable zones studied by GSI in Uttarakhand**

<b>Unstable zones</b>		
<b>1</b>	<b>Okhimath Tehsil, Rudraprayag-Kedarnath road, district Chamoli</b>	<b>10</b>
<b>2</b>	<b>Okhimath Tehsil, Haridwar-Badrinath road, and Rudraprayag-Kedarnath road, district Chamoli.</b>	<b>35</b>
<b>3</b>	<b>Haridwar-Badrinath road, district Chamoli</b>	<b>14</b>
<b>4</b>	<b>Karnapryag-Gwaldam road, district Chamoli</b>	<b>4</b>
<b>5</b>	<b>Haridwar-Badrinath-Mana road, district</b>	<b>2</b>
<b>6</b>	<b>Reni village, Ganai village, Joshimath-Marlari road, district Chamoli</b>	<b>4</b>
<b>7</b>	<b>Tharali village, district Chamoli</b>	<b>1</b>
<b>8</b>	<b>Karmi village, district Almora</b>	<b>2</b>
<b>9</b>	<b>Jalikhana-Jiakhan road district Almora</b>	<b>1</b>
<b>10</b>	<b>Bareilly-Almora road district Almora</b>	<b>2</b>
<b>11</b>	<b>Nainital: Sher ka Danda Hill, Naina Peak, Balia nala and Jangali village</b>	<b>3</b>
<b>12</b>	<b>Barielly-Kathgodam road, district Nainital</b>	<b>5</b>
<b>13</b>	<b>Almora-Pithoragarh road, district Almora</b>	<b>4</b>
<b>14</b>	<b>Kinwani Slide, Distt, Pauri Garhwal</b>	<b>1</b>
<b>15</b>	<b>Bhagirathi Valley, district Uttarkashi</b>	<b>181</b>
<b>16</b>	<b>Bhagirathi Valley, district Uttarkashi</b>	<b>54</b>
<b>17</b>	<b>Kannauldiya gad, district Uttarkashi</b>	<b>3</b>
<b>18</b>	<b>Haridwar-Badrinath road, district Chamoli</b>	<b>4</b>
<b>19</b>	<b>Rudraprayag-Kedarnath road, district Chamoli</b>	<b>1</b>
<b>20</b>	<b>Haridwar-Badrinath road and Rudraprayag-Kedarnath road, district Chamoli</b>	<b>2</b>
<b>21</b>	<b>Durlokh village, district Pithoragarh</b>	<b>1</b>
<b>22</b>	<b>Pithoragarh-Almora road, district Almora</b>	<b>1</b>
<b>23</b>	<b>Dharchula-Tawaghat road, Tawaghat village, district Pithoragarh</b>	<b>8</b>
<b>24</b>	<b>Kedarnath township</b>	<b>1</b>

### Unstable zones studied by GSI in Himachal Pradesh

<b>Unstable zones</b>		
<b>1</b>	<b>Satluj river valley, district Kinnaur</b>	<b>87</b>
<b>2</b>	<b>Naina Devi Temple area, district Bilaspur</b>	<b>1</b>
<b>3</b>	<b>Bilaspur-Kiratpur road, district Bilaspur</b>	<b>1</b>
<b>4</b>	<b>Simla town, district Simla</b>	<b>3</b>
<b>5</b>	<b>Kulu and Mandi districts</b>	<b>19</b>
<b>6</b>	<b>Satluj river valley, district Kulu</b>	<b>4</b>
<b>7</b>	<b>Satluj river valley, Simla and Kulu districts</b>	<b>30</b>
<b>8</b>	<b>Kulu and Kinnaur districts</b>	<b>20</b>
<b>9</b>	<b>Baira dam site, districts Chamba</b>	<b>2</b>
<b>10</b>	<b>Beas valley, district Kangra</b>	<b>175</b>
<b>11</b>	<b>Dalhousie town, district Chamba</b>	<b>2</b>
<b>12</b>	<b>Near Sonwara Rly. St., Kalka-Simla Rail route, district Solan</b>	<b>1</b>
<b>13</b>	<b>Near Kandon, district Sirmur</b>	<b>1</b>

### Unstable zones studied by GSI in Jammu & Kashmir

<b>1</b>	<b>Landslide at village Tak, Batote, District Ramban, Jammu and Kashmir.</b>
<b>2</b>	<b>Landslide at village Channgabra, Batote, District Ramban, Jammu and Kashmir.</b>
<b>3</b>	<b>Landslide at village Rakh Jhrog along PMGSY road, Batote, District Ramban, Jammu and Kashmir.</b>
<b>4</b>	<b>Landslides on Road Karu-Tangtse, District Leh, Jammu and Kashmir.</b>
<b>5</b>	<b>Landslides on Shyok-Agham Road, District Leh, Jammu and Kashmir.</b>
<b>6</b>	<b>Landslides on Rema-Rewari Road, District Leh, Jammu and Kashmir.</b>
<b>7</b>	<b>Landslide along Shri Mata Vaishno Devi Shrine Board track (near Devidwar, Ardhkwari), District Reasi, Jammu and Kashmir.</b>
<b>8</b>	<b>Landslide at village Sadal, District Udhampur, Jammu and Kashmir.</b>
<b>9</b>	<b>Landslide at village Sheindera, District Poonch, Jammu and Kashmir.</b>
<b>10</b>	<b>Landslide at village Upper Potha, District Poonch, Jammu and Kashmir.</b>
<b>11</b>	<b>Landslide at village Chela and Dangri, District Poonch, Jammu and Kashmir.</b>
<b>12</b>	<b>Landslide at Kheri on National Highway, District Udhampur, Jammu and Kashmir.</b>
<b>13</b>	<b>Landslide at Shri Mata Vaishno Devi Bhawan, Katra, District Reasi, Jammu and Kashmir.</b>
<b>14</b>	<b>Landslide at Tringula, Batote on national highway, District Ramban, Jammu and Kashmir.</b>
<b>15</b>	<b>Landslide at village Dharam, Gool, District Ramban, Jammu and Kashmir.</b>