

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
LOKSABHA
UNSTARRED QUESTION NO. 3013
TO BE ANSWERED ON FRIDAY, 6th AUGUST, 2021**

ACTIVE FAULT MAPPING STUDY

**3013. SHRI CHANDRA SEKHAR BELLANA:
SHRIMATI CHINTA ANURADHA:**

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) whether the Government has undertaken any active fault mapping study with the Indian Institute of Technology (IIT), Kanpur and if so, the details thereof;
- (b) the details of the signatures of active faults observed based on the analysis of satellite imageries and State/UT-wise break up of such locations thereof;
- (c) whether the geological field survey or ground-truthing at all such sites has been undertaken to validate the identified features from the satellite data and if so, the details thereof;
- (d) whether the results generated through MT survey (orientation, extent and depth of faults) can be utilized for the future seismic-resistant designing of hospitals and schools, industrial units and buildings; and
- (e) 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) Yes Sir, a coordinated project titled “Active Fault, Paleoseismic and crustal deformation in NW and Central Himalaya, India: An integrated approach towards Seismic Hazard Assessment” was sanctioned to IIT, Kanpur in March 2016 at a total cost of ~Rs. 4.54 Crores for a period of 5 years. Participating institutes along with IIT-Kanpur in this project are Punjab University, Institute of Seismological Research (ISR), Gandhinagar, and L. D. College of Engineering, Ahmedabad. The project is going to be concluded by September 2021.
- (b) Disposition of Active Faults and their imagery based on satellite data are available for the area. As per the objective of the project, active faults were identified and mapped using satellite data and ground-truthing was carried out in the areas like Central Kumaon Himalaya (Uttarakhand); around Chandigarh-Pinjore (Chandigarh); Ropar-Hajipur-Pathankot (Punjab), and in Kangra Valley (Himachal Pradesh). Studies in the areas covering the Dehra Dun foothills and Central Himalaya from east of Kaladungi till west of Nepal is under progress.
- (c) Yes Sir, Validation of active faults has been done in following areas:
 - (i) Kangra Valley: along Kangra Valley Fault

(ii) Pinjore: along Pinjore Garden Fault & Jhajra Fault

(iii) Near Thapli: along Khetpurali Taksal Fault

(iv) Near Hajipur (left bank of Beas): along Himalayan Frontal Thrust

(v) Near Gabua-Dhol and Nandpur: along Himalayan Frontal Thrust in Central (Kumaon) Himalaya.

Further, identification in other areas covering the Dehra Dun foothills and Central Himalaya from east of Kaladungi till west of Nepal are under progress.

(d) and (e) Bureau of Indian Standard (BIS) has already provided the norms for earthquake-resistant design for structures in India. This standard provides the minimum design force for the earthquake resistant design of hospitals and schools, industrial units and buildings using seismo-geotechnical parameters estimated for shallow layers up to few hundred meters. High rise buildings and major industrial units would require detailed site specific investigations for accurate seismic hazard assessment. The orientation, extent and depth of faults estimated by seismological and geophysical surveys are used for better characterisation of seismic source and for estimate of seismic hazards of sites. MT surveys are used for detailed characterization of deeper crustal faults, which may shed light on orientation, extent and depth of deeper faults and structural heterogeneities associated with those faults in integration with seismological surveys.
