

**GOVERNMENT OF INDIA
MINISTRY OF EARTH SCIENCES
RAJYA SABHA
UNSTARRED QUESTION No.1768
TO BE ANSWERED ON THURSDAY, DECEMBER 01, 2016**

RESEARCH ON EARTHQUAKE RISK MITIGATION

1768. SHRI PRABHATJHA:

Will the Minister of EARTH SCIENCES be pleased to state:

- (a) **whether special emphasis was laid on seven core research areas under Twelfth Five Year Plan to promote research work related to mitigation of earthquake risks which yielded positive outcomes, if so, the details thereof; and**
- (b) **whether the research work on earthquake risk mitigation during the last two years has been expedited and made more comprehensive than before 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) **Yes Sir. The seven core research areas under twelfth five year plan to promote research work related to the earthquake hazards are as follows:**
- **Observational networks and data centre,**
 - **Seismicity & Earthquake Precursors,**
 - **Earthquake hazard assessment**
 - **Deep Borewell investigations in Koyna**
 - **Deep crustal studies**
 - **Development of Geotechnology**
 - **Setting up National Centre for Seismology**

The National Center for Seismology (NCS) was created as an attached office of Ministry of Earth Sciences in August 2014 with the objectives:

- **Provide earthquake (M:3.0 and above) related information to all user agencies in shortest possible time.**
- **Provide earthquake hazard and risk related products of specific regions required by various agencies as mitigative measures for design and construction of earthquake resistant structures, land use planning and for enacting building bye-laws towards minimizing damage to property and loss of lives due to earthquakes.**

- **Carry out research in pure and applied seismology and earthquake precursory phenomena, earthquake processes and modeling.**

The core areas of “Observational networks and data centre” and “Earthquake hazard assessment” have been brought under NCS. These core areas have yielded positive outcome with regard to mitigation of earthquake hazard and risk.

Under observational ‘Observational Networks and Data Centre’, NCS maintains a National Seismological Network (NSN) for real time monitoring of earthquake activities in and around the country. The NSN now consists of 84 state-of-art digital broadband seismograph stations with VSAT commutations facilities for real time monitoring and auto location of earthquakes in and around the country. This system has latest tools for dissemination of earthquake information to the concerned disaster management authorities and other user agencies in least possible time for relief and rescue operations in hour of need. The network also includes a 17-station real time seismic monitoring system to monitor and report large magnitude under sea earthquakes capable of generating tsunamis on the Indian coastal regions. A tsunami early warning system is also in place at Indian National Centre for Ocean Information Services (INCOIS), Hyderabad to provide early warning on tsunamis likely to be generated on the Indian Coastal areas by large magnitude under sea earthquakes. A state-of-art Data Centre has been created in NCS for archival of ground motion data generated by the NSN for further use in seismological research and earthquake hazard mitigation related programs.

- (b) The NSN is under up-gradation by putting 38 more state-of-art seismograph stations and strengthening the real time monitoring of earthquake activities in the country.**

Seismic hazard microzonation is very useful in planning hazard reduction due to earthquakes. It will provide earthquake hazard and risk related products of specific regions required by various agencies as mitigative measures for design and construction of earthquake resistant structures, land use planning and for enacting building bye-laws towards minimizing damage to property and loss of lives due to earthquake.

Seismic microzonation of NCT Delhi has been completed on 1:10000 scale and report has been released in February for stake holders including governments. Seismic microzonation of Jabalpur, Guwahati, Bangalore, Sikkim, Ahmedabad, Gandhidham-Kandla, Kolkatta and Mumbai has been completed. The seismic microzonation of thirty more cities lying in seismic zone III, IV and V and having population more than half a million is under consideration.
