

## Note on SDMA-HP supported workshop at IIT Mandi on 11<sup>th</sup> October 2017



**Inaugural session**

The one day workshop, **Rainfall Induced Landslides: Mapping, Mitigations and Monitoring** has been organized at **IIT Mandi** with support from **SDMA-HP** (Himachal Pradesh State Disaster Management Authority). The workshop has witnessed 22 external participation apart from 15 from IIT Mandi. The group included practising engineers from NHAI, HPPWD, I&PH, HPSEB, Town Planning and several others from Mandi, Bilaspur and Kullu. The inauguration session had Dr Rajeev, Chairperson, SE who introduced IIT Mandi and School of Engineering to the participants and extended the possible support from IIT Mandi towards the natural disaster management and response. Prof Vikas greeted the participants and expressed his interest along with take home material from the workshop. Later, Dr Uday and Dr Mousumi conveyed the importance and schedule of the workshop.



**Keynote by Prof Vikas**



**Talk by Dr Mousumi**

After a short tea break, the workshop started with the Keynote lecture of **Dr. Vikas**, Professor, Faculty of Civil and Environmental Engineering, **NTNU, Norway**, who introduced the various triggering factors of landslide and briefed the importance of understanding the rainfall induced landslides with its relevance to Himachal Pradesh. Further, the requirement of the Hazard mapping and methods to assess the risk and hazard has been enumerated in detail. Case studies on the same followed in various parts of world and especially Norway, has been presented to the participants. Later, **Dr Varun**, Assistant Professor, **SCEE, IIT Mandi** have introduced his works related to landslide monitoring, prediction and possibilities of early warning system to reduce the risk associated with the disaster. Along with his findings on landslide prediction, he also discussed various components and their application

towards assembly of early warning sensors, being developed indigenously at IIT Mandi. The physical model and working of the early warning system also have been demonstrated to the enthusiastic participants. The possibilities of exploring the locations for sensor deployment were also discussed.



**Demonstration by Dr Varun and Team**



**Presentation by Ms Kinjal Parmar**

The post lunch session was taken over by **Dr Mousumi**, Assistant Professor, SCEE, **IIT Mandi** who pondered on the rock failure conditions and physics behind the failures in rocks. She pictographically explained the possible modes and triggering factors for rock failures and suggested applicability of mitigation measures, especially in rocks. Concepts behind the design and case studies of such mitigation measures have been presented by **Ms Kinjal Parmar** and **Mr Gaganpreet Singh** from **Maccaferri Environmental Solutions Pvt. Ltd.**, Gurugram, Haryana. The case studies along with the design aspects and limitations of mitigation measures for unstable rocks and landslide prone areas have been showcased. The measures constructed by M/S Maccaferri in various parts of India including Uttarakhand, Himachal Pradesh and North-Eastern states of India have been presented in the concluding session of workshop.

The exhilarated participants have expressed their gratitude to the speakers for sharing the information and demanded higher level workshop to gain the in-depth knowledge of landslide hazard, mitigation measures and early warning system. The workshop concluded with the distribution of mementoes to the speakers and certificates to the participants along with the participants sharing their experiences, moments and learning from the workshop.



**Group photo of the participants**

