



Building Resilience: Workshop on Retrofitting and Plot-Specific Landslide Mitigation 08th and 09th April 2019, Wayanad

Introduction

The recent floods in Kerala, of an unanticipated magnitude, have resulted in considerable damage and loss in housing and built infrastructure. Recovery of lost property through reconstruction and repair of the damaged structures pose a major challenge for communities as well as for the state. Such disasters also challenge them to look into the preparedness programs in a better way. In addition to rebuilding and repairing the damaged buildings, the unprecedented disaster underscored the need to strengthen our dwelling units and public buildings. Retrofitting measures have to be adopted in order to strengthen and make a building disaster resilient. Retrofitting of the life line structures like schools, hospitals, community halls, administrative centres etc. is a critical step towards rebuilding Kerala better since it was these buildings that acted as temporary relief camps during the deluge of August 2018. The need for strengthening and retrofitting of these lifeline structures was also cited by the state government. Due to lack of precedence, the public as well as the engineers are unaware of the retrofitting measures to be adopted to strengthen the residential as well as the public buildings. The workshop aims at sensitizing them on the need for retrofitting, enabling them to do basic vulnerability assessment of the buildings and equip them in suggesting retrofitting measures to the public.

In the hilly areas of Idukki and Wayanad; the damages caused during the deluge was mainly due to small and big landslides. A considerable amount of loss in the housing sector was due to unprotected slopes. Stabilising the slopes may to a large extent reduce the number of casualties as well as damage to the structures in the future. The slope stabilisation measures adopted usually are expensive and applicable to a large area which is beyond the purview of an individual house owner. Rubble and RCC retaining walls which are often constructed by individuals for slope protection also prove to be expensive now especially because of the scarcity of materials and high transportation costs in hilly areas. Moreover, under owner driven reconstruction a beneficiary is eligible to an aid of Rs. 4 lakhs only from the state government for house reconstruction and it is impossible to construct retaining walls with that amount. Our hub staffs have noticed that many houses are being reconstructed in vulnerable slopes without adopting adequate slope stabilization measures. This workshop aims at making the shelter hub staff and government engineers aware of various plot-specific slope stabilization techniques that could be adopted by these beneficiaries.

The program

The workshop was held on 8th and 9th of April 2019 at Green Gates hotel, Wayanad. The programme was conducted in partnership with LIFE Mission and KSDMA. It was attended by

- 9 LIFE Mission hub engineers
- 6 engineers from LSGD
- 20 UNDP shelter hub engineers,
- 10 UN Volunteers, and
- 7 UNDP District Project Officers.

The participants were from the districts of Pathanamthitta, Alappuzha, Kottayam, Idukki, Ernakulam, Thrissur, Palakkad, Malappuram and Wayanad.

The first day had sessions by 3 speakers:

- **Dr. Rajendra Desai** (Joint director, National Centre for Peoples' Action in Disaster Preparedness, Gujarat) conducted 2 sessions based on his visits to disaster struck sites and other buildings in Wayanad during the 3 days prior to the workshop. The first session was on vulnerability assessment techniques for retrofitting of structures and the second was on the different retrofitting measures to be adopted to strengthen the buildings in Kerala.



- **Mr. C Thanavelu** (Former Superintending Geologist and Director, GSI) spoke about landslide vulnerability assessment and few stabilisation techniques.



- **Dr. S Chandrakaran** (Geotechnical Engineer and Professor, NIT Calicut) discussed few slope stabilisation techniques like soil nailing and vetiver.



The second day began with a presentation by Dr. Rajendra Desai, video documentary on carrying out different retrofitting measures, Shock table tests etc. He also explained about the faulty construction practices with the help of photographs he had taken during his site visits.



Later site visits were conducted to H.I.M.U.P school, Kalpetta and Primary Health Centre, Meppadi; where Dr Rajendra Desai explained how to assess the vulnerability and what measures need to be taken to strengthen the buildings.



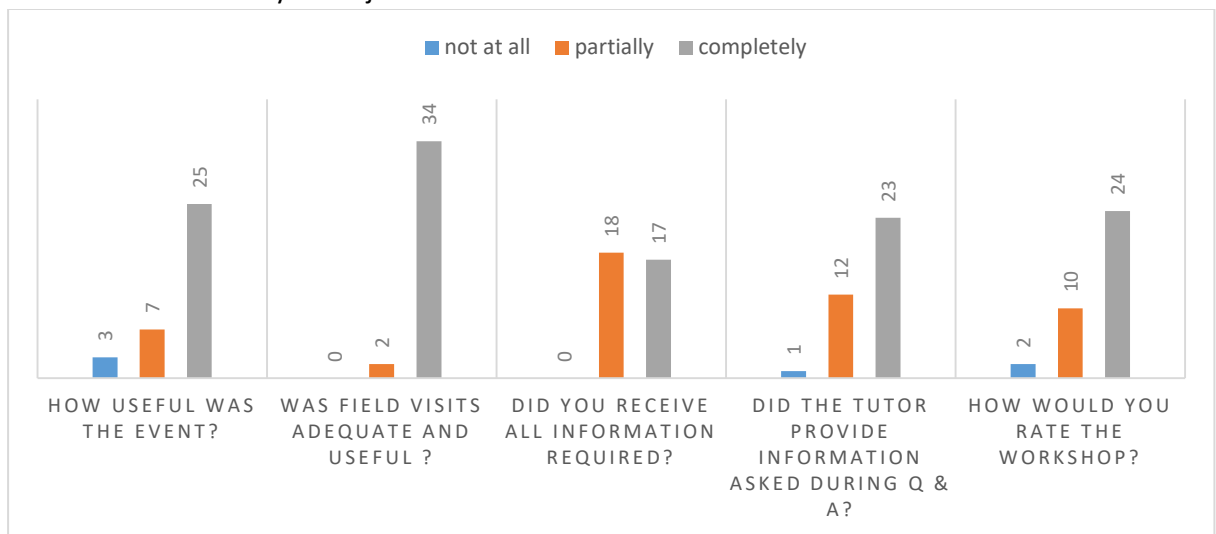
Site visits were also carried out to few landslide struck areas where Mr. Thanavelu explained to the engineers how to identify previous landslides, visually analyse the vulnerability of the slope, properties of the soil and also suggested a few remedial measures.



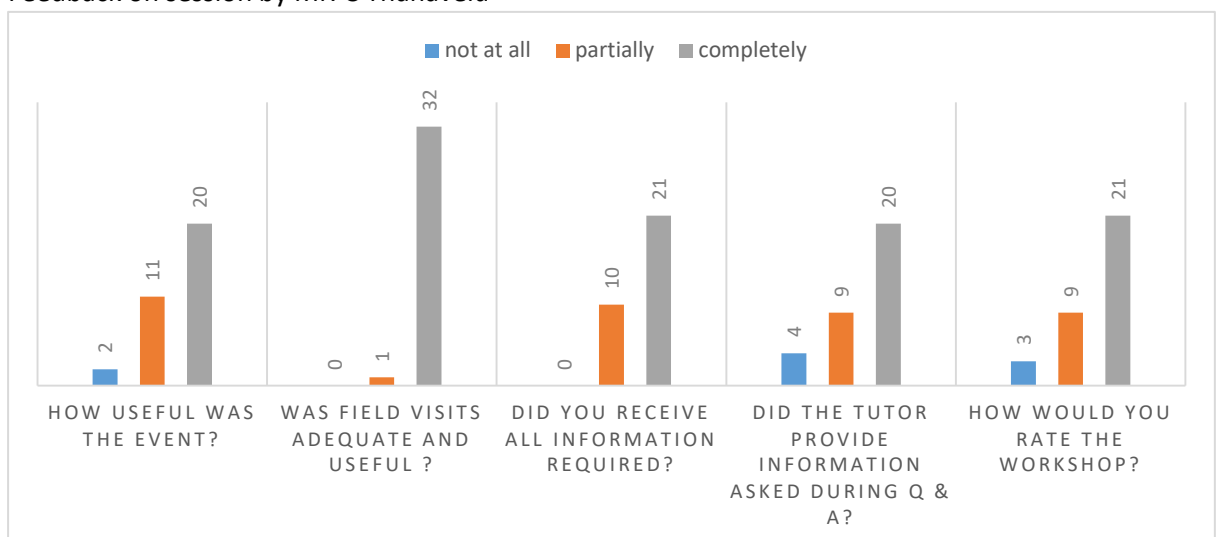
Feedback

Feedback forms were collected from the attendees of the workshop and were tabulated.

- Feedback on session by Dr. Rajendra Desai



- Feedback on session by Mr. C Thanavelu



- Feedback on session by Dr. S Chandrakaran

