Helicopter Survey Report on Badulla Koslanda Landslide

*This report is based on the aerial survey done from the helicopter
*The contents of this report can be changed in the future with additional survey

1. Object of Survey
A landslide occurred in Koslanda, Badulla District, Uva Province on October 29th around 7:30 am. The objectives of this survey are as follows;
- grasp the overall view from the helicopter
- identify the effect and risk of secondary disaster when the area has heavy rain in the near future and;
- Conduct the OJT (On the Job Training) of DMC and NBRO on the helicopter survey (a staff of DMC and NBRO boarded in the helicopter this time for this purpose)

2. Date of Survey
5th November, 2014 from 8:40 to 9:15am
The helicopter of Helitours by Sri Lanka Air Force was chartered for this survey.

3. Location of Survey
Koslanda Meeriyabedda, Badulla District, Uva Province in Sri Lanka (about 100km East of Colombo)

4. Investigator
Mr. Toshiyuki SHIMANO, JICA Sri Lanka Office (Representative)
Mr. Wijeratne Sanath, JICA Sri Lanka Office (National Staff)
Mr. Kenichi HANDA, JICA TCLMP Team (Chief Advisor)
Mr. Ryuichi HARA, JICA TCLMP Team (Team Leader)
Mr. Srimon Priyantha Samansiri, DMC
Mr. Dayan Sanjeeewa Munasinghe, NBRO

5. Summary of Survey
- The damage from the disaster is as follows (DMC Situation Report as of November 5th, 2014)
- Number of death: 12 people
- Number of missing: 22 people

- The angle of the slope is assumed to be below 30 degree by the aerial survey from the helicopter.
- The survey team confirmed considerable amount of water flow in the landslide area. It is believed the percentage of water content in the soil is high even now.
- The survey team could see some parts of the scarp of the landslide as it was before the landslide in the downward of the area. The nick line (the turning point of the slope degree) was confirmed that it could be around 250m below the scarp of the landslide (a little above where the community was located before the landslide). The survey team assumed that the landslide occurred above the nick line. This observation led to an assumption that 40 to 50 % of the landslide mass still remains there.
- There are 3 to 4 of relatively large trees still standing in the lower part (300m above from the stream on the map). Based on the aerial survey from the helicopter, the left part facing the landslide was deeply eroded. The condition told that the landslide mass was fluidized downwards.
- The most of the mud was stagnated in the lower area where the community was located before. The slope is comparatively gentle in the area. Therefore, there is a less possibility of becoming a landslide dam right after a heavy rain in the future.
- In the lower part of the landslide area, there are some communities along the river (the communities were more than 1km away from the landslide area). The most of the housings were located comparatively in high lands, but some housings were in low lands along the river.
6. Measures that should be Taken in Future
   ➢ Some of the landslide mass was still remaining and since still the water spring is flowing, there is a high possibility that this area remains unstable (some factors such as the angle of the slope and the deposit condition of the landslide mass are not clear enough through the aerial survey). Especially around the scarp may expand from now on. Therefore, the community people should beware of a heavy rain. We also should beware of sediment disasters including landslide in this area and in surrounding areas as well.
   ➢ A site visit survey is required in addition to this aerial survey to observe detailed condition and information.

7. Others
   ➢ This survey was conducted on the 7th day after the landslide occurred due to the availability of the helicopter and the weather condition. The team would like to recommend the Government of Sri Lanka to develop a system for conducting an aerial survey immediately after the occurrence of disasters in order to grasp overall view of the emergency situation, to examine the risk of secondary disaster in surrounding area and disseminate a warning to community people (for example there is a possibility of outburst flood of a landslide dam and it might breach river dikes of lower streams of the river, and they cause massive overflow and inundation).
   ➢ Staffs from DMC and NBRO boarded in the helicopter in this survey. In the future, the survey team suggests developing a system for emergency situations between MDM and MD&UD including the Air Force.
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