Project News Letter

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Project for Capacity Strengthening on Development of Non-Structural Measures for Landslide Risk Reduction (Project SABO)

National Building Research Organization (NBRO) & Japan International Cooperation Agency (JICA)

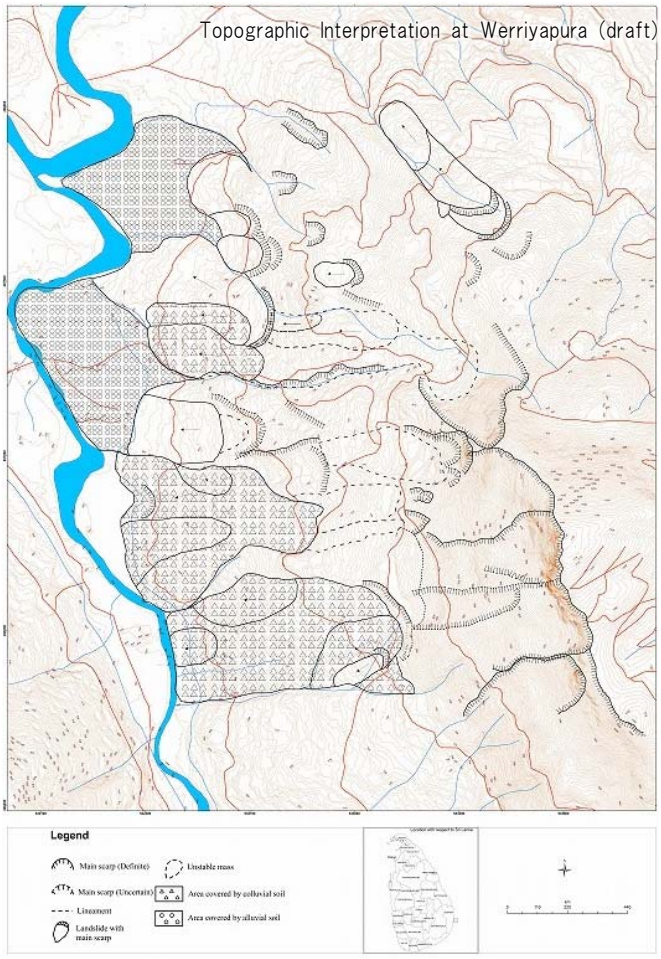
■Seminar for Topographic Interpretation

February 28, 2019

For land use control, one of the main targets of the project, detail and scientific landslide hazard and risk assessments are essential. The project aims at "Site-Specific" hazard and risk assessment.

Topographic interpretation is the first step for the hazard assessment. In order to assess potential of landslide, we carefully inspect the landform history of the area and surface micro-deformation that would be a sign of landslide occurrence by using aerial photographs and stereo-scope. LiDAR DEM, which is the high resolution digital elevation model supported by JICA in the past, is also important source for topographic interpretation. With LiDAR DEM, it is possible to capture accurate ground surface condition that cannot be identified from aerial photograph due to thick vegetation cover.

The project will promote "Site-Specific" hazard and risk assessments integrating such available topographical data.




Seminar for Topogrphic Interpretation

Topographic Survey by Drone

March, 2019

At outside of LiDAR DEM coverage area, only 1:10,000 scale topographic data is available. However, the 1:10,000 topographic data is not sufficient as base map for debris flow simulation and land use control at GN levels.

Recently NBRO has utilized Drone survey technology for landslide investigation and resettlement programs. The Working Group members carried out the Drone survey at Morawakkanda, Matara district, to obtain high resolution topographic data and ortho-photograph. The survey result will be used for debris flow simulation as well as facility planning of Sabo countermeasures.

Drone Survey Result
at Morawakkanda, Matara

■Joint Investigation with Relevant Agencies

April 5-7, 2019

The site investigations were carried out jointly with relevant agencies to confirm current land use control and development application at the project pilot sites.

The joint investigations team includes NBRO, Urban Development Agency (UDA) and Land User Policy Planning Department (LUPPD), who are responsible for land use and development planning. The team shared their efforts on land use and development planning, and discussed appropriate way for land use control at local levels.

Joint Investgation at Pilot Sites

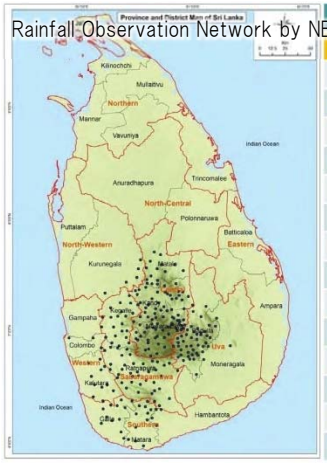
Discussion among Development Sector

■Improvement of Landslide Early Warning

June, 2019

NBRO manages about 250 Automatic Rain Gauges (ARG) in the central and the southwestern mountain regions for landslide early warning.

For the warning criteria, mainly accumulated daily rainfall is employed based on past experience of landslide hazards. However there are issues that regional characteristics of landslides are not reflected for the criteria, and the highest warnings were not issued in several landslides occurred in the past. Improvement of warning criteria is really required.



Rainfall Observation Network by NBRO

ARG count of each District

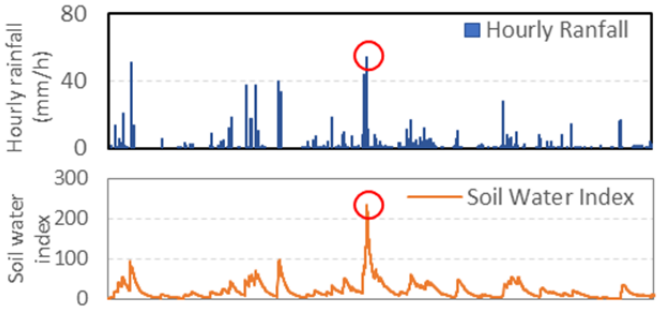
No	District	ARG Count
1	Badulla	43
2	Colombo	04
3	Galle	11
4	Gampaha	01
5	Hambantota	04
6	Kalutara	11
7	Kandy	36
8	Kegalle	21
9	Kurunegala	05
10	Matale	14
11	Matara	12
12	Moneragala	04
13	Nuwara_Eliya	43
14	Ratnapura	38

Current Landslide Warning Criteria

Alert	75 mm/day
Warning	100 mm/day
Evacuation / Off-limit	75 mm/hour or 150 mm/day

Landslides often occur by short time–high intensity rainfall, but in other cases, not only the rains that day, but also as a result of rains that last for many days. In Japan, "Soil Water Index (SWI)" has been used for landslide warning. The SWI is an indicator representing amount of rainfall accumulated in the soil.

For instance, in the debris flow occurred in Morawakkanda, Matara district, the most intense rainfall was about 50 mm/hour, but such amount of rainfall is frequently observed around the day (upper fig. below). However, when you look at the SWI, the value is obviously high compared with other rainfalls (lower fig. below). Consequently, by using SWI, it is possible to detect the danger of landslide more accurately and help improve the landslide warning.



Working Group member have examined in detail the time of landslide occurrences and rainfall characteristics throughout the country. Although this work takes a very long time, the relationship between landslides and SWI has been gradually clarified. By accumulating such data, we improve the accuracy of landslide warning in Sri Lanka.

■Launching Project Facebook Page

April, 2019

We launched a facebook page of the project, and will update project activities by Working Group members. Please access to the page and crick "Like"!

https://www.facebook.com/Project.SABO/

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