

Potential Landslides, Slope failures and Cutting failures areas associated with SW monsoon

Wasantha Senadeera
Landslide Research and Risk Management Division
National Building Research Organization



Provinces

Western, Sabaragamuwa, Central, Southern

Districts and respective DS divisions

- Badulla:** Haldummulla
- N-Eliya District:** Ambagamuwa, Kothmale, Nuwara Eliya
- Matale District:** Wiligamuwa, Laggala-Pallegama (Riverstem). Not much affected, but get fairly heavy falls
- Kandy District:** Gangawatakorale, Yatinuwara, Uduuwara, Udapalatha, Gangaihalakorale, Doluwa, Deltota, Pasbagekorele and some areas of Harispattthuwa, Hataraliyadda, Pathadumbara, Galagedera, Pujapitiya, Akurana and Panwila
- Kegalle:** High impact - Aranayake, Bulathkohupitiya, Yatiyantota, Deraniyagala, Part of Dehiowita. Medium impact - Galigamuwa, Ruwanwella, remaining part of Dehiowita
- Ratnapura:** Ratnapura, Kuruwita, Eheliyagoda (Highest RF), Kirella, Ayagama, Kalawana, Niwithigala, Elapha, Pelmadulla, Kahawatta, Opanayake Balangoda (Sabaragamuwa range)

- Katutura:** Bulathsinhala, Baduraliya (Palindunuwara), Agalawatta, Walallawita, Ingriya, and certain other GN divisions in Mathugama, Dodangoda, Horana, Millaniya, and Madurawala
- Galle:** All district may affect with cutting failures, but landslides are possible in Neluwa, Tawalama, Nagoda, Niyyagama, Elpitiya, Yakkalamulla
- Matara:** All district may affect with cutting failures, but landslides possible in Kotapola, Pasgoda, Pitabeddera and Akuressa DS
- Hambantota:** Landslide possible in Katuwana, Walasmulla (Matara and Rathnapura district boarder). Mainly cutting failures are possible in Okewela, Weeraketiya, Belliatthe, Tengalle
- Kurunegala:** Hilly areas near to Gampaha and Kegalle boarder
- Monaragala:** Generally, the hilly areas of Monaragala districts will not be affected
- Colombo:** Landslides possible in Seethawaka. Mainly Cutting failures are possible in Padukka, Kesbawa, Kaduwela, Kolonnawā, Malabe, Maharagama, Homagama
- Gampaha:** Mainly Cutting failures are possible in Attanagalle, Dompe, Mahara, Mirigama

NBRO readiness

- Landslide EW will be issued based on short range forecasts issued by Met Dept. and real time rainfall data received from 330 automated rain gauges located around the Central Highland of the country. EWC will be operated 24/7.
- EW will be issued to DMC for dissemination to the relevant authorities and communities.
- CBEW group will be coordinated and encouraged for self evacuation whenever possible and necessary.
- Field investigations of landslide susceptible/potential sites for complying with complains by public/Govt. authorities will be carried out by field staff allocated in each district.



Warning and Evacuation in Sri Lanka

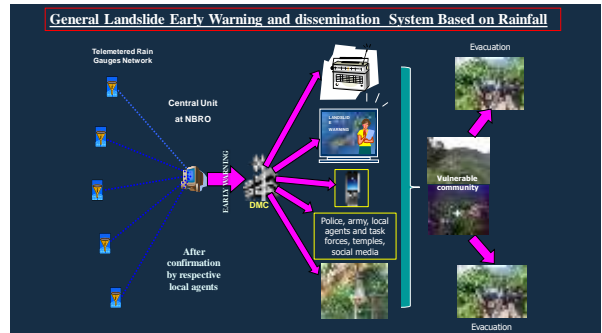
Defined standard threshold limits of the Rainfall for landslides

Watch 75 mm/day

Alert 100mm/day

(Get ready to evacuation under short notice)

Evacuation, Off limit 75 mm/hour or 150mm/day



Community Based Approach



Field Investigation of Landslides

Identification by direct observation of slope instability signs. Site specific investigation approach is used to identify potentially unstable locations. Decisions are mostly subjective and accuracy depend on the experience of the expert involved.



If you live near steep hills

What should you do???

1. Before Intense Storms
2. During Intense Storms
3. After Intense Storms

1. Before Intense Storms

- **Become familiar with the land around you.**
- **Support your local government** to develop and enforce land-use and building ordinances.
- **Watch the patterns of storm-water drainage** on slopes near your home. Since drainage is a major problem, clear or advise to clear all drainage paths to facilitate free flow of storm water.
- **Watch the hillsides** around your home for any signs of land movement.
- **Contact your local authorities** to learn about the emergency response and evacuation plans for your area, and **develop your own emergency plans** for your family and business.

2. During Intense Storms

- **Stay alert and stay awake:** Many landslide and debris flow fatalities occur when people are sleeping.
- **Listen for any unusual sounds** that might indicate moving debris, such as trees cracking or boulders knocking together. So **be prepared to move quickly**. Don't delay! Save yourself, not your belongings.
- If you are in areas susceptible to landslides and debris flows, **consider leaving**.
- **Be especially alert when driving:** Watch the road for **collapsed pavement, mud, fallen rocks**, and other indications of possible landslides or debris flows.

3. After Intense Storms

Keep looking for signs that the land is moving.

Landslides can occur even few hours or days after an intense or antecedent storms.

What to do if you suspect immediate landslide danger!

- **Inform** affected neighbors.
- Make **notice and sign** boards.
- **Leave** the area quickly.
- **Contact** your local authority, police or DS.
- If you sense **strongly, close the road** and evacuate the area and contact a consulting agency for an investigation (DMC, NBRO)

Apart from landslides and slope failures, cutting failures are a major threat. Inform and educate communities to minimize the use of areas close to unstable soil cuts, especially behind houses, pass quickly the road sections with unstable cuts.



We have to aware and educate people to follow the above instructions and the advices issued by NBRO during rainy situations.



Thank You