

# **An Analysis of a Large-scale Landslide in Feresmay Area, Northern Ethiopia**



Nuredin Mohammed Beyan

## **Abstract:**

Rainfall-triggered landslides are common in many areas of the hilly and mountainous regions of Ethiopian highlands. Slope instability hazards in these highland terrains have been affecting human lives, infrastructures, agricultural lands and the natural environment. The stability problem in the Feresmay area is also closely related to heavy rainfalls induced by extreme meteorological events. A clear understanding of the mechanisms triggering these slides is required to analyse landslide risk and to optimize slope stabilization strategies. In this project, an analysis of slope instability mechanisms is performed in order to evaluate the potential for slope failure during the event by applying the limit equilibrium method.

The work described in this report had the objective of evaluating the slide-triggering mechanisms, including the effects of pore water pressure due to heavy rainfall. The results indicate that the failure occurred due to considerable amount of rainfall, which caused rise of groundwater table within the highly weathered and permeable rock slope which is confined by the overconsolidated and impermeable sediments. This consequently led to the build up of water pressure, followed by landslide around the toe which propagates uphill through time. Surface and subsurface drainage of the slope at the bottom of the weathered and permeable rocks is considered to be the most feasible remedial measure option for stabilizing the slope.

## Pictures of the Study Area

