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Composite nature of Eco-Hydro-Geological (EHG) stability of slopes

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Nature always educates us to explore more scientific meaning of surrounding stability of the earth. Rain triggered landslides are common in many terrains and cost for such remediation is usually high in drainage improvement. In many instances, ground water recharge, stagnation of water within soil, rock-soil interface saturations, influence of artesian water pressures, subsurface saturation due to geological complexity and many more hydro-geological regiments are responsible for landslides. However, water is the major component of ecological stability of mountain slopes which contains soil, rock, water, flora & fauna. It deals with all natural and man-made stresses from the grass root level until long term stability of the slope or slope failure event. Some large natural reservations developed as control measures against slope erosion are commonly visible in hill country slope management in Sri Lanka, dating back to year 1800. The hill country area is generally subjected to very heavy rainfall of 4000mm to 6000mm annually. The objective of this paper is to report on the progress of development techniques and studies of natural slope instabilities in saturated and unsaturated soils in order to improve our understanding of such phenomena within multiphase environments. Observations are naturally site specific. The study is to assess the impact of deviation of first principal of ecological stability during slope stability designs, understanding capacity of draining water pathways within heterogeneous regolith soils under vegetative complexity and predicting the hydrological exchange between a potentially unstable slopes and its surroundings. An approach of site specific investigations, incorporation of principal mechanism of eco-hydro-geological(EHG) techniques and isolation methods for stability will be discussed.