

## **Engineering Geological Mapping On Slope Design In The Mountainous Area Of Sabah Western, Malaysia.**

### **ABSTRACT**

The geology in the mountainous area of Sabah western provides a favourable setting for engineering geological instability. The area is underlain by the Trusmadi Formation (Palaeocene to Eocene age), the Crocker Formation (Late Eocene to Early Miocene age) and vary recent Quaternary alluvial materials which are still being deposited. The argillaceous nature and intense deformation suffered by the Trusmadi Formation and the highly jointed sandstone and mudstone beds of the arenaceous Crocker Formation makes them highly susceptible to weathering and instability. The weathered materials are unstable and may experience sliding due to by high pore pressure and intensively of geomorphological processes. In this study, a total of 20 selected critical slope failures were studied and classified into two main groups; rock slope (ten) and soil slope (ten). Soil slope failures normally involved large volumes of failed material as compared much rock slopes, where the failures are mostly small to medium. Kinematics rock slope analyses indicates that the variable potential of circular, planar, wedges, and toppling failures modes as well as the combination of more than one mode of aforementioned failure. Rock and soil slopes stability analysis indicates that the factor of safety value as unsafe (0.56 to 0.95). The geological influence had transformed the slopes in the Sabah mountainous area to be highly unstable and susceptible to landslide occurrences. Six (6) related main parameters to the landslide occurrence in the study area were attributed; 1) local and regional geology, 2) hydrological and geohydrological, 3) mineralogical and micro structures, 4) local discontinuities structures, 5) physical and engineering properties of soil and rock, and 6) geomorphological processes which can help in evaluating landslide problems. Therefore, development planning has to consider the slope hazard and risk management. This engineering geological mapping may play a vital role in disaster risk reduction programme in Sabah to ensure the public safety and to be extend with different environment.