



Green Road: an ecological road construction method for the preservation of mountain environment and landscape in Nepal

Madhu Sudan Acharya

Institute of Geotechnical Engineering, Department of Civil Engineering and Natural Hazards, University of Natural Resources and Life Sciences, Vienna, Austria (masuua@yahoo.com)

Road is the only viable means of transportation and an important infrastructure for the economic development of a mountainous country like Nepal. The construction and maintenance of hill and mountain roads in Nepal are often challenged by its topography with very steep slopes, fragile geological conditions and a strong monsoon rain for a longer duration.

Under such topographic and climatic conditions, the conventional approach of road construction on hills with cut and throw method with the use of machines has caused substantial increase in post construction landslides, mass wastage of soil material, shear failures on the downhill slope due to additional surcharge from tipped soil, loss of vegetation on slopes and environmental degradation.

To overcome these environmental problems, a concept called "Green Road" has emerged in hill road construction practices in Nepal. This concept was evolved from the lesson learnt in the past and decade long experiences in hill road constructions and maintenance. This is an environment-friendly and labour-based construction technique which utilizes mass balancing approach. It is a low cost solution which focuses on the use of locally available materials and techniques in a sustainable way by maintaining the existing landscapes. Appropriate soil bioengineering techniques are applied to stabilize the roadside slopes and to reduce soil erosion.

This paper provides some basics of green road approach, its advantages and its contribution to preserve natural environment. This paper examines the magnitude of direct mass wasting of materials due to excess excavation and compares the loss of masses in both conventional as well as green road approach of road construction. Recommendations are also made for minimizing the mass wastage and to preserve the fragile mountain environment by using appropriate soil bioengineering methods.