

6. Low Cost Mountain Roads

Properly engineered mountain roads, suitable for truck traffic, cost about 10 million rupees per km for a single lane and 20 million rupees per km for a double lane design speed of 30 to 60kmph. The lowest possible cost for a single lane dirt road in a relatively favourable terrain, e.g., a 25 to 35 degree slope on the ridge section, would cost three to four million rupees per kilometre for a truckable road, geometry permitting, with an average design speed of around 30kmph. Since about 44 per cent of the existing 8,300km of roads in Nepal are earthen roads with very few structures, and about 55 per cent of roads are in mountainous regions, considerable investment is required for these existing roads. Investment in properly engineered new constructions and high speed (30 to 40kmph) mountain roads is greatly constrained due to budgetary problems. The low traffic levels on most of these roads hardly justify their costs.

Extension of mountain road networks, under these circumstances, would only be possible at very low kilometre costs. Fair weather, earthen roads, four metres' wide at 20kmph design speeds on the ridges and flatter valleys, primarily for jeeps and tractors, built with local participation and accompanied by an environmental awareness programme, will be the only choice for quite some time. East Consult, in cooperation with the District, PDP/Helvetas, and the local road committees are constructing such roads at 400,000 to 600,000 rupees per kilometre (Joshi P.C.). Plates 11 to 14 illustrate the

excellent environmental controls on these roads. Such road programmes are very effective for bringing about risk-awareness and eliminating indiscriminate mountain road building.

Plate 15 illustrates that a carelessly constructed, low-cost village road causes significant damage to the slopes and to the road itself.

Low-cost mountain roads, such as the Palpa road, are an expression of MRE concerns for low volume rural roads. However, the formalisation of MRE at village level requires that the engineering and geological inputs be in a simplified and inexpensive manner. This requires awareness of geology, causes of instabilities, and simplified quantifications of risks (worth of loss caused by ambitious road cutting).

In order for a low-cost mountain road to be sustainable, especially designed Participant Action Research type projects are necessary.

Savings' schemes at village level as preconditions for receiving grants from the AKRSP in Gilgit, Pakistan, are designed to serve as a mirror through which the strengths and weaknesses of a particular project, the village organisation, and potentials for self-help can be observed. Such projects provided interesting evidence about sustainable low-cost road projects in mountainous regions (Ali 1989).