been too successful. Increases in the height of protection dikes has been quickly matched by rapid sedimentation and higher river bed levels. River flooding is now even more prevalent than before the dikes because the river at bank full stage can accomodate less discharge than before the dikes were built.

Bridges present another engineering problem, as deep scouring and peak discharges of rivers result in high construction costs. Concrete river bed level bridges offer a relatively cheap alternative to conventional bridging. Low flows pass through drainage culverts beneath the structure and the occasional large flood passes harmlessly over the structure, only temporarily closing the road to traffic. Such structures built on the Manohari and Lothar Kholas were still functioning in 1985 in spite of having been abandoned upon completion of the new bridges in 1981.

F. CONCLUSIONS

Erosion processes profoundly affect the economy of Nepal. The Nepalese Government is aware of the serious nature of the erosion problem and has attempted to implement programmes that reduce erosion. The main agency to deal with erosion has been the Department of Soil and Water Conservation within the Ministry of Forests. With their limited budget and narrow scope for activities, the Department of Soil and Water Conservation has had little opportunity to positively influence the overall erosion problems facing Nepal. The lack of a government wide mandate to approach erosion problems on all fronts hampers attempts towards soil conservation. Briefly, the technical solutions offered by the Department of Soil and Water Conservation cannot produce significant results without major policy changes throughout the government. Soil conservationists should be first asking themselves why the land is being so poorly managed. Soil conservation programmes must consider the political, social and economic problems facing the villagers. The technical solutions are generally equally obvious to the villager.

In order to determine realistic goals for a government committed to soil conservation but with a limited budget, the following points should be considered.

1. Soil erosion is probably the most serious resource problem facing Nepal. It should have high priority in government planning and policy making in a number of Ministries.

2. Rainfall induced topsoil erosion is greatly increased by man; better land management could reduce this form of erosion significantly. Mass wasting processes are not usually directly related to man's activities. Consequently, intervention by man to reduce mass wasting can be very expensive with less clear cut results.

3. The most serious surface erosion occurs on marginal agricultural lands and overgrazed agriculture - forest fringe areas. These areas should be the primary targets for soil conservation programmes.

4. The most significant improvements in watershed management generally requires minimal monetary support. By handing over control of communal lands and government forests to responsible panchayats or in other ways increasing local control, tremendous advances are possible. Although a few districts have come a long way in this regard, the majority of districts have seen little real change because of the reluctance or inability of the forest department to transfer authority to the panchayat or other groups.

5. The most important single goal for improving watershed conditions is to improve sustained productivity on a per unit basis. Agricultural, grazing and forest lands can be managed more intensely with increases in production and decreases in erosion.

6. Each watershed will respond in a unique manner to soil conservation measures. Generally speaking, the larger the watershed and the greater the regional river cutting, the less the effect of soil conservation measures on river characteristics. Dam sites planned for major river systems such as the Karnali with a high proportion of erosion as mass wasting cannot expect that soil conservation programs will markedly reduce sediment loads. On the other hand smaller, more isolated watersheds with minimal mass wasting may show significant hydrological improvements from soil conservation measures. Watersheds such as the Kulekhani, may experience significant sediment reductions by integrated soil conservation programmes.

7. Flooding and sedimentation problems in India and Bangladesh are a result of the geomorphic character of the rivers and man's attempts to contain the rivers. Deforestation likely plays a minor, if any role in the major monsoon flood events on the lower Ganges. Better management of existing forest lands and marginal agricultural lands is mandatory however, to ensure the continued livelihood of the Himalayan hill farmer.

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