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The Effects of Non-market Benefits on Planning of Mitigation Measures against Debris Flows in Taiwan

Huei-Yann Joann Jeng (1), Yung-Chuan Ko (2)

(1) Professor, Department of Applied Economics, National Chunhsing University, Taiwan. (2) Section Chief, Soil and Conservation Bureau, Taiwan

Debris flows pose a threat to settlements and recreational areas in Taiwan. Technical mitigation measures have been reinforced since the last decade. Decision making for mitigation measures against debris flows often does not involve monetary values of non-market benefits such as life and recreational activities. This paper compares the total costs and benefits of technical mitigation measures for debris flows in Taiwan. The benefits of mitigating damages of debris flows are determined on two scenarios of life and recreational values. The protected residents are monetarily assessed by methods of human capital approach. The recreation value is assessed by contingent valuation method. The monetary benefit is compared with the present value of cumulative public expenditures on debris flows mitigation measures. The results show a large range of benefit cost ratios depending on whether the non-market benefits are included. Critical issues of benefit cost analysis in the context of Taiwanąęs slope land are discussed, included the sensitivity of results to how benefits are calculated.