

Water Yield Computation and the Evaluation of Urbanization in the Bagmati Basin of Nepal

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Abstract

Ecosystem service valuation is a crucial step for the sustainable management of watershed. In the context of various ecosystem services provided by watershed, this study, particularly deals with water yield computation in Bagmati Basin of Nepal. The water availability per population in Bagmati Basin is lowest compared to other basins in Nepal. Also, the rate of urbanization is rapidly growing over a decade. In this regard, the objectives of this study are 1) to compute the total water yield of the basin along with computation on a sub-watershed scale, and 2) Study the impacts of land use change on water yield based on CLUE-S model. For the study, Integrated Valuation of Environmental Services and Tradeoffs (InVEST), a popular model for ecosystem service assessment based on Budyko hydrological method is used to compute water yield. As well, CLUE-S model is used to study land use change, which is further related to study variation on water yield. The sub-watershed wise outcome of the study is expected to provide the guidelines for the effective and economic management of a watershed on a regional scale.

Key words: Ecosystem service valuation, InVEST, CLUE-S, water yield, climate change, urbanization.

본 연구는 국토교통부/국토교통과학기술진흥원의 지원으로 수행되었음(과제번호 18AWMP-B127555-02).

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