

FORESTRY LAND USE PLANNING USING THE RUSLE MODEL IN THE BINH DIEN RESERVOIR WATERSHED, VIET NAM

NGUYEN Thi My Quynh¹ and Kunihiko YOSHINO²

¹*Graduate School of Life and Environmental Sciences, University of Tsukuba
Room 3F617, University of Tsukuba, 1-1-1, Tennodai, Tsukuba, Ibaraki, Japan;
myquynh2505@yahoo.com.vn*

²*Faculty of Engineering, Information and Systems: Division of Policy and Planning Sciences; University
of Tsukuba
Room 3F1111, University of Tsukuba, 1-1-1, Tennodai, Tsukuba, Ibaraki, Japan;
sky@sk.tsukuba.ac.jp*

Abstract: Vietnam locates in the humid tropical zone where water erosion and sedimentation have become a seriously environmental problem due to human activities such as deforestation, intensification of agriculture, and urbanization. Hence, an appropriate land use planning that contributes to improvement of vegetation cover is critical for soil conservation in high risk areas of water erosion. In the context of reservoir watersheds where are covered mainly by forestry land, planning of protected areas plays an important role in reducing soil loss and sedimentation in reservoirs that result in environmental problem on both on-site and off-site. Therefore, the aim of this paper is to focus on how to improve forestry land use planning for soil conservation in watershed. It was found that the currently qualitative criteria for indentifying the protected areas did not correspond strongly with soil loss rate. Then, the RUSLE model was used in integration of GIS and RS software to generate distribution map of soil loss and classified map of soil erosion risk. Better result of the C factor simulation in the context of tropical forest was found when the vegetation cover was divided into two groups: shrub land and forested land for separate estimation using the NDVI map derived from ALOS AVNIR 2 satellite images. Using the classified map of soil erosion risk as the quantitative criterion for high risk area identification, we pointed out additionally potential areas where belong to nil or slight level of erosion risk for production instead of protected areas as currently land use planning. Thus, we proposed to use soil erosion map simulated by the RUSLE model as the criterion in classifying critical levels for protection, so that head water forestry land use planning could be more corresponding to soil erosion problem.

Keyword: land use planning, soil erosion by water, RUSLE, C factor, NDVI