The Analysis of the Landcover Change Effect to Soil Erosion Using Spatial Modeling and Analysis (As a Key for Land Use Planning in Telaga Warna Catchment Area)

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ABSTRACT

Lake Telaga Warna is situated at upper stream of Ciliwung River. The lake contains freshwater supporting a rich ecosystem, promoting the lives of three primate species of Java and play important role hydrological function. Considering to its function, the national government established its status as Nature Reserve in 1981 through Ministry of Forestry Regulation No. 481/Kpts/Um/6/1981. Unfortunately, the lake is subject to land cover changes due to agricultural, settlement encroachment & other infrastructure development. The objectives of the research are (a) To provide accurate information of critical land / land degradation map for land use planning, **(b)** To analyze potential soil erosion due to land cover change in Telaga Warna Nature Reserve. Remote Sensing and GIS Technology couple with hydrological modeling (USLE) were applied.

Forest areas have been decreasing since 1991 of about 13.66% (1.315 Ha) or almost 1% per year. In the other hand settlement areas have been increasing. Meanwhile agricultural land was fluctuated depend on the season. Due to the land cover changes, distribution pattern of potential soil loss /erosion also changed. The area were classified into very heavy soil erosion were increase, which are situated mostly at bare land & agricultural areas.

Key words : Telaga Warna, GIS, Remote Sensing, USLE, soil erosion, soil loss

1. INTRODUCTION

1.1, Background

Telaga Warna is a shallow basin lake, situated at 25 km southeast of Bogor. This lake contains freshwater supporting a rich ecosystem, promoting the lives of three primate species of Java. Considering to its function, the national government established its status as Nature Reserve in 1981 through Ministry of Forestry Regulation No. 481/Kpts/Um/6/1981.

Sustainable land use is a complex problem which containing several issues in different fields and then need to be solved by integrating the