

ESTIMASI UMUR TELAGA CEBONG, WONOSOBO, JAWA TENGAH

Oleh Evlis Erliyani

21/473703/GE/09493

INTISARI

Telaga Cebong adalah salah satu danau vulkanik di Kecamatan Kejajar Kabupaten Wonosobo yang berfungsi sebagai suplai kebutuhan air irigasi pertanian di sekelilingnya. Luasnya penggunaan lahan pertanian dengan pengolahan intensif di DTA Telaga Cebong mengindikasikan adanya potensi erosi yang berdampak pada sedimentasi telaga. Sedimentasi telaga yang terjadi terus menerus menjadi permasalahan bagi Telaga Cebong. Potensi erosi dan sedimentasi yang mempengaruhi keberlanjutan fungsi Telaga Cebong perlu dikaji. Oleh karena itu, penelitian ini bertujuan untuk (1) menganalisis potensi erosi di Daerah Tangkapan Air Telaga cebong, (2) mengkaji laju sedimentasi yang masuk ke dalam Telaga Cebong, dan (3) mengestimasi sisa umur Telaga Cebong.

Data primer yang diambil meliputi sampel tanah, kedalaman telaga, dan observasi tutupan lahan serta tindakan konservasi. Data sekunder berupa data curah hujan bulanan. Potensi erosi dihitung menggunakan persamaan Universal Soil Loss Equation (USLE). Model ini memperhitungkan parameter erosivitas hujan, erodibilitas tanah, panjang dan kemiringan lereng, dan penggunaan lahan, serta tindakan konservasi tanah. Potensi erosi yang sudah dikalkulasikan dihitung menggunakan formula *Sediment Delivery Ratio* (SDR) untuk menentukan hasil erosi yang masuk ke waduk sebagai sedimen. Volume telaga dibagi dengan laju sedimentasi menghasilkan sisa umur Telaga Cebong.

Potensi erosi DTA Telaga Cebong sebesar 25.557,35 ton/bulan dengan laju erosi sebesar 334,70 ton/ha/tahun. Berdasarkan perhitungan SDR sebesar 0,49, maka volume sedimen yang masuk ke telaga sebesar 12.487,27 ton/tahun dengan laju sedimentasi sebesar 23.124,58 m³/tahun. Hasil perhitungan SY diasumsikan sebagai volume sedimen yang mengendap di telaga, sehingga sisa umur Telaga Cebong sebesar 7,25 tahun.

Kata kunci: *Telaga Cebong, USLE, potensi erosi, laju sedimentasi, batimetri*

ESTIMATION OF CEBONG LAKE'S LIFESPAN, WONOSOBO, CENTRAL JAVA

By Evlis Erliyani

21/473703/GE/09493

ABSTRACT

Telaga Cebong is one of the volcanic lakes located in Kejajar District, Wonosobo Regency, which serves as a water source for irrigation of the surrounding agricultural land. The extensive agricultural land use with intensive cultivation practices within the Telaga Cebong Catchment Area (DTA) indicates a potential for soil erosion that contributes to lake sedimentation. The continuous sedimentation in the lake has become a significant problem for Telaga Cebong. Therefore, assessing the erosion and sedimentation potential that affects the sustainability of Telaga Cebong's function is necessary. This research aims to: (1) analyze the erosion potential in the Telaga Cebong Catchment Area, (2) assess the sedimentation rate entering Telaga Cebong, and (3) estimate the remaining lifespan of Telaga Cebong.

Primary data collected include soil samples, lake depth measurements, and land cover observation along with conservation practices. Secondary data consists of monthly rainfall data. Erosion potential was calculated using the Universal Soil Loss Equation (USLE), which considers rainfall erosivity, soil erodibility, slope length and steepness, land use, and soil conservation practices. The calculated erosion potential was then adjusted using the Sediment Delivery Ratio (SDR) to estimate the portion of eroded soil transported and deposited as sediment in the lake. The remaining lifespan of Telaga Cebong was estimated by dividing the current lake volume by the annual sedimentation rate.

The erosion potential in the Telaga Cebong Catchment Area was calculated at 25.557,35 tons/month, with an erosion rate of 334.70 tons/ha/year. Based on the calculated SDR value of 0.49, the amount of sediment entering the lake was estimated at 12,487.27 tons/year, with a sedimentation rate of 23,124.58 m³/year. Assuming that all transported sediment settles in the lake, the remaining lifespan of Telaga Cebong was estimated at approximately 7.25 years.

Keywords: *Telaga Cebong, USLE, erosion potential, sedimentation rate, bathymetry*