UNIVERSITAS GADJAH MADA
PEMETAAN EROSI DAN ARAHAN REHABILITASI LAHAN DENGAN MENGGUNAKAN SISTEM INFORMASI GEOGRAFIS DI DAERAH TANGKAPAN AIR GANDON SUB DAS PROGO HULU
CHIELVILIA, Sahid, Ambar Kusumandari
Universitas Gadjah Mada, 2008 | Diunduh dari http://etd.repository.ugm.ac.id/

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INTISARI

Erosi merupakan salah satu dampak yang disebabkan oleh penggunaan lahan yang tidak sesuai dengan karakteristik, kemampuan dan daya dukung dari lahan tersebut. Penelitian ini bertujuan untuk mengetahui besarnya erosi dan tingkat bahaya erosi serta persebarannya pada masing-masing penggunaan lahan dan menentukan arahan kegiatan rehabilitasi lahan (penggunaan lahan) berdasarkan kelas kemampuan lahan dan tingkat bahaya erosi. Penelitian dilakukan di kawasan Daerah Tangkapan Air Gandon Sub-DAS Progo Hulu.

Metode penelitian yang digunakan ialah penghitungan erosi dengan metode *Universal Soil Loss Equation* (USLE), pengolahan dan analisis data menggunakan Sistem Informasi Geografis (SIG). faktor-faktor yang dipertimbangkan dalam penghitungan erosi ialah erosivitas hujan (R), erodibilitas tanah (K), gradien kemiringan (LS), cara bercocok tanam (C), dan praktek konservasi tanah (P). Kegiatan rehabilitasi lahan dilakukan dengan metode pencocokkan (*matching*) antara kondisi yang ada di lapangan dengan usulan konservasi menggunakan acuan pendekatan dalam konservasi tanah untuk menurunkan nilai C dan P dengan menggunakan metode-metode konservasi tanah.

Daerah Tangkapan Air Gandon Sub-DAS Progo Hulu memiliki dua jenis tanah, yaitu Latosol 3351,41 ha (79,45%) dan Regosol 866,95 ha (20,55%). Kelas kelerengannya ialah kelas kelerengan III (agak curam) 781,72 ha (18,53%), IV (curam) 1180,72 ha (27,99%) dan V (sangat curam) 2255,92 ha (53,48%). Besarnya curah hujan yang ada ialah 1861,43 mm/th, 1966,75 mm/th, 2002,63 mm/th dan 2127,13 mm/th. Bentuk penggunaan lahannya ialah hutan 19,45 ha (0,46%), kebun campur 1099,58 ha (26,07%), pemukiman 487,11 ha (11,55%), semak 242,99 ha (5,76%), sawah 225,65 ha (5,35%) dan tegalan 2143,58 ha (50,82%). Kelas kemampuan lahannya ialah kelas kemampuan IV 781,72 ha (18,53%), VI 1180,72 ha (27,99%) dan VII 2255,92 ha (53,48%). Arahan fungsi kawasannya ialah kawasan lindung 2763,67 ha (65,52%) dan kawasan penyangga 1454,69 ha (34,48%).

Besarnya erosi pada masing-masing penggunaan lahan di Daerah Tangkapan Air Gandon Sub-DAS Progo Hulu ialah pada hutan 0,107 ton/ha/thn, kebun campur 15,620 ton/ha/thn, pemukiman 152,070 ton/ha/thn, sawah 0,396 ton/ha/thn, semak 4,110 ton/ha/thn dan tegalan 36,503 ton/ha/thn. Besarnya erosi pada masing-masing penggunaan lahan di Daerah Tangkapan Air Gandon Sub-DAS Progo Hulu setelah rehabilitasi lahan dengan usulan konservasi menggunakan acuan pendekatan dalam konservasi tanah untuk menurunkan nilai C dan P ialah pada hutan 0,107 ton/ha/thn, kebun campur 2,471 ton/ha/thn, pemukiman 123,557 ton/ha/thn, sawah 0,396 ton/ha /thn, semak 5,595 ton/ha/thn dan tegalan 9,922 ton/ha/thn.

Kata kunci : Erosi, Rehabilitasi Lahan, SIG, DTA Gandon

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EROSION MAPPING AND ORIENTATION OF LAND REHABILITATION USING GEOGRAPHIC INFORMATION SYSTEMS IN GANDON CATCHMENT AREA OF UPPER PROGO SUBWATERSHED

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ABSTRACT

Erosion is one of the impacts caused by unsuitability of land use with the land characteristics, capability, and carrying capacity. The research aimed at identifying the land physical characteristics as well as capability classes, the orientation of zone function based on the land capability classes, the amount of erosion, the erosion hazard evaluation, and the spread of erosion onto respective land use. It also aimed at establishing the orientation of land rehabilitation activities (land use) based on the land capability classes and the erosion hazard evaluation. The research was conducted in Gandon Catchment Area of Upper Progo Subwatershed.

The methods used in the research were erosion assessment employing the Universal Soil Loss Equation (USLE) method and data processing and analysis employing Geographic Information Systems. Factors taken into consideration in the erosion assessment were rain erosivity (R), soil erodibility (K), slope gradient (LS), crop management (C), and conservation practices (P). Land rehabilitation activities were carried out by matching the on-site conditions with the proposed conservation activities according to references of approaches to soil conservation with the aim of lowering the C and P values by employing methods of soil conservation.

According to the results of the research, the soil in Gandon Catchment Area of Upper Progo Subwatershed was composed of two types, i.e. latosol amounting to an area of 3351.41 ha (79.45%) and regosol 866.95 ha (20.55%). The area could be classified into three slope steepness classes, i.e. Class III (moderately steep) amounting to an area of 781.72 ha (18.53%), Class IV (steep) 1180.72 ha (27.99%), and V (very steep) 2255.92 ha (53.48%). The amount of rainfall varied from 1861.43 mm/year, 1966.75 mm/year, 2002.63 mm/year and 2127.13 mm/year. The forms of land use ranged from forest amounting to an area of 19.45 ha (0.46%), mixed plantation 1099.58 ha (26.07%), settlement 487.11 ha (11.55%), underbrush 242.99 ha (5.76%), rice field 225.65 ha (5.35%) and dry-land field 2143.58 ha (50.82%). In terms of the land capability classes, the area fell into the categories of Class IV amounting to an area of 781.72 ha (18.53%), Class VI 1180.72 ha (27.99%) and Class VII 2255.92 ha (53.48%). The orientation of zone function divided the area into 2763.67 ha (65.52%) of protected areas and 1454.69 ha (34.48%) of buffer zone.

The amount of erosion in Gandon Catchment Area of Upper Progo Subwatershed had varied among land uses, i.e. 0.107 ton/ha/year in forest, 15.620 ton/ha/year in mixed plantation, 152.070 ton/ha/year in settlement, 0.396 ton/ha/year in rice field, 4.110 ton/ha/year in underbrush, and 36.503 ton/ha/year. After the land rehabilitation activities were carried out using the proposed conservation activities according to references of approaches to soil conservation with the aim of lowering the C and P values, the amount of erosion in Gandon Catchment Area of Upper Progo Subwatershed was as follows: 0.107 ton/ha/year in forest, 2.471 ton/ha/year in mixed plantation, 123.557 ton/ha/year in settlement, 0.396 ton/ha/year in rice field, 5.595 ton/ha/year in underbrush, and 9.922 ton/ha/year

Keywords: GIS, Gandon Catchment Area, Erosion, Land Rehabilitation

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