ABSTRAK PENELITIAN BERBASIS

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MODEL MULTI KRITERIA PENGGUNAAN LAHAN PADA DAERAH TANGKAPAN HUJAN (DTH) UNTUK MENURUNKAN LAJU SEDIMENTASI PADA WADUK SUMBER AIR UNTUK PERTANIAN

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ABSTRAK

DAS Jeneberang terletak di Sulawesi Selatan, Indonesia. Pada beberapa tahun terakhir ini, DAS ini tidak dapat berfungsi secara optimal untuk mempertahankan fungsi hidrologisnya, terutama untuk mempertahankan fungsi hidrologi Bendungan Jeneberang (Bili Bili). Untuk mempertahankan fungsi hidrologis tersebut maka diperlukan formulasi kesesuaian penggunaan lahan terutama untuk mereduksi masukan sedimen kedalam bendungan tersebut. Perhitungan erosi pada penelitian ini menggunakan RUSLE (Revised Universal Soil Loss Equation). Penggunaan lahan yang optimal didapatkan dengan menggunakan Fuzzy Multi Attribute Decision Making (FMADM) dan Analytic Hierarchy Process (AHP) yang dikombinasikan dengan Geographical Information System (GIS). AHP digunakan untuk mendapatkan weighting factor. Alternative konservasi yang diteliti adalah penggunaan mulsa alami, penggunaan plastik, *strip cropping*, rotasi tanaman, tanaman penutup, pengolahan tanah sejajar kontur, terrasering, agroforestry, penanaman pohon dan penghijauan. Kriteria konservasi yang dievaluasi adalah ketersediaan bahan, tingkat pengetahuan petani, tingkat penerimaan terhadap teknologi, dukungan institusi, kecocokan sistim pertanian, kemampuan pembiayaan dan kriteria lainnya.

Hasil studi menunjukkan bahwa nilai interseksi 0,799 didapatkan pada rotasi tanaman yang merupakan alternative konservasi yang paling sesuai. Terbukti bahwa benerapan FMADM dapat menurunkan sedimentasi 18.43 m^3/km^2/tahun menjadi 4.63 m^3/km^2/tahun.

Kata kunci: GIS, Fuzzy, penggunaan lahan, DAS, sedimen.

MULTICRITERIA MODEL IN RIVER BASIN MANAGEMENT FOR REDUCTION OF SEDIMENTATION AT THE DAM FOR AGRICULTURAL DEVELOPMENT

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ABSTRACT

Jeneberang Basin is situated in South Sulawesi, Indonesia. In the recent years, the function of this basin could not be performed optimally in maintaining sustainability hydrologic function of Jeneberang dam. Therefore, in order to maintain the hydrologic function of the dam, it is necessary to formulate suitable land use at upstream of the river basin. This research is objected to formulate policy for the suitable land use, in term of reducing sedimentation rate in Jeneberang Dam. This study employed RUSLE (Revised Universal Soil Loss Equation) for calculating of erosion as well as sedimentation rate. Fuzzy Multi Attribute Decision Making (FMADM) and Analytic Hierarchy Process (AHP) which is combined with Geographical Information System (GIS) were employed for obtaining the formulation. AHP was applied for obtaining of weighting factor that ware used to formulate optimum land use at the upstream. There are ten conservation alternatives were observed (natural mulch, plastic mulch, strip cropping, crop rotation, cover crops application, plough paralleled with contour, terrace, agro forestry, tree cultivation and replanting) by considering seven criteria (material availability, farmer knowledge, acceptance level of technology, supporting of institution, suitability of farming system, financial affordability, others criteria).

The result of this study indicated that, the value of intersection vector of 0.799 is attributed to the conservation practice of crop rotation. From the research, it was proved that by applying of FMADM, sedimentation rate can be reduced of 18.43 m^3/km^2/year becomes 4.63 m^3/km^2/year.

Keywords: GIS, Fuzzy, land use, river basin, sediment.