

**EVALUASI PERUBAHAN PENGGUNAAN LAHAN DI HULU DAS
CIMANUK TERHADAP DEBIT SUNGAI UNTUK MITIGASI BENCANA
BANJIR DI WILAYAH GARUT**

M Rafif Amanullah, Iskandar Muda¹⁾, Rina Marina²⁾

*Program Studi Teknik Sipil, Fakultas Pendidikan Teknologi dan Kejuruan,
Universitas Pendidikan Indonesia*

Email : amanullah.rafif@gmail.com

ABSTRAK

Perubahan penggunaan lahan di hulu DAS Cimanuk bisa dikatakan sudah tidak sesuai karena banyak hilangnya daerah resapan yang berdampak pada debit di Sungai Cimanuk. Penelitian ini bertujuan untuk: (1) Mengetahui perubahan kondisi penggunaan lahan di hulu DAS Cimanuk, (2) Mengetahui debit dan pola debit Sungai Cimanuk di lokasi yang diamati (3) Mengetahui laju erosi yang terjadi di hulu DAS Cimanuk (4) Mengetahui fenomena dinamis banjir dan erosi akibat perubahan penggunaan lahan berbasis simulasi dinamis untuk mitigasi bencana banjir. Metode penelitian ini yaitu metode deskriptif dengan analisis data menggunakan simulasi debit mock dan laju erosi USLE dan validasi dengan menggunakan model dinamis. Data yang digunakan berupa Peta landuse, slope, jenis tanah, data debit, curah hujan, data iklim dan klimatologi. Hasil penelitian didapatkan presentase penurunan luas lahan tertinggi ke terendah berturut-turut yaitu perkebunan, belukar, hutan, sawah. Sementara presentase peningkatan luas lahan tertinggi ke terendah berturut-turut yaitu, lahan terbuka (terbengkalai), pertanian, pemukiman. Debit maksimal didapat 64,02 m³/det, debit minimum didapat 2 m³/det. Untuk Validasi dengan model dinamis didapat nilai RSMPE = 0,56% AVE = 8,94% dan AME = 4,8%. Pengaruh perubahan penggunaan lahan di hulu DAS Cimanuk tahun 2009-2014 berdasarkan nilai koefisien limpasan mengalami peningkatan. Pengelolaan DAS yang berkelanjutan diharapkan dapat dilakukan untuk menunjang mitigasi bencana banjir di wilayah Garut.

Kata Kunci (DAS, penggunaan lahan, mitigasi bencana banjir)

**EVALUATION OF LAND-USE CHANGES IN UPSTREAM WATERSHED
OF CIMANUK TOWARD THE STREAMFLOW FOR MITIGATION OF
FLOOD DISASTER IN GARUT AREA.**

M Rafif Amanullah, Iskandar Muda¹⁾, Rina Marina²⁾

*Civil Engineering Study Program, Faculty of Technology and Vocational
Education, Indonesia University of Education*

Email : amanullah.rafif@gmail.com

ABSTRACT

Land-Use Change in upstream watershed of Cimanuk can be said is no longer suitable because the high amount of water absorption area's loss impacting the streamflow in Sungai Cimanuk. This Research aims to: (1) Discover the changes in condition of land-use in upstream watershed of Cimanuk. (2) Discover the flow and flow patterns of Sungai Cimanuk in the observed area. (3) Discover the erosion rate that has happened in upstream watershed of Cimanuk. (4) Discover the dynamic phenomenon of flood and erosion as the impact of land-use changes based on dynamic simulation for mitigation of flood disaster. The research method is descriptive method with analysis of data using flow simulation Mock and erosion rate USLE also validation using dynamic model. Data that have been used are Map of landuse, slope, soil type, streamflow data, rainfall, climate data and climatology. Results of research obtained are percentage of highest to lowest land-use area degradation in consecutive are plantation, shrub, forest, rice field. While the percentage of increase of land area in consecutive are vacant land (abandoned), agriculture, residential. Maximum flow obtained is 64,02 m³/sec, minimum flow obtained is 2 m³/sec. For the validation with dynamic model, percentage obtained are RSMPE = 0,56% AVE = 8,94% and AME = 4,8%. The impact of land-use changes in upstream watershed of Cimanuk in the year 2009-2014 based on value of runoff coefficient has been increased. The sustainable Watershed management is expected to be done to support mitigation of flood disaster in Garut area.

Keywords: (Watershed, Land use, Mitigation of flood disaster)

Muhammad Rafif Amanullah, 2017

EVALUASI PERUBAHAN PENGGUNAAN LAHAN DI HULU DAS CIMANUK TERHADAP DEBIT SUNGAI
UNTUK MITIGASI BENCANA BANJIR DI WILAYAH GARUT

Universitas Pendidikan Indonesia | repository.upi.edu | perpustakaan.upi.edu