

ABSTRAK

FLUKTUASI *INFLOW* DAN KUALITAS AIR AKIBAT PERUBAHAN TUTUPAN LAHAN DI DAERAH ALIRAN SUNGAI SEKAMPUNG HULU KABUPATEN TANGGAMUS PROVINSI LAMPUNG

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Perubahan tutupan lahan di wilayah hulu Daerah Aliran Sungai (DAS) Sekampung Hulu dapat mempengaruhi rezim aliran dan kualitas air yang masuk ke Bendungan Batutegi, yang berfungsi sebagai pemasok utama air irigasi, air baku, dan pembangkit listrik di Provinsi Lampung. Aktivitas pertanian yang semakin meluas, terutama sistem agroforestri kopi, menyebabkan pergeseran struktur tutupan lahan yang berimplikasi terhadap kondisi hidrologis dan ekologis DAS. Penelitian ini bertujuan untuk menganalisis perubahan tutupan lahan pada tahun 2010- 2022, menghitung fluktuasi *inflow*, Koefisien Aliran Tahunan (KAT), dan Koefisien Regim Aliran (KRA), dan mengukur kualitas air. Metode yang digunakan, meliputi analisis citra Landsat untuk interpretasi tutupan lahan, analisis data *inflow* dan curah hujan, serta uji laboratorium untuk parameter kualitas air fisika dan kimia. Hasil penelitian menunjukkan bahwa selama periode 2010–2022 terjadi penambahan hutan sekunder sebesar 31,44%, kenaikan pertanian lahan kering campur +12.03%, penurunan pertanian lahan kering - 67,70%, penurunan savana -100%, penurunan semak belukar +66,32%. Hal ini terutama dipicu oleh adopsi sistem agroforestri pada komoditas kopi. *Inflow* tertinggi di 2016 dengan 9.100.544 m³/detik dan terendah di 2012 dengan 5.277.990 m³/detik. Nilai rata-rata KAT 0.37 dengan kriteria sedang, sedangkan KRA 44,41 dengan kategori rendah. Kualitas air DAS Sekampung Hulu termasuk kategori tercemar ringan hingga sedang masuk kedalam kelas II menurut baku mutu. Perubahan tutupan lahan terbukti berkontribusi terhadap penurunan kualitas ekosistem hidrologi di DAS Sekampung Hulu. Diperlukan strategi pengelolaan DAS berbasis konservasi lahan, reboisasi dengan sistem *agroforestry*, perlindungan kawasan hutan untuk menjaga fungsi hidrologis dan kualitas air secara berkelanjutan.

Kata kunci: DAS, Tutupan Lahan, *Inflow*, KAT, KRA, Kualitas Air.

ABSTRACT

FLUCTUATIONS IN INFLOW AND WATER QUALITY DUE TO LAND COVER CHANGES IN THE SEKAMPUNG HULU WATERSHED TANGGAMUS REGENCY LAMPUNG PROVINCE

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Land cover changes in the upstream region of the Sekampung Hulu Watershed can significantly influence the flow regime and water quality entering the Batutegei Dam, which serves as a critical source of irrigation water, raw water supply, and hydroelectric power for Lampung Province. The expansion of agricultural activities, particularly coffee-based agroforestry systems has altered the land cover structure, with important implications for the watershed's hydrological and ecological conditions. This study aims to analyze land cover changes in 2010-2022, and to assess the variations in inflow, Annual Flow Coefficient (KAT), Flow Regime Coefficient (KRA), and measure water quality. The methodology includes Landsat imagery analysis for land cover classification, hydrological data analysis (inflow and rainfall), and laboratory tests for physical and chemical water quality parameters. The results indicate that between 2010 and 2022, secondary forest area increased by 31.44%, mixed dryland agriculture expanded by +12.03%, while dryland farming decreased by -67.70%, savanna areas disappeared completely -100%, and shrubland declined by -66.32%. These changes were primarily driven by the adoption of agroforestry practices for coffee cultivation. The highest recorded inflow occurred in 2016 at 9,100,544 m³/s, while the lowest was in 2012 at 5,277,990 m³/s. The average KAT value was 0.37, indicating a moderate classification, while the KRA value averaged 44.41, categorized as low. Water quality in the Sekampung Hulu watershed ranged from slightly to moderately polluted and falls under Class II. Overall, land cover change has contributed to the degradation of the hydrological ecosystem in the Sekampung Hulu Watershed. Watershed management strategy that integrates land conservation, reforestation through agroforestry systems, and forest area protection is crucial to maintaining hydrological functions and ensuring long-term water quality.

Key words: Watershed, Land Cover, Inflow, KAT, KRA, Water Quality.