

## **ANALISIS DAYA TAMPUNG BEBAN PENCEMARAN SUNGAI CIMANUK, JAWA BARAT**

**Oleh**  
**Andy Wibawa Nurrohman**  
**16/407373/PGE/01270**

### **INTISARI**

Sungai Cimanuk telah mengalami pencemaran dari aktivitas pemanfaatan lahan untuk pertanian, permukiman, dan industri. Dampak yang ditimbulkan dari aktivitas tersebut telah menurunkan kondisi kualitas air. Tujuan dari penelitian ini adalah, (1) menganalisis karakteristik sumber pencemar di Sungai Cimanuk, (2) menganalisis kondisi kualitas air di Sungai Cimanuk, (3) menilai status mutu air di Sungai Cimanuk, (4) menganalisis daya tampung beban pencemaran di Sungai Cimanuk, dan (5) merumuskan strategi pengendalian pencemaran di Sungai Cimanuk.

Daerah Aliran Sungai (DAS) Cimanuk dibagi menjadi lima segmen sungai sebagai unit analisis berdasarkan kondisi hidrologi, penggunaan lahan dan keberadaan Sub DAS yang memiliki potensi sebagai sumber pencemar ke sungai utama yaitu Cimanuk. Setiap segmen memiliki titik pemantauan kualitas air di sungai utama dari hulu ke hilir. Analisis deskripsi digunakan untuk menggambarkan karakteristik sumber pencemar dan kondisi kualitas air. Metode Indeks Pencemaran (IP) digunakan dalam penentuan status mutu air, sedangkan daya tampung beban pencemaran (DTBP) menggunakan persamaan Mitsch dan Goesselink dalam Lampiran II Peraturan Menteri Negara Lingkungan Hidup Nomor 1 Tahun 2010 dengan didasarkan pada baku mutu air kelas 2. Hasil dari analisis tersebut digunakan untuk merumuskan strategi alternatif pengendalian pencemaran di Sungai Cimanuk.

Berdasarkan hasil analisis, *Non Point Source* (NPS) yang berasal dari lahan pertanian sawah, tegalan/ladang dan limbah domestik berkontribusi pada penurunan kualitas air Sungai Cimanuk. Semua titik pemantauan memiliki kondisi kualitas air melebihi baku mutu air kelas 2 untuk parameter pH dan BOD dengan nilai IP berada dalam kategori tercemar ringan, kecuali titik E di segmen 5 yang dikategorikan tercemar sedang dengan nilai indeks 5,96. Beban pencemaran Sungai Cimanuk sudah melewati DTBP untuk parameter BOD dan COD. Penyumbang beban pencemar terbesar adalah segmen 5 yang didominasi lahan pertanian sawah. Kondisi morfologi sungai yang lurus, kondisi debit aliran yang kecil dari titik pemantauan sebelumnya menjadi faktor yang menghambat proses pemurnian alami sungai. Upaya pengendalian pencemaran yang dapat dilakukan di Sungai Cimanuk yaitu dengan mengoptimalkan aturan terkait dengan penggunaan pupuk kimiawi di lahan pertanian, sedangkan sumber pencemar yang berasal dari permukiman dan industri memerlukan pembuatan IPAL terpadu.

**Kata kunci:** Kualitas Air, Daya Tampung Beban Pencemaran, Beban Pencemaran, Penggunaan Lahan, Indeks Pencemaran, Sungai Cimanuk

## **ANALYSIS OF POLLUTION LOAD CAPACITY IN CIMANUK RIVER, WEST JAVA**

by  
**Andy Wibawa Nurrohman**  
**16/407373/PGE/01270**

### **ABSTRACT**

Cimanuk River has been polluted by land use activities for agriculture, settlement, and industry. The impact of these activities has reduce the water quality. The purpose of this study is, (1) analyzing the characteristics of pollutant sources in Cimanuk River, (2) analyzing water quality conditions in Cimanuk River, (3) assessing the water quality in Cimanuk river, (4) analyzing the capacity of the pollution load in Cimanuk River, and (5) formulating a pollution control strategy in Cimanuk River.

Cimanuk watershed divided into five river segments as an analysis unit based on hydrological conditions, land use and the existence of a potential sub-watershed as a source of pollutants to the main Cimanuk river. Each segment has a monitoring point to observe water quality on the main river from upstream to downstream. Description analysis is used to describe the characteristics of pollutant sources and water quality conditions. The Pollution Index method is used in determining the status of water quality. At the other hand, the pollution load capacity uses the Mitsch and Goesselink equation in Appendix II of the State Minister of Environment Regulation No. 1 of 2010 based on grade 2 water quality standards the result of this anlysis is used to formulate alternative strategies for pollution control in the Cimanuk River.

Based on the results of the analysis, Non Point Sources (NPS) originating from rice field, moor/non irrigated land and domestic waste also contribute in decreasing of water quality on Cimanuk River. All monitoring points have water quality conditions that exceed grade 2 water quality standards for pH and BOD parameters with IP values in the lightly polluted category, except for point E in segment 5 which is categorized as moderately polluted with an index value of 5,96. River pollution load in Cimanuk river has passed the pollution load capacity for BOD and COD parameters. The biggest pollutant contributor is segment 5, which is dominated by agricultural land. The morphological condition of the river is straight, the condition of the small flowrate from the previous monitoring point is a factor that inhibits the self purification process of the river. Efforts to control pollution that can be done in the Cimanuk River are by optimizing regulations related to the use chemical fertilizers on agricultural land, while sources of pollutants originating from settlements and industries require the creation of integrated WWTPs.

**Keywords:** Water Quality, Pollution Load Capacity, Pollution Load, Land Use, Pollution Index, Cimanuk River