ANALISIS KUALITAS AIR LIMPASAN TAMBANG NIKEL DENGAN MENGGUNAKAN INDEKS PENCEMARAN DI PT X MOROWALI SULAWESI TENGAH

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INTISARI

Perkembangan pertambangan nikel laterit di kawasan pesisir, termasuk Desa Matarape, Kecamatan Sombori Kepulauan, Kabupaten Morowali, Sulawesi Tengah, berpotensi mengubah kualitas perairan serta memengaruhi kondisi sosial ekonomi masyarakat sekitar. Penelitian ini bertujuan: mengidentifikasi kualitas air limpasan yang dihasilkan dari kegiatan pertambangan nikel laterit, menentukan status mutu air limpasan tambang nikel laterit, dan menganalisis dampak sosial ekonomi keberadaan pertambangan nikel terhadap masyarakat Desa Matarape. Metode untuk mengindentifikasi kualitas air limpasan diukur pada tiga titik pengamatan dan dibandingkan dengan baku mutu PP No. 22 Tahun 2021 Lampiran VI Kelas II untuk parameter pH, DO, BOD, COD, TSS, dan kekeruhan, serta dibandingkan dengan Permen LH No. 09 Tahun 2006 untuk parameter logam berat Fe, Ni, dan Cr. Metode untuk menganalisis status mutu air ditentukan menggunakan metode Indeks Pencemaran (IP) berdasarkan parameter pH, DO, BOD, COD, TSS, dan kekeruhan, sedangkan beban pencemaran logam berat dihitung menggunakan Heavy Metal Pollution Index (HPI) untuk Fe, Ni, dan Cr. Metode untuk mengkaji dampak sosial ekonomi melalui survei kuesioner kepada 81 kepala keluarga yang dipilih secara purposive dan didukung observasi lapangan, kemudian dianalisis secara deskriptif. Hasil penelitian menunjukkan seluruh parameter fisik–kimia dan logam berat pada ketiga titik pengamatan masih berada di bawah ambang baku mutu yang digunakan dalam penelitian. Nilai IP pada seluruh titik menunjukkan status tercemar ringan, dengan nilai berturut-turut dari Titik 1 hingga Titik 3 sebesar 1,4; 3,8; dan 3,2. Sementara itu nilai HPI pada masing-masing titik berturut-turut adalah 25,22; 18,93; dan 47,28; berdasarkan klasifikasi HPI, Titik 1 dan Titik 2 termasuk kategori sangat bagus (very good), sedangkan Titik 3 termasuk kategori bagus (good). Dari sisi sosial ekonomi, rata-rata pendapatan rumah tangga meningkat dari sekitar Rp 2,26 juta/bulan menjadi Rp 4,36 juta/bulan dan 91,36% responden menyatakan masyarakat lokal terserap bekerja di perusahaan. Namun, dampak sosial juga muncul berupa konflik dan ketegangan, tercermin dari 74,07% responden yang menyatakan terdapat konflik masyarakat–perusahaan, disertai kekhawatiran terhadap penurunan kualitas lingkungan serta persepsi ketidakadilan dalam distribusi manfaat.

Kata kunci: nikel laterit, air limpasan, Indeks Pencemaran, Heavy Metal Pollution Index, kualitas air, dampak sosial ekonomi.

ANALYSIS OF WATER QUALITY IN LATERITE MINE RUNOFF USING THE POLLUTION INDEKS METDOH AT PT X MOROWALI CENTER SULAWESI

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ABSTRACT

The development of laterite nickel mining in coastal areas, including Matarape Village, Sombori Kepulauan Subdistrict, Morowali Regency, Central Sulawesi, has the potential to change water quality and affect the socioeconomic conditions of the surrounding community. This study aims to: identify the quality of runoff water generated from laterite nickel mining activities, determine the quality status of laterite nickel mine runoff water, and analyze the socioeconomic impact of nickel mining on the community of Matarape Village. The method for identifying runoff water quality was measured at three observation points and compared with the quality standards of PP No. 22 of 2021 Appendix VI Class II for the parameters of pH, DO, BOD, COD, TSS, and turbidity, as well as compared with Permen LH No. 09 of 2006 for the parameters of heavy metals Fe, Ni, and Cr. The method for analyzing water quality status was determined using the Pollution Index (PI) method based on the parameters of pH, DO, BOD, COD, TSS, and turbidity, while the heavy metal pollution load was calculated using the Heavy Metal Pollution Index (HPI) for Fe, Ni, and Cr. The method used to assess the socioeconomic impact was through a questionnaire survey of 81 heads of households selected purposively and supported by field observations, which were then analyzed descriptively. The results of the study show that all physical-chemical parameters and heavy metals at the three observation points are still below the quality standards used in the study. The IP values at all points indicate a slightly polluted status, with values from Point 1 to Point 3 of 1.4, 3.8, and 3.2, respectively. Meanwhile, the HPI values at each point were 25.22, 18.93, and 47.28, respectively. Based on the HPI classification, Points 1 and 2 were categorized as very good, while Point 3 was categorized as good. From a socioeconomic perspective, the average household income increased from around IDR 2.26 million/month to IDR 4.36 million/month, and 91.36% of respondents stated that the local community was employed by the company. However, social impacts also emerged in the form of conflicts and tensions, as reflected by 74.07% of respondents who stated that there were community-company conflicts, accompanied by concerns about declining environmental quality and perceptions of unfairness in the distribution of benefits.

Keywords: laterite nickel, runoff water, Pollution Index, Heavy Metal Pollution Index, water quality, socioeconomic impacts.