

ANALISIS KRITIS REGULASI PENGELOLAAN LIMBAH BATERAI KENDARAAN LISTRIK PADA TRANSISI ENERGI BERSIH DI INDONESIA

ABSTRAK

Percepatan penggunaan kendaraan listrik merupakan bagian dari kebijakan transisi energi bersih di Indonesia untuk mendukung penurunan emisi gas rumah kaca dan pencapaian *Net Zero Emission* 2060. Namun, kebijakan tersebut menimbulkan konsekuensi baru berupa peningkatan volume limbah baterai kendaraan listrik yang tergolong limbah bahan berbahaya dan beracun (B3). Penelitian ini menganalisis pengaturan hukum pengelolaan limbah baterai kendaraan listrik dalam kerangka transisi energi bersih di Indonesia, serta praktik pengelolaannya di beberapa negara guna menilai relevansinya bagi pengembangan regulasi nasional. Penelitian ini merupakan penelitian hukum normatif dengan pendekatan perundang-undangan, konseptual, dan perbandingan hukum, menggunakan prinsip pencegahan, pembangunan berkelanjutan, dan *extended producer responsibility* (EPR) sebagai pisau analisis. Hasil penelitian menunjukkan bahwa pengaturan Indonesia masih bersifat generik dan berorientasi pada pengendalian tahap akhir, tanpa kriteria perubahan status baterai, sistem pelacakan siklus hidup, maupun EPR yang operasional. Perbandingan dengan Uni Eropa dan Tiongkok menunjukkan pentingnya pendekatan berbasis siklus hidup. Penelitian ini merekomendasikan regulasi lanjutan yang mengintegrasikan tanggung jawab produsen, pelacakan, dan penggunaan kedua baterai.

Kata kunci: limbah baterai kendaraan listrik; transisi energi bersih; *extended producer responsibility*

CRITICAL ANALYSIS OF ELECTRIC VEHICLE BATTERY WASTE MANAGEMENT REGULATIONS IN INDONESIA'S CLEAN ENERGY TRANSITION

ABSTRACT

The acceleration of electric vehicle adoption is part of Indonesia's clean energy transition policy to support greenhouse gas emission reduction and the achievement of Net Zero Emission by 2060. However, this policy gives rise to a new consequence: an increasing volume of electric vehicle battery waste, classified as hazardous and toxic waste (B3). This research analyzes the legal arrangements governing electric vehicle battery waste management within Indonesia's clean energy transition framework, along with management practices in several countries, to assess their relevance for national regulatory development. This is a normative legal study employing statutory, conceptual, and comparative legal approaches, using the prevention principle, sustainable development, and extended producer responsibility (EPR) as analytical frameworks. The findings show that Indonesia's regulatory framework remains generic and end-of-pipe oriented, lacking criteria for battery status change, a lifecycle traceability system, and an operational EPR mechanism. Comparison with the European Union and China shows the importance of a lifecycle-based approach. This research recommends regulator to integrate extended producer responsibility, traceability, and battery second-life use.

Keywords: *electric vehicle battery waste; clean energy transition; extended producer responsibility*