

# Penentuan Kriteria dalam Pemilihan Lokasi Pabrik Daur Ulang Baterai Kendaraan Bermotor Listrik di Indonesia = Criteria Determination for the Selection of Optimal Locations for Electric Vehicle Battery Recycling Facilities in Indonesia

Keysha Almira Zahrani, author

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## Abstrak

Peningkatan adopsi kendaraan listrik (EV) di Indonesia mendorong kebutuhan akan pengelolaan limbah baterai EV secara berkelanjutan. Daur ulang baterai menjadi strategi penting dalam mendukung ekonomi sirkular dan mencapai target Net Zero Emission (NZE) Indonesia tahun 2060. Penelitian ini bertujuan untuk menentukan kriteria prioritas dalam pemilihan lokasi pabrik daur ulang baterai EV di Indonesia menggunakan pendekatan Analytic Network Process (ANP). Sebanyak 22 kriteria dari dimensi lingkungan, ekonomi, sosial, dan teknis diidentifikasi melalui studi literatur dan divalidasi oleh para ahli menggunakan Content Validity Index (CVI) dan Modified Kappa. Hasil ANP menunjukkan bahwa dimensi lingkungan memiliki bobot paling tinggi, dengan "tingkat perlindungan lingkungan" sebagai kriteria utama. Konsistensi penilaian antar ahli diuji menggunakan uji Kendall's W. Hasil dari penelitian ini dapat menjadi dasar dalam pengambilan keputusan bagi pemangku kepentingan untuk membangun pabrik daur ulang baterai EV secara strategis dan berkelanjutan di Indonesia.

.....The increasing adoption of electric vehicles (EVs) in Indonesia drives the need for sustainable management of EV battery waste. Battery recycling has become a crucial strategy to support the circular economy and achieve Indonesia's Net Zero Emission (NZE) target by 2060. This study aims to determine the priority criteria for selecting locations for EV battery recycling plants in Indonesia using the Analytic Network Process (ANP) approach. A total of 22 criteria from environmental, economic, social, and technical dimensions were identified through literature review and validated by experts using the Content Validity Index (CVI) and Modified Kappa. The ANP results indicate that the environmental dimension holds the highest weight, with "level of environmental protection" emerging as the top-priority criterion. Expert assessment consistency was tested using Kendall's W. The findings of this study can serve as a decision-making foundation for stakeholders in strategically and sustainably planning EV battery recycling facilities in Indonesia.