Evaluasi Pengaruh Pengembangan Industri Mobil Listrik di Indonesia Terhadap E-Waste Baterai Mobil Listrik Dengan Metode Sistem Dinamis = An Evaluation of the Electric Vehicle Industry Development Influence in Indonesia against the E-waste of Electric Vehicle Batteries with Dynamic System modeling

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Abstrak

Pemerintah Indonesia terus mencanangkan program akselerasi kendaraan listrik berbasis baterai. Penjualan kendaraan listrik berbasis baterai (EVB) diperkirakan akan tumbuh signifikan. Biaya baterai sekitar 40% dari total biaya kendaraan listrik (EV). Dengan daya tahan baterai sekitar 8 tahun yang mendapatkan garansi dari produsen (OEM), baterai mobil listrik akan segera mencapai tahap akhir masa pakai dan akan berdampak pada lingkungan berupa limbah baterai yang tidak terpakai. Target jumlah EV di Indonesia pada 2030 mencapai 2 juta unit; sehingga diperkirakan akan ada 0,718 juta ton baterai yang perlu didaur ulang pada tahun 2040. Perlu adanya kajian tentang reverse logistic industri baterai kendaraan listrik dan kendaraan listrik. Diagram sebab-akibat digunakan untuk memeriksa dinamika potensial yang ada dalam sistem reverse logistic mobil listrik. Hasilnya dapat mendukung perencanaan kapasitas pengumpulan baterai mobil listrik dan mencegah pembuangan baterai yang tidak terkontrol. Skenario dan strategi yang dikembangkan akan membantu regulasi potensial di masa mendatang.
.....The Indonesian government continues to launch a battery-based electric vehicle acceleration program. It is estimated that there will be significant growth in sales of battery-based electric vehicle (EVB). The battery costs about 40% of the cost of an electric vehicle (EV). With a battery life of around 8 years that gets a warranty from the manufacturer (OEM), EV batteries will intensively face the retirement stage and have an impact on the environment in the form of unused battery waste. The target number of EVs in Indonesia in 2030 will reach 2 million units; hence, it is estimated that there will be 0.718 million tons of batteries that need to be recycled by 2040. There is a need for a study on the reverse logistics of the electric vehicle and electric vehicle battery industries. The causal loop diagram was utilized to examine the potential dynamics existing in the reverse logistics system of EV. The results can support the planning of electric car battery collection capacities and prevent uncontrolled battery disposal. The scenarios and strategies developed will help generate potential regulations in the future.