

Recycling and Utilization of Disposed Lithium-Ion Batteries in Poland and Neighboring Countries*

Jacek CZERNIAK¹, Olga HNATYSZAK¹, Anna GACEK¹ and Damian DUBIS²

¹Krakow University of Economics, Krakow, Poland

²State University of Applied Sciences in Krosno, Krosno, Poland

Correspondence should be addressed to: Jacek CZERNIAK, czerniaj@uek.krakow.pl

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Abstract

The dynamic economic progress, burgeoning market for electronic products, and increasing reliance on portable energy sources have driven a rapid expansion of the lithium-ion battery industry within European Union (EU) countries. Projected production capacity is set to exceed 500 GWh by 2030, a significant rise from just over 70 GWh in 2022. However, this growth is paralleled by a substantial increase in post-consumer battery waste, necessitating advancements in recycling technologies and infrastructure. Investments in the EU recycling sector have surged in recent years to address this challenge. Neighboring countries, including Ukraine, are experiencing similar trends, with rising demand for lithium-ion batteries and electric vehicles, especially used models, facilitated by policies such as the exemption from customs duties on imported electric cars (Верховна Рада України, 2022). Given the geographic proximity and shared environmental risks, this study examines the waste management practices for lithium-ion batteries in EU-bordering countries. Findings reveal that recycling initiatives in these nations remain underdeveloped, leading to improper disposal of used batteries, which poses significant ecological threats to both local and regional ecosystems. Collaborative efforts between EU countries and their neighbors, such as Ukraine, Romania, and Poland, offer promising pathways for addressing this issue. By channeling used batteries to established EU recycling facilities, environmental hazards can be mitigated, and critical secondary materials like cobalt and lithium can be recovered. Such cooperation not only aligns with EU strategic goals to reduce dependency on external imports but also strengthens resource security within the region.

Keywords: Globalization, Production, Batteries, Recycling