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# SECOND LIFE FOR EV BATTERIES: UNLOCKING ESTONIA'S ENERGY STORAGE POTENTIAL

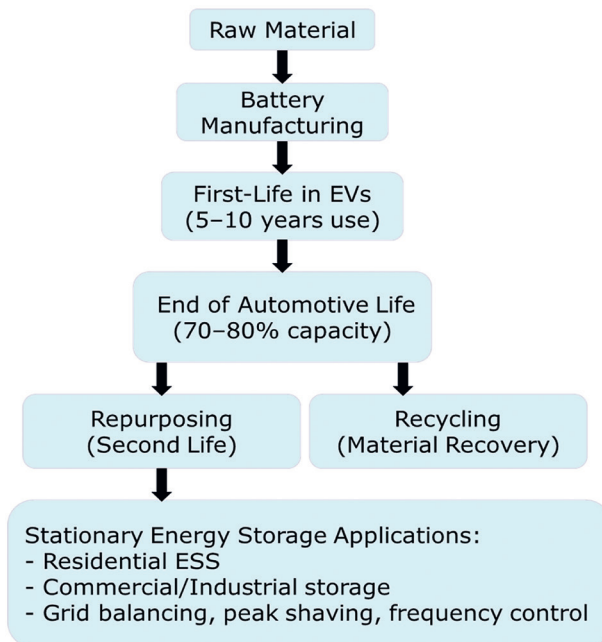
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**Abstract** – The rapid expansion of electric vehicles (EVs) in Europe is generating growing volumes of batteries reaching the end of their automotive life. Repurposing these batteries for stationary energy storage is promoted as a key strategy for advancing battery circularity and supporting renewable energy integration. Yet the deployment of second-life EV batteries remains limited and uneven, particularly in small markets with low EV penetration. This paper examines the policy and institutional barriers shaping second-life battery adoption in the Baltic region, with a primary focus on Estonia. Drawing on interviews with industry actors in Norway and Latvia, expert discussions, and a national stakeholder workshop involving safety authorities and regulators, the study shows that limited uptake is not driven by technological constraints or lack of interest, but by governance-related challenges. These include ambiguous battery classification, unclear liability and extended producer responsibility, weak safety supervision, lack of testing and certification capacity, and fire safety concerns that deter insurers. Comparative insights from Nordic and Baltic cases indicate that EU-level regulation alone is insufficient to enable second-life markets. Instead, targeted national measures addressing safety governance, liability, and institutional capacity are required. The findings highlight the importance of meso-level policy implementation for advancing battery circularity in emerging energy markets.

**Keywords** – Battery repurposing; circular economy; electric vehicle; Energy Storage Systems (ESS); second-life batteries



Lifecycle of EV Batteries and Second-Life Pathways.

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