590 kWh lithium-ion battery

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Mongird, K.; Viswanathan, V.; Balducci, P.; Alam, J.; Fotedar, V.; Koritarov, V.; Hadjerioua, B. An Evaluation of Energy Storage Cost and Performance Characteristics. Energies 2020, 13, 3307. https://doi /10.3390/en13133307

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Life cycle assessment (LCA) literature evaluating environmental burdens from lithium-ion battery (LIB) production facilities lacks an understanding of how environmental burdens have changed over time due to a transition to large-scale production. The purpose of this study is hence to examine the effect of upscaling LIB production using unique life cycle inventory data representative of large-scale production. A sub-goal of the study is to examine how changes in background datasets affect environmental impacts.

Upscaling LIB production shifts environmental burdens to upstream material extraction and production, irrespective of the carbon intensity of the energy source. Thus, a key message for the industry and policy makers is that further reductions in the climate impacts from LIB production are possible, only when the upstream LIB supply chain uses renewable energy source. An additional message to LCA practitioners is to examine the effect of changing background systems when evaluating maturing technologies.