The global electric vehicle (EV) industry is focusing on strengthening the resilience and security of the EV battery supply chain, particularly due to China's dominant position in anode and cathode production. South Korean companies have initiated reshoring strategies, exemplified by the recent reopening of a cathode plant in Texas, to reduce their reliance on China. This paper discusses the implications of South Korea's reshoring efforts and explores the potential for establishing mutually beneficial, reconfigured supply chains between the U.S. and South Korea. It also emphasizes the significance of considering geopolitical events in supply chain modeling to enhance resilience and introduces a geopolitical risk model accounting for both reshoring and friend-shoring scenarios (Friend-Shoring, Not Reshoring, Is the Answer).

The imperative of the EV revolution for addressing climate change and reducing greenhouse gas emissions underscores the need for a secure and resilient EV battery supply chain. China's dominance in anode and cathode production has exposed a vulnerability, prompting the U.S. and South Korea to reassess their strategies. South Korean companies have made significant strides in mitigating China's control over anode and cathode production, most notably by reopening a cathode plant in Texas. This strategic move diversifies the EV supply chain and reduces risks associated with overdependence on one geographic location.

The initiation of reshoring by South Korean companies presents an opportunity to establish realigned supply chains that not only enhance the resilience of the EV battery supply chain but also promote economic growth for both South Korea and the United States. Policymakers and industry leaders in both nations should explore ways to maximize the benefits of these realigned supply chains while bolstering the security of EV battery production.

In the ever-changing landscape where geopolitical events can significantly impact global supply chains, it is imperative to develop effective risk mitigation strategies. Researchers are advocating
for a geopolitical risk model that accommodates scenarios involving reshoring and friend-shoring. Such a model would offer valuable insights into potential scenarios and their effects on the resilience and security of the EV battery supply chain, enabling stakeholders to proactively plan for disruptions and adapt their strategies accordingly.

The EV battery supply chain is undergoing significant transformations, with South Korean companies at the forefront of reshoring essential production components. Through innovative initiatives like lithium clay mining in Nevada by POSCO and Redwood Material partnering with L&F Co., Korea aims to reduce its dependence on China while enhancing the resilience of the global EV battery supply chain. Moreover, opportunities are emerging to create realigned supply chains that benefit not only South Korea but also the United States (Posco Pushes for Lithium Clay Extraction Project in US; EXCLUSIVE U.S. Battery Startup Redwood Materials Sets Deal with Korea’s L&F | Reuters).

To address the evolving geopolitical landscape, researchers propose a geopolitical risk model capable of forecasting scenarios that consider reshoring and friend-shoring events. This model would play a pivotal role in enhancing the resilience and security of the EV battery supply chain, ensuring its continued growth and sustainability.

*Figure 1: The McDermitt Caldera, one of the world’s largest lithium clay reserves highlighted in red here; allocated for Lithium clay mining by POSCO. Source: (Daily Mail, World’s biggest lithium reservoir 2023) Insert: McDermitt location on the Nevada map*
In conclusion, the collaborative efforts between the United States and South Korea in reshaping the EV battery supply chain can serve as a model for other nations aiming to establish robust, mutually beneficial supply chain ecosystems.

References


