

Supply Chain and Operations for EV Battery Production: North American Perspective

APS 1028 – Project Report

Team 2

Mandeep Malhotra 1008697411

Srikanth Ranganathan 1009747794

Arshia Ghasemi 1009750805

Sahand Fazli 1009775600

Jitesh Jodhani 1004143269

Executive Summary

The North American EV industry is rapidly expanding, and EV battery production is a critical component of the supply chain. This project investigated the structure of the EV battery supply chain and evaluated the operations of major North American EV battery manufacturers. The goal was to develop an operations strategy that would optimize the supply chain and meet the industry's future demands.

After analyzing the value chain and conducting industry-specific case studies, a comprehensive strategy for optimizing the North American EV battery industry was developed. Investing in R&D, infrastructure, diversifying raw materials, developing a sustainable business model, improving the supply chain, and increasing the skilled labor force are all part of the strategy. The overall goal is to optimize operations throughout the EV value chain by securing raw material access, supporting domestic industry growth, stimulating manufacturing sectors, and facilitating end-of-life reuse and critical material recycling. Circular growth is a promising strategy for the EV battery industry, with the potential to increase domestic raw and processed material supply, reduce waste, and benefit the environment. The next steps will be to conduct additional research, develop federal policies to encourage sustainable practices, and establish a multinational spending pool.

We also suggested the next steps for the EV industry in North America. Three key next steps are recommended for EV battery manufacturers. To begin, case studies on critical materials such as nickel, cobalt, and graphite are being researched to ensure their sustainable sourcing, production, and recycling to support circular growth in the industry. Second, by encouraging the use of recycled materials, sustainable mining practices, and the development of new recycling technologies, the federal government can incentivize all sectors of the value chain to promote sustainability.