

EMERGING INQUIRIES IN THE ELECTRIC VEHICLE BATTERY MATERIALS SECTOR: SYNTHESIS OF KEY THEMES AND AGENDA FOR ENERGY ECONOMICS RESEARCH

Rubal Dua, King Abdullah Petroleum Studies and Research Center (KAPSARC), KSA, rubal.dua@kapsarc.org

Overview

As the world moves towards decarbonization and sustainability, electric vehicles are becoming increasingly important. The demand for electric vehicles is expected to rise significantly in the coming years, which will drive the market for electric vehicle battery materials. This study summarizes the wide-ranging scope of recent media inquiries pertaining to the business and financial aspects of the electric vehicle (EV) battery materials sector into themes, highlighting emerging research areas for exploration that could provide valuable insights for various stakeholders. Given the climate-, energy-, and industrial-policy implications of recent business and financial developments in the EV battery materials sector, there is merit in translating what is currently being reported in international media as significant for the industry, investors, governments, and policymakers into potential research areas that warrant further investigation. Moreover, investigative media articles are frequently ahead of academic literature in providing insights into emerging issues and trends that have not yet been studied or documented. Instead of focusing on conclusions, we emphasize recent questions to underscore areas that warrant further investigation. Finally, we outline a list of specific energy economics-related research topics that merit further investigation and could lead to valuable insights for the diverse stakeholders involved, including industry, governments, policymakers, and investors. This information could prove beneficial to research-focused organizations, including think tanks, universities, and consulting firms, as they seek to better understand and address the needs of these stakeholders on timely, significant, and relevant issues.

Methods

We collected all Financial Times (FT) articles published over the last two years 2022 and 2021 pertaining to EV battery materials. Given the global nature of the EV battery materials market and global coverage of FT and the fact that our focus is more on questions than on findings, we utilize FT as a representative sampling of the most recent business and financial questions emerging from the global EV battery materials sector that merit further investigation. In other words, since we are not seeking to validate or refute any particular hypothesis or conclusion, and our only aim is to identify key themes and subthemes by extracting a wide range of questions, the articles published in FT could be considered to provide a reasonable overview of the business and financial issues facing the global EV battery materials sector. Nonetheless, it is essential to note that the Financial Times focuses primarily on business and financial issues. Therefore, it is unlikely that this analysis has identified all themes pertaining to all aspects of the EV battery materials sector. Consequently, while the sample of questions based on FT articles provides useful insights into key themes and subthemes related to the business and financial aspects of the global EV battery materials sector, it may not be representative of all aspects related to the sector.

To identify a broad range of articles pertaining to the EV battery materials sector, we searched articles published in Financial Times using a combination of topics including – (i) batteries and mining, (ii) batteries and commodities, (iii) batteries and supply chains, (iv) batteries and industrial metals, and (v) electric vehicles and industrial metals. Combining the results from the five searches and removing duplicates left us with 85 unique articles published in Financial Times over the last two years 2022 and 2021. After going through the list of 85 articles, 83 articles were deemed relevant to the scope of our study. We analyzed all 83 articles in-depth and grouped the media inquiries into categories based on their common themes and laid out potential energy economics-related research topics that merit further investigation.

Results

The methodology yielded a total of ten major themes. We subdivided some of the themes that had numerous questions into subthemes. The ten determined themes and subthemes, based on grouping the 83 questions, are listed in order of the number of questions contained within each.

1. Revamping Regional EV Battery Material Supply Chains: China's Dominance and Alternatives
 - a. Developing Diverse Regional EV Battery Material Supply Chains: Reducing Dependence on China
 - b. China's Strategies to Maintain Dominance in the EV Battery Material Supply Chain
 - c. Chinese Firms' Investments in Western Countries' Lithium Refineries with the Prospect of Reducing Dependence on China
2. Navigating Price Volatility and Supply Concerns in Battery Materials Markets
 - a. Outlook for Battery Critical Metals' Supply, Demand, and Pricing

- b. Outlook for EV Industrial Metals' Supply, Demand, and Pricing
 - c. Commodity Exchange Trading and Market Volatility in Battery Material Markets
 3. Lithium Investments and Battery Supply Chain Start-Ups in Europe
 - a. Investments in lithium projects amid global competition for battery metals
 - b. Start-up companies and Europe's efforts to create a sustainable battery value chain
 4. Challenges and Implications of Raw Material Shortages and Rising Prices in the Global Rollout of EVs
 5. EV Industry's Strategies for Securing Critical Battery Materials
 6. Geopolitical Dynamics and Emerging Developments in Battery Material Supplier Countries
 7. Navigating Environmental, Social, and Governance Challenges in Battery Material Mining Amidst Rising Demand
 8. Financial Performance and Investor Outlook in the Rapidly Evolving EV Battery and Materials Market
 9. Potential Effects of Cheaper Chinese Electric Car Batteries on Recycling Costs
 10. Legal Investigations Involving EV Battery Material Suppliers

Energy economics-related research on these topics can lead to a better understanding of - the current state of the EV battery supply chain; the potential economic impact of reducing dependence on China for EV batteries; the impact of policy and regulation in shaping the EV battery supply chains; the geopolitical implications of China's efforts to secure stable EV battery materials supplies; supply-demand dynamics and pricing implications; challenges faced by market participants in trading and hedging battery materials; the economic impact of battery material shortages and rising prices; and the potential consequences of the formation of OPEC-like groups among producers of critical metals.

Conclusions

The themes and subthemes identified in this work can provide valuable insight into potential research topics for organizations such as think tanks, universities, and consulting firms to investigate further. The investigation of these topics can yield valuable insights for stakeholders involved in the global EV battery materials sector, such as industry, governments, policymakers, and investors.