Analysis and design of lithium-ion solar container industry chain

Does a global lithium-ion battery supply chain need a multilevel framework?
Our analysis underscores that a deep and equitable decarbonization of the global lithium-ion battery supply chain requires an integrated,multilevel frameworkthat moves beyond siloed policies.

Could lithium supply the European battery value chain with lithium?
ers. These could supply the European battery value chain with lithium. According to published production capacity information, around 425 GWheq/a could be realised with the planned extraction volumes by 2030. The own supply could inc ease to approximately 25% with the deposits that have been identified.However, which p

Why is the lithium-ion battery supply chain important for Global decarbonization?
Provided by the Springer Nature SharedIt content-sharing initiative The lithium-ion battery supply chain is critical for global decarbonization1,2, yet its geographically dispersed production stages pose substantial challenges for carbon management3,4.

How can a circular economy improve lithium-ion battery supply chain?
A circular economy approach applied to the global lithium-ion battery supply chain shows that combining cross-regional cooperation on technology and trade with regionally tailored domestic circular economy policies yields the highest global emission reduction.

How do battery supply chains affect environmental and socio-economic impacts?
However,depending on the design of battery supply chains,environmental and socio-economic impacts can vary considerably. Especially the selection of suppliers as well as production locations and processes can have a major influence.

Why is the lithium supply chain vulnerable?
Trade networks are complex and dynamic systems (Hao et al.,2023,Liu et al.,2024). The intricate trade relationships between countriescontribute to the vulnerabilities of the lithium supply chain.

In order to develop, operate, and optimize the new material-based supply chain, new decision-making frameworks and tools are needed to design ...

Results show that: (1) The global lithium industry chain supply network system exhibits a "hub and spoke" feature with a "robust yet fragile" structure. (2) Countries in Asia and Europe are ...

The increasing number of electric vehicles worldwide leads to various challenges, especially in terms of battery supply chains. New battery production...

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This Policy Brief focuses on the issues and challenges raised by the electrification of the transport fleet, through the study of lithium-ion batteries. It provides an in-depth analysis of the positioning of various ...

The review describes the end-of-life management of the Li-ion battery (LIB) from raw material composition to recycling/remanufacturing from the perspective of industrial engineering, ...

Download Citation | On Dec 1, 2024, Li Jian-fei and others published A predictive model for the security and stability of the lithium-ion battery industry chain based on price modal combinations ...

This paper develops a value chain analysis (VCA) model, with a consideration of value retaining processes (VRPs), which combines physical and monetary value flows of lithium (Li) for ...

This study aims to examine the evolution of China"s lithium supply chain networks from 2017 to 2021 and employs an attack model to reveal network resilience. A lithium supply chain ...

Batteries recycling typically involves high-temperature melting-and-extraction, or smelting, a process like ones used in the mining industry. But there is a large amount of research taking place to find better ...

This study introduces a novel framework for managing the lithium-ion battery supply chain, which is essential for electric vehicles and smartphones. The framework integrates a contract ...

[Objective] This study aims to simulate the vulnerability of the lithium industry trade network in the event of interruption risks. The goal is to effectively identify key nodes and potential ...

In this regard, the present study proposes a two-phase approach based on a new hybrid multicriteria decision-making (MCDM) method and sustainable robust optimization (RO) ...

The lithium-ion battery industry is driving the global clean energy transition but faces growing sustainability challenges. Pollution and recycling bottlenecks span the entire materials life ...

This analysis provides insights for advancing sustainable LIB supply chains, and informs optimization of industrial-scale environmental impacts for emerging battery recycling efforts.

Effects of network structures on the production planning in closed-loop supply chains - A case study based analysis for lithium-ion batteries in Europe

Resilient Supply Chains in the Battery Industry Publication of the accompanying research on battery cell production on behalf of the German Federal Ministry for ...

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Lithium-ion Battery Market Summary The global lithium-ion battery market size was estimated at USD 54.4 billion in 2023 and is projected to reach USD 182.5 billion ...

Therefore, the aim of this study is to investigate battery supply chain options to highlight the differences and trade-offs related to the three sustainability dimensions.

Resilient Supply Chains in the Battery Industry Publication of the accompanying research on battery cell production on behalf of the German Federal Ministry for Economic Affairs and Climate Action

By introducing a conclusive nomenclature and a consistent classification, the depiction, analysis and assessment of raw material value chains for lithium-ion technology is facilitated.

Based on such concept, this study assesses the risks of the lithium-ion battery related materials in the three major stages of the entire supply chain: mining, refining and manufacturing. ...

In view of the fragmentation of world trade, the proliferation of lithium supply chains, and the multiple transactions of lithium industry chains between trading countries, exploring the ...

Electric vehicle lithium-ion battery supply chain (EV LIB SC) exhibits reduced resilience when confronted with supply disruptions in upstream mineral ...

Lithium-ion batteries (LIBs) deployed in battery energy storage systems (BESS) can reduce the carbon intensity of the electricity-generating ...

Faced with these imperatives, battery manufacturers should play offense, not defense, when it comes to green initiatives. This article describes how the industry can become sustainable, circular, and ...

How to achieve harmonious development of economy, society, and environment, and scholars focus on closed-loop supply chain (CLSC) under corporate social responsibility (CSR). This ...

Our analysis provides a quantitative basis for the value-emission paradox within the global lithium-ion battery supply chain.

One potential solution to address this issue is the implementation of a circular economy model. This study aims to identify and assess the key ...

A relevant concern is the supply security of lithium-ion batteries, which has been raised and discussed in existing literature in the context of ...

The demand for raw materials for lithium-ion battery (LIB) manufacturing is projected to increase

substantially, driven by the large-scale adoption of electric vehicles (EVs). To fully realize ...

This article introduces the overview of the Chinese Lithium-ion Power Battery Export Industry as well as the lithium battery industry chain. Specifically, the article focuses on the ...

While the lithium-ion battery supply chain will likely remain Chinese-dominated until 2030, a European CRM supply security policy and other global supply diversification policies are picking up. Re-shoring ...

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