

Should lithium-ion batteries have a circular economy?

A circular economy for lithium-ion batteries could decrease manufacturing costs, add additional revenue streams, and offer tax benefits. New and expanded markets could also create jobs.

Are lithium-ion batteries a circular product?

In a sense the lithium-ion battery is already very circular as a product. They last for a long time, they are reused and recycled. However, the circle looks very different to what policy makers, academics and NGOs often suggest as batteries are being used and reused without control and visibility for our societal institutions and control systems.

Could a circular economy extract more value from battery energy storage systems?

A circular economy would extract more value out of lithium-ion battery energy storage systems, according to Taylor Curtis, project lead and NREL analyst. However, only one U.S. lithium-ion battery recycling facility exists today. The complete findings are published in an NREL technical report.

What is a circular economy for energy materials?

A circular economy for energy materials, such as lithium-ion batteries, reduces waste and preserves resources by designing materials and products with reuse, recycling, and upcycling in mind from the start. Decommissioned lithium-ion batteries are often considered either hazardous or universal waste, which have their own regulations.

What is the life cycle of a lithium-ion battery?

The life cycle of a lithium-ion battery is typically based on a linear model, in which the batteries are made, consumed, and disposed of without much consideration for end-of-life management strategies, including opportunities to reuse or recycle. (Note: The passage does not provide specific information about the length of the life cycle.)

Can lithium batteries be recycled?

In about 2 years, the recycling of lithium batteries which still in 2016 was claimed in Europe to lack economic viability as "only 3% of the material mix in batteries is made of lithium", became profitable and convenient.

A Circular Economy for Lithium-Ion Batteries Used in Mobile and Stationary Energy Storage: Drivers, Barriers, Enablers, and U.S. Policy Considerations . Taylor L. Curtis, Ligia Smith, ...

This critical review aims to synthesize the growing literature to identify key insights, gaps, and opportunities for research and implementation of a circular economy for two of the leading technologies that enable the transition ...

But lithium-ion batteries have long lives, says Hans Eric Melin, director of Circular Energy Storage. "Thirty percent of used EVs from the U.S. market are now in Russia, Ukraine, ...

Driven by the rapid uptake of battery electric vehicles, Li-ion power batteries are increasingly reused in stationary energy storage systems, and eventually recycled to recover ...

By Hans Eric Melin, Circular Energy Storage July 2019 Analysis of the climate impact of lithium-ion batteries and ... The lithium-ion battery is not really one single battery type but basically the ...

Lithium is key for a clean energy transition but faces sustainability challenges in the global supply. Here, we use a bottom-up approach to study the evolution of the global ...

Circular Energy Storage was the first consultancy in the world to publish forecasts on the lithium-ion battery end-of-life volumes. We have built our data bottom-up by basically tracking every single EV model and its batteries, ...

To start to identify possible pathways for a circular economy--one of the laboratory's key research objectives--NREL analysts assessed the state of reuse and recycling of large-format lithium-ion batteries ...

A critical review of the circular economy for lithium-ion batteries and photovoltaic modules - status, challenges, and opportunities. ... (PV) capacity in the United States could exceed 1 TW by 2050 alongside ...

In the context of utility-scale energy storage, a circular economy approach means examining the entire lifecycle of energy storage systems, from raw material extraction to end-of-life disposal. ... Li-Cycle's two-step process ...

Fingerprint Dive into the research topics of "A Circular Economy for Lithium-Ion Batteries Used in Mobile and Stationary Energy Storage: Drivers, Barriers, Enablers, and U.S. Policy ...

