
Government policies and regulations in shaping the landscape of Li-ion battery recycling

Songhak Yoon

2024 Korea-Finland Sustainable and Circular Economy Symposium
(30 August 2024)

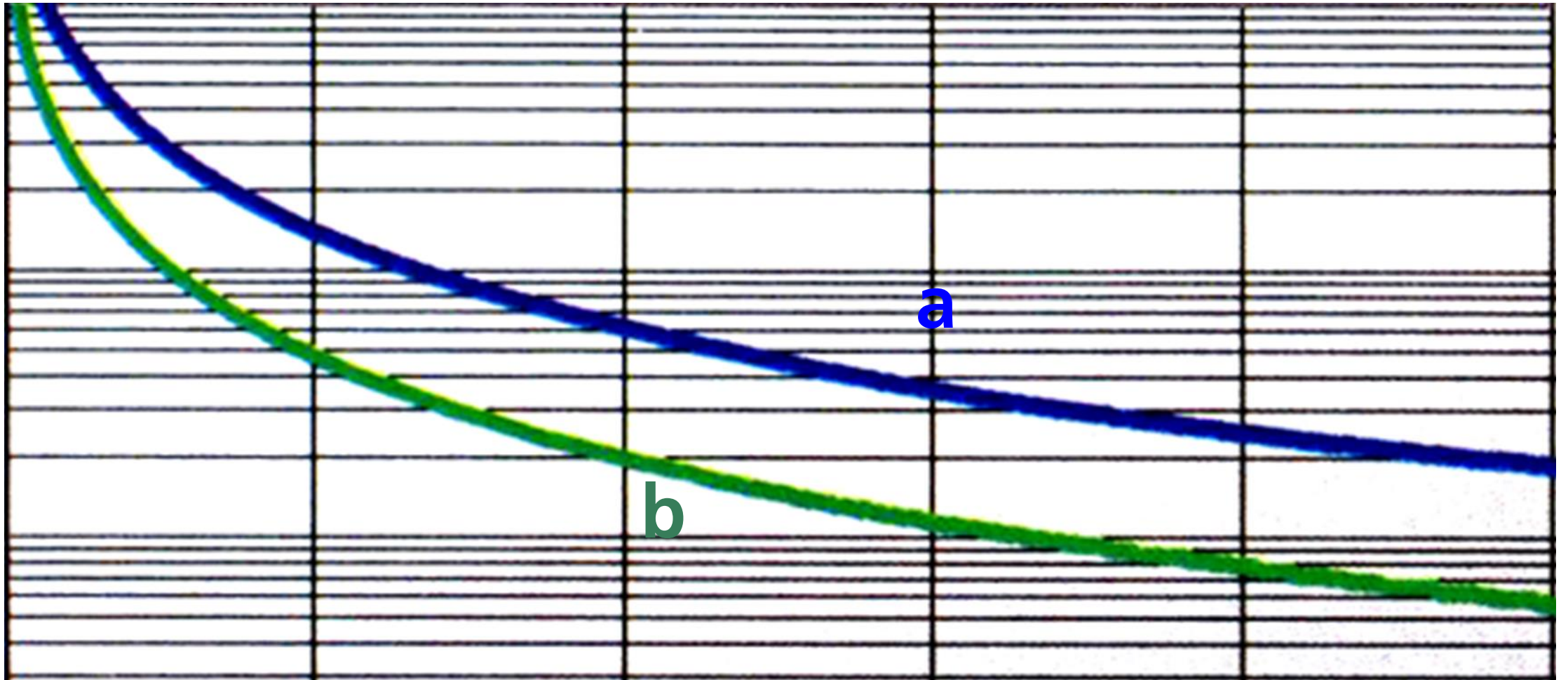
**IF YOU GIVE AN ANSWER TO YOUR VIEWER, YOUR FILM WILL
SIMPLY FINISH IN THE MOVIE THEATRE. BUT WHEN YOU POSE QUESTIONS,
YOUR FILM ACTUALLY BEGINS AFTER PEOPLE WATCH IT.**

관객에게 답을 주는 영화는 극장에서 끝날 것이다.
하지만 관객에게 질문을 던지는 영화는 상영이 끝났을 때 비로소 시작한다.

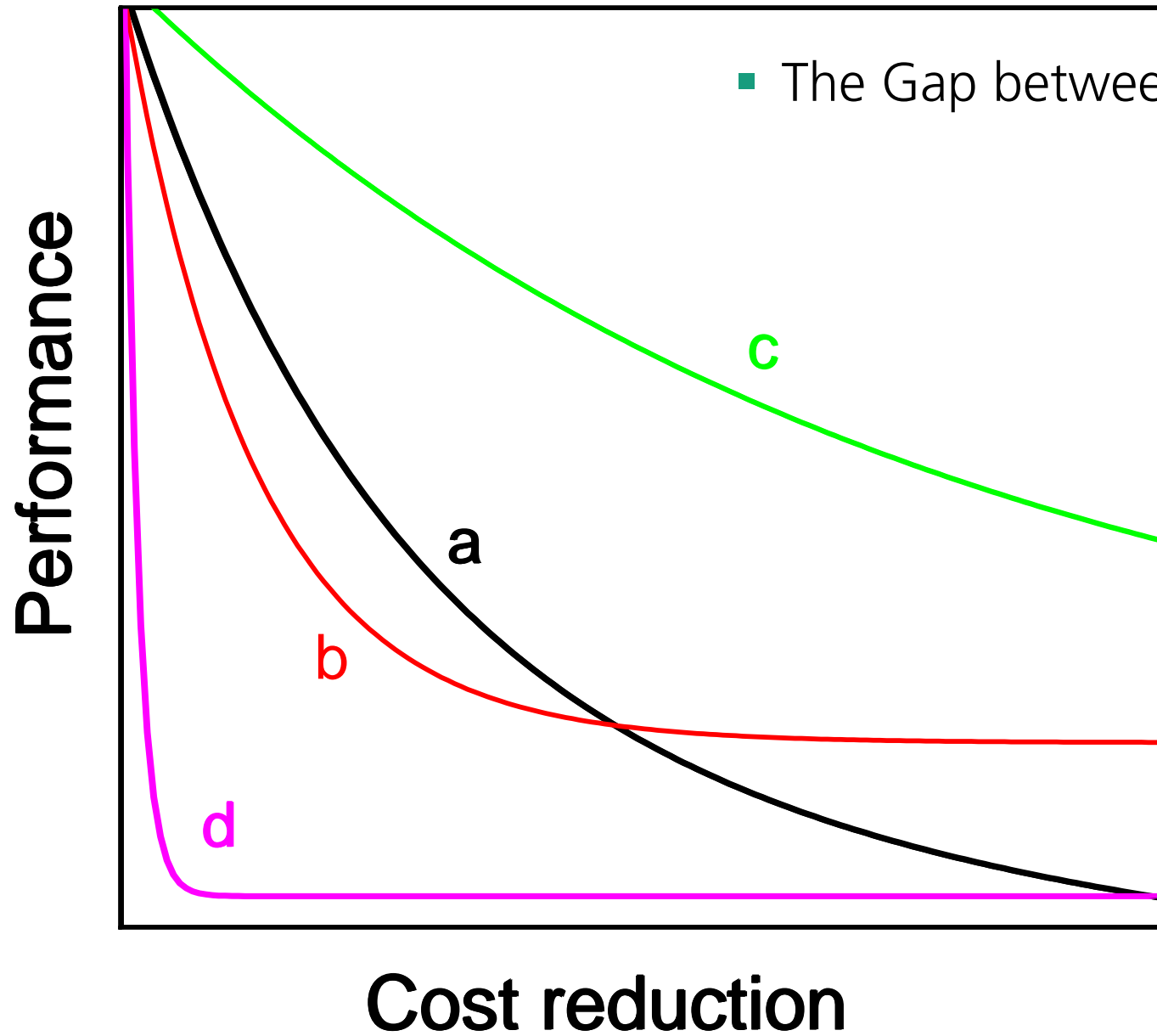
[ASGHAR FARHADI · 아쉬가르 파라디]

Policies and regulations

Performance |



Cost reduction



■ The Gap between **a** and **b** ...

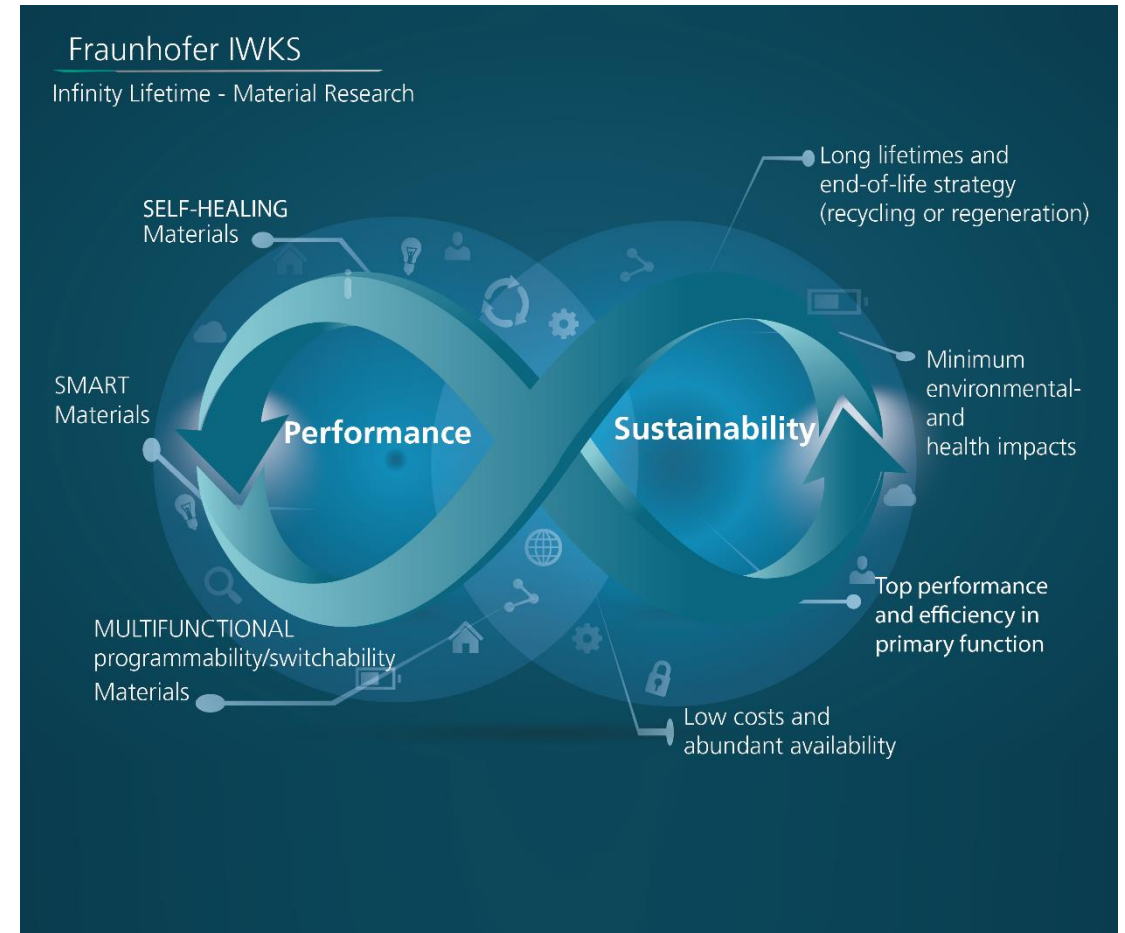
Research at the Fraunhofer IWKS

Sustainability, a demoninator ?

We develop new materials and technologies based on material science for a sustainable, waste-free circular economy.

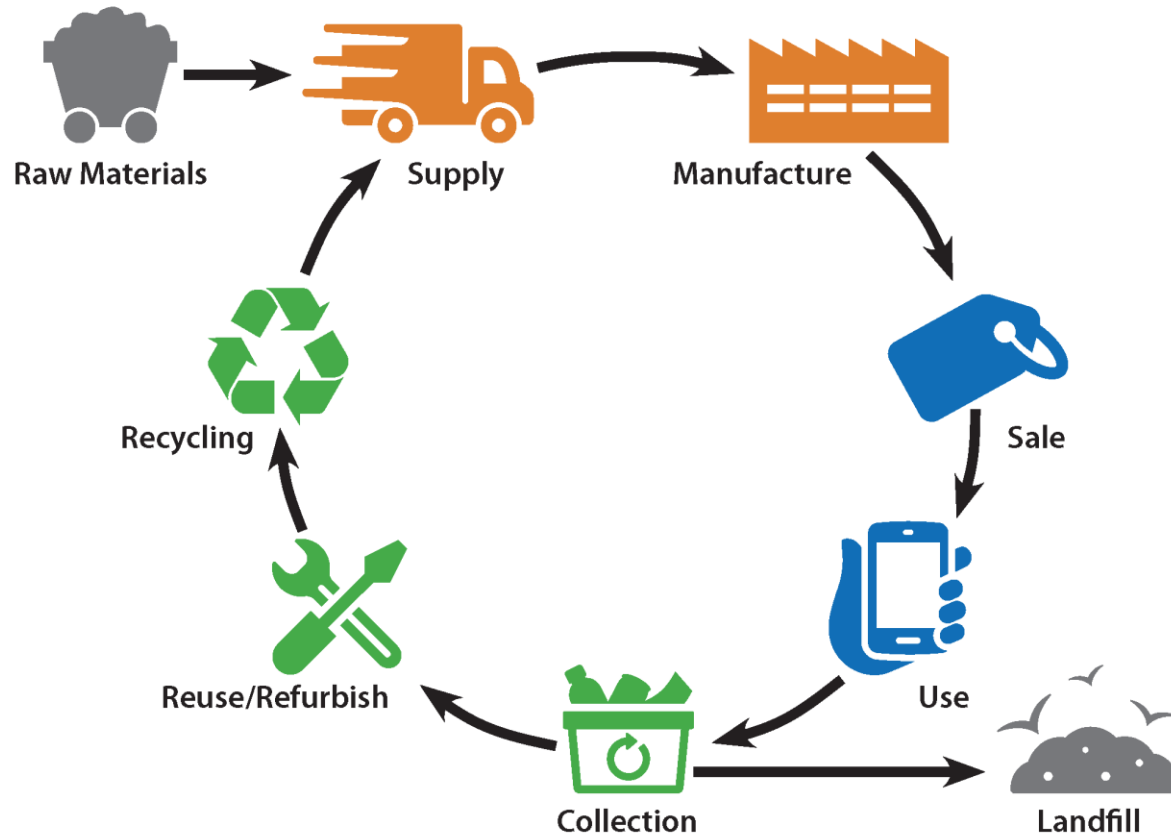
Our research includes

- energy-efficient recovery of materials (recyclates) as sustainable precursors for **production**,
- **substitution** of critical raw materials by more sustainable alternatives,
- intelligent **regeneration** of future-oriented materials with regard to longevity of products.





Closed-loop battery recycling

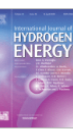


The different sectors need to become **more interdependent**
→ new forms of **collaborative models among companies**,
including novel business models


The Investments in such cooperation are **relation-specific**
→ making long-term commitment difficult, **rather joint-venture in LIB recycling**

- Can be the other sectors to be much greener ?

Especially when it comes to battery recycling, we cannot avoid talking about China.



Charging Chinese future: the roadmap of China's policy for new energy automotive industry

Jianzhong Li 

Highlights

- China's policy development of new energy vehicle industry is schemed thoroughly.
- Intense government intervention is necessary and successful at the starting stage.
- China's new energy vehicle industry is a government-centralized dance.
- Delicate balance between policy intervention and market-adjustment should be kept.

Laws about Battery Recycling in China in Recent 10 Years

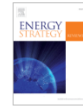
China has realized the urgency of battery recycling and has successively introduced many policies to promote the development of the battery recycling industry

Year	Laws and regulations	Major regulations on battery recycling
2012	Energy Saving and New Energy Vehicle Industry Development Plan (2012–2020)	Formulate power battery recycling and utilization management methods, establish power battery cascade utilization and recycling management system
2015	Technical Policy on Recycling and Utilization of Electric Vehicle Power Battery (2015 Edition)	Specifies the recycling, disassembly, storage, and utilization of waste power batteries
2016	Industry standard conditions for comprehensive utilization of waste batteries of new energy vehicles	Promote the recycling, large-scale, and high-value utilization of used power batteries, and improve the comprehensive utilization of resources
2018	Notice on Organizing the Pilot Work of Recycling and Utilization of New Energy Vehicle Power Batteries	Promote automobile production and other related enterprises to implement the responsibility of power battery recycling, and establish a recycling system and a full life cycle supervision mechanism
2018	New Energy Vehicle Power Battery Recovery and Utilization Pilot Implementation Plan	By 2020, China will establish and improve the power battery recycling and utilization system, and explore and form innovative business cooperation models for power battery recycling and utilization
2019	Industry Specification Conditions for Comprehensive Utilization of Waste Power Batteries of New Energy Vehicles	The layout and project location, technology, equipment and process, comprehensive utilization of resources, energy consumption, and environmental protection of battery recycling enterprises are clearly required
2020	Administrative Measures for Cascade Utilization of Power Batteries for New Energy Vehicles	Echelon utilization enterprises are encouraged to cooperate with new energy vehicle production, power battery production, and scrap motor vehicle recycling and dismantling enterprises to efficiently recycle waste power batteries for echelon utilization
2021	Administrative Measures for Cascade Utilization of Power Batteries for New Energy Vehicles	Encourage power battery production enterprises to participate in the recycling and utilization of waste power batteries
2021	Circular Economy Development Plan of the 14th Five-year Plan	Strengthen the construction of a new energy vehicle power battery traceability management platform, and improve the new energy vehicle power battery recycling traceability management system
2021	Specification Conditions for Lithium-ion Battery Industry (2021 Edition)	Enterprises are encouraged to increase resource recovery and comprehensive utilization in product front-end design
2021	Announcement on improving value-added tax policy on comprehensive Utilization of resources	The recovery rate of nickel, cobalt, and manganese should not be less than 98%, and that of lithium should not be less than 85%
2022	Notice on the coordinated and stable development of the lithium-ion battery industry chain and supply chain	Promote the orderly layout of the lithium battery industry to ensure the stability of the industrial chain and supply chain, improve the supply capacity of public services, and ensure the supply of high-quality lithium battery products
2023	Administrative measures for recycling and utilization of power batteries for new energy vehicles	To strengthen the standardized management of the industry, the recycling and utilization of new energy vehicle power batteries have been promoted by laws and regulations



Energy Strategy Reviews

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Assessing policy influence on electric vehicle adoption in China: An in-depth study

Financial and preferential EV policies have a considerable impact towards shaping the attitude of consumers and significantly related to adoption intention of EVs.



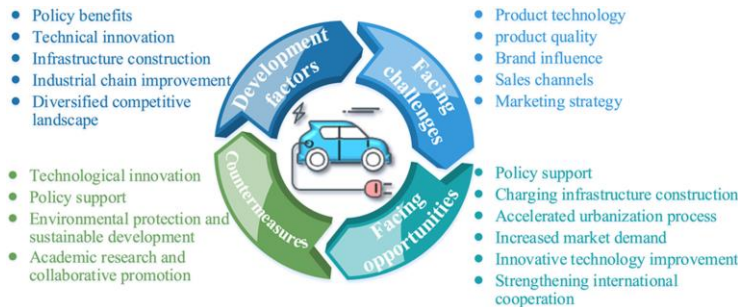
Green Energy and Resources

Volume 2, Issue 2, June 2024, 100075



Review

Overview of Chinese new energy vehicle industry and policy development



Energy

Volume 295, 15 May 2024, 130998



Synergistic effect of government policy and market mechanism on the innovation of new energy vehicle enterprises

Government policy and venture capital play an innovative synergistic effect. There is an innovation failure in policy mix before venture capital intervention.

Good and bad examples of incentives

Distorted innovation by regulation

- The new regulation also means that European EV manufacturers will be more **constrained in their options** to source batteries than manufacturers in the less regulated United States but also in a strongly regulated China as their share of the LIB market is simply so much bigger and their players much more mature.
-
- A second mechanism for distorted innovation involves situations where **regulatory guidance lags the technical realities in the Market**
- A third case of distorted innovation is that the requirements for recycled content could **hamper the speed at which new technologies are introduced and raise expectations** for the overall growth of the LIB market



RESOURCE POLICY

Global implications of the EU battery regulation

A much-needed law may have unintended global consequences

Good examples of incentives

- **Supporting Infrastructure Development :**

Installing dedicated parking lots for electric vehicles in government offices and public facilities, prioritizing electric vehicles for resident priority parking

In Korea, for instance, allowing electric vehicles to use expressway bus lanes for a short period of time

→ Rather than providing direct subsidies with limited tax budgets, a practical alternative by reducing user inconvenience and time.

- **Research and Development Funding :**

Governments fund R&D initiatives aimed at improving recycling technologies, making the processes more efficient and cost-effective, and even environmentally friendly discovering new ways to recycle or reuse battery materials.

Bad examples of incentives

Focuses only on the differences that are visible in Short-term perspectives

The most urgent thing is to revise the subsidy system for electric vehicles and charging infrastructure.

Reducing subsidies when sales are good and increasing subsidies when sales are bad may help in the short term. However, in the long term, it will greatly increase the volatility of vehicle prices, making it difficult to purchase vehicles.

World Europe

Germany's electric car subsidies spark Danish sales ploy

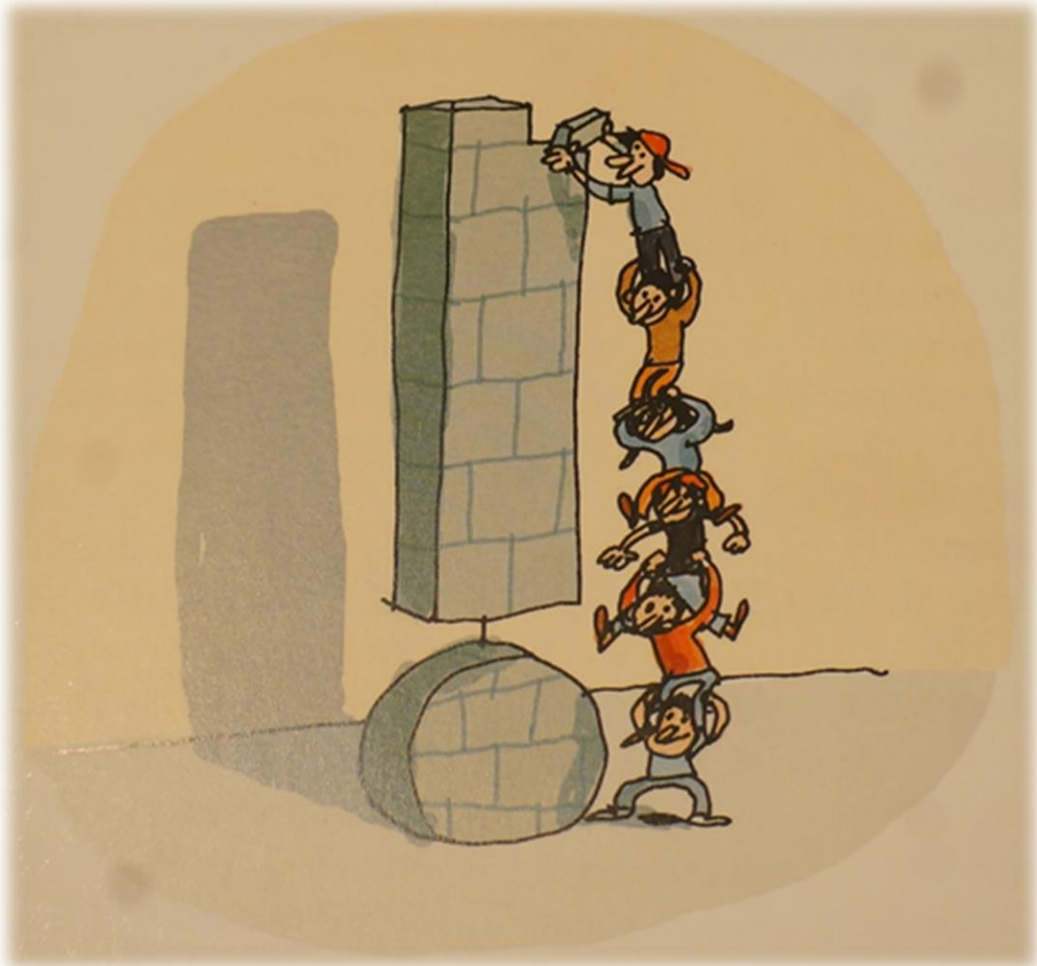
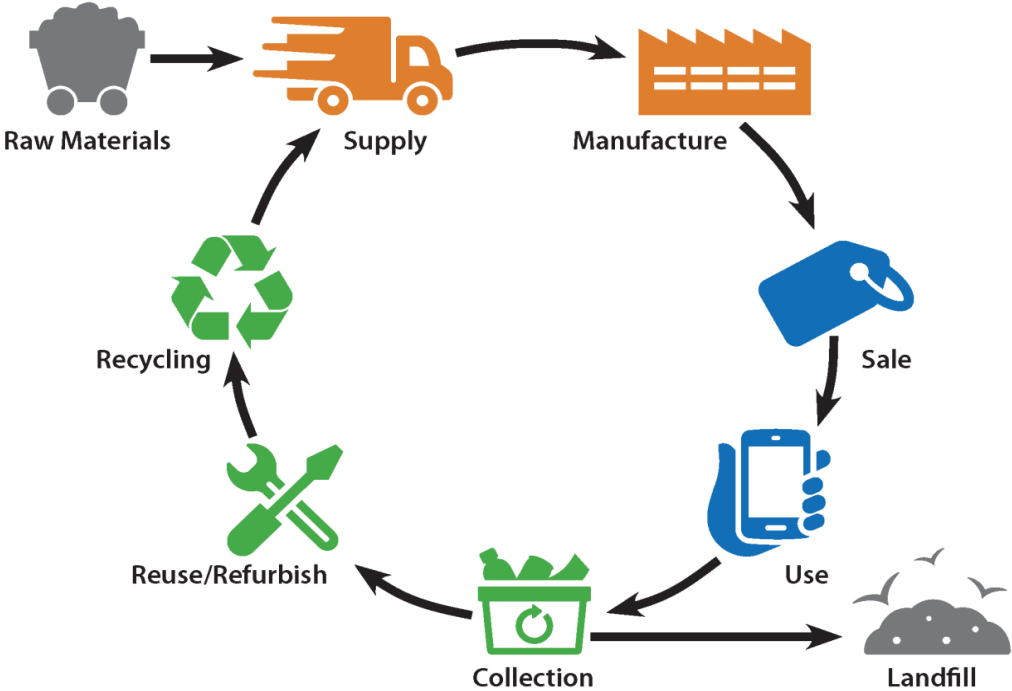
Bonus for plug-in vehicles is intended to transform Germany's flagship industry

Germany has defended its €9,000 (\$10,200) bonus for electric car buyers after claims that many of the vehicles subsidized by taxpayers are disappearing over the border into Denmark.

Updated: January 04, 2022, 3:12 PM

<https://www.thenationalnews.com/world/europe/2022/01/04/germanys-electric-car-subsidies-spark-danish-sales-ploy/>

The value of deep and wide thinking





It would be nice if experts from various fields could cooperate to formulate policies and regulation and to diagnose the flaws of policies and regulations.

Thank you for your interest!

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