

Akkuteollisuus Euroopassa

Sähköenergian varastointiratkaisut –tilaisuus

Jyrki Alkio 16.1.2024



Työ- ja elinkeinoministeriö
Arbets- och näringsministeriet





Ajanlaskun alku



In October 2017, Vice President Maros Šefčovič launched the European Battery Alliance together with EU countries and industry.

The alliance's main aim is to build up battery technology and production capacity in the EU, which is crucial for low-emission mobility, energy storage, and Europe's economic strategy. When launching the alliance, Europe had almost no battery cell manufacturing at scale. We only accounted for around 3% of the world market and faced a future with a mostly foreign-supplier-dependent EU. We expect that production in the EU will match demand by 2025. The alliance has attracted the industrial participation of some 440 actors and around €100 billion in investment commitments according to InnoEnergy.

In line with the [European Green Deal](#) , the [Circular Economy Action Plan](#) , and the [Industrial Strategy](#), we are working on a competitive, circular, sustainable and safe value chain for all batteries placed on the EU market. The European Battery Alliance integrates with the Commission's interests.

Eurooppalainen akkuprojekti käynnistyy

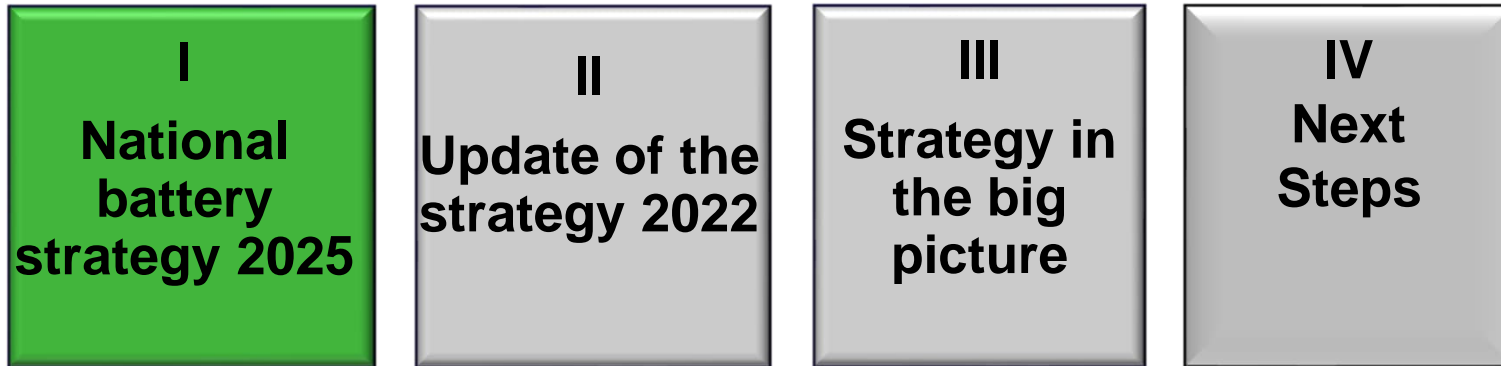


Raw and advanced materials	Cells and modules	Battery systems	Repurposing, recycling and refining
BASF	ACC	BMW	BASF
Eneris	BMW	Endurance	Endurance
Keliber	Endurance	Enel X	Elemental
Nanocyl	Eneris	Eneris	Eneris
Solvay	FAAM	Kaitek	FAAM
Terrafame	SEEL	SEEL	Fortum
Umicore	VARTA		SEEL
			Umicore

Raw and advanced materials	Battery cells	Battery systems	Recycling and sustainability
ACIS	Alumina Systems	ACIS	Borealis
Arkema	BMW	Alumina Systems	Enel X
Borealis	Cellforce Group	AVL	Engitec
Ferroglobe	ElringKlinger	BMW	FIAMM
Fluorsid	FCA	Endurance	Fortum
Green Energy Storage	Green Energy Storage	Enel X	Hydrometal
Hydrometal	InoBat Auto	Energia Aqua	Italmatch Chemicals
Italmatch Chemicals	Manz	FCA	Keliber
Keliber	Midac	FIAMM	Liofit
Prayon	Northvolt	FPT Industrial	Little Electric Cars
SGL Carbon	SGL Carbon	Green Energy Storage	Midac
Solvay	Skeleton Technologies	InoBat Energy	SGL Carbon
Tokai Carbon Group	Sunlight Systems	Manz	Tesla
VARTA Micro Innovation	Tesla	Miba eMobility	Valmet Automotive
	VARTA Micro Innovation	Midac	ZTS VaV
		Rimac Automobili	
		Rosendahl	
		Nextrom	
		Skeleton Technologies	
		Sunlight Systems	
		Tesla	
		Valmet Automotive	
		Volllabor	

[First pan-European research and innovation project, Dec. 9, 2019](#)

[Second pan-European research and innovation project, Jan 26, 2021](#)

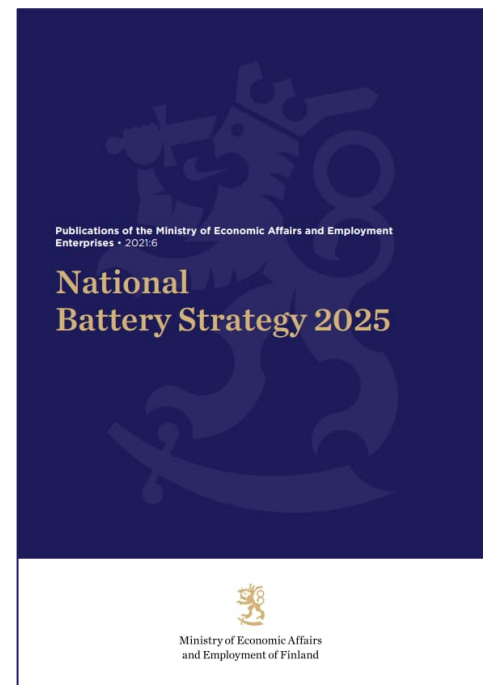


National battery strategy 2025



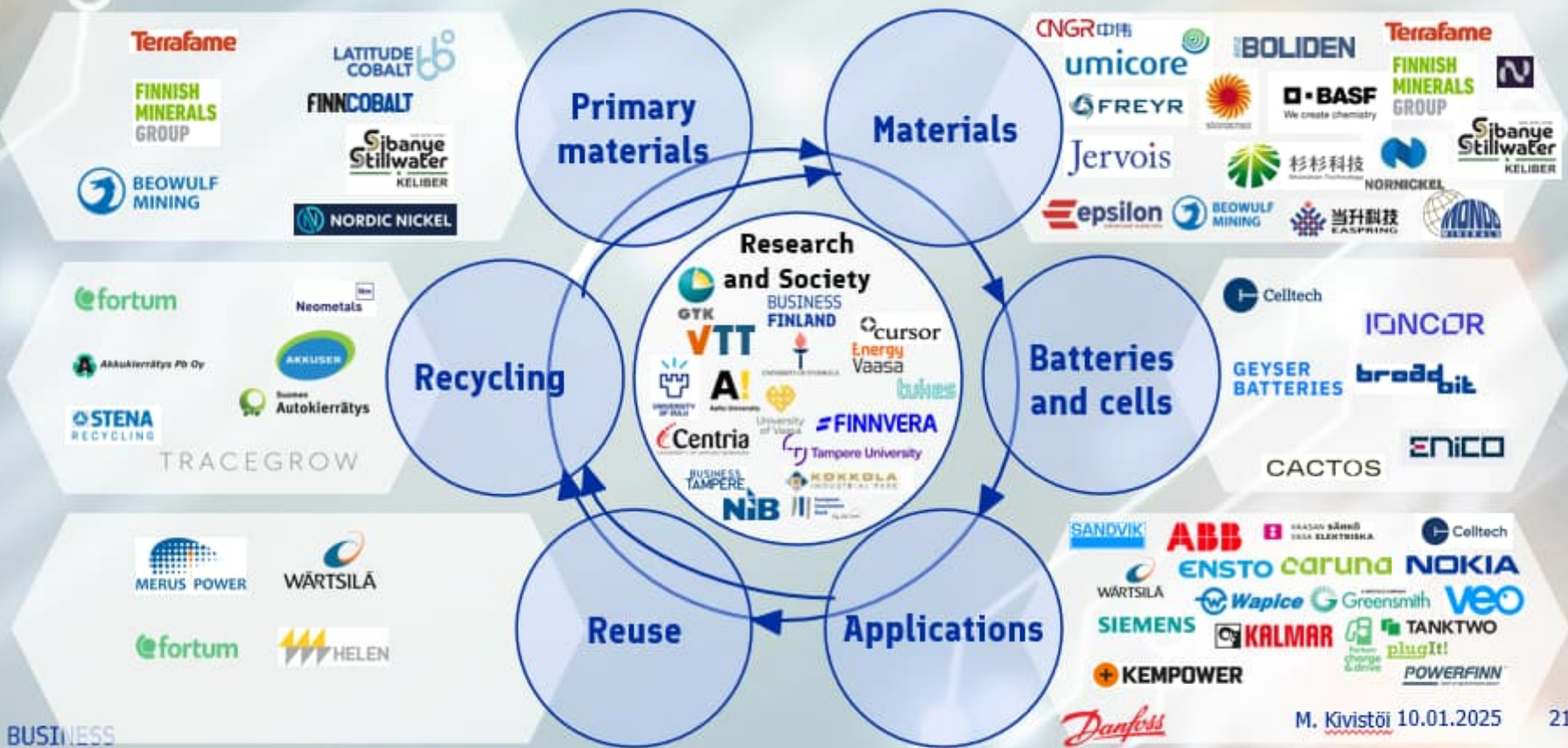
- The strategy was published in January 2021.
- Strong linkage to climate goals and battery projects in EU.
- Strategic goals:

Speed up the growth of low carbon economy In Finland (incl. investments)	Further responsible production and circulation of batteries
Further Work opportunities in the ecosystem	Grow the export of batteries and solutions in electrification



SUSTAINABLE CIRCULAR BATTERY BUSINESS FINLAND

SAMPLE OF COMPANIES



Akkustrategia 2025 - keskeiset oletukset



1. Sähköautojen kysyntä kasvaa voimakkaasti
2. Akkujen kysyntä kasvaa voimakkaasti (EV)
3. Eurooppaan syntyy vahva oma akkuteollisuus
4. NMC-akut hallitsevat markkinoita vuoteen 2025 (EV)
5. Suomeen ainakin yksi kennotehdas

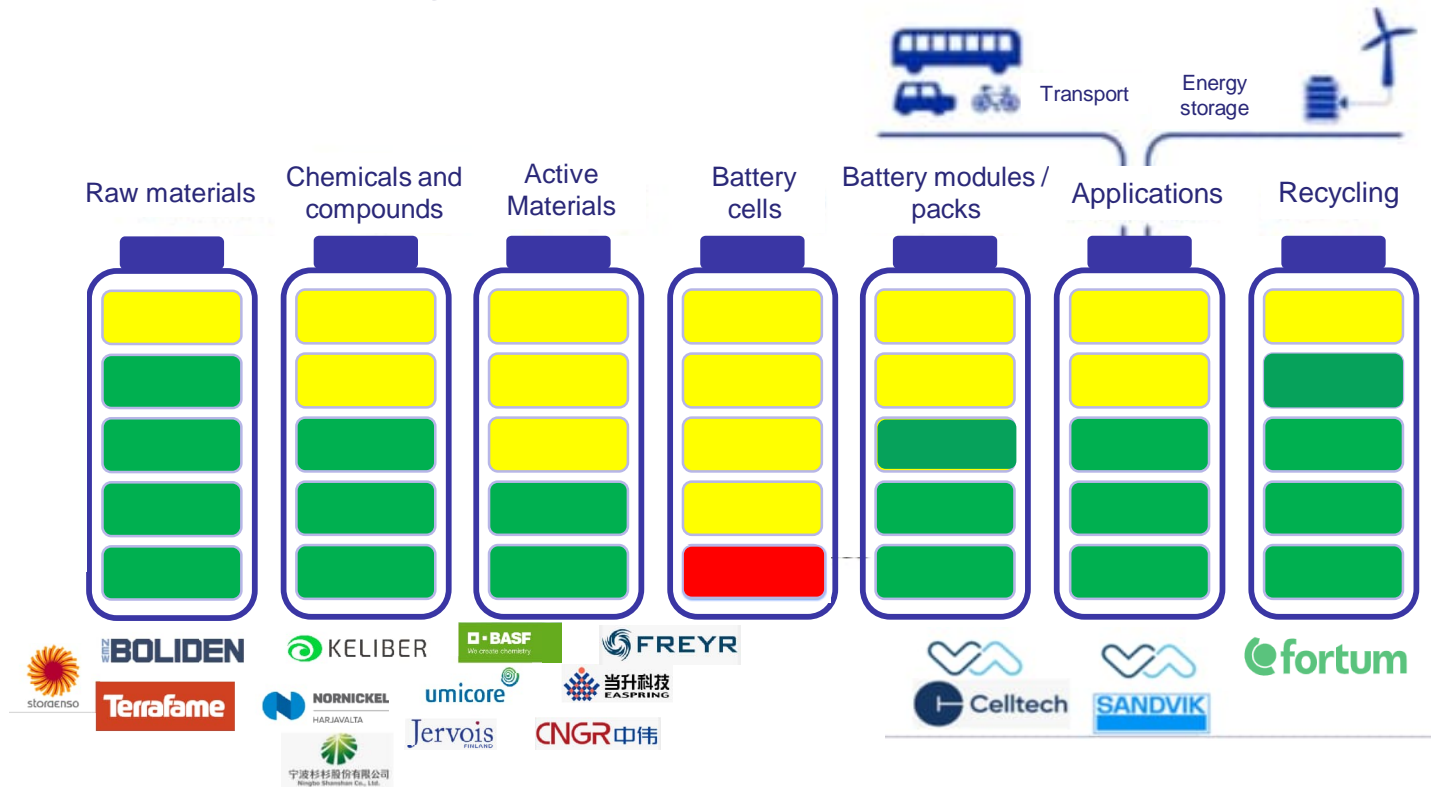
Examples of Strategic Actions



Areas of Strategic Actions	Examples of practical actions
Enhancing national cooperation	To create a national body to encourage and foster and coordinate efficient cooperation.
Scaling up the skills of the Battery and Electrification cluster	To establish an international doctoral school focusing on topics relevant to the national cluster.
Expanding EU and international cooperation	To coordinate and ensure that Finnish experts and companies participate actively in EU-level activities .
Establishing an operating environment that attracts investments to Finland	To make the permitting processes more fluent and predictable (single point of contact, digitalization etc.)
Making Finland a forerunner in sustainable and responsible battery production	To analyse and demonstrate the carbon footprint and carbon handprint of the Finnish Battery and Electrification cluster.
Developing the brand of the Finnish Battery and Electrification sector	To organise conferences and other events, for instance, a side event at Slush , the no. 1 start-up event in Europe.
Developing funding	Increasing the size of funding for high-risk investments.



Finnish battery value chain



Battery minerals and materials from Finland



Batteries & Electrification



SUSTAINABLE BATTERY MATERIALS

Battery raw materials

Advanced battery materials

Battery cells

Recycling



Competitiveness
Sustainability
Responsible
business

ELECTRIFICATION AND APPLICATIONS

Charging systems

E-Mobility

Heavy duty moving machines





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battery
strategy 2025**

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**Update of
the strategy
2022**

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the big
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**Next
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Updated and new focus areas



On going

- Permitting
- Investments
- Competences
- Availability of competent workforce
- Attractiveness of the industry
- Networking (FI/EU/global)
- Responsible & circular
- Circularity
- EU battery regulation

CONTINUE!

New fields of activities

- New battery chemistries, technologies and production technologies
- Electrification of heavy duty vehicles (on-road)
- Batteries as part of the energy system
- Digitalisation & data economy
- Export of production technologies and competences
- Critical Raw Material Act (EU)
- Program of the next government

**START!
RE-START!**



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NOT INNOVATED HERE

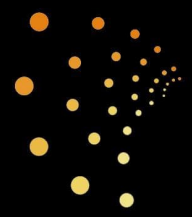
LABORATORY OF CREATIVE DESTRUCTION

Eurooppalainen akkuteollisuus vuonna 2024 – toiveet ja todellisuus

Akkualan yhteistyöryhmä – tilannepäivitys 22.11.2024

KTT Jarkko Vesa, toimitusjohtaja

Not Innovated Here – Laboratory of Creative Destruction



Ensin on puhuttava autoteollisuudesta

”Det går inte riktigt att prata om batteriindustrin utan att också prata om bilindustrin.”

”Batterier är ingen 'commodity' längre, de är en central del av bilens drivlina. **Att tappa förmågan att tillverka batterier** innebär att vi riskerar **att tappa förmågan att göra bilar** – och det är där europeisk konkurrenskraft riskerar att försvinna.”

Bo Normark, EIT InnoEnergy & European Battery Alliance

Ny spelplan för framtidens batterilösningar

NyTeknik

Av: Alicia Wennstig



Under de senaste åren har marknaden för batterier, både för fordon och stationär energilagring, växt fram som en nyckelkomponent i energiomställningen. Stationära batterier har blivit särskilt intressanta då de nu snabbt integreras i elnätet för att stabilisera och lagra förnybar energi, samtidigt som batterier för elfordon fortsätter att utvecklas. Trots den stora potentialen kantas bilbatteriindustrin av utmaningar i Europa, där kostnader, global konkurrens och beroende av utländska värdekedjor utgör stora hinder.

Sähköautomarkkinat vetävät happea

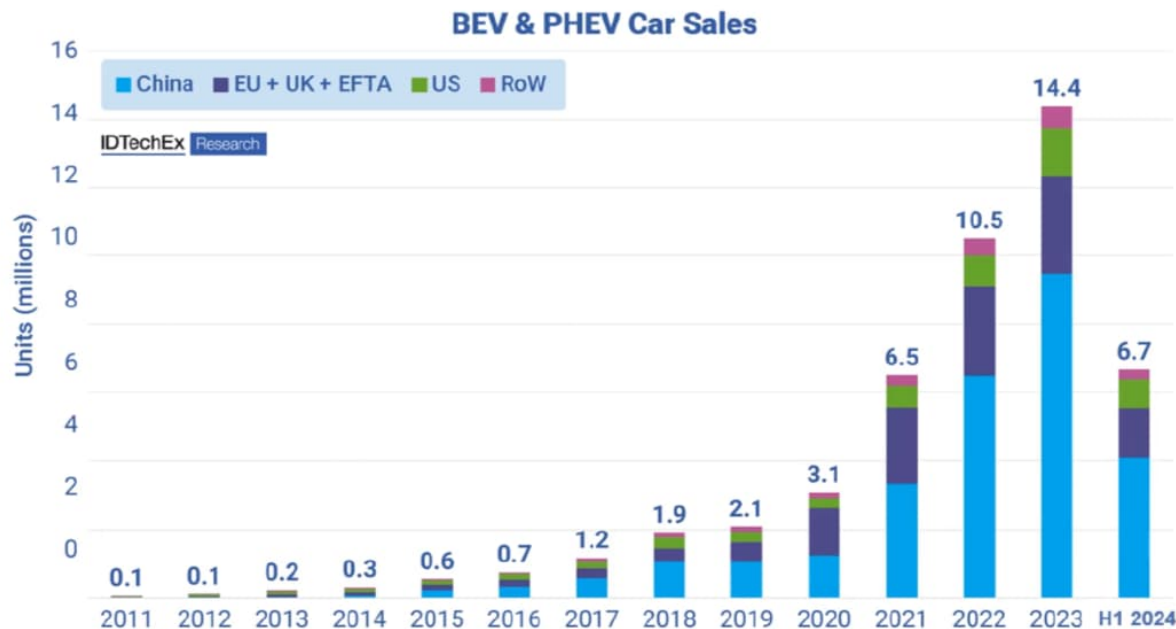
Global electric car sales hit 14.4 million in 2023.

3 markets (China, the USA, and Europe) dominate electric car sales. These figures account for both BEV and PHEV sales.

H1 2024 sales were less than 50% of the overall 2023 sales – although H2 sales performance is typically stronger.

It is important to note that growth is not uniform across all regions and drivetrains, generally H1 2024 has seen stronger sales in PHEVs than historically.

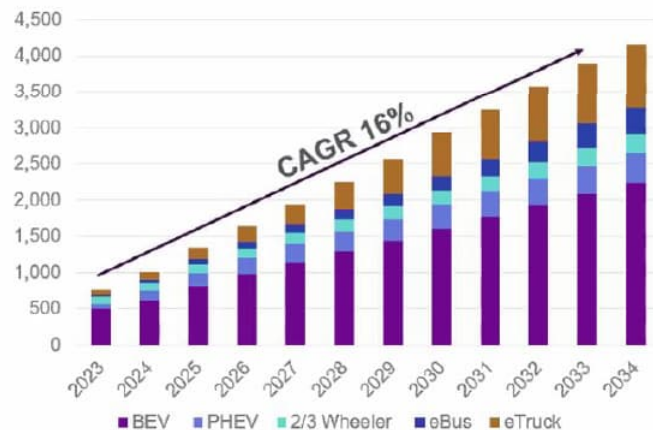
IDTechEx



Vuosi 2024 jäänyt odotuksista

Growth for battery demand hasn't been as strong as the market hoped this year...

xEV battery demand forecast, by vehicle type (2023-2034)
GWh



Demand by sector (2022-2034)
GWh

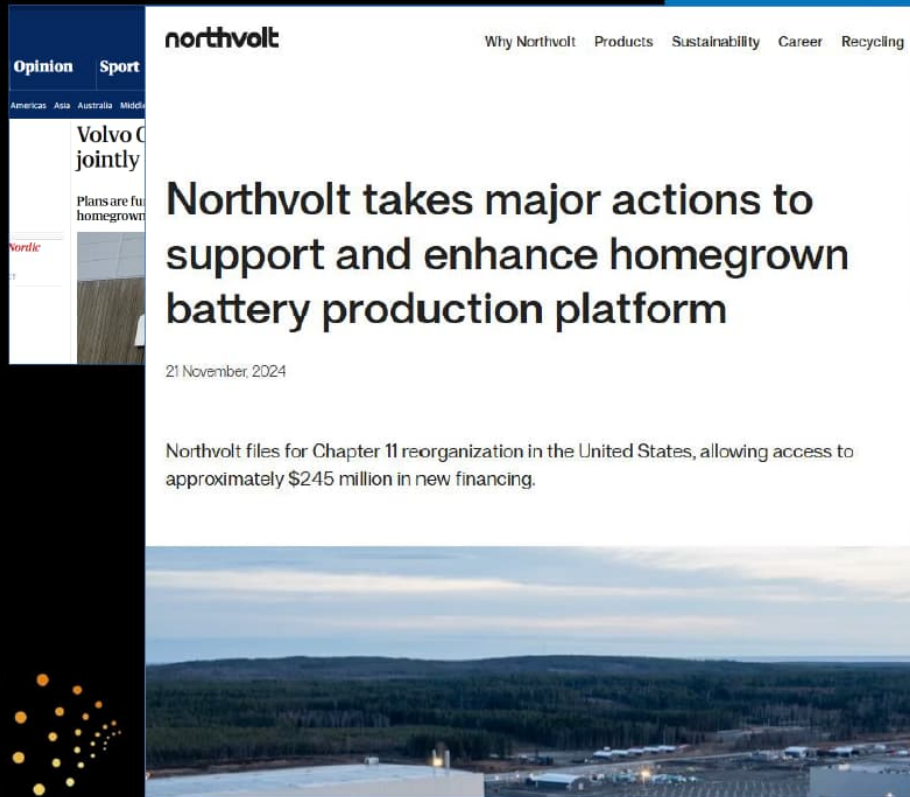


Source: Fastmarkets Long Term Forecasts

2024 | Fastmarkets | Battery Raw Materials Global Outlook Webinar – November 2024

7

Euroopan akkutehdashankkeet pulassa




northvolt Why Northvolt Products Sustainability Career Recycling

Northvolt takes major actions to support and enhance homegrown battery production platform

21 November, 2024

Northvolt files for Chapter 11 reorganization in the United States, allowing access to approximately \$245 million in new financing.



Asia Opinion Life & Arts Politics

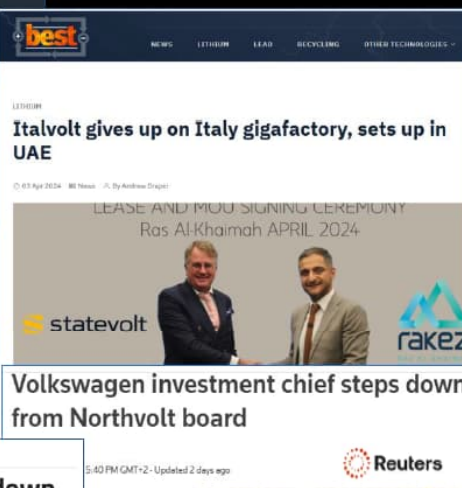
SVOLT to shut



electrive Automobile Infrastructure Battery Commercial Vehicles Fleet

SVOLT will not build battery factory in Germany

Chinese battery manufacturer SVOLT will not set up a manufacturing site in German state of Brandenburg. The company says it has reassessed its local strategy - and cannot resist taking a jab at German politicians, who make it difficult.




best NEWS LITHIUM LEAD RECYCLING OTHER TECHNOLOGIES

Italvolt gives up on Italy gigafactory, sets up in UAE

63 Apr 2024 90 News By Andrew Dwyer

LEASE AND MOU SIGNING CEREMONY Ras Al-Khaimah APRIL 2024



5:40 PM GMT+2 - Updated 2 days ago



start-up ation



NORRAN

Peter Carlsson steps down as chairman of Northvolt Ett

Peter Carlsson has stepped down as chairman of Northvolt Ett, according to Dagens Industri.



Reuters



Northvolt heijastuu laajemminkin pohjoismaihin

” You had these Swedes ...selling what they called **the greenest batteries on earth**, using this fact they had cheap hydropower as a massive selling point,” said one large European automotive shareholder, who is not invested in Northvolt. **”But it never made sense to build it in Sweden. The don’t have the people, the skills, and they got too much money, too fast, and wanted to do everything once. It was always going to be a disaster.”**

”Northvolt hired top battery-making talent from Japan and South Korea as it aimed to reduce European dependence on China by developing its own active material and finding new sources of raw materials. Instead, employees describe **a company reliant on machines – and the workers who operate them – from China and South Korea** at its only factory in the northern Swedish town of Skellefteå.

Financial Times, 17 Nov 2024



Mihin akkutehdas kannattaa rakentaa?



Aaron Wade • 1st

Head of Battery Costs, CRU | Project Director, ...
16h • 🌐

However, places like Germany where there is more available talent and a history of manufacturing excellence in adjacent industries, it likely that a factory in Germany would have better yields and automation than some of the other regions, resulting in lower production costs.

You can mitigate labour costs with factory automation, and electricity costs with subsidised energy.

The big caveat is of course that each region will also have differences in skilled workforce, government support, shipping costs and many more. Gigafactories also tend to be localised to EV assembly plants.

Would love to hear your thoughts about where in Europe makes the most sense to build a gigafactory!

Where could be the cheapest battery production location in Europe?

Cell production in Europe will initially suffer from lower yields, less integrated supply chains, and lower automation within factories.

However, across Europe, not all things are equal.

By varying the electricity and labour prices, I've analysed how much it could cost to produce LFP prismatic cells in a range of countries.

Regions with both low electricity and labour costs unsurprisingly rank as the cheapest cost producers – examples being Portugal and Serbia.

The UK is a good example where electricity price is high, but labour is relatively cheap, resulting in slightly below average production costs.

Regions where electricity is super-cheap, but labour is expensive, such as Sweden and Finland, result in high production costs.

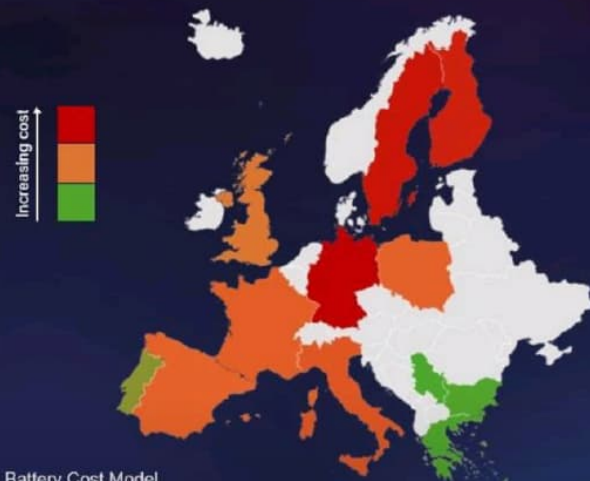
Finally, Germany, where both labour and electricity is expensive, results in the highest production cost.

However, places like Germany where there is more available talent and a history of manufacturing excellence in adjacent industries, it likely that a factory in Germany would have better yields and automation



Where could be the cheapest battery production location in Europe?

Battery production cost, 2024 \$/kWh
Variation across Europe using regional electricity and labour prices



Akkumateriaali- ja kierrättyshankkeet pulassa

electrive
Automobile Infrastructure Battery Commercial Vehicles Fleet

Battery

BASF puts plans for cathode material factory in Finland on hold

electrive
Automobile Infrastructure Battery Commercial Vehicles Fleet

Battery

Eramet and Suez suspend plans for battery recycling in France

Reuters
World US Election Business Markets Sustainability Legal Breaking news Technology

Stellantis and Orano drop planned JV to recycle electric car batteries

By Reuters
September 25, 2024 10:38 PM GMT+3 Updated 2 months ago

argus

Latest market news

Finland's Terrafame to cut battery jobs on EVs slowdown

Market: Battery materials, Metals | 30/10/24

Umicore Newsroom

Umicore shares details on cost saving measures and pauses construction of its battery materials plant in Canada

6 November 2024 08:30
Regulated information - Inside information

BENCHMARK SOURCE
Supply Chain Intelligence for the Energy Transition

Minerals Batteries Sustainability New Energy Geopolitics Data Visualisation Video

BASF and Eramet cancel only 100% Western-backed nickel project in Indonesia

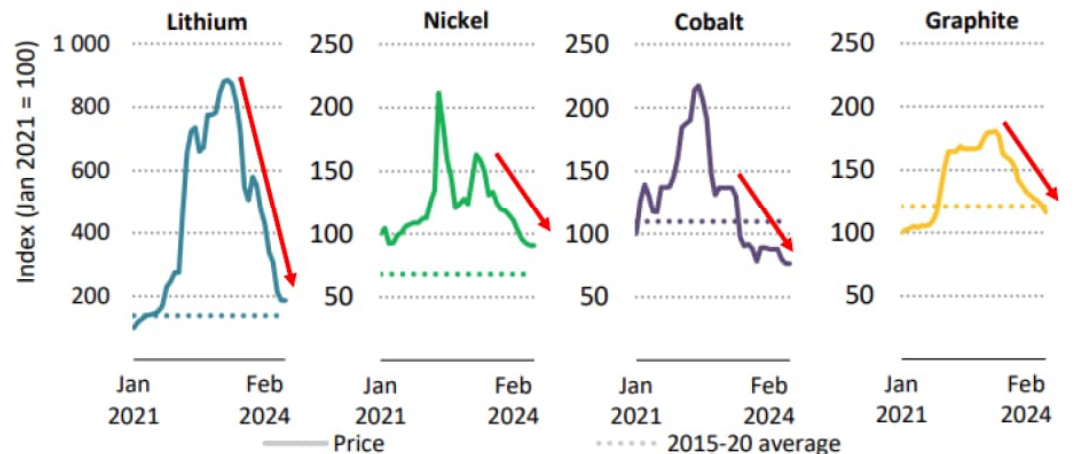
BASF and Eramet have canceled plans to invest up to \$2.6 billion to build a high pressure acid leach (HPAL) operation in Weda Bay, Indonesia. The project, known as Sorek Bay, had been set to become the first and only nickel plant in Indonesia with 100% Western ownership. First announced in December 2020, the Sorek [...]

BENCHMARK SOURCE
Supply Chain Intelligence for the Energy Transition

Europe's gigafactory slowdown impacting recycling plans

Akkumetallien hinnat putosivat rajusti v. 2023

Figure 1.24 ▶ Price developments for key battery minerals

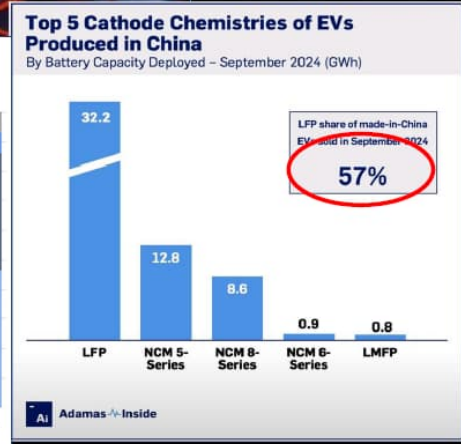
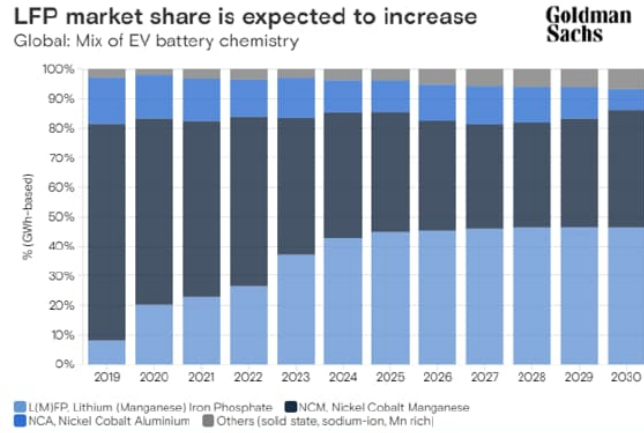
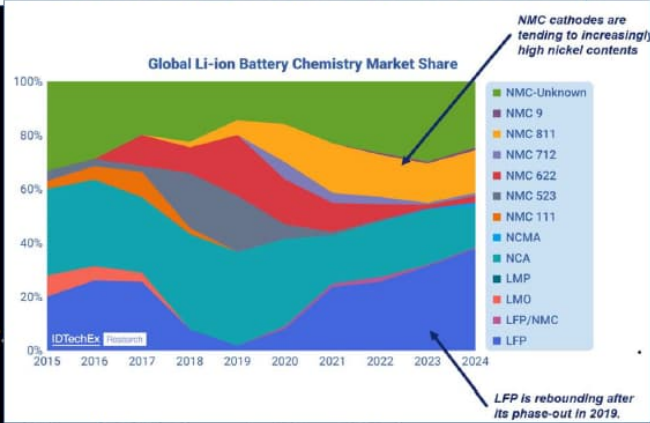
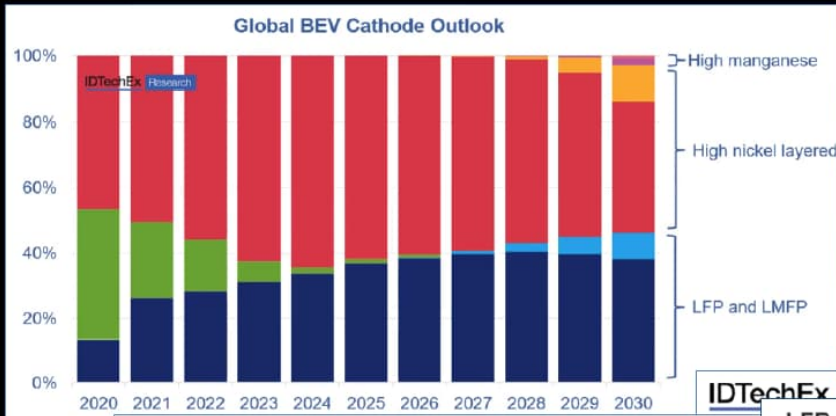


IEA. CC BY 4.0.

Lithium prices rose as much as nine times between 2021 and 2022 and prices of most battery minerals surged in 2021 and 2022 before plunging in 2023

Lähde: IEA Global Batteries and Secure Energy Transitions (2024)

LFP jyrää



Akkuenergiavarastot



China's supply chain dominance and cost advantage

FEATURE

Cu
of

By Iola
Janua

Of the 200GWh of BESS expected to come online globally in 2024, over 85% of this will be lithium iron phosphate (LFP), 8% will be (nickel manganese cobalt) NCM and the remainder a mix of flow batteries, sodium ion and other alternative technologies. The LFP supply chain is almost entirely concentrated in China, from the processing of raw materials, production of anode and cathode and the cell manufacturing itself. China's market dominance sits between 95 and 100% and will continue to be for the coming years.

The result is that over 85% of BESS installations worldwide, and over 75% of deployment ex-China are therefore reliant on China for the batteries that go into them, a figure that is set to rise over the next few years. The continued decline in raw material prices since the end of 2022, paired with economies of scale and a fierce price war, has caused cell prices to fall to record lows, with reports of LFP cells costing as low as US\$45/kWh.

op

EU vaatii Kiinaa avaamaan teknologiat

”Brussels is planning to force Chinese companies to transfer intellectual property to European businesses in return for EU subsidies as part of a trade regime for clean technologies.”

”The requirements, while at much smaller scale, echo China’s own regime, which pressures foreign companies into sharing their intellectual property in exchange for access to the Chinese market.”

Financial Times, 19 Nov 2024

EU-China relations [+ Add to myFT](#) FINANCIAL TIMES

EU to demand technology transfers from Chinese companies

New requirements will apply to batteries but could be expanded to other green sectors



Chinese electric cars ahead of their shipment abroad. The European Commission has confirmed tariffs of up to 35% on Chinese EVs, on top of an existing 10% levy © STR/AFP/Getty Images

Alice Hancock, Andy Bounds and Alec Russell in Brussels NOVEMBER 19 2024 360



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The story continues



- Next phase in the implementation
 - Ministeries
 - The work of national coordination group ended at the end of year 2023
 - The ministry of environment is running the national implementation of EU Battery decree
 - In the ministry of economic affairs the implementation of battery strategy is connected to national mineral strategy and industrial policy strategy and to CRMA and NZIA
 - Streamlining of permitting will have an effect on battery industries as well
 - Others
 - Finnish Battery Industries (Akkuteollisuus ry) was formed in 1/2023 (12 members)
 - Business Finland is running a six year program Hydrogen & Batteries, started in 1/2023
 - Work on investments going on in regions with strong support from Business Finland
 - Call for state aid, including batteries, was opened in 13.1.2025
 - Scientific work on BATCircle and my other forums (13 meur funding for BATCircle 3.0 in nov. 2024)
 - Co-operation on EU level (EBA, IPCEI, Batteries Europe)

Akkumateriaalitehdas on räjähtää

jätevetensä suo

LEHDISTÖTIEDOTE

"Käsittämätön"

Haminan akkumateriaaliteht

Kuhmoisiin nousee Suomen ensimmäinen täysin kotimainen akkupuisto: "Tuntuisi



Talous

- Korvaavat
- Euroopassa perustuen haastavat
- Globaalit akkuarvokätkö näkökulma

Lempäälään nousi erikoinen teollisuushalli, jonka suljettujen ovien takana tekoäly kauppaa sähköä

Lempäälään Paistinkulmaan on ilmestynyt jääkiekkokaukalon kokoinen halli, jonka suljettujen ovien takana noin 40 000 akkukennoa varastoi sähköä. Uuden energiavaraston taustalla on kaksi yritystä.

n akunhallinta-
in kriittisessä

tä.

a akkupuisto.
sta, huollosta,
ialaisyritys

ennettua jo
sön tammikuun



Fortum Battery Recycling Oy on tehnyt aluevarauspynnön Porin kaupungille akkukemikaalitehdasta varten. Kuva: Rinna Härkönen / Yle

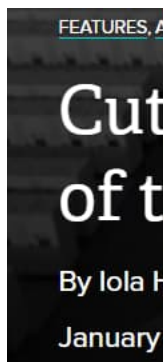


SALMÉN / HS, © MAPCREATOR.IO / HERE, LÄHDE: ALUEHALLINTOVIIRASTO

Eurooppa ja akkuenergiavarastot



Europe lagging in BESS deployments and even further in its supply chain

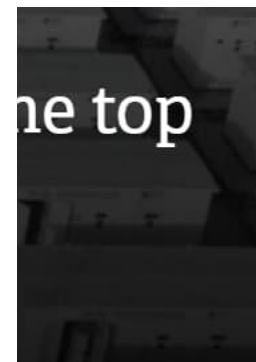


Europe is currently trailing in BESS deployment and even further behind in building a robust battery supply chain, with a notable shortage of domestic cell and system manufacturing.

The top three system manufacturers in Europe in 2023, Tesla, Fluence and Sungrow, all manufacture outside of the region and all rely on cells from China. Unlike the US, which benefits from the IRA's generous support for cell manufacturing, Europe's initiatives for the sector are comparatively limited and fragmented across countries. This has slowed the establishment of domestic production, leaving Europe reliant on imports, particularly from China. Unlike the US, which has imposed tariffs to curb dependency, Europe remains open to Chinese players, who are gaining a strong foothold in the market.

This openness could be an advantage for Europe if leveraged strategically. Chinese players can help fill immediate supply gaps, while partnerships and joint ventures with Chinese firms may facilitate faster knowledge transfer and technological progress.

In the longer term, Europe has an opportunity to carve out a competitive position by focusing on sustainable practices, circular economy principles, and end-of-life management regulations, areas where it has regulatory strength. By emphasising quality, environmental standards and recyclability, Europe can develop a distinct value proposition within the BESS landscape, differentiating itself from markets focused primarily on scale and cost.





Kiitos