



CLEANBRIDGE

European Gigafactory Market

December 2025



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Our latest industry primer, the European Gigafactory Market, continues our series of deep-dive research reports focused on the evolving dynamics of the global energy transition. The collective work is the result of a valued research collaboration between us and Alchemy Business Intelligence and Insights, a leading industry research group working actively across the energy transition markets. The report incorporates targeted insights sourced from industry associations, government agencies, and statistical departments, further enriched by information from news outlets, trade publications, and other credible sources.

This report provides a comprehensive overview of the European gigafactory landscape at a pivotal juncture for the region's industrial strategy. It examines how European battery manufacturing ecosystem is evolving amid intensifying global competition, shifting market dynamics, and accelerating policy interventions. The analysis captures both the momentum and the challenges shaping Europe's pathway toward scaling domestic capacity, securing supply chains, and achieving technological differentiation. It evaluates the financial, regulatory, and industrial factors influencing project execution, while highlighting emerging trends that are shaping the region's battery ecosystem.

We hope this report offers valuable insights and an engaging read, and we look forward to sharing further updates on other energy transition trends in the months ahead.



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Key Takeaways

- Europe's battery sector is at a critical inflection point. The region accounts for 25% of global battery demand but just 10% of production capacity, leaving it dependent on imports and exposed to geopolitical and supply chain risks.
- China alone controls over 75% of global lithium-ion ("Li-ion") manufacturing, more than two-thirds of processing for key battery metals, and 93% of anode production capacity. At the same time, the United States ("US") has supercharged domestic investment via the Inflation Reduction Act ("IRA"), further intensifying global competition.
- This reality underscores why Europe must urgently scale its own battery manufacturing base—not only to meet rising electric vehicle ("EV") demand, but also to safeguard industrial sovereignty and reduce reliance on external supply chains
- Despite setbacks—including delays, cancellations, and ownership changes at projects such as PowerCo, Automotive Cells Company ("ACC") and Northvolt—Europe continues to expand its gigafactory footprint. The region currently has just over 300GWh of operational capacity, with an additional 500GWh under construction.
- To meet the European Union's ("EU") Net Zero Industry Act ("NZIA") target of 40% domestic production, Europe needs another 200GWh annually by 2030, and to meet the European Battery Alliance's ("EBA") target of 550GWh, the shortfall rises to around 250GWh per year.
- These targets are attainable given the scale of Europe's project pipeline. However, much of this capacity rests on projects led by Asian players, European startups, or joint ventures between the two. The future of these projects looks hopeful, but their realisation will depend on whether they receive final investment approval and stay on schedule.
- To help bridge the gap between ambition and implementation, Europe is working to enhance its policy frameworks and strengthen the case for investment. The EU's Critical Raw Materials Act ("CRMA") sets targets to strengthen supply chains by aiming to source 10% of critical raw materials domestically, process 40% within the EU, and recover 15% through recycling. Complementary initiatives like the €1.8 billion Battery Booster and the broader €3.8 billion Industrial Action Plan ("Action Plan") are intended to help improve competitiveness, particularly relative to

Asian markets.

- National governments are also stepping in, with France, Spain and the United Kingdom ("UK") each deploying multi-million-euro support packages to attract and retain large-scale cell manufacturing.
- A strong rebound in EV sales in 2025—up 27% year-on-year in the first five months, reaching 1.6 million units—is reinforcing long-term demand fundamentals. This recovery, coupled with Europe's industrial expertise, renewable energy base, and strong automotive sector, provides a solid foundation for scaling.
- However, the competitive landscape in battery chemistry is evolving. While Europe's projects remain tied to nickel manganese cobalt ("NMC"), Chinese players are aggressively building lithium iron phosphate ("LFP") plants in Europe, leveraging a 20–30% cost advantage and threatening the competitiveness of EU-based gigafactories.
- For investors, the message is clear: the market is challenging but still full of opportunity. Europe is not retreating—it is recalibrating. Gigafactory clusters in France's "Battery Valley," Germany, Spain, Poland, and Hungary demonstrate strong momentum.
- Europe's gigafactory expansion is challenging but increasingly essential. The next five years will be critical, as success will depend on projects that align with policy goals, secure reliable offtake agreements, and scale effectively. For investors with long-term capital and an interest in industrial collaboration, Europe's battery sector offers not only a strategic opportunity to support regional resilience but also a promising avenue for growth.

European Gigafactory Market Overview

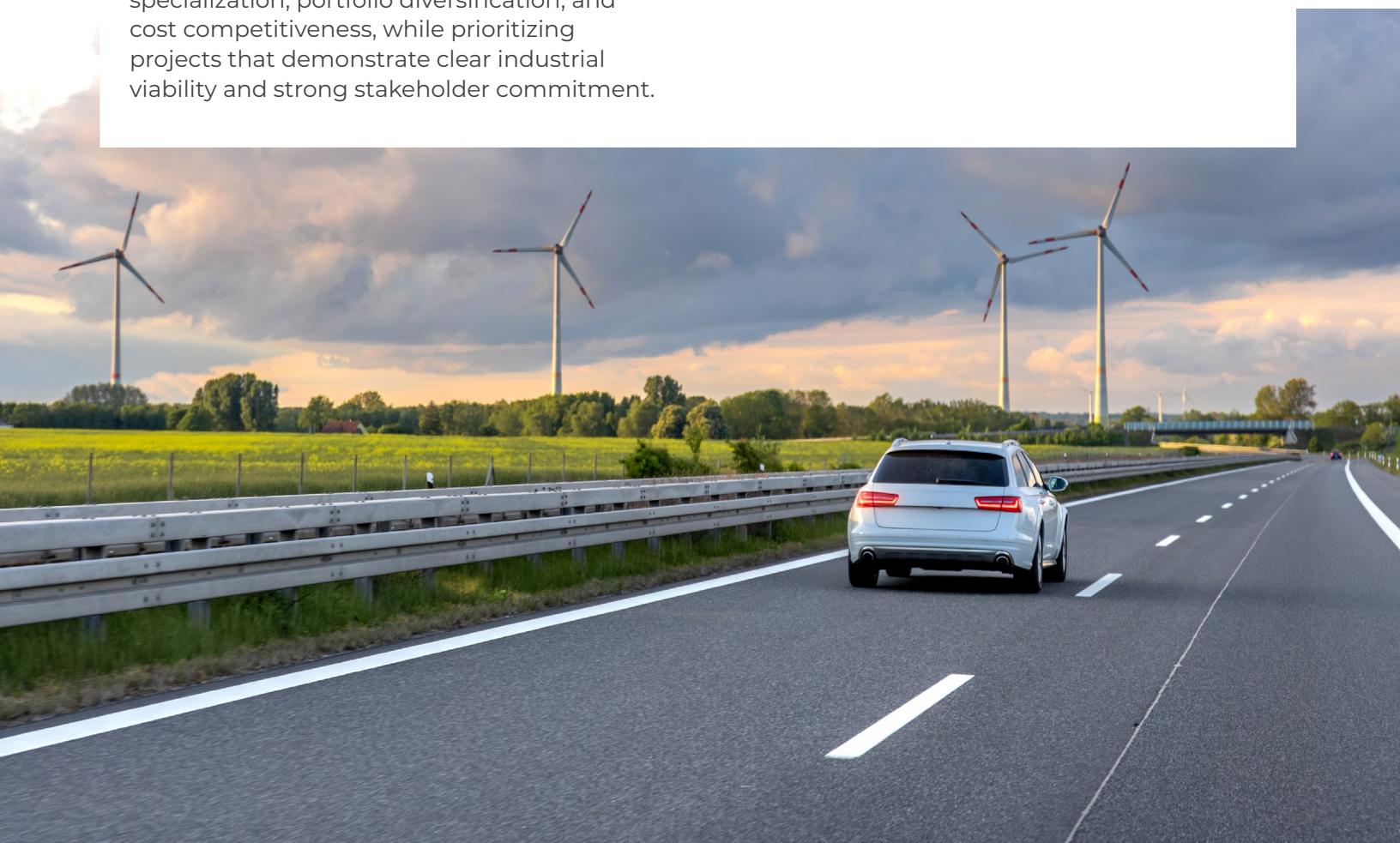


Introduction

Europe's battery sector stands at a critical juncture, bolstered by strong political and industrial momentum aimed at building a resilient regional EV supply chain. However, financial stakeholders continue to grapple with significant technological, operational, and commercial risks. Large-scale battery projects, or gigafactories, face complex ramp-up challenges, uncertain demand for EVs and specific chemistries, and a heavy reliance on Chinese-controlled supply chains.

Non-recourse financing introduces additional constraints, making it difficult to achieve investment-grade ratings during the construction phase without long-term offtake agreements from original equipment manufacturers ("OEM") and well-defined industrial strategies. Lenders must carefully navigate trade-offs between product specialization, portfolio diversification, and cost competitiveness, while prioritizing projects that demonstrate clear industrial viability and strong stakeholder commitment.

Encouragingly, emerging clusters such as "Battery Valley" in northern France signal early progress toward establishing a sustainable and strategically independent European battery ecosystem. Beyond France, multiple large-scale projects across Germany, Spain, and Hungary suggest that Europe's industrial pipeline has the potential to close a significant portion of its future demand gap. If these projects achieve timely ramp-up and secure stable offtake agreements, Europe could position itself as a credible counterweight to Asian and US battery dominance.



Reducing Dependence: The Case for Expanding Europe's Domestic Battery Manufacturing

Despite early signs of progress, Europe faces a pivotal challenge in scaling its manufacturing capacity to meet the accelerating demand from the expanding EV market. The region accounts for roughly 25% of global battery demand but only about 10% of global production capacity, leaving it highly dependent on imports and exposed to geopolitical risks and cost volatility. Operational challenges, including delays and ownership changes at key projects, highlight structural vulnerabilities across the European gigafactory landscape.

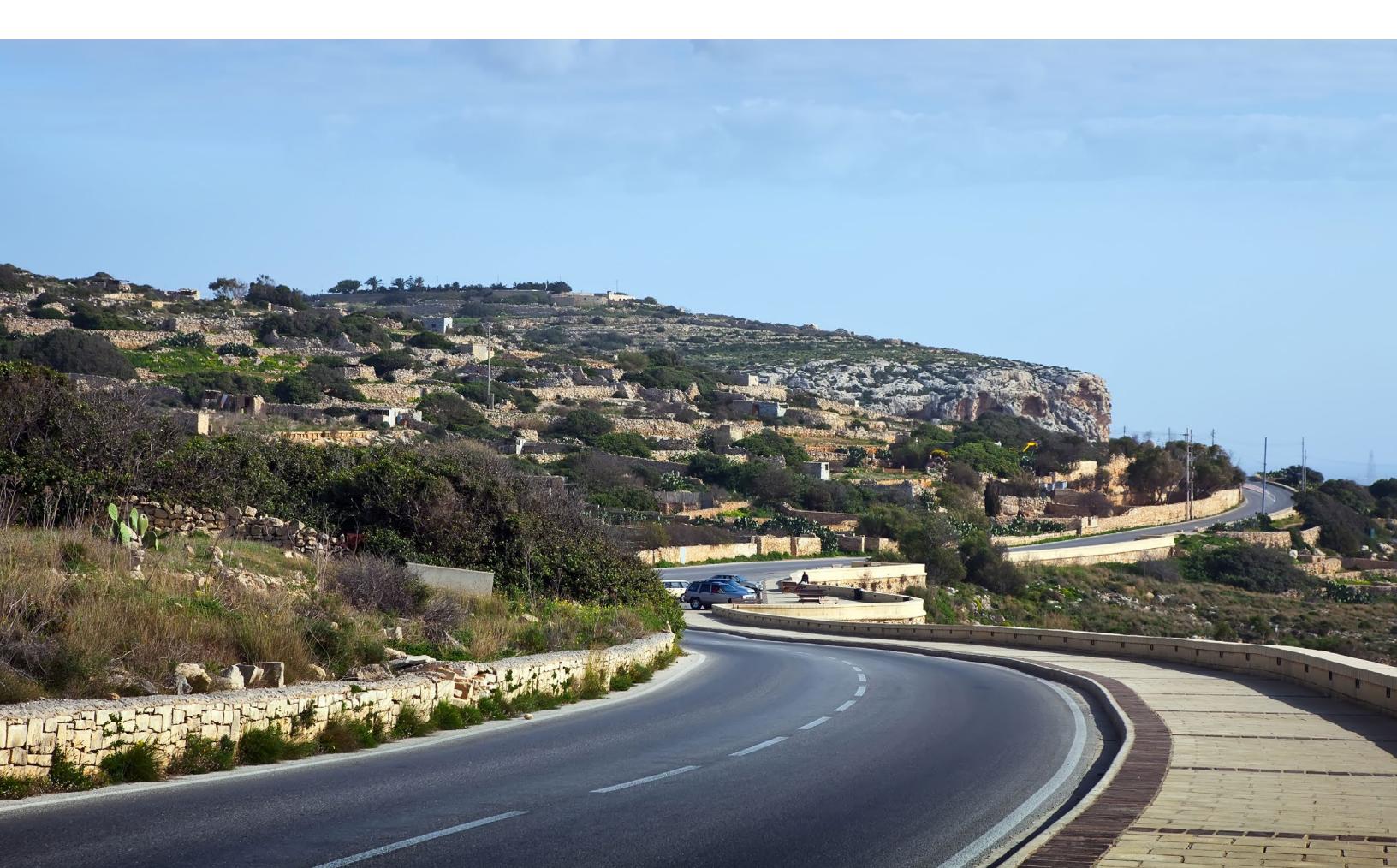
Uncertainties around specific battery chemistries, higher production costs relative to Asia, and supply chain concentration in China further emphasize the urgency for Europe to accelerate gigafactory development, secure long-term offtake agreements and foster a resilient industrial base capable of meeting the EU's 2030 zero-emission vehicle ("ZEV") targets. Even fully independent European gigafactories remain heavily reliant on Chinese-controlled supply chains—such as the near-monopoly over anode production—making them vulnerable to geopolitical tensions in the US-China-Europe trade relations.

Despite setbacks from high-profile startups such as Britishvolt, Northvolt, and CustomCell, Europe remains committed to scaling its battery production. Continued progress will depend on forging strategic partnerships, accelerating innovation in manufacturing processes, and reducing supply-chain vulnerabilities. If these efforts are sustained, Europe can build a more resilient and competitive battery ecosystem, positioning itself to meet rising EV demand while gradually reducing its dependence on imports.

Closing the Gap: Europe's Gigafactory Landscape and Growth Needs

Despite recent advancements, Europe's battery production pipeline continues to fall short of its own electrification goals and still lags behind global competitors. China controls over 75% of global Li-ion cell manufacturing, while the US has turbocharged domestic investment through the IRA. In contrast, fragmented policies, elevated energy costs, and prolonged permitting processes have hindered the pace of factory deployment across Europe. By 2030, Europe's battery demand is expected to approach 1,000GWh, but the region currently has just over 300GWh of operational manufacturing capacity in place. This significant gap leaves Europe dependent on imported materials, with China remaining the dominant supplier.

To achieve the NZIA target of producing 40% of its battery demand domestically, Europe will need an additional 200GWh/year of manufacturing capacity by 2030. Meeting the EBA goal of 550GWh/year requires an even larger scale-up—roughly 250GWh/year of new capacity. While the announced project pipeline indicates that these targets are attainable, a significant portion of the planned capacity remains under non-European ownership. This underscores the urgent need for a strategic onshoring approach to safeguard Europe's autonomy and secure a reliable domestic supply.



Some Major Gigafactories Currently Operational in Europe

Country	Company	Capacity
	 LG Energy Solution	86 GWh
	 TESLA	50 GWh
	 SAMSUNG SDI	40 GWh
	 SK on	30 GWh
	 ACC AUTOMOTIVE CELLS Co.	13 GWh
	 Envision AESC	10 GWh
	 SK on	10 GWh
	 CATL	8 GWh
	 SK on	7.5 GWh
	 microvast	1.5 GWh

Source: New Automotive, News Releases, Company Publications



Europe's Gigafactory Landscape: Momentum, Headwinds and Institutional Response

Driving Forces Behind Europe's Gigafactory Push

Multiple factors are propelling the rise of gigafactory projects across Europe. Regulatory mandates such as the EU's "Fit for 55" package and the 2035 ZEV targets are pushing automakers to rapidly electrify their fleets. The planned phase-out of internal combustion engine sales, along with binding CO2 reduction targets, creates long-term clarity for investors and OEMs. In response, leading manufacturers including Volkswagen, Stellantis, Renault, and BMW have committed billions to EV platforms, creating surging demand for localized cell production.

This wave of investment is reinforced by a supportive policy and funding environment. The EU Green Deal Industrial Plan has streamlined permitting processes and relaxed state aid rules, while national subsidy programs—from France's €1 billion allocation to ACC to Spain's Proyectos Estratégicos para la Recuperación y Transformación Económica (Strategic Projects for Economic Recovery and Transformation) ("PERTE") EV grants—are drawing in battery and EV manufacturing projects. Collectively, these measures integrate regulatory pressure, industrial investment, and financial incentives to accelerate the rollout of gigafactories across Europe.

Another key driver lies in Europe's structural advantages. Markets such as Spain, France, and Sweden offer abundant low-carbon energy potential, enabling sustainable cell production that is increasingly vital for Environmental, Social, and Governance-conscious ("ESG") automakers and investors. Europe's stringent ESG and sustainability standards, while requiring careful compliance, further enhance the credibility and global attractiveness of European battery projects. At the same time, proximity to established automotive clusters in Germany and cost-competitive assembly bases in Eastern Europe creates an integrated EV value chain that strengthens the business case for local cell production.

Structural Challenges Slowing Europe's Momentum

Despite favourable tailwinds, Europe's battery industry faces significant challenges. Elevated industrial energy costs undermine its competitiveness compared to Asia and the US, where energy prices and government subsidies are more advantageous. Europe also depends heavily on external suppliers for cathode and anode materials, as well as critical mineral refining, leaving it exposed to global supply chain risks.

Permitting bottlenecks and local opposition add to delays, as seen with environmental protests around CATL's Hungary project. Grid congestion and uneven renewable energy availability further constrain the stable, low-carbon power supply needed for gigafactory operations.

A deeper challenge lies in policy fragmentation. While the EU sets broad industrial frameworks, member states continue to apply varying subsidy schemes and permitting rules, making cross-border projects complex and slowing the pace of scale-up. EU-level measures such as the NZIA and CRMA are designed to close these gaps, but implementation remains uneven.

Talent shortages compound these pressures. While Europe's automotive industry provides a strong foundation, its gigafactory ambitions are constrained by a shortage of highly educated battery researchers and technical experts. Fraunhofer ISI, a distinguished applied research institute, estimates that the EU's direct battery-skilled workforce must grow from about 60,000 today to 200,000 by 2030, a target far harder to meet than the broader creation of up to 800,000 value-chain jobs by 2025, most of which can be filled through training and reskilling. The scarcity of specialized researchers is the real bottleneck, as they are essential multipliers for scaling skills and advancing next-generation battery technologies.

EU Institutional Backbone: Policy, Regulation, and Funding

To overcome these challenges and enhance resilience, the European Union has progressively developed a robust industrial framework for the battery sector. Over the past decade, it has strategically integrated industrial policy, regulatory measures, and financial instruments to strengthen the global competitiveness of Europe's battery industry.

The policy journey commenced with the Strategic Energy Technology ("SET") Plan, which, as early as 2007, recognized breakthroughs in energy storage technologies as critical to achieving decarbonization goals. A 2015 revision sharpened this focus: among its ten priority actions was a dedicated objective for the EU battery sector to achieve global competitiveness, positioning it as a cornerstone of Europe's e-mobility ambitions. Building on this momentum, the European Commission launched the EBA in 2017, a public-private platform that now connects over 800 stakeholders across the battery value chain.

In 2018, the European Commission adopted the first Strategic Action Plan on Batteries to strengthen the entire value chain from R&D to recycling. To support large-scale investment, the EU approved two Important Projects of Common European Interest ("IPCEI") for batteries. The first, launched in 2019, provided up to €3.2 billion in public funding from seven member states to support R&D and initial industrial deployment of innovative, sustainable battery technologies, aiming to attract around €5 billion in private investment. The second, approved in 2021, allocated €2.9 billion across twelve member states to accelerate raw material extraction, advanced cell design, and recycling projects, expected to leverage ~€9

billion in private capital.

More recently, the Green Deal Industrial Plan (2023) elevated batteries to one of 19 strategic net-zero technologies under the NZIA. The NZIA established a non-binding target of 550GWh of EU battery manufacturing capacity by 2030. To support this objective, it introduced key instruments such as priority permitting and the creation of 'net-zero acceleration valleys' to foster industrial clustering, attract investment in net-zero technology manufacturing projects, and streamline approval processes. Complementary frameworks include the CRMA, designed to strengthen supply chains, and the Batteries Regulation, which imposes EU-wide requirements on sustainability, recycling, carbon footprint disclosure, and due diligence. Supporting measures like the revised Industrial Emissions Directive and the Euro 7 Regulation extend these standards to production sites and battery durability.

On the funding side, EU financial support has come through programmes such as Horizon Europe, the European Regional Development Fund, and the Recovery and Resilience Facility. The European Court of Auditors estimates that between 2014 and 2020 alone, at least €1.7 billion in EU grants and loan guarantees were directed towards the battery sector. The European Investment Bank ("EIB") has also emerged as a key financier, extending dedicated lending across the battery value chain.

These initiatives form the EU's institutional core — strategic, regulatory, and financial measures to scale battery production, secure supply chains, and enhance global competitiveness.

Assessing the EU Battery Industry's Competitive Position — SWOT Framework



STRENGTHS

- Robust automotive sector driving large-scale demand for batteries
- Supportive policy framework accelerating the uptake of clean technologies
- Strong institutional backing for R&D, innovation, and industrial deployment
- Broad societal and political commitment to climate action and stringent environmental standards



WEAKNESSES

- Heavy reliance on third countries for raw materials, refining, and production equipment
- Elevated energy and labour costs reducing cost competitiveness
- Complex regulatory processes and lengthy permitting timelines
- Gaps in domestic production capacity for low-cost cells and battery-containing goods
- Limited integration between R&D and industry, particularly in Eastern Europe
- High business uncertainty and investor caution around new technologies

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OPPORTUNITIES

- Rapidly expanding markets for battery-enabled applications, from EVs to stationary storage
- Strong synergies with adjacent sectors such as hydrogen, grid services and other energy storage technologies
- Critical role of batteries in enabling large-scale renewable integration, grid stability and reduced energy costs
- Potential to accelerate emissions reduction by displacing fossil fuel use
- Development of localized, resilient value chains through alternative and more sustainable battery chemistries
- Opportunity for the EU to shape and lead emerging international standards and regulations on batteries
- Growth of recycling and circular economy solutions to supply secondary raw materials, including critical minerals

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THREATS

- Strong competition from established global battery producers
- Rising imports risk worsening the EU's trade balance if domestic production lags
- Intensifying competition from countries offering cheaper battery technologies, often supported by heavy subsidies
- Competitive pressure from imports originating in regions with lower environmental and labour standards
- Geopolitical tensions and disinformation campaigns could erode public trust in EU battery strategies while reinforcing reliance on fossil fuel incumbents
- Consumer price sensitivity may limit willingness to pay a premium for higher-quality or more sustainable EU-made batteries

Source: European Parliament

Country-Level Developments: Momentum Across Europe

Europe's battery expansion is not uniform; some countries have emerged as clear leaders while others are catching up.

The Leaders

Poland

Manufacturing Powerhouse but Needs Diversification

Poland has become a key player in Europe's EV and battery supply chain, led by LGES's Wroclaw gigafactory—the largest in Europe with 86GWh capacity, targeting 90GWh by 2025. Supported by €95M in state aid and €250M from the EIB, Poland has scaled rapidly to lead in cell production. Its low labour and operating costs and proximity to German automakers make it a strategic hub. Domestic EV manufacturing is rising, with Stellantis producing Leapmotor T03 in Tychy, boosting demand for domestic batteries. However, the sector relies heavily on Korean firms like LGES and SK On. Strengthening local R&D and grid infrastructure is vital for long-term competitiveness.

Hungary

Asia's Gateway to the EU

Hungary has established itself as Asia's main entry point into the EU, hosting major Korean players like Samsung SDI and SK On, which together operate close to 90GWh of gigafactory capacity. The country's future pipeline also looks strong, with significant projects underway, including CATL's €7.3 billion Debrecen facility (~100GWh) and planned expansions by Samsung SDI and SK On. To secure CATL's investment, the Hungarian government offered around €800 million in grants and tax breaks, complementing its pro-investment policies and relatively efficient permitting regime. However, challenges persist, particularly growing environmental opposition and Hungary's reliance on foreign OEMs for technological expertise.

Germany

Expanding Gigafactory Capacity, Confronting Cost Pressures

Germany continues to distinguish itself as one of Europe's leading gigafactory hubs, led by Tesla's Berlin site and CATL's facility. Its strong automotive ecosystem—home to VW, BMW, and Mercedes—supports this growth. Robust R&D and IPCEI funding further strengthen its battery manufacturing edge. Tesla plans to expand Berlin to 100 GWh, while PowerCo is building a new gigafactory. These moves reflect Germany's ambition to lead in battery production. However, high energy costs, rising labour costs, and slow permits pose challenges. Despite this headwinds, Germany's role in the auto value chain remains critical. Its innovation-driven approach keeps it competitive in the EU market. Germany stands firm as a strategic hub for large-scale gigafactory development.

The Emerging Ones

France

Fast-Growing Hub with Aggressive State Support

France has emerged as a rising contender in the European battery landscape, driven by assertive state support and strategic policy initiatives. The ACC gigafactory is scaling towards ~40GWh by 2030, joined by Verkor and ProLogium's multi-billion-euro solid-state investments. France's access to competitively priced, nuclear-generated power enhances its appeal as a hub for low-carbon battery manufacturing. Moreover, the Hauts-de-France "Battery Valley" cluster—home to ACC, Verkor, ProLogium, and AESC—offers synergies through proximity to suppliers, industrial infrastructure, and a concentrated labour pool. This clustering dynamic, supported by reliable energy and water resources, strengthens France's position as a cornerstone of Europe's gigafactory ecosystem, though occasional labour unrest poses risks.

Spain

High Potential with Industrial Clusters Emerging

Spain is quickly catching up in Europe's battery race with major projects such as Volkswagen's PowerCo gigafactory in Valencia (~40GWh) and the Stellantis-CATL joint venture (~50GWh by 2026), both supported by the government's PERTE industrial grants. The country benefits from a strong automotive base with players like SEAT and Stellantis, abundant low-cost renewable energy, and well-positioned ports that support both domestic demand and exports. These competitive advantages position Spain as an increasingly attractive destination for large-scale gigafactory investments, particularly as automakers seek integrated supply chains within Europe. However, challenges persist, including slow permitting procedures in some regions and fragmented regional government support, which could delay timelines despite otherwise favourable conditions.

Slovakia

Nascent Market with OEM Integration

Slovakia is positioning itself as an emerging hub for EV and battery manufacturing, leveraging its strong automotive base with Volkswagen, Stellantis, Kia, and Jaguar Land Rover. Its strategic location near Hungary and Poland offers regional supply chain synergies, while early-stage projects signal growing momentum. A key development is the €1.2 billion InoBat-Gotion joint venture, backed by €214 million in government support through subsidies and tax relief, which includes provisions for technology transfer and skills development. However, with Chinese company Gotion holding an 80% stake, strategic decision-making remains largely foreign-controlled. To secure long-term competitiveness, Slovakia must expand domestic innovation capacity and scale public investment alongside these foreign-led projects.

UK

Playing Catch-Up After Recent Setbacks

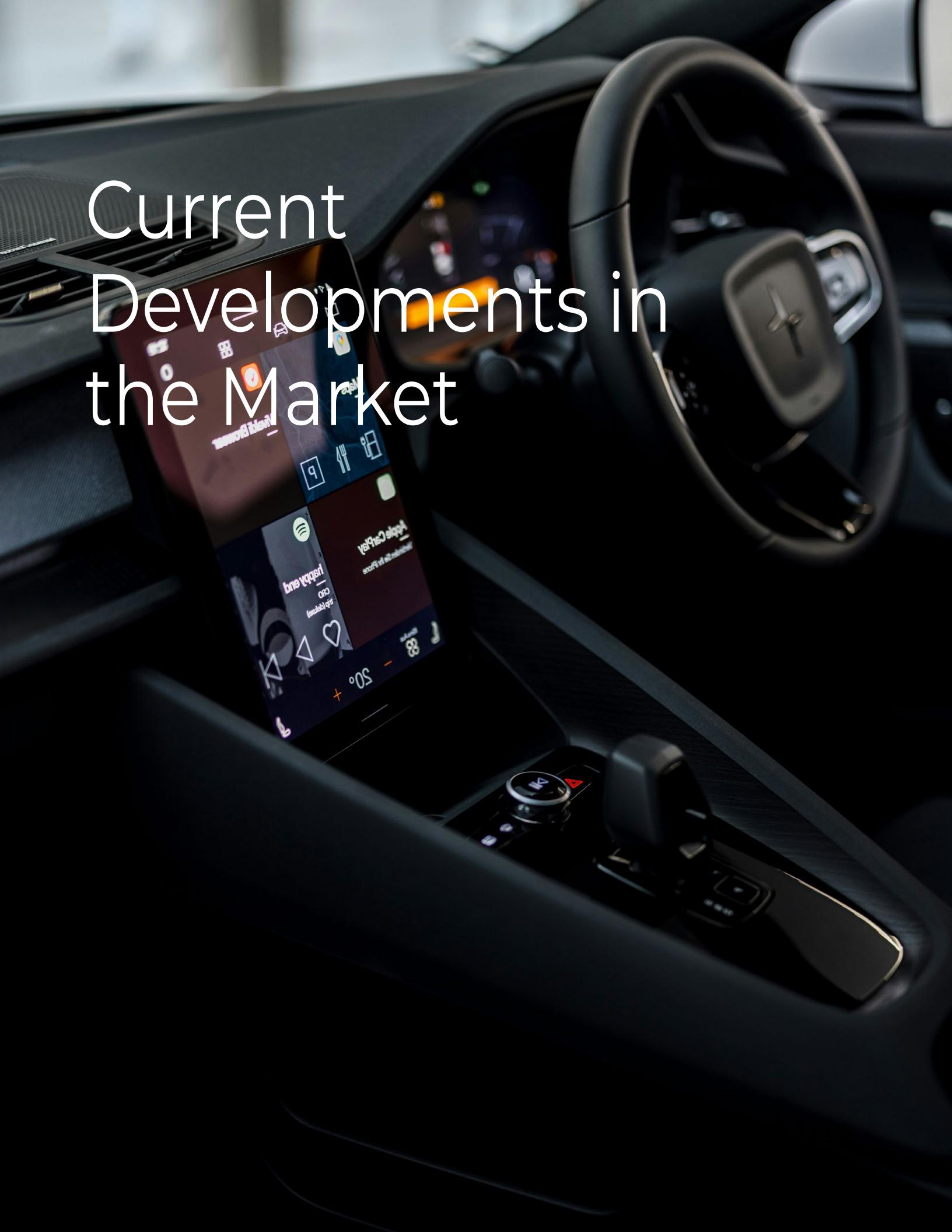
The UK is gradually regaining momentum in the battery sector, following setbacks such as the collapse of Britishvolt and recent financial concerns surrounding AMTE Power. Britishvolt entered administration after failing to meet production timelines and secure OEM offtake agreements. AMTE Power now faces potential collapse unless it secures new funding—highlighting the fragility of early-stage players. Despite these setbacks, the UK government is actively working to strengthen the sector through initiatives such as the Clean Power 2030 Action Plan, which sets out a comprehensive clean energy strategy, and the National Wealth Fund ("NWF"). As part of this, £1.5 billion has been earmarked from the NWF to accelerate gigafactory development, reflecting a clear commitment to expanding domestic battery production capacity. Some projects are already benefiting from this policy push. Agratas' (Tata Group's global battery business) Somerset gigafactory (~40GWh) has secured around £500 million in subsidies, while AESC's Sunderland facility is progressing towards 15.8GWh of annual output with support from a £1 billion public-private financing package. However, trade frictions, high energy costs, and ongoing permitting delays continue to challenge the UK's gigafactory ambitions.

Sweden

Sustaining Europe's Battery Capacity Through Lyten's Acquisition of Northvolt

Sweden, once anchored by Northvolt's ambitious gigafactories, is now entering a renewed phase of activity following Lyten's acquisition of Northvolt's remaining European assets, previously valued at approximately \$5 billion. The portfolio includes around 16GWh of operational capacity at Northvolt Ett in Skellefteå, plus over 15GWh under construction, alongside R&D facilities in Västerås and sites under development such as Heide, Germany. While this ensures Sweden will continue contributing meaningfully to Europe's gigafactory build-out, the shift in ownership to a US based company has raised concerns that Europe has lost control over a strategically important homegrown battery player. Nonetheless, Sweden's renewable-powered infrastructure and skilled workforce remain key enablers for scaling these assets under new stewardship.

Current Developments in the Market



Funding / Investments and Investor Perceptions

Shifting Away from Heavy Reliance on VC Funding

The experience of recent high-profile setbacks in Europe's battery sector highlights the inherent risks of relying too heavily on venture capital ("VC") to fund capital-intensive gigafactory projects. VC funding models, which are typically geared toward rapid scaling and short-term returns, may not align well with the extended investment timelines, operational complexities, and substantial upfront capital requirements associated with establishing large-scale battery manufacturing facilities.

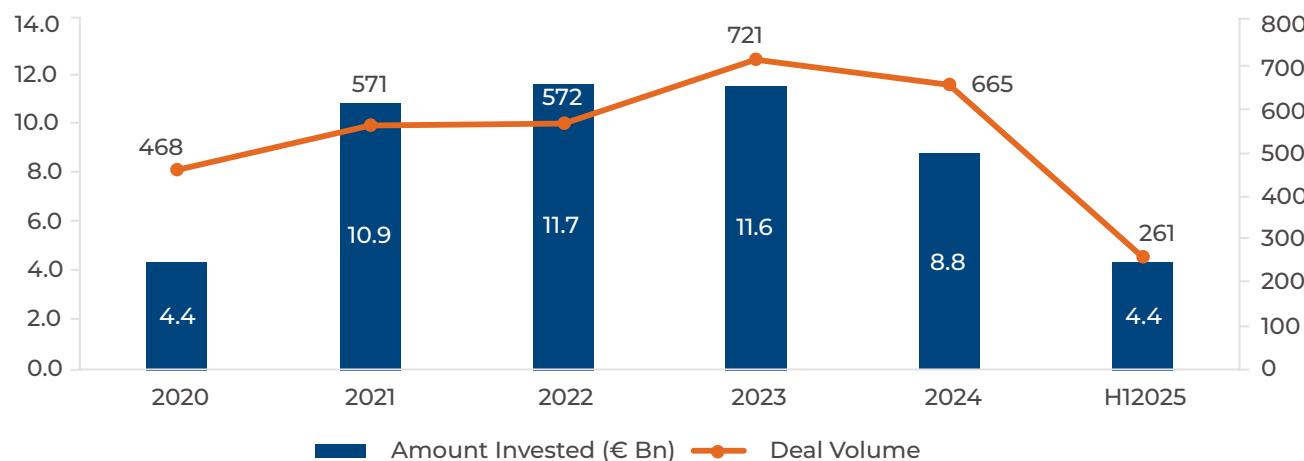
For many early-stage gigafactory ventures, this mismatch has underscored the need to diversify funding strategies. Rather than leaning predominantly on VC, new entrants are increasingly expected to look towards industrial partnerships, government-backed financing, and long-term strategic investors with the capacity and patience to support multi-year buildouts. Such a shift would allow these companies to focus on disciplined execution and sustainable growth, while positioning Europe's battery ecosystem on a firmer footing in the global race for capacity.

This reassessment comes at a time when broader market conditions are adding further pressure to traditional funding models. 2024 was a particularly challenging year for cleantech investment in the EU, as it marked the first decline in both investment

volume and deal activity in over a decade. VC investment in EU cleantech fell to €8.8 billion, down from €11.6 billion in 2023. The number of deals also dropped to 665, compared to a peak of 721 the previous year. While Series B rounds held steady, activity in Seed, Series A, and Growth Equity stages saw declines. The EU's share of global cleantech venture and growth investment held relatively steady, dipping slightly from 23% in 2023 to 22% in 2024, yet it still lags well behind the US – 32% in 2023 and 42% in 2024.

In the first half of 2025, this cautious sentiment persisted, with Q1 marking one of the weakest quarters since 2020, with €1.9 billion invested in European cleantech VC as investors held back from early-stage bets, and Q2 showing only a modest rebound to around €2.5 billion. The recovery was concentrated in larger late-stage deals, as ticket sizes increased while seed and Series A activity remained subdued. This reflects a broader investor shift away from riskier, illiquid ventures towards safer, more capital-efficient opportunities, highlighting that uncertainty in macroeconomic conditions and fundraising environments continues to weigh on early-stage innovation in Europe's cleantech sector.

EU27 Cleantech Seed, Series A, Series B and Growth investment, 2020 - H1'25

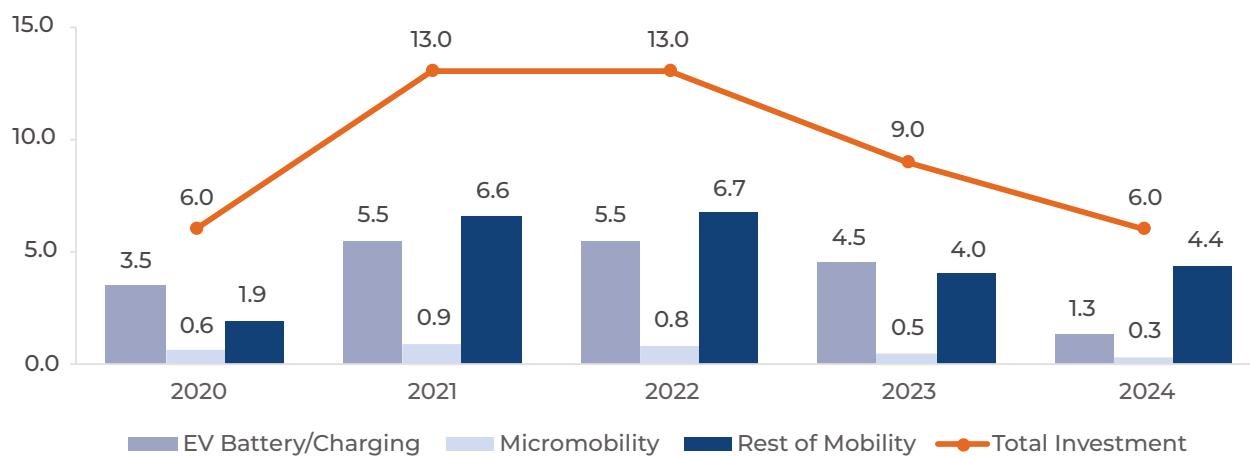


Sources: Cleantech for Europe

These tightening financial conditions are being felt across multiple cleantech segments, particularly in mobility and energy infrastructure. VC investment in European mobility startups reached \$6 billion in 2024, representing a 30% year-on-year decline. The EV battery and charging segment, previously

a dominant focus, accounted for less than 25% of total funding, indicating a broader shift away from capital-intensive infrastructure projects. The slowdown was compounded by the absence of large-scale deals.

VC Investment in European Mobility Startups by Segment (\$ Bn), 2020 - 24



Source: Dealroom and Via iD

Delays and Cancellations in European Battery Projects

Investor sentiment has turned cautious, intensifying scrutiny on early-stage battery ventures. Cost overruns and execution risks have shifted institutional preference towards projects backed by experienced industrial partners with proven track records and financial strength.

This shift is already reshaping the market. Volkswagen's battery subsidiary, PowerCo, has scaled back plans for its Salzgitter plant, cutting from two production lines to one amid broader market headwinds and increasing caution towards large-scale battery investments. Similarly, French startup Verkor faced difficulties in raising €1.3 billion for its Dunkirk gigafactory, with investors insisting on detailed audits and validation of its technology and production plans, highlighting the new standard of diligence now shaping the funding landscape.

Even established joint ventures are feeling the pressure. ACC, a collaboration between Stellantis, Mercedes-Benz, and TotalEnergies (through its subsidiary Saft), has paused

expansion plans for its battery plants in Germany and Italy. Once a cornerstone of Europe's battery strategy, ACC is now reassessing its technology roadmap and exploring lower-cost chemistries in response to the prevailing tough market conditions.

These developments reflect the broader challenges that emerged in the battery sector during 2024, when a notable slowdown in EV sales growth—particularly in Europe—prompted a reassessment of expansion plans. With demand plateauing amid high vehicle prices, insufficient charging infrastructure, and uncertain policy signals, many companies viewed the market outlook with caution. As a result, several gigafactory projects were delayed or cancelled, as firms responded to softer demand and reassessed the feasibility of rapid capacity ramp-up. The combination of weaker-than-expected growth and tightening financial conditions marked a turning point, forcing the industry to adopt a more measured approach to scaling battery production.

Indicative List of Projects Cancelled or Put on Hold in Europe

Plant Location	Company	Country	Capacity (GWh)
Überherrn, Lauchhammer, Germany	Svolt	China	40
Mo i Rana, Norway	Freyr	Norway	83
Kaiserslautern, Germany	ACC	France	TBD
Scarmagno, Romano Canavese, Italy	Italvolt	Italy	45
Termoli, Italy	ACC	France	40

Source: Dunne Insights, S&P Global

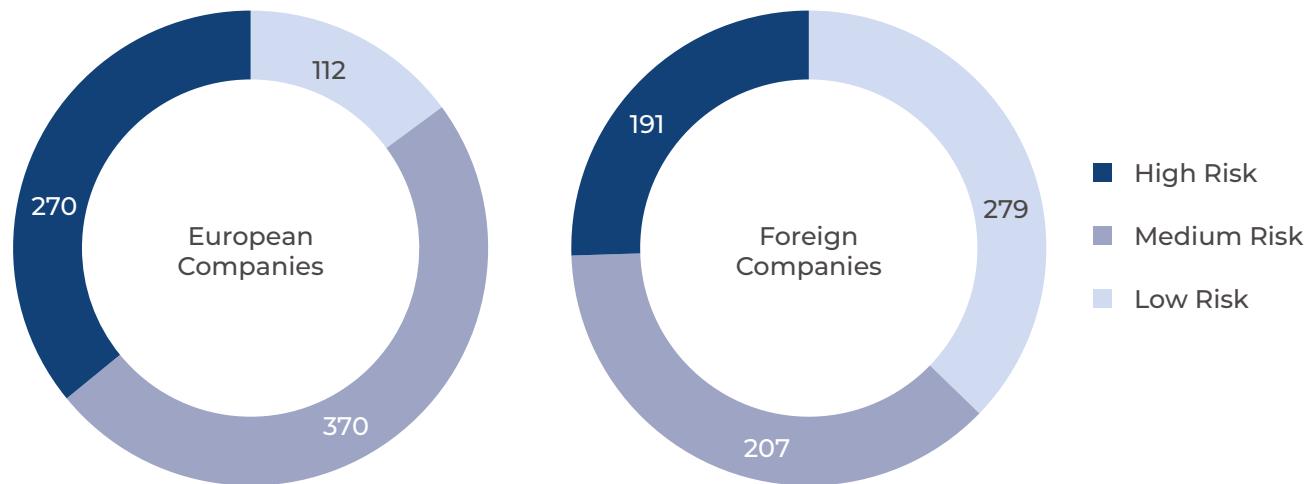
Asian Dominance in the European Gigafactory Market

Financing greenfield gigafactories in Europe on a non-recourse basis remains a major challenge, particularly as much of the region's existing battery manufacturing capacity and project pipeline is already dominated by established Asian players. Companies such as China's CATL, Japan's AESC Group, and South Korea's LGES, Samsung SDI, and SK On have secured a strong foothold in the European market. Their early entry, technical expertise, and proven execution capabilities have positioned them as preferred partners for both automakers and investors, reinforcing Asia's influence over Europe's EV battery supply chain.

While Europe has announced ambitious plans to scale domestic gigafactory capacity, many of these projects are still classified as medium- or high-risk. According to analysis by Transport & Environment ("T&E"), a significant portion of European-led initiatives lack final investment decisions, stable financing, or regulatory clarity. In contrast, Asian-led projects are typically classed as low risk, with many already operational or nearing completion. This disparity gives Asian firms a significant head start and creates a structural opening for them to capture greater market share.

Battery Investments from European Companies more at Risk than Foreign Competitors

Planned Gigafactory Capacity per Risk Category (GWh)



Source: Transport & Environment

The competitive advantage of Asian manufacturers lies not only in their technical capabilities but also in their access to deeper pools of lower-risk capital and their established track record of delivering large-scale battery plants. Their credibility instills greater confidence among investors and

OEMs, who increasingly prioritize reliability and scalability. Meanwhile, newer European entrants face heightened scrutiny and skepticism, further widening the risk gap between domestic players and their Asian counterparts.

30% of Capacity and €20 billion investment face severe risk of not being realised

Combined Capacity of European Gigafactories (Currently operating and potential) by 2030

Risk Category	Capacity (GWh)	Investment (€ million)
Low	390	39,000
Medium	630	48,000
High	410	21,000
Total	1,430	108,000

Source: Transport & Environment

In this context, Asian battery manufacturers are consolidating their presence through a dual approach: entering strategic partnerships with European firms while also undertaking independent greenfield investments. A notable example is Slovakian startup InoBat, which secured a 25% stake investment from China's Gotion High-Tech through a joint venture to co-develop European gigafactories. Gotion's involvement was pivotal in enabling InoBat to raise €100 million in Series C funding, with investors citing the partnership as critical to validating the company's production potential. Another major development is the joint venture between Stellantis and CATL, which will see up to €4.1 billion invested in a 50GWh LFP battery plant in Zaragoza, Spain, with production expected to begin in 2026.

Alongside these partnerships, Chinese players are increasingly pursuing standalone projects to serve Europe's EV battery demand directly. For instance, China Aviation Lithium Battery ("CALB") has committed €2 billion to establish its first European gigafactory in Portugal, targeting 15GWh of annual capacity by 2027. Similarly, CATL and EVE Energy are advancing their own projects across the continent.

Through this two-pronged strategy—combining partnerships that provide European credibility with independent investments that ensure long-term control—Asian firms are strengthening their competitive edge in the region. By leveraging their technological expertise, financial strength, and proven ability to execute at scale, they are poised to lead the next wave of European gigafactory expansion between 2025 and 2030.

Diversifying Offtake Contracts to Avoid Concentration Risk

The volatility of the EV sector has underscored the risks of concentrating gigafactory output in a single end market. While early growth in Europe's battery industry was largely anchored by long-term supply agreements with major automakers, this model has revealed vulnerabilities when demand patterns shift. Reliance on one sector leaves manufacturers exposed to cyclical downturns, regulatory changes, and evolving consumer preferences.

In response to the evolving market dynamics, new gigafactory projects are increasingly adopting more diversified offtake strategies. Developers and investors are broadening their focus to include a wider range of end-use markets, such as energy storage systems, grid-scale applications, and industrial sectors. By distributing exposure across multiple demand drivers, manufacturers can mitigate concentration risk and enhance the resilience of their business models.

A case in point is Volklec, a UK-based startup backed by former Britishvolt investors. In collaboration with China's Far East Battery, Volklec is pursuing a phased development strategy for its £1 billion gigafactory, with a targeted capacity of 10GWh by 2030, by initially importing battery cells to generate early revenue. Its target sectors span e-bikes and energy storage, with longer-term plans to enter automotive, aerospace, and marine markets—illustrating a deliberate move towards demand diversification.

Additionally, newer projects are embedding greater flexibility into offtake contracts, incorporating features such as adjustable volumes, renegotiation provisions, and milestone-based commitments. Supply is also being distributed across a wider pool of smaller customers to enhance resilience against sector-specific downturns or client attrition. This evolving approach reflects a broader recognition of the need for balanced and adaptive growth strategies in the battery manufacturing sector.

Emergence of Alternative Business Models

Although strategic partnerships with established Asian players have become the preferred path for scaling projects, several European battery manufacturers continue to pursue standalone strategies, opting to scale operations without such alliances. For example, France's Verkor is moving ahead with a €3 billion gigafactory in Dunkirk, backed by Renault. In the near term, the company is focused on meeting Renault's delivery targets to strengthen trust among other automakers, reflecting the industry's increasing emphasis on production reliability.

Meanwhile, UK-based Ilika is taking a different approach, opting for an asset-light licensing model for its solid-state battery technology. Rather than building its own factories, it plans to license battery designs to established manufacturers, with test cells set for delivery to 17 partners—including Tata Agratas in 2025. Additionally, a licensing deal with Cirtec Medical will enable production of miniature batteries for medical devices starting next year.

These examples illustrate how European players are responding to market challenges by adopting alternative business models—ranging from client-aligned partnerships to IP-driven licensing strategies. As the sector continues to evolve, more companies are likely to adopt similar approaches.



Outlook



Europe's EV Market Surges in 2025, Powering a Battery Manufacturing Revival

While EV sales stagnated in 2024, triggering delays and cancellations, the sharp rebound in 2025 demonstrates that this slowdown was cyclical rather than structural. The recovery has restored confidence in long-term demand and underpins renewed momentum for gigafactory investments. Last year, EV market share plateaued at approximately 20%, primarily due to reduced government subsidies and stable EU CO₂ regulations. These factors raised concerns about long-term demand, with some markets even recording year-on-year declines. However, 2025 has marked a clear turnaround. The European EV market expanded by 27% in the first five months of the year, with 1.6 million units sold, signalling a strong resurgence in consumer demand and market momentum.

This growth reflects broader consumer acceptance and an expanding pipeline of EV models. Policy support also plays a key role. Germany, for instance, recently introduced a new EV incentive package that includes special depreciation allowances and tax relief for corporate fleets. This initiative is expected to significantly boost demand since corporate purchases account for more than half of new vehicle sales.

Importantly, the International Energy Agency ("IEA") projects that this renewed momentum in EV adoption will be sustained. According to its latest forecasts, EV sales in Europe are expected to continue rising steadily, reaching approximately 60% market share by 2030. This long-term growth trajectory provides a solid foundation for scaling up Europe's battery manufacturing sector.

As EV demand increases, so will the need for secure, sustainable, and locally produced battery supply chains. The current market rebound, therefore, not only reinforces the investment case for European gigafactories but also plays a critical role in advancing the continent's clean technology sovereignty.

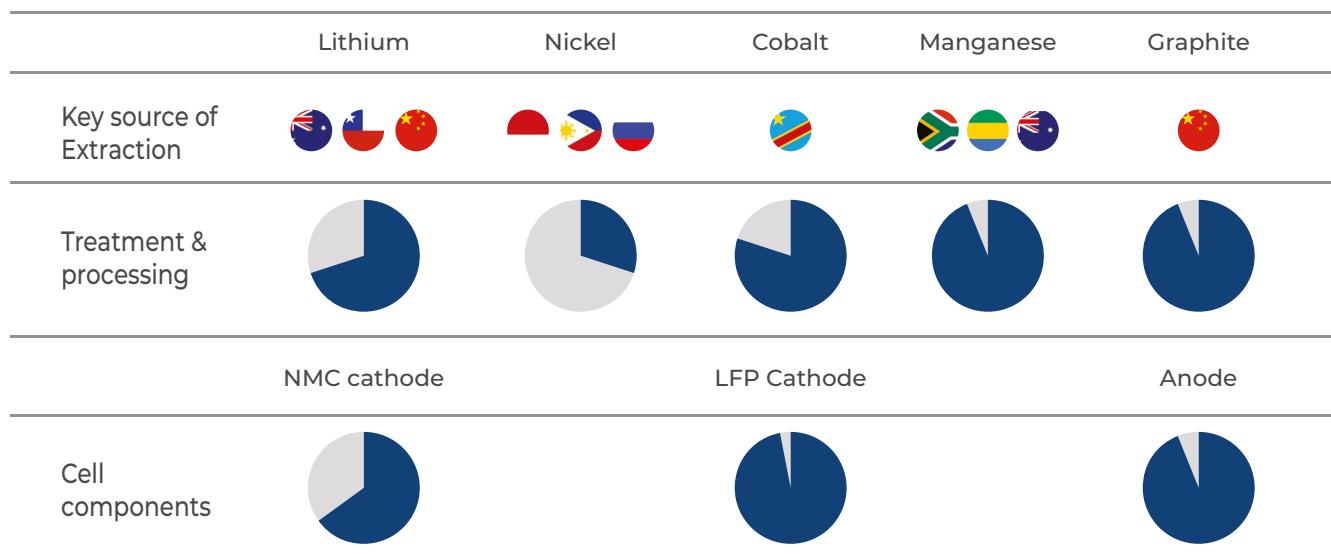
The Need to Commercialize New Battery Technologies for Differentiation

Europe's battery industry remains heavily reliant on imported materials, with China dominating the refining and processing of key inputs across the supply chain. China controls more than two-thirds of global processing capacity for most battery metals and over 90% of anode material production,

leaving Europe exposed to significant geopolitical and supply chain risks. Recent export restrictions by Beijing and Europe's heavy dependence on imports—97% of lithium, 87% of natural graphite, and 86% of rare earths—underscore the urgency of strengthening supply chain resilience.

China's Stranglehold over Materials in the Battery-making Supply Chain

China's share of raw-material processing and battery-cell components shown in dark blue



Sources: IEA and Scope Ratings

To address these vulnerabilities, the EU's CRMA sets clear targets: 10% of key minerals from domestic extraction, 40% from EU processing, 15% from recycling, and no more than 65% reliance on any single country. These goals are backed by funding, trade deals, and regulations to boost refining, mining innovation, and sustainable sourcing. A circular economy is central, with rising investment in recycling, battery reuse, and secondary material recovery. The EU is also securing long-term supply partnerships with countries like Canada, Argentina, and Australia to diversify inputs.

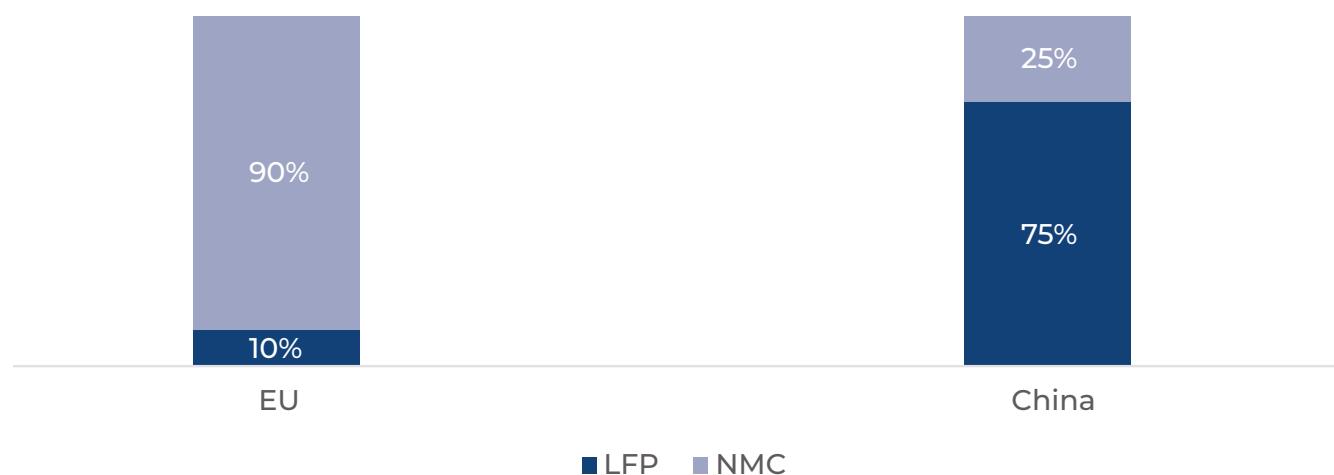
Europe's Li-ion battery landscape is undergoing a chemistry shift that could impact its competitiveness. Despite expectations of strong EV growth, new battery-electric car registrations in the EU dropped 5.9% in 2024, reflecting price sensitivity in a weaker market. Although registrations recovered in early 2025, long-term consumer preferences remain uncertain, especially amid rising competition between

NMC and LFP battery technologies.

So far, European gigafactories have largely centered around NMC battery chemistry, favoured for its high energy density and premium EV performance. However, LFP is rapidly gaining traction due to its 20–30% cost advantage and suitability for mass-market models. The Stellantis–CATL venture in Spain highlights China's export of LFP expertise into Europe. As demand shifts toward affordable EVs, LFP adoption may accelerate, challenging the viability of NMC-focused European projects. This could reinforce the dominance of Asian—especially Chinese—battery manufacturers in the region. Europe risks losing ground in today's LFP race, where Chinese players enjoy a cost advantage, but it is simultaneously positioning itself for leadership in next-generation chemistries such as sodium-ion and solid-state. In this sense, Europe's strategy is less about cost competition today and more about securing technological differentiation tomorrow.

LFP Batteries: Poised for a Growth in the EU

Share of LFP and NMC batteries in the EU and China in 2024 for EVs

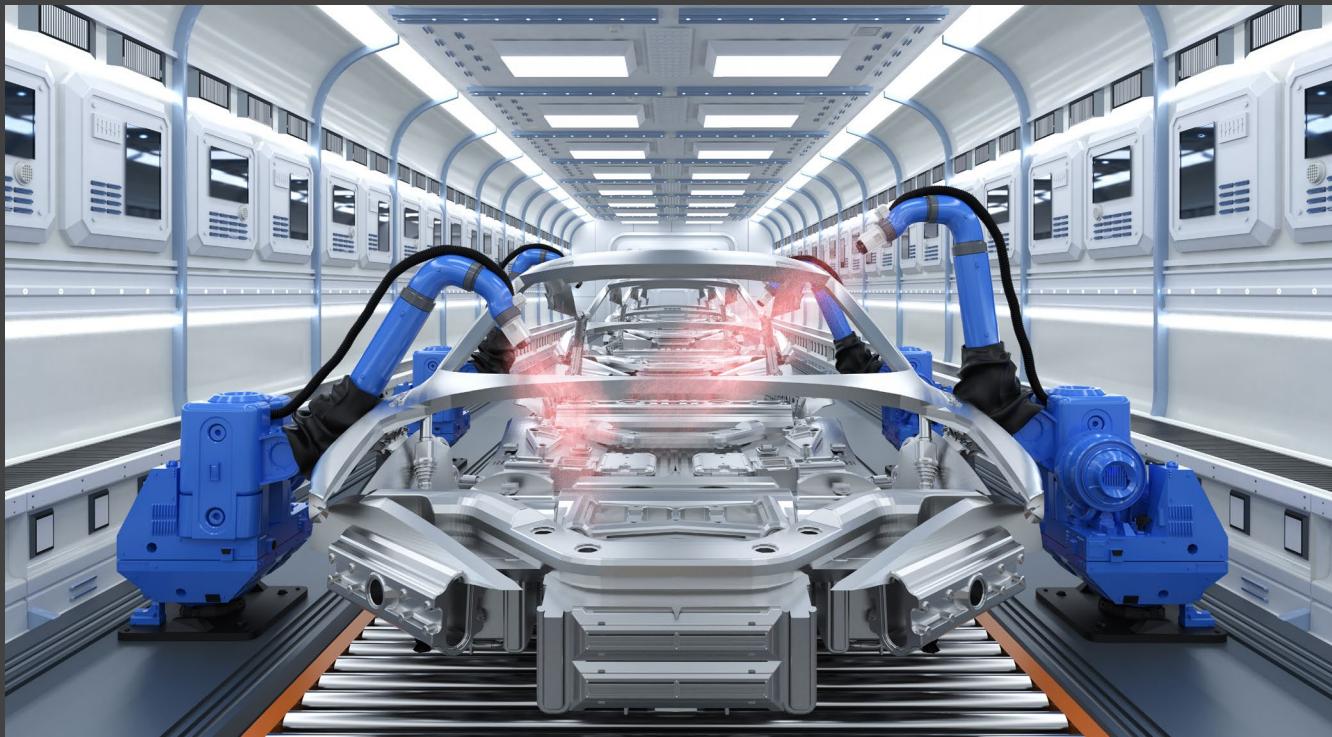


Sources: IEA

To hedge against these shifts, Europe must broaden its Li-ion base to include both NMC and LFP, while accelerating the development of next-generation alternatives such as sodium-ion and solid-state batteries to secure long-term differentiation. The bigger challenge, however, lies in the region's structural dependence on Li-ion technology, which leaves it exposed to global supply risks and China's dominance across the critical materials value chain. Building resilience will therefore require moving beyond today's chemistries. Startups such as LionVolt (Netherlands), Molyon (UK), Enerpoly (Sweden), and CarbonX (Netherlands) are advancing sodium-ion, lithium-sulfur, zinc-ion, and 3D lithium-metal technologies, leveraging Europe's scientific strengths to establish a more diverse, sustainable, and strategically independent battery ecosystem.

Indicative List of Planned Gigafactories on New Technologies in Europe

Plant Location	Company	Project Cost	Technology	Target Capacity (GWh/Year)
Dunkirk, France	ProLogium	€5.2 billion	Solid-state	48 by 2032
Alsace, France	Blue Solutions	€2.2 billion	Solid-state	25 by 2030
Minano, Spain	Basquevolt	€0.7 billion	Solid-state	10 by 2027
Amiens, France	Tiamat	€0.5 billion	Sodium-ion	5 by 2030



The US Government's Tariff Position and Implications

As Europe pushes to commercialize next-generation battery technologies, global trade dynamics are rapidly reshaping the competitive landscape. The US government's newly implemented tariff policy marks a pivotal shift in global trade and industrial strategy. Central to this transformation is the introduction of a broad 10% import tax, accompanied by reciprocal tariffs on goods from other nations. These tariffs include a 30% levy on Chinese imports, 15% on goods from Japan, Korea, and the EU. However, automobiles and auto parts will continue to face higher tariffs (up to 27.5%) until the EU enacts its own tariff reductions on US goods. This policy signals a strong emphasis on US economic priorities, particularly in the energy and technology sectors.

In response to these changes, the EU faces growing pressure to strengthen its cleantech sector, navigating the uncertainties posed by new US trade policies and potential tariff risks. These developments, coupled with the possibility of rollbacks to the IRA, may prompt European firms to reassess their plans to expand into the US market. To remain competitive and reduce strategic dependencies, the EU must act swiftly to align its policy instruments with the goal of building a robust business case for the next generation of clean industries. Central to this effort is the successful implementation of the Clean Industrial Deal, which is essential for stimulating demand for cleantech and unlocking public de-risking mechanisms that can mobilize investment from Europe's €38 trillion private capital market.

Clear demand signals and effective de-risking strategies are urgently needed to strengthen industrial resilience. With strong political support, the EU is at a pivotal moment, presented with a unique opportunity to convert policy ambition into meaningful economic impact.

Cost and Talent Constraints Challenge Europe's Battery Ambitions

Europe's battery industry faces structural cost disadvantages compared to China, where production costs are up to 25% lower due to cheaper labour and energy. High labour costs and a shortage of skilled professionals continue to constrain scalability and competitiveness.

In response, Europe is focusing on automation, digitalisation, and workforce development rather than direct labour subsidies. Investments in advanced manufacturing and vocational training aim to reduce dependency on manual processes and build a skilled talent pipeline.

Despite these measures Europe has yet to bridge the cost gap with China, which continues to benefit from aggressive industrial strategies and lower operating costs. Recognizing that competing on price alone is unsustainable, Europe is shifting its focus from volume-driven competition to value-based innovation. This strategic pivot emphasizes sustainability, integration with the automotive sector, and the development of next-generation technologies.

Rather than replicating China's low-cost model, Europe is positioning itself as a differentiated player in the global battery market—prioritizing technological leadership, stringent environmental standards, and strategic autonomy. This approach leverages Europe's strengths in engineering and clean energy, enabling it to compete on quality, resilience, and long-term value.



Policy Response: Strengthened Commitment Despite Setbacks

Despite challenging market conditions and sector-wide setbacks, European governments and institutions have reaffirmed their commitment to developing a robust domestic battery industry, demonstrating resilience and strategic focus rather than retreat. While private investors remain cautious, this has prompted the EU and national governments to intervene with unprecedented policy measures and financial support. A new wave of subsidies, loan guarantees, and regulatory reforms is strategically designed to attract private capital and safeguard the momentum of Europe's gigafactory development pipeline.

The European Commission and the EIB first acted in late 2024 with a €3 billion emergency support package aimed at stabilising the European battery value chain. This included the €1 billion IF24 Battery programme to accelerate domestic cell production, a €200 million InvestEU loan guarantee top-up to help start-ups scale, and €1.8 billion in direct EIB investments across recycling, charging infrastructure, and advanced materials. These measures were conceived as rapid interventions to prevent project delays and counter competitive pressures from the US and China.

In early 2025, the European Commission introduced the Battery Booster package, designed to close the cost gap between EU-made battery cells and imports. Backed by €1.8 billion from the Innovation Fund, the package specifically targeted gigafactories and component makers to ensure that ongoing investments could move forward despite high energy prices and cost inflation.

By focusing on near-term competitiveness, the Battery Booster helped de-risk projects already under development, anchoring industrial capacity in Europe.

This policy momentum culminated in March 2025 with the release of the Action Plan for the European automotive sector, which consolidated measures into a forward-looking strategy for long-term competitiveness. Within the plan, the European Commission identified over €3.8 billion in dedicated battery-related initiatives, including: €350 million for next-generation R&D via BATT4EU, €1 billion from Horizon Europe for connected and autonomous vehicles and batteries, €570 million from the Alternative Fuels Infrastructure Facility to improve repairability and accelerate charging rollout, the €1.8 billion Battery Booster package (incorporated into the wider framework), and €90 million via the Pact for Skills Fund to upskill the workforce. Taken together, these actions illustrate a sequenced approach—short-term stabilisation in late 2024, targeted cost-competitiveness in early 2025, and a long-term industrial transformation strategy from March 2025 onwards.

By integrating emergency funding, competitiveness initiatives, and structural reforms, the EU has established a foundation that enables Europe's gigafactory pipeline to progress from announcements to active construction and scaling. This approach reinforces Europe's ambition to build a globally competitive, resilient, and sustainable battery ecosystem.

National governments have also intensified efforts. Germany is now collaborating with US battery company Lyten, which has acquired the Northvolt Drei assets—including the Heide gigafactory project—and is working with regional and federal authorities to move forward with the 15GWh facility. In the UK, a £1 billion package supports AESC's Sunderland gigafactory, combining guarantees and direct grants. France provided €48 million for AESC facility in Douai, while Spain raised support for major battery initiatives—awarding €133 million to Stellantis and increasing Volkswagen's PowerCo funding from €98 million to €152 million.

While financial and execution risks persist, and global competition intensifies, policymakers are becoming more selective—prioritising projects with solid fundamentals and diversified inputs. Still, the outlook remains positive. Europe is recalibrating its battery strategy with a sharper focus on innovation, resilience, and industrial policy. Recent setbacks have underscored the need for smarter investment and EU institutions remain committed to building a robust, sustainable battery sector.

Scaling Amid Structural Constraints

Against this backdrop, Europe's battery production capacity continues to expand. Existing facilities have reached over 300GWh in annual capacity, largely developed through partnerships with Asian manufacturers. Projects under construction are expected to add another 500GWh and long-term plans could push capacity to 1,500GWh by 2030. This sustained growth underscores the resilience of the industry. While individual projects may face obstacles, the broader momentum reflects Europe's commitment to scaling production in line with growing demand for EVs and energy storage.

However, structural financing constraints present a growing risk. Tight fiscal rules are limiting Europe's ability to make meaningful public investments in cleantech, threatening the scalability and global competitiveness of its battery ecosystem. According to T&E, at least €50 billion in public funding—via grants, loans, and risk-sharing instruments—is required by 2030 to build a viable and competitive battery value chain. Establishing a dedicated green investment fund and reforming fiscal policy frameworks will be critical to avoiding long-term strategic dependence and securing Europe's position in the global battery race.

Indicative List of Near-term Scheduled Gigafactory Projects in Europe

Plant Location	Company	Project Cost	Target Capacity (GWh/Year)
Dunkirk, France	Verkor	€3 billion	16 by 2025 50 by 2030
Salzgitter, Germany	Volkswagen	€2 billion	20 by 2025
Teverola, Italy	FAAM	€0.5 billion	8 by 2025
Arendal, Norway	Morrow	€0.5 billion	1 by 2025 43 by 2029
Navalmoral de la Mata, Spain	AESC	€1 billion (Phase 1)	30 by 2026
Douai, France	AESC	€1.3 billion (Phase 1)	9 by 2025 24 to 30 by 2030 40 in future
Valencia, Spain	Volkswagen/PowerCo	€3 billion (Phase 1) €4.5 billion (Phase 2)	40 by 2026 60 in future
Zaragoza, Spain	Stellantis-CATL	€4.1 billion	50 by 2026
Debrecen, Hungary	CATL	€7.3 billion	40 by 2025 100 in future
Debrecen, Hungary	EVE Energy	€1 billion	28 by 2027
Sines, Portugal	CALB	€2 billion	15 by 2027
Bridgewater, UK	Tata Group	€4.6 billion	40 by 2026
Orkland, Norway	Elinor Batteries	€1 billion	10 by 2026 40 by 2030
Subotica, Serbia	ElevenEs	€1 billion	1 by 2027 (Initial of Phase-1) 8 in future (End of Phase 1) 49 by 2031

Sources: Dunne Insights, Reuters, EIB, Batteries International, Company Publications

Policy-Action Framework for Europe's Battery Sector

To translate strategy into scale, the European Policy Centre has suggested that Europe should pursue a coordinated set of measures across manufacturing, financing, supply chains, partnerships, and technology

Foster a Supportive Framework for Competitive Manufacturing

Ensure affordable energy, strengthen workforce skills, streamline regulatory requirements, expand funding access, promote low-cost manufacturing processes, and accelerate EV charging infrastructure rollout under the Sustainable Transport Investment Plan.

Accelerate Efficient, Sufficient Funding

Shorten implementation timelines, expand the new EV-battery Innovation Fund beyond the initial call, mobilize private capital via Public-Private Partnerships ("PPP"), and establish a dedicated Joint Undertaking for the automotive/battery value chain (incl. TechEU).

Launch a "Sync360" Platform

Create a 360° coordination mechanism (under the proposed Competitiveness Coordination Tool) to align R&D, critical raw material access, talent, state aid / IPCEI decisions, and demand creation at scale and speed.

Grant Privileged Access to the Critical Raw Materials Platform

Use EU-level demand aggregation/joint purchasing and give battery players premium access to CRMA "Strategic Projects" to secure inputs and attract private upstream investment.

Accelerate the Shift Towards a Circular Battery Economy

Curb exports of battery waste, classify "black mass" as hazardous across the EU, harmonize and reduce transport bureaucracy, and invest at scale in recycling capacity and new processes. Apply consistent permitting standards across member states.

Promote Joint Ventures Over Standalone Greenfield Projects

Encourage partnerships with leading Asian firms; co-locate near EU EV manufacturing hubs; include knowledge-sharing and supply-commitment clauses backed by EU incentives; diversify beyond China to include South Korea and Japan.

Invest in Next-Generation Battery Technologies

Radically scale EU R&D and support for solid-state, sodium-ion, and other emerging chemistries. De-risk critical raw material sourcing at the EU level to bring these technologies to market readiness in the early-to-mid 2030s.

Apply Trade Protection Selectively and Strategically

Monitor China's battery overcapacity, deploy Trade Defence Instruments and the Foreign Subsidies Regulation with precision, protect European producers while carefully managing supply chain impacts, and exempt critical raw materials and components from such measures until a robust EU supply chain is in place.

Conclusion

From Strategy to Scale: The Path Forward



Europe's EV transition hinges on whether it can scale domestic cell manufacturing fast enough. The fundamentals are strong—robust demand, industrial expertise, and abundant renewable energy—but success depends on rapid reforms and targeted investment. The next five years will be decisive: those who align policy, capital, and supply chains will define leadership in the global battery economy.

For investors and policymakers, three priorities stand out:

Competing on Cost and Scale

to close the gap with the US and Asia

Secure Supply Chain

to hedge geopolitical risks

Ensure Material Supply and Drive Innovation

to shift from catch-up manufacturing to a distinct, high-value global position

By focusing on these priorities, Europe can move from strategy to scale—transforming vulnerabilities into an investment opportunity and positioning itself as a hub for sustainable, globally competitive battery production.



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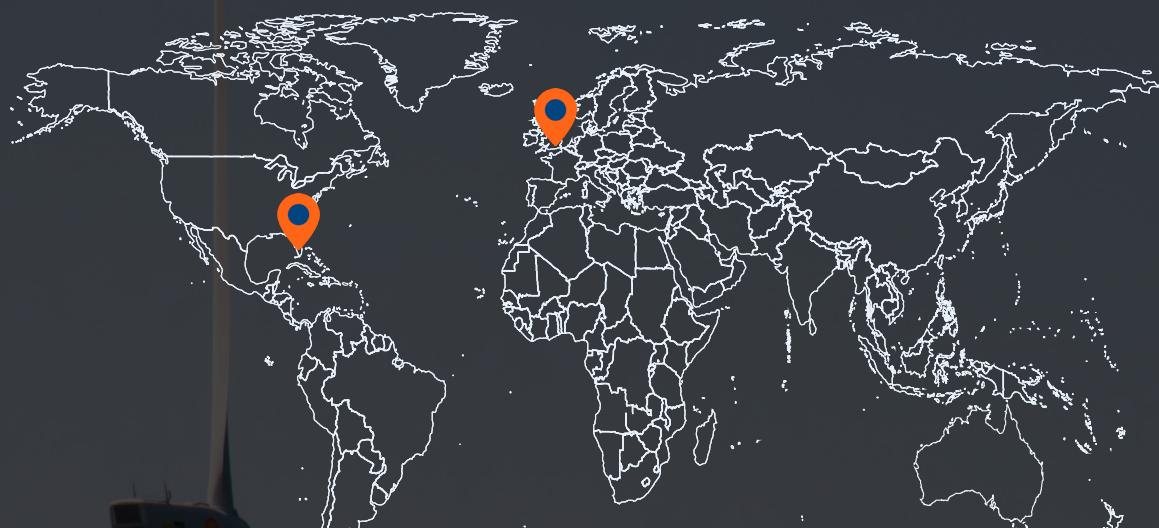
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