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CENTRO NAZIONALE PER LA MOBILITÀ SOSTENIBILE

SPOKE 14

INDUSTRY TRENDS REPORT

ENERGY, ENVIRONMENT & UTILITIES

EV BATTERIES

Italiadomani
PIANO NAZIONALE DI RIPRESA E RESILIENZA
Ministero dell'Università e della Ricerca
Finanziato dall'Unione europea
NextGenerationEU

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The majority of the data and commentary in this publication was developed and provided by Frost & Sullivan. It draws on proprietary information and a range of other sources including the companies, organizations and academics that are referenced in the text.

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EXECUTIVE SUMMARY

The energy and mobility sectors at the forefront of global decarbonization efforts. Here, electrification of transport is emerging as a key strategy to meet CO_2 reduction targets outlined in frameworks such as the Paris Agreement and the EU Green Deal. Traditional internal combustion engine vehicles are increasingly seen as incompatible with long-term climate goals, driving a policy and market shift toward zero-emission mobility solutions. Electric vehicles (EVs), powered by advanced battery technologies, represent a cornerstone in the transition to sustainable transport systems and renewable energy integration.

Global investments in battery innovation and EV infrastructure are not only a response to climate imperatives but also a strategic lever for economic resilience and technological leadership. Here, batteries represent the most critical and costly component of electric vehicles, directly influencing their performance, range, safety, and overall market competitiveness.

Before exploring next-generation solutions, it is essential to understand the characteristics and trade-offs of current dominant lithium-based chemistries such as LFP, NMC, NCA, and traditional Li-ion. As electric mobility accelerates, a diverse range of emerging battery technologies is being explored to overcome the limitations of conventional lithium-ion systems and meet evolving performance demands.

Here, Sodium-ion batteries are a promising alternative to lithium-ion with more abundant and less critical raw materials. Solid-state batteries promise higher energy density, enhanced safety, and extended cycle life, but face major barriers in scalability and interfacial stability. Lithium-sulphur (Li-S) batteries promise significantly higher energy densities but remain constrained by technical hurdles related to stability and limited cycle life. Redox flow batteries present a scalable option for stationary energy storage, with decoupled power and energy components that provide operational flexibility.

While lithium-based and emerging battery chemistries remain central to electric mobility, it is important to recognise that alternative zero-emission powertrains, such as hydrogen fuel cells, are also being developed in parallel. These systems further illustrate the pervasive and indispensable role of batteries within the wider landscape of electrified transport.

Battery technologies lie at the intersection of advanced scientific research and strategic industrial development, driving progress in materials science, energy systems, and global supply chains, which are all elements we will deep dive into in this report.

Battery cell manufacturing involves complex multi-step processes that include electrode preparation, cell assembly, electrolyte filling, and formation cycling, each of which significantly influences cell performance and cost. The design of battery cells comes in three major form factors, cylindrical, prismatic, and pouch, each offering distinct advantages and trade-offs.

Here, Cylindrical cells, widely adopted by Tesla (US) and other manufacturers, are favoured for their mechanical robustness and ease of automation, but face limitations in packing efficiency. Prismatic cells offer improved volumetric efficiency and are commonly used in commercial EVs and buses, although they can be more sensitive to swelling and mechanical stress. Pouch cells, while flexible and lightweight, often require complex containment and cooling systems, making them suitable for compact or high-performance applications despite their lower structural stability.

Here, gigafactories play a key role in scaling battery production and lowering costs through economies of scale, and its growth. Moreover, battery manufacturing is highly reliant on upstream supply chains involving raw materials like lithium, nickel, cobalt, and graphite, making the scalability of production closely tied to mining, refining, and logistics infrastructures.

Ensuring supply chain resilience and ethical sourcing has become a strategic priority for battery manufacturers, leading to new models of vertical integration, onshoring, and circular economy practices. Here, Redwood Materials, founded by J. B. Straubel, the co founder of Tesla (US) , embodies a vertically integrated, circular approach to EV battery supply chain resilience. Furthermore, automation, digital twins, and AI-driven quality control are increasingly being integrated into battery manufacturing to enhance scalability, reduce defects, and meet growing EV demand efficiently. As a relevant example here, BYD's (China) rapid production scale-up and in-house battery manufacturing have driven significant cost reductions, positioning the company as a global leader in affordable electric vehicles.

Furthermore, smart sensors embedded in battery packs enable real-time tracking of temperature, voltage, and location across production, transport, and deployment stages. In addition, Blockchain-backed Digital Battery Passports ensure secure, transparent records of battery origin, specifications, and usage history throughout the lifecycle. Furthermore, AI-driven analytics predict degradation patterns and optimize maintenance strategies, helping extend battery life and improve lifecycle efficiency .

Sustainable battery manufacturing begins with eco-conscious design strategies that prioritize recyclability, energy efficiency, and reduced material complexity. Furthermore, designing batteries for disassembly and end-of-life recovery simplifies recycling and minimizes resource loss in downstream processes. In this context, modern gigafactories are integrating low-emission production lines and energy-efficient systems to reduce their overall carbon footprint. Therefore, renewable energy sources such as solar, wind, and green hydrogen are increasingly being used to power battery production facilities. Moreover, the combination of sustainable design and low-carbon production is essential to reducing the embedded environmental cost of EV batteries.

Here, The Toyota (Japan) battery manufacturing in North Carolina is demonstrating clean-energy powered gigafactory model in the US. The Verkor (France) Gigafactory in Dunkerque exemplifies low-carbon EV battery manufacturing in Europe, integrating energy-efficient processes and circular economy principles to align with EU climate targets.

The battery industry continues to face critical technical risks, including fire hazards, raw material bottlenecks, and recycling limitations. Furthermore, Thermal runaway and overheating remain primary safety risks, especially under fast-charging or extreme-use conditions. Also, advancements in thermal management systems, such as liquid cooling and phase-change materials, are key to improving battery safety and stability.

The sector is under pressure to reduce dependence on critical materials like lithium, cobalt, and nickel due to supply constraints and ethical sourcing issues. Here, China's early deployment of sodium-ion batteries in grid storage and electric scooters highlights a strategic shift toward alternative chemistries that could reduce EVs' reliance on lithium and cobalt. CATL's (China) 2025 launch of its Naxtra sodium-ion battery series demonstrates rapid progress in commercializing next-gen chemistries with energy densities approaching those of mainstream lithium-ion cells.

Recycling methods must adapt to evolving battery designs and chemistries, requiring flexible and scalable systems that can process a diverse range of cell types. After their automotive lifespan, EV batteries can be repurposed for second-life applications in stationary energy storage systems. These batteries undergo testing, certification, and repackaging to ensure performance, safety, and suitability for grid or off-grid use. Second-life battery systems support renewable energy integration by balancing solar and wind fluctuations and providing backup storage.

Here, A second-life project by Enel (Italy) and Nissan (Japan) repurposed used EV batteries into a 2.1 MWh storage system at Rome's Fiumicino Airport, supporting solar energy integration and grid stability. Furthermore, repurposing used batteries reduces waste, delays recycling demand, and enhances grid stability through affordable energy storage solutions. Here, Jaguar Land Rover's (UK) partnership with Allye Energy (UK) created a mobile second-life storage unit from Range Rover PHEV batteries, offering clean, portable power as an alternative to diesel generators.

INTRODUCTION

The energy and mobility sectors at the forefront of global decarbonization efforts

Among all emitting sectors, **energy and mobility** stand out as both highly carbon-intensive and strategically pivotal, since their decarbonization unlocks systemic change across the global economy. Fossil-fuel-based electricity generation, still dominant in many economies, contributes significantly to global CO_2 levels, while the internal combustion engine (ICE) vehicle fleet remains the single largest end-use contributor to urban air pollution and oil demand. At the same time, these two sectors are also deeply **interconnected**: as electricity grids decarbonize, electric vehicles (EVs) become cleaner throughout their life cycle, reinforcing the case for transport electrification. This mutual reinforcement is why energy and mobility are often treated as a joint system in climate mitigation models.

Consequently, governments, businesses, and civil society organizations are directing unprecedented attention and resources toward transforming these sectors. From **vehicle electrification mandates** and **clean energy subsidies** to **zero-emission city targets**, policies are now being implemented with a degree of speed and ambition not previously seen. The European Union's **Fit for 55 package**, China's **New Energy Vehicle policy**, and the United States' **Inflation Reduction Act (IRA)** all reflect this emerging consensus. However, the transition is complex and multidimensional, particularly for transport, and requires scalable, safe, and affordable battery technologies as a core enabling platform.

Here, electrification of transport is emerging as a key strategy to meet CO_2 reduction targets outlined in frameworks such as the Paris Agreement and the EU Green Deal

In this global context, the **electrification of transport** has emerged as a cornerstone of climate strategy due to its potential to eliminate tailpipe emissions and leverage clean electricity. Replacing ICE vehicles with EVs powered by renewable energy sources significantly reduces **well-to-wheel emissions**, and when scaled, can lead to transformative reductions in national and regional carbon footprints. Global institutions such as the **IEA (International Energy Agency)** and **World Bank** now view electrification as not just one solution among many, but as foundational to the success of climate policies in developed and emerging economies alike.

The rationale for EV adoption goes beyond emissions. Electric drivetrains are more energy-efficient, mechanically simpler, and offer superior torque control, enabling new performance benchmarks. They also eliminate urban air pollutants such as **Nitrogen Oxides** and **Particulate Matter ≤ 2.5 micrometres**, bringing co-benefits for public health. However, these benefits depend fundamentally on the availability of high-quality, affordable, and sustainable batteries, which makes battery innovation and manufacturing capacity central to the success of transport decarbonization strategies.

Traditional internal combustion engine vehicles are increasingly seen as incompatible with long-term climate goals, driving a policy and market shift toward zero-emission mobility solutions

Globally, **internal combustion engine vehicles** are being phased out through a combination of **regulatory bans, market disincentives**, and **consumer preference shifts**. Leading jurisdictions, including the EU, Canada, and several U.S. states, have announced bans on the sale of new ICE vehicles starting between 2030 and 2035. Simultaneously, automotive manufacturers are transitioning their R&D and production pipelines toward **fully electric and hybrid-electric platforms**, reflecting both consumer demand and shareholder pressure to align with net-zero targets.

ICE (Internal Combustion Engine) vehicles are no longer viewed as economically future proof. Indeed, they are increasingly vulnerable to **carbon pricing, urban access restrictions**, and **technology obsolescence**. In contrast, zero-emission vehicles (ZEVs) are receiving growing support through **subsidies, charging infrastructure investments**, and **fleet electrification mandates**.

This market evolution is not only reshaping the auto industry but also redefining upstream sectors, including materials processing, electronics, and energy infrastructure, all of which must adapt to meet the growing demands of an electrified transport system underpinned by batteries.

Electric vehicles (EVs), powered by advanced battery technologies, represent a cornerstone in the transition to sustainable transport systems and renewable energy integration

Electric vehicles are more than just replacements for fossil-fuelled cars, they are **convergent nodes** in a broader energy system transformation. Their functionality depends on the integration of advanced **battery technologies, software, thermal management**, and **power electronics**, all of which must operate in harmony to ensure safety, performance, and reliability.

Moreover, EVs increasingly interface with the **electric grid**, enabling bidirectional power flows (e.g., Vehicle-to-Grid, or V2G) that allow vehicles to act as **decentralized energy storage units**, stabilizing renewable generation and improving grid flexibility.

This expanded role transforms EVs from simple modes of transport into **strategic assets** for grid decarbonization. Batteries, therefore, serve a dual purpose: powering mobility and enabling **renewable energy integration**. Their cost, efficiency, recyclability, and environmental footprint have become metrics of systemic importance, influencing not only vehicle performance but also national energy security, infrastructure investment, and industrial competitiveness.

Global investments in battery innovation and EV infrastructure are not only a response to climate imperatives but also a strategic lever for economic resilience and technological leadership

Recognizing the critical role of batteries in both the transport and energy transitions, countries and corporations are deploying **unprecedented levels of capital** into **battery research, manufacturing, and infrastructure**. Investment in battery gigafactories alone exceeded $100 billion in 2023, with major initiatives underway in **China, Europe**, and **North America**.

Governments are aligning these investments with strategic goals: to **localize supply chains, secure critical raw materials**, and **establish industrial leadership** in what is now considered one of the most competitive and geopolitically significant sectors of clean tech.

Beyond cell production, funding is also flowing into **mining, refining, battery software, safety systems**, and **second-life solutions**. Public-private partnerships and industrial alliances, such as the **European Battery Alliance** and the **U.S. Battery Materials Initiative**, illustrate the degree of coordination required to scale a complex and rapidly evolving value chain. Batteries are no longer considered a niche technology but a **national strategic priority**, influencing everything from trade policy to labour markets and environmental regulation.

Here, batteries represent the most critical and costly component of electric vehicles, directly influencing their performance, range, safety, and overall market competitiveness

Among all EV subsystems, the **battery pack is the most defining component**, shaping the vehicle's price, range, safety profile, and carbon footprint. Battery costs, once exceeding $1,000/kWh, have fallen to ~$115/kWh (**BloombergNEF, 2024**), but still represent **the largest single cost item** in an EV.

Beyond cost, batteries influence how far a vehicle can travel, how fast it can recharge, how long it lasts, and how safely it can operate under various conditions. These variables affect not only consumer adoption but also the total cost of ownership and residual value.

Moreover, battery packs introduce **unique operational risks**, including thermal runaway, manufacturing defects, and capacity degradation, which require continuous monitoring and sophisticated **battery management systems (BMS)**. As manufacturers compete to improve energy density and performance, balancing these gains with safety, durability, and recyclability becomes a central engineering challenge. This is precisely why understanding **current battery chemistries and architectures** is a necessary prelude to discussing emerging technologies and systemic solutions.

Before exploring next-generation solutions, it is essential to understand the characteristics and trade-offs of current dominant lithium-based chemistries such as LFP, NMC, NCA, and traditional Li-ion

The modern EV market is dominated by a set of well-established **lithium-based chemistries**, including **Lithium Iron Phosphate (LFP), Nickel Manganese Cobalt (NMC), Nickel Cobalt Aluminium (NCA)**, and traditional **lithium-ion (Li-ion)**. Each chemistry brings unique advantages and trade-offs. **LFP** is lauded for its safety, cycle life, and low cost, making it ideal for entry-level EVs and commercial fleets, but its lower energy density limits range. **NMC** and **NCA** offer higher energy densities and faster charging but rely on **costly and ethically sensitive materials** like cobalt and nickel.

The choice of chemistry affects not only **vehicle performance** but also **supply chain resilience, manufacturing complexity**, and **recyclability**. As such, these systems form the **benchmark** against which emerging technologies are evaluated. They also provide the starting point for discussions in Chapter 1, which investigates **how batteries are manufactured, assembled, and optimized**, and Chapter 2, which analyses their **sustainability, lifecycle risks, and second-life applications**.

As electric mobility accelerates, a diverse range of emerging battery technologies is being explored to overcome the limitations of conventional lithium-ion systems and meet evolving performance demands

With growing demand for **faster charging, longer range, lower cost**, and **reduced reliance on critical materials**, attention is increasingly turning to **emerging chemistries** that move beyond traditional lithium-ion systems. These include **sodium-ion, lithium-sulphur (Li-S), solid-state**, and multivalent systems like magnesium and zinc. Each introduces new electrochemical architectures that seek to overcome specific limitations of conventional batteries, whether in terms of material scarcity, thermal instability, or volumetric limitations.

The development of these chemistries is motivated by both **performance requirements** and **sustainability imperatives**. However, transitioning from laboratory prototypes to industrial-scale production involves overcoming numerous challenges, including **electrode stability, cycle life, manufacturing integration**, and **supply chain readiness**. Understanding their potential, and their current limits, is essential to charting a realistic path forward for battery technology in the next decade.

… Here, Sodium-ion batteries are a promising alternative to lithium-ion with more abundant and less critical raw materials

Among the most promising alternatives is the **sodium-ion battery**, which replaces lithium with **abundant, widely distributed sodium**, offering **cost advantages, geopolitical resilience**, and **improved thermal safety**. While sodium-ion cells currently trail lithium-ion in gravimetric energy density (~140–160 Wh/kg), they are increasingly seen as viable for **short-range EVs, two- and three-wheelers**, and **stationary storage**. Importantly, they eliminate the need for cobalt and nickel, significantly reducing both cost and ESG exposure.

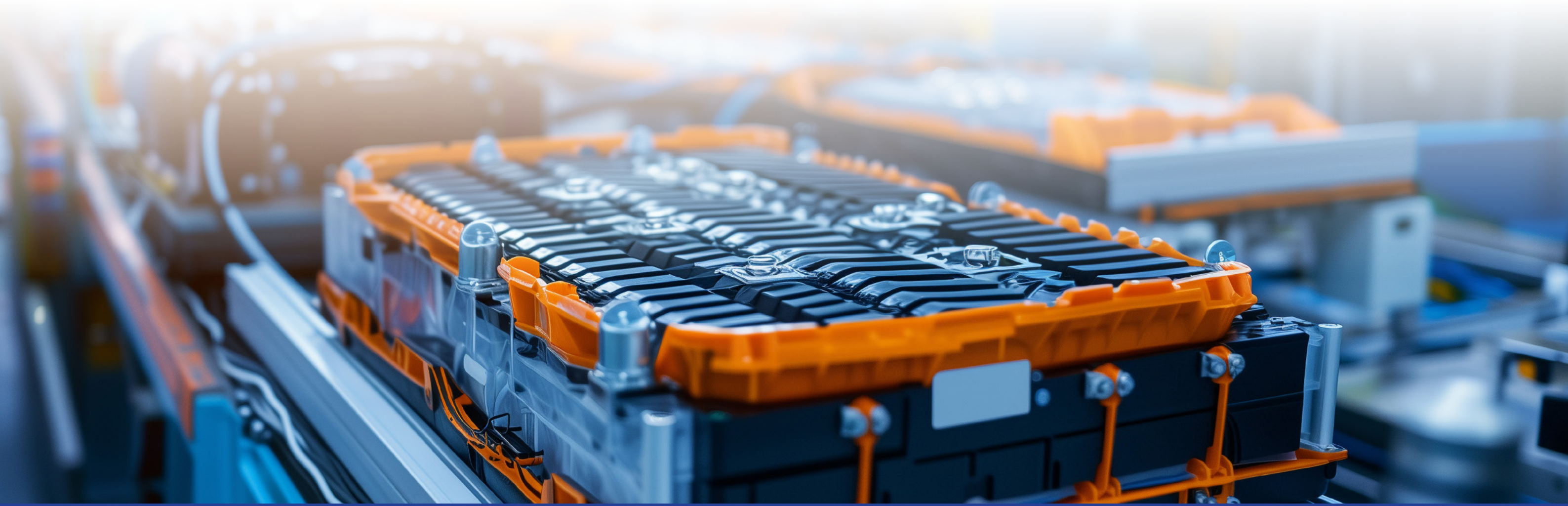
China has taken the global lead in **sodium-ion** deployment, with **CATL , HiNa Battery**, and other firms rolling out commercial systems as early as 2023. CATL's **Naxtra** series, launching in 2025, signals an inflection point, as its energy density approaches that of early **LFP cells**. These developments suggest sodium-ion could gain **widespread adoption in specific segments** by the end of the decade, making it a serious contender in the evolving battery landscape.

… Solid-state batteries promise higher energy density, enhanced safety, and extended cycle life, but face major barriers in scalability and interfacial stability

Solid-state batteries (SSBs) are widely regarded as a transformative evolution of lithium-based energy storage, offering the potential to significantly increase energy density while improving safety and longevity. By replacing the flammable liquid electrolyte found in conventional lithium-ion cells with a solid electrolyte, typically ceramic, polymer, or sulphide-based—SSBs eliminate the risk of leakage and thermal runaway, enhancing both mechanical stability and fire resistance. Furthermore, solid electrolytes enable the use of lithium metal anodes, which can dramatically boost specific energy beyond that of current lithium-ion chemistries.

Despite their theoretical advantages, SSBs remain largely in the development or pilot production phase. Key challenges include interfacial resistance between the solid electrolyte and electrodes, mechanical degradation during cycling, and the complexity of manufacturing processes at scale. Additionally, achieving consistent performance across varied operating temperatures and charge rates remains a technical hurdle.

Nonetheless, major automotive and battery manufacturers, such as Toyota (Japan), QuantumScape (US), and Solid Power (US), are investing heavily in commercialization efforts, aiming to deploy early-generation SSBs in EVs within the next several years. Solid-state technology thus holds the potential to redefine performance benchmarks across mobility and storage applications, provided current material and integration challenges can be overcome.



... Lithium-sulphur (Li-S) batteries promise significantly higher energy densities, but remain constrained by technical hurdles related to stability and limited cycle life

Lithium-sulphur (Li-S) batteries are attracting interest for their **theoretical energy densities exceeding 500 Wh/kg**, which could revolutionize long-range electric transport, aerospace, and defence applications. Sulphur is cheap, abundant, and non-toxic, making it an ideal cathode material from both economic and environmental perspectives. However, Li-S systems face persistent technical barriers such as the **polysulfide shuttle effect**, which leads to rapid capacity fading. Other barriers here are the poor electronic conductivity, and the **large volumetric expansion** during cycling.

To address these challenges, researchers are developing **nanostructured cathode architectures, solid-state electrolytes,** and **advanced separators** to improve stability and cycle life. While still in the R&D phase, **Li-S** holds transformative potential if its durability and manufacturing compatibility can be improved. Its development underscores the broader trend toward **function-specific chemistries**, optimized not only for range or cost, but for application context and lifecycle impact.

Feature comparison between Lithium Ion, Sodium Ion and solid-state

Feature	Lithium Ion	Sodium Ion	Solid State
Energy Density	High	Medium	Highest
Cost	Medium	Low	High
Safety	Medium	High	Highest
Charging Speed	Medium	High	Highest
Maturity	Mature	Developing	Emerging

... Redox flow batteries present a scalable option for stationary energy storage, with decoupled power and energy components that provide operational flexibility

While unsuitable for EVs due to low energy density, **redox flow batteries (RFBs)** are becoming increasingly important for **grid-scale and long-duration energy storage**. RFBs decouple energy and power capacity by storing electrolytes in external tanks, enabling flexible scalability and **exceptional cycle life** (up to 20,000 cycles). This makes them ideal for **renewable integration, peak shaving**, and **backup power** in decentralized systems or critical infrastructure.

Vanadium-based systems dominate the current market, but alternative chemistries, including **zinc-bromine, iron-chromium**, and **organic redox couples**, are being explored to reduce cost and toxicity. RFBs may play a complementary role to lithium- and sodium-based systems by occupying a niche where **longevity, modularity, and safety** outweigh volumetric constraints. Their development exemplifies the growing need for **multi-technology storage portfolios** tailored to different segments of the energy landscape.

While lithium-based and emerging battery chemistries remain central to electric mobility, it is important to recognise that alternative zero-emission powertrains, such as hydrogen fuel cells, are also being developed in parallel. These systems further illustrate the pervasive and indispensable role of batteries within the wider landscape of electrified transport

Electric batteries and hydrogen mobility are closely interconnected due to the complementary roles they both play in the transition towards low-emission transport systems. Fuel Cell Electric Vehicles (FCEVs) utilise hydrogen stored on board to generate electricity through an electrochemical reaction within the fuel cell, which powers an electric motor similar to that used in Battery Electric Vehicles (BEVs).

Although hydrogen vehicles do not store energy in large rechargeable batteries, they produce electricity on board through the reaction between hydrogen and oxygen, generating only water vapour as an emission. These systems nonetheless include a battery, smaller in size compared to those used in BEVs, which performs essential functions for overall energy efficiency and power management. The battery enables the recovery and storage of energy during regenerative braking, provides auxiliary power during transient peaks (for instance, during acceleration), and stabilises the flow of electricity between the fuel cell and the electric motor.

Thus, even in hydrogen-powered vehicles, the battery remains a key component of the propulsion system, contributing to the optimisation of performance and operational efficiency. Electric batteries, on the other hand, store energy directly from the electrical grid to power the motor, offering high conversion efficiency but facing constraints related to charging times and energy density, which may limit range depending on the application.

Hydrogen mobility is particularly suitable for uses requiring long driving range, short refuelling times and reduced impact on payload – such as heavy-duty vehicles, industrial transport, and off-road applications. In these sectors, hydrogen can effectively complement battery electric mobility, which remains more appropriate for light-duty and urban transport where efficiency and infrastructure are more developed.

Overall, the transport energy system therefore positions batteries and hydrogen as synergistic technologies. Both share the common objective of powering electric motors through different energy carriers: electrochemical energy directly stored in the case of batteries, and the chemical energy of hydrogen converted into electricity via fuel cells. This complementarity enables an integrated response to the diverse requirements of range, charging time, and operational flexibility in sustainable transport systems.

Battery technologies lie at the intersection of advanced scientific research and strategic industrial development, driving progress in materials science, energy systems, and global supply chains, which are all elements we will deep dive into in this report

EVOLUTION OF EV BATTERIES

PRINCIPAL ABBREVIATIONS

AI	*Artificial Intelligence*
°C	*degrees Celsius*
3D	*3 dimensions*
BMS	*Battery management systems*
BESS	*Battery energy management system*
CBAM	*Carbon Border Adjustment Mechanism*
CO_2	*Carbon Dioxide*
DBP	*Digital Battery Passport*
DfD	*Design for disassembly*
DPP	*Digital Product Passport*
ECOSOC	*United Nations Economic and Social Council*
EIS	*Electrochemical Impedance Spectroscopy*
EoL	*End-of-Life*
ESG	*Environmental, Social, and Governance*
ESS	*Energy storage system*
EU	*European Union*
EV	*Electronic vehicle*
GBA	*Global Battery Alliance*
GDPR	*General Data Protection Regulation*
GHG	*Greenhouse gases*
GWh	*Gigawatt-hour*
ICE	*Internal combustion engine*
IEA	*International Energy Agency*
IoT	*Internet of Thing*
IRA	*Inflation Reduction Act*
Km	*Kilometres*
kV	*Kilovolt*
KWh	*Kilowatt-hour*
LCA	*Lifecycle assessments*

LFP	*Lithium Iron Phosphate*
Li-ion	*Lithium-ion*
Li-S	*Lithium- Sulphur*
LMT	*Light transport vehicles*
M	*Million*
ML	*Machine Learning*
MWh	*Megawatt-hour*
NCA	*Nickel Cobalt Aluminium*
NMC	*Nickel Manganese Cobalt*
OEMs	*Original Equipment Manufacturers*
PCM	*Phase-change materials*
PHEV	*Plug-in Hybrid Electric Vehicle*
PPAs	*Power purchase agreements*
QR	*Quick Response*
RBSs	*Redox flow batteries*
SEI	*Solid electrolyte interphase*
SSBs	*Solid-state batteries*
TCO	*Total cost of ownership*
TMS	*Thermal management systems*
TPA	*Tons per annum*
UK	*United Kingdom*
UN	*United Nations*
UNECE	*United Nations Economic Commission for Europe Regulation*
US	*United states*
V	*Volt*
V2G	*Vehicle-to-Grid*
Wh/kg	*Watt-hour per kilogram*
ZEVs	*Zero-emissions vehicles*

ABOUT INTESA SANPAOLO INNOVATION CENTER:

Intesa Sanpaolo Innovation Center is the company of Intesa Sanpaolo Group dedicated to innovation: it explores and learns new business and research models and acts as a stimulus and engine for the new economy in Italy. The company invests in applied research projects and high potential start-ups, to foster the competitiveness of the Group and its customers and accelerate the development of the circular economy in Italy.

Based in the Turin skyscraper designed by Renzo Piano, with its national and international network of hubs and laboratories, the Innovation Center is an enabler of relations with other stakeholders of the innovation ecosystem - such as tech companies, start-ups, incubators, research centres and universities - and a promoter of new forms of entrepreneurship in accessing venture capital. Intesa Sanpaolo Innovation Center focuses mainly on circular economy, development of the most promising start-ups, venture capital investments of the management company Neva SGR and applied research

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Published: September 2025

CENTRO NAZIONALE PER LA MOBILITÀ SOSTENIBILE

This work has been supported under the National Recovery and Resilience Plan (NRRP), Mission 4 Component 2 Investment 1.4 - Call for tender No. 3138 of December 16, 2021 of the Italian Ministry of University and Research, funded by the European Union - NextGenerationEU [Award Number: CNMS named MOST, Concession Decree No. 1033 of June 17, 2022, adopted by the Italian Ministry of University and Research, CUP: B13D21011590004, Spoke 14 "Hydrogen and New Fuels"]