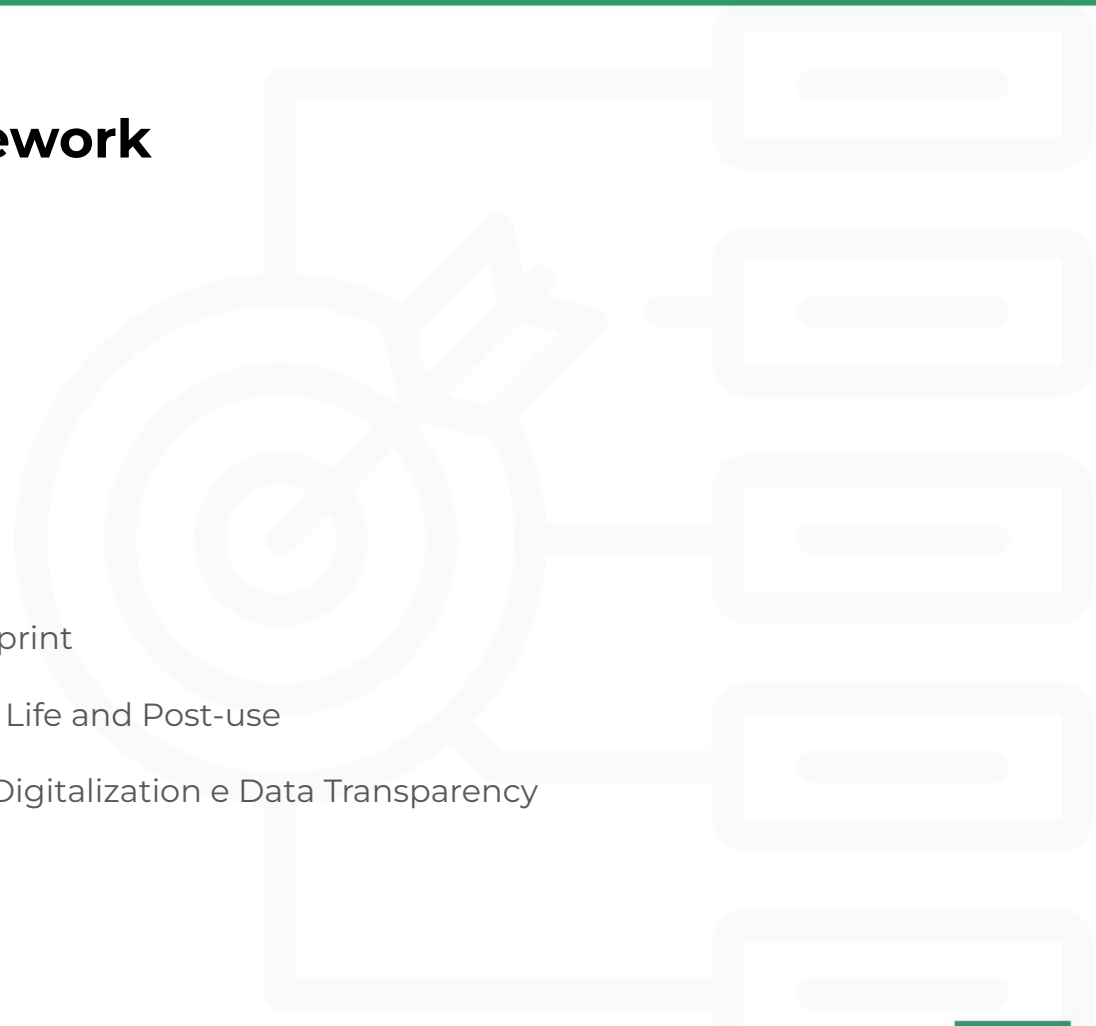








The implications for Italy of the new EU battery regulation

EXECUTIVE SUMMARY



Executive Summary Framework

- 
-  Report Methodology
 -  Introduction to Regulation
 -  Italian Battery Value Chain
 -  Focus on Carbon Footprint
 -  Focus on End of Life and Post-use
 -  Focus on Digitalization e Data Transparency

Objectives and Methodology of the Report

The study aims to provide useful tools for understanding and applying the new European regulation on batteries, which came into force on 18/02/2024.

THE WORK CARRIED OUT INCLUDES

- **Study** on the **Italian battery ecosystem**, identifying the various actors and their positions in the value chain,
- **In-depth analysis** of the [European Regulation on batteries and waste batteries](#), with particular attention to the articles that have the greatest impact on the members and to secondary legislation,
- Assessment of the **impact of regulation** on the identified actors, including timing, costs, and increased sustainability of the supply chain,
- **Insights** into the three main themes identified by the members:
 - Carbon footprint,
 - End of life and post-use,
 - Digitization and data transparency.

THE METHODOLOGY OF THE REPORT INCLUDES

- **Independent analysis** of the European regulation on batteries and other relevant official documents, such as the [Critical Raw Materials Act](#) or il [Regulation on Ecodesign for Sustainable Products](#).
- Series of **interviews** conducted between October 2023 and January 2024, with actors active in the Italian and European battery supply chain, in order to receive feedback on regulation, understand their doubts, and understand how they are preparing for implementation.



Attached to the report is a **Battery Passport model**, appropriately explained and compliant with the regulation.

Introduction to the New European Regulation

The new European regulation on batteries and battery waste was approved by the European Parliament on July 12, 2023, published in the Official Journal of the EU on August 17, 2023, and entered **into force on February 18, 2024**.

Its **chapters, articles, and paragraphs will not be applied simultaneously**, but will follow a time interval ranging from 2024 to 2037.




The official document is divided into **14 chapters** and **15 annexes**.

This regulation is part of the **EU Green Deal**, a package of policy initiatives aimed at guiding the EU towards a green transition, with the ultimate goal of achieving climate neutrality by 2050.

The document approved on July 12, 2023, constitutes the regulatory framework for the battery sector in the European market for the coming decades.

However, within the regulation, there are provisions for **delegated acts** and **implementing acts**, which will be crucial for filling gaps in the regulation, harmonizing its implementation, and adapting it to future technical and market developments. The publication of these acts is scheduled between 2024 and 2031.

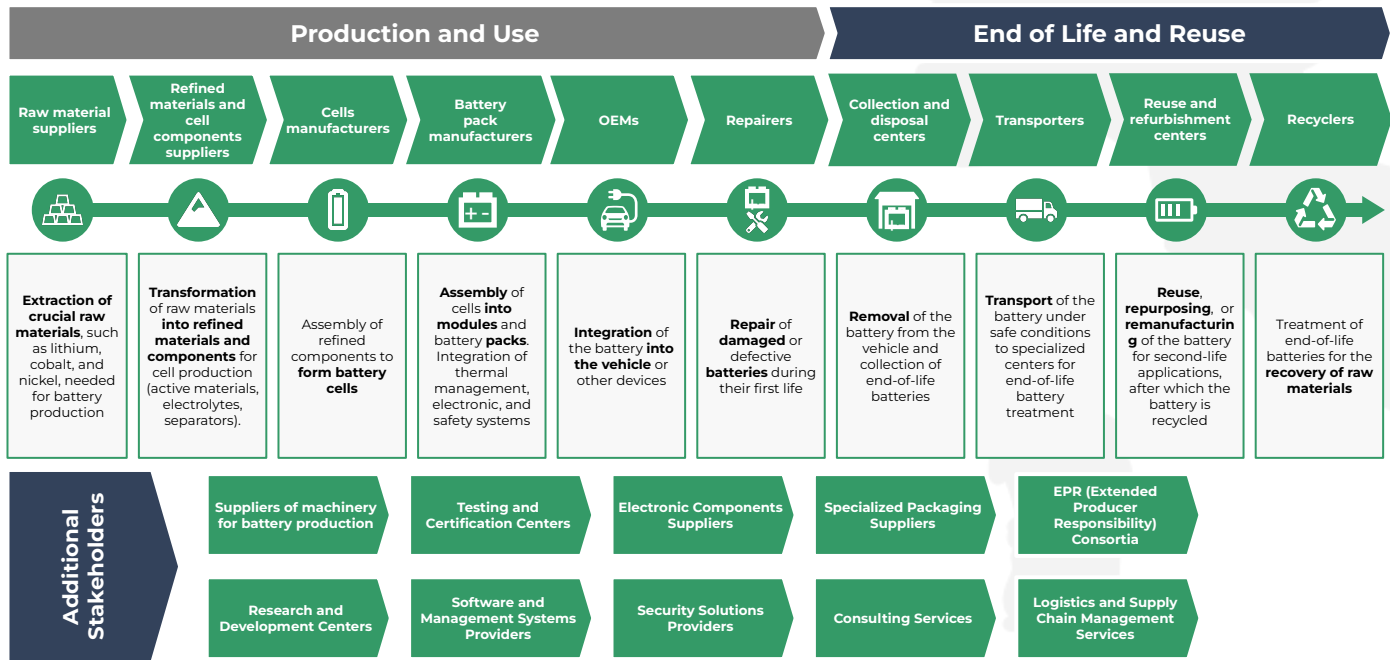
AREAS OF INTEREST

 <p>Carbon Footprint and Sustainability</p>	 <p>Battery Performance and Durability</p>	 <p>Notification and Administrative Procedures</p>	 <p>Circularity and End of Life</p>	 <p>Battery Data and Digitalization</p>
--	---	---	--	---

TIMELINE AND OBJECTIVES

2024	Entry into Force of the Regulation.
2025	Carbon footprint declaration (starting from EVs). Mandatory due diligence process. 65% lithium battery recycling efficiency.
2026	Application of performance categories for carbon footprint (starting from EVs).
2027	Entry into force of the battery passport. Recovery efficiency: 90% Cu, Co, Ni; 50% Li; 90% Pb.
2028	Application of maximum threshold for carbon footprint (EV). Minimum values for performance and durability. Declaration of recycled content.
2029	
2030	Lithium battery recycling efficiency 70%.
2031	Recovery efficiency: 95% Cu, Co, Ni; 80% Li; 95% Pb. Minimum recycled content: 16% Co, 6% Ni, 6% Li, 85% Pb.
2036	Minimum recycled content: 26% Co, 15% Ni, 12% Li, 85% Pb.

Battery Value Chain with a Focus on Italy



Italian Ecosystem

Many Italian actors are trying to navigate an environment that is not yet entirely favorable to investments, especially in precursor materials and cell production, particularly in the automotive sector. Currently, many industrial projects for **cell production** have yet to start, with 48 GWh of Gigafactory capacity planned. A distinctive feature is the absence of Asian or American actors, unlike other European countries.

Battery pack manufacturers in Italy are predominantly medium to small-sized compared to global counterparts. The battery **recycling industry** is in its infancy, involving actors with experience in other recycling sectors or specifically in lead-acid battery recycling. In fact, many leading companies in the lead-acid battery market are now moving towards the lithium battery sector. As for **second life** battery, there are mainly pilot projects and case studies at the moment.

Italy boasts world-class **research centers** that contribute to innovation in the field of batteries. The Italian manufacturing tradition plays a significant role, producing key players in the development of **machinery for battery production** and in the electronic and thermal management of these devices.

Focus on Carbon Footprint

The regulation introduces three new concepts in Article 7 that are currently not present in the battery sector.

Article	Description	Introduction
Carbon footprint declaration (Art. 7.1)	Requirement for detailed declaration providing comprehensive information on the carbon emissions associated with each stage of the battery life cycle (Annex II)	2025 - EV Batteries 2026 - Industrial Batteries 2028 - LMT Batteries 2030 - Industrial Batteries with External Storage
Carbon footprint performance class (Art. 7.2)	Addition of battery categorization based on their environmental impact.	2026 - EV Batteries 2027 - Industrial Batteries 2030 - LMT Batteries 2032 - Industrial Batteries with External Storage
Carbon footprint maximum threshold (Art. 7.3)	Introduction of a maximum threshold for tolerable carbon emissions throughout the entire lifecycle of a battery.	2028 - EV Batteries 2029 - Industrial Batteries 2031 - LMT Batteries 2033 - Industrial Batteries with External Storage

Pros

It provides **consumers** with detailed information on the **sustainability** of electric vehicles compared to their fossil fuel counterparts. **Manufacturers** welcome this opportunity as a **new dimension to differentiate** themselves from Asian competitors. The inclusion of the end-of-life phase in the carbon footprint calculations could promote local supply chains.

Doubts

The regulation grants **ample space for delegated acts**, thus making it difficult to issue a definitive assessment on the measures. It is crucial to assess the **effect on the final cost** of batteries resulting from this regulation. Since most information concerns the battery model, manufacturers with higher volumes may enjoy lower marginal costs, while those with lower volumes or specific batteries may face penalties.

Proposals

Economic incentives for batteries with the highest performance class could promote the adoption of more sustainable solutions. Differentiation of performance classes and carbon footprint based on battery chemistry and application is necessary, as some higher-performing solutions may have inherently greater environmental impact.

Focus on End of Life and Post-use

Starting from 2028, batteries must be accompanied by the percentage of recovered materials documentation. Furthermore, collection and recycling targets for batteries and their contained materials are defined. In addition, extended producer responsibility is introduced.

Article	Description
Recycled content in batteries (Art. 8)	Starting from 2028, certain categories of batteries are required to be accompanied by documentation indicating the percentage of recovered materials. Minimum percentage recovery targets from waste are also established.
Extended Producer Responsibility (Art. 56)	Battery producers must cover all costs related to battery waste management, including collection, transportation, and treatment. If a company places a reused or refurbished battery on the market, it assumes extended producer responsibility.
Collection of waste batteries (Art. 59, 60, 61)	Percentage collection targets are established for portable and LMT waste batteries, while there are none for industrial and EV waste batteries.
Targets for recycling efficiency and recovery of materials (Art. 71)	Minimum recycling percentage targets are set for batteries and their contained materials, including Cobalt, Nickel, Copper, and Lithium.

Pros

The clear definition of producer responsibilities **simplifies** the **management of end of life** batteries, encouraging new investments and operators. The regulation **promotes** the development of the battery **recycling industry** in Europe, improving the supply chain and stimulating technological innovation in the sector.

Doubts

There is a **potential trade-off** to be made **between battery recycling objectives and reuse**, as the emphasis on recycling targets could limit opportunities for reuse. Additionally, there is a lack of distinction between waste from battery manufacturing and post-consumer waste in recycling targets, and there are no design obligations that promote battery reuse. The regulation does not specify whether recycling should occur within or outside of Europe.

Proposals

Inclusion of specific recovery and recycling **targets for graphite and LFP** battery cathodes, reinforcing the commitment to sustainability and improving the European supply chain. **Alignment** between the **European Battery Regulation** and the **Raw Material Act** to promote a stronger local recycling industry.

Focus on Digitalization e Data Transparency

The regulation introduces measures aimed at promoting greater transparency of battery data, such as labeling requirements and the battery passport, to increase the sustainability of the supply chain and facilitate the efficiency of repair, recovery, and recycling processes.

Article	Description
Labelling and marking of batteries (Art. 13)	The obligation to label batteries is introduced with two temporal horizons: a physical label starting from 2026 and a QR code enabling remote access to data starting from 2027.
Information on the state of health and expected lifetime of batteries (Art. 14)	Starting from August 2024, data related to parameters for determining the state of health and expected lifetime of batteries must be contained within the Battery Management System (BMS) of stationary battery storage, LMT batteries, and EV batteries.
Battery Passport (Art. 77, 78)	Starting from February 18, 2027, all LMT batteries, industrial batteries > 2 kWh, and EV batteries placed on the market or put into service must be accompanied by the battery passport. The data contained in the passport is organized in two tiers (static or dynamic), with three different levels of access (public, notified bodies, and individuals with a legitimate interest). The Battery Passport is a Digital Product Passport (DPP) and must be interoperable, unique, based on an open standard, accurate, complete, and up-to-date.

Pros

The digital battery passport **encourages** the **use of sustainable materials** and empowers suppliers to levy premium prices for environmentally friendly products. **Consumers** become **more environmentally aware**. For all participants in the value chain, from manufacturing to repair and recycling, access to data through the digital passport streamlines **secure, efficient operations**, and informed decision-making.

Doubts

The lack of specifications regarding the frequency of dynamic data updates and the **potential costs of connecting to the online platform** raise concerns, especially for non-EV applications. The assessment of remaining useful life is influenced by the accuracy of algorithms developed by OEMs. Furthermore, the **absence of module-level data** could limit the efficiency of battery reuse and refurbishment, making it crucial to conduct longer and more detailed end-of-life tests.

Proposals

While additional **module and cell-level data** are not currently mandated, **incentives** could be introduced to encourage OEMs to voluntarily declare them in the passport. This would facilitate a more comprehensive assessment, streamline repairs, and, if possible, promote battery reuse, contributing to more sustainable practices and efficient component management.

Report published by Motus-E on **April 2024**

