CIC energiGUNE

MEMBER OF BASQUE RESEARCH & TECHNOLOGY ALLIANCE

SUSTAINABILITY in the Battery industry

Advancing Sustainable Battery Manufacturing

Why Sustainability is Crucial in Battery Manufacturing?

The battery industry is **undergoing significant changes due to increasing environmental regulations**, which are pushing manufacturers to adopt more sustainable practices. With global pressure to **reduce carbon emissions** and the need to comply with new regulations, **sustainability has become essential for remaining competitive in the market**. In addition, focusing on **resource efficiency** and the **circular economy** helps **reduce dependence on scarce materials** and aligns with Europe **climate goals**.

Critical Points in Environmental Footprint Calculation

When estimating the environmental footprint of batteries, several key aspects need to be carefully considered to ensure an accurate assessment:

- **LIMITED AVAILABILITY OF PRIMARY INDUSTRIAL DATA**
- **END-OF-LIFE MANAGEMENT**
- **EFFICIENCY LOSSES AND REAL-WORLD PERFORMANCE**
- **GEOGRAPHICAL VARIABILITY**
- **MATERIAL SOURCING AND PROCESSING**
- **DATA TRANSPARENCY AND STANDARDIZATION**

EU Regulation 2023/1542: Carbon Footprint Declaration for Batteries

Since 2023, batteries placed on the EU market have been required to include a carbon footprint declaration—initially as a recommendation and progressively becoming mandatory. The obligation is being phased in across different battery categories, depending on their type and intended use.

STAGE 1	STAGE 2	STAGE 3
Recommendation (2023–2025)	**Mandatory for Certain Battery Types (2026–2029)**	**Thresholds and General Obligation (2030–2033)**
During this period, the carbon footprint declaration was **optional for all batteries.** Manufacturers could include the **carbon footprint on a voluntary basis.**	Starting in 2026, the carbon footprint declaration becomes **mandatory** for the following categories: **Rechargeable industrial batteries** **Electric vehicle batteries** In 2027, the requirement will extend to Light Means of Transport (LMT).	From 2030 onwards, the obligation will include additional types of rechargeable batteries, and the implementation of EU-defined carbon footprint thresholds. **All batteries placed on the EU market must comply** with these thresholds, regardless of where they are manufactured.

New EU Requirements on
Recycled Content and Recycling Efficiency

The EU Battery Regulation introduces new circular economy requirements that focus on increasing recycled material in new batteries and improving the recovery of key materials at end-of-life, reducing dependence on critical raw materials and enhancing resource efficiency.

MINIMUM RECYCLED CONTENT IN NEW BATTERIES

(Mandatory thresholds for cobalt, lithium, and nickel)

- **2030:**
  12% Cobalt (Co)
  4% Lithium (Li)
  4% Nickel (Ni)
- **2035:**
  20% Cobalt (Co)
  10% Lithium (Li)
  12% Nickel (Ni)

RECYCLING EFFICIENCY AND MATERIAL RECOVERY TARGETS

(Applicable to end-of-life Li-ion batteries)

- **2025:** 65% recycling efficiency
- **2027:** Recovery of: 90% Co · 90% Cu · 35% Li · 90% Ni
- **2030:** 70% recycling efficiency
- **2035:** Recovery of: 95% Co · 95% Cu · 70% Li · 95% Ni

The Battery Passport: Mandatory from 2027

Starting in 2027, a digital Battery Passport will be mandatory for **all electric vehicle batteries, industrial batteries above 2 kWh, and Light Means of Transport (LMT) batteries placed on the EU market**. This passport aims to enhance transparency, traceability, and sustainability across the entire battery value chain.

WHAT THE BATTERY PASSPORT MUST INCLUDE

TECHNICAL INFORMATION

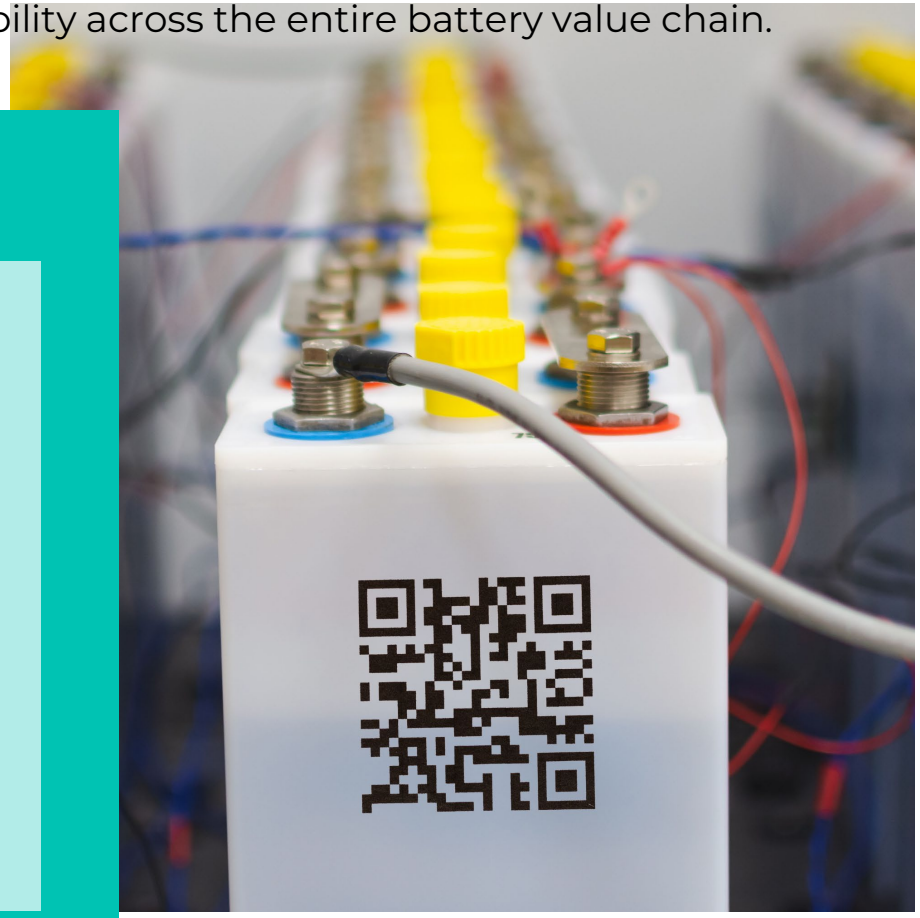
- Material composition
- Rated capacity and power limits
- Expected lifetime and durability indicators
- Energy efficiency metrics
- Internal resistance and performance data
- Safety parameters and C-rate information

ADMINISTRATIVE INFORMATION

- Responsible sourcing practices
- Warranty period
- Marking and compliance requirements
- EU declaration of conformity

SUSTAINABILITY INFORMATION

- Carbon footprint
- Recycled material content
- Share of renewable content

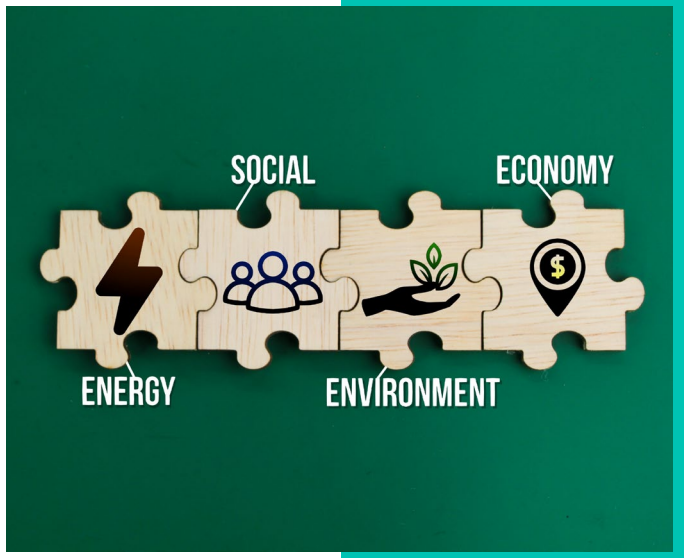


Our Value Proposition

Through our **knowledge and experience**, we advise on key aspects to achieve a more sustainable industry and activity

Analysis and integration of new regulations

Identification and analysis of impacts, implications and opportunities arising from new battery regulation, ecodesign directive, etc.



Development of sustainability strategy

Development and integration of sustainability strategy to generate competitiveness. Taxonomy, Social responsibility, regulatory compliance.

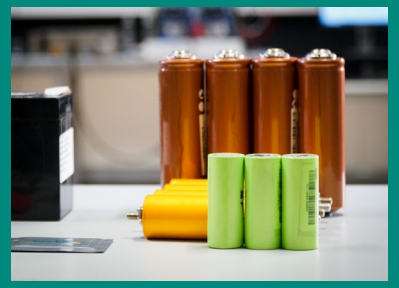
Environmental footprint analysis (LCA)

Development of LCA and for assessing the environmental behavior of processes, services or products

Our value in the industry and its regulatory implications

CROSS-PROCESS KNOWLEDGE
Expertise in all stages of the battery value chain, ensuring alignment with regulatory frameworks.

ACTIVE PARTICIPANTS IN REGULATION
Involved in shaping the new regulatory landscape in Europe.



PCRs & EPDs MASTERY
Expertise in creating Product Category Rules (PCRs) and Environmental Product Declarations (EPDs) for energy storage.

STRATEGIC LEVER
Developing global sustainability strategies to reduce environmental impact, with actions like eco-design and industrial symbiosis.

Sustainable Strategy: LCA as a Tool

LCA (Life Cycle Assessment) is a powerful tool in defining and implementing sustainable strategies. It helps **identify opportunities to improve the environmental performance of products**, **provide information** to decision-makers, and **align results with sustainability goals** and policies.

- **Identify Opportunities:** Improve the environmental performance of products compared to other alternatives.
- **Provide Information:** Support industry decision-makers with strategic, product, and process design.
- **Identify Critical Points:** Pinpoint key areas in the manufacturing process that affect sustainability.
- **Align Results:** Ensure alignment with Sustainable Development Goals and Sustainability Policies.
- **Boost Marketing & Positioning:** Enhance branding and market positioning through the development of environmental labels (EPDs).

Access to High-Quality Industrial Databases

We rely on one of the **most comprehensive datasets in the battery sector**, enabling **accurate life-cycle assessments (LCA) and environmental footprint calculations** based on real industrial operations.

Global Coverage: Europe and Asia

- Detailed data from suppliers **both within and outside Europe.**
- **Strong coverage of China**, the world's leading hub for battery materials and cell manufacturing.
- Supports realistic benchmarking across international supply chains.

Real, Industry-Scale Data — Not Theoretical Models

- Information sourced directly from operating industrial facilities.
- Highly specific datasets covering both **production and end-of-life** processes (recycling, material recovery, efficiencies).
- Delivers results that are representative, auditable, and aligned with regulatory requirements.

Value for Our Partners

- Greater accuracy in carbon footprint assessments and compliance reporting.
- Robust analyses to identify hotspots and optimization opportunities.
- Ability to model scenarios with different suppliers, geographies, and technologies.

Some of Our Capabilities

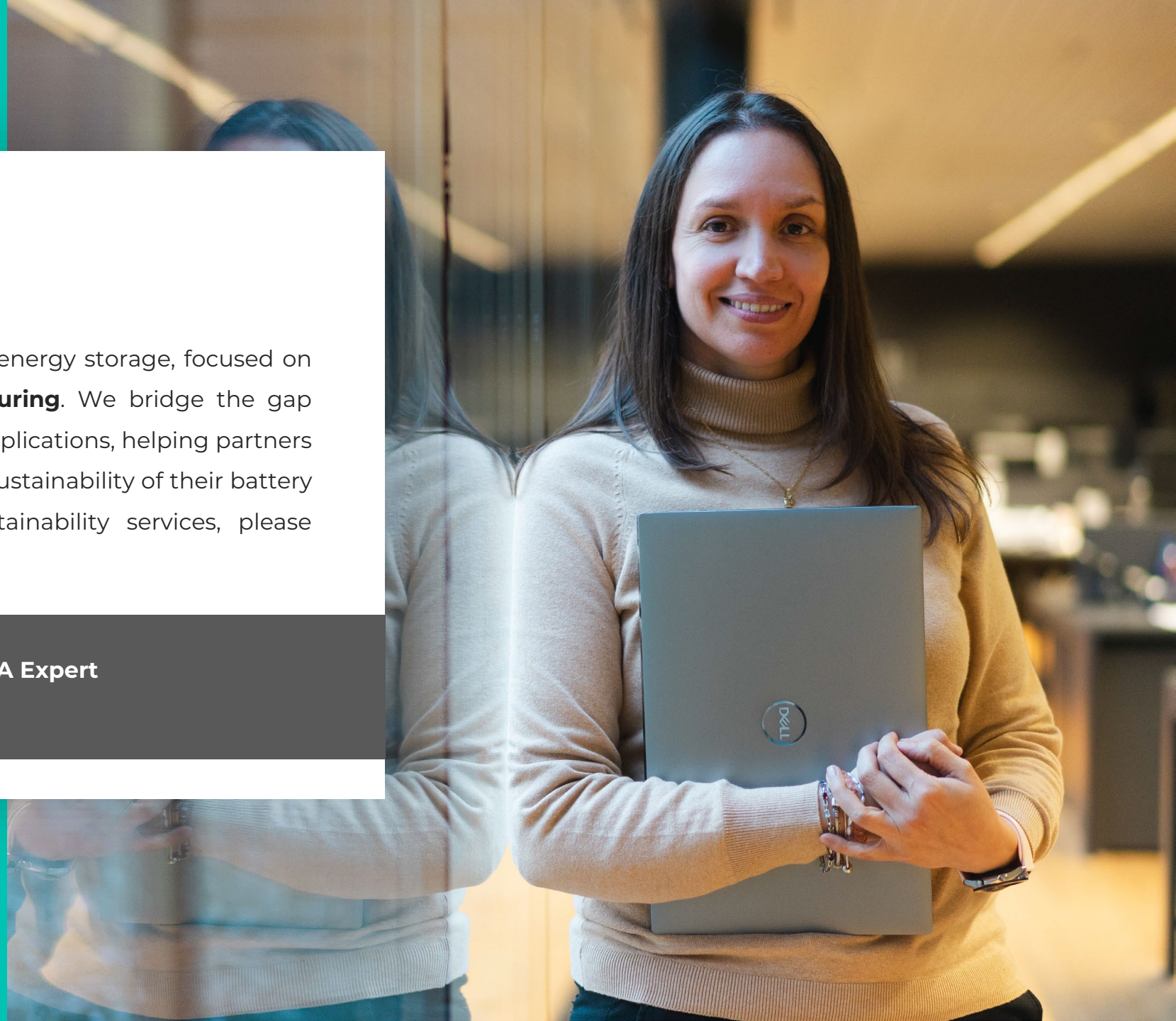
At CIC energiGUNE, we provide **advanced tools and expertise** to help industries achieve sustainability goals.

- **Definition of sustainability strategies and action plans**
- **Implementation and deployment of LCA approaches**
- **Baseline definition**
- **Calculation of Environmental footprint analysis according to scenarios**

GET IN TOUCH

CIC energiGUNE is a leading research centre in energy storage, focused on **advancing sustainability in battery manufacturing**. We bridge the gap between cutting-edge research and industrial applications, helping partners reduce environmental impact and improve the sustainability of their battery systems. For further information on our sustainability services, please contact us:

- **Andrea Casas – Sustainability Head, LCA Expert**
- **Email: acasas@cicenergigune.com**

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