Batteries fit for Europe

Key sustainability indicators for a thriving European Battery industry

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RECHARGE

ADVANCED RECHARGEABLE & LITHIUM BATTERIES ASSOCIATION

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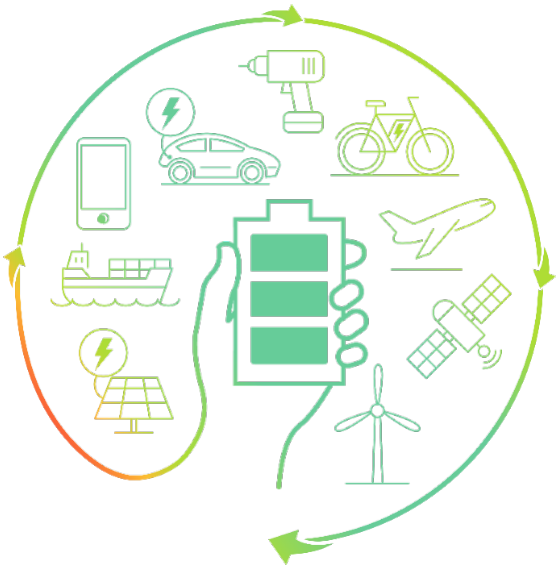
INTRODUCTION



Advanced rechargeable batteries are a key enabler for the transition towards low-emission mobility and decarbonised energy generation. Without them, the target of a climate-neutral economy by 2050 and the 2°C Paris Agreement goal cannot conceivably be reached.

Indeed, batteries' applications in the automotive, industrial vehicles and energy sectors are key tools for this transition. In the transport sector, the hybridisation and electrification of vehicles reduce CO_2 emissions, while the use of batteries in industrial vehicles supports both decarbonisation and noise reduction. In the energy sector, batteries are necessary to store renewable energy and contribute to the stability of the electrical grid. Moreover, batteries power everyday applications, such as smartphones, tablets, power tools, and robots and have become a significant job engine for millions of people around the world.

For these reasons, working on the sustainable development of the industry and ensuring a high level of environmental and social benefits of batteries is a mission of great value to society.

The Bottom Line

In May 2018, the European Commission adopted a Strategic Action Plan for Batteries that sets out measures to support the establishment of a European battery value chain worth up to an expected €250 billion by 2025. The Action Plan stresses the need for a coherent regulatory framework which will enable a competitive battery industry based on innovative and sustainable products.

The Commission's Action Plan suggests applying sustainability requirements to all batteries placed on the EU market, triggering the launch of an Initiative on Sustainability Requirements for Batteries.

The advanced rechargeable and lithium batteries industry in Europe, represented by RECHARGE, welcomes the Sustainable Batteries Policy Initiative of the European Commission. It calls upon policymakers to extend current legal requirements applicable in the industry to a set of key environmental and social indicators.

These indicators have been established based on an extensive review of the existing regulatory framework as well as other relevant initiatives, such as the creation of a Commission lifecycle assessment tool (see Product Environmental Footprint). This paper is complementary to other topic-specific RECHARGE positions.

EXISTING POLICY FRAMEWORK

Batteries have been subjected to an extensive number of regulatory frameworks at the European, national, and local level for more than 20 years and are one of the priority sectors for achieving the EU's 2050 climate and energy, and industrial leadership targets. These frameworks cover:

- consumer safety;
- design requirements;
- emissions control;
- substances management;
- workers protection;
- waste treatment.

The current governance of the European battery industry value chain is set out in the following EU regulatory framework.

A. Regulatory framework governing the battery value chain

Batteries Directive: Directive 2006/66/EC

The Batteries Directive, the only piece of EU legislation entirely dedicated to batteries, was published in 2006. It established the Extended Producer Responsibility (EPR) on batteries and sets requirements on the collection, treatment, and recycling of used batteries and accumulators placed on the EU market. The Commission has completed the evaluation of the Batteries Directive and published its results in April 2019 which is likely going to lead to its revision.

End-of-Life Vehicles Directive: Directive 2000/53/EC

Under the End-of-Life Vehicles (ELV) Directive, certain categories of vehicles are covered, including their components, such as batteries.

Workers protection – Occupational Safety and Health (OSH)

The EU-OSH legislative framework aims at protecting workers from the different risk factors, including chemicals, present in the workplace at the mining and refining, manufacturing and recycling stages of a battery lifecycle. Most substances used in batteries are regulated under OSH.

Transport of dangerous goods – UN Model Regulations

The transport of battery cells, batteries, and equipment containing batteries is regulated by UN, regional, and national legislation. Lithium batteries are regulated as "dangerous goods", class 9, by the United Nations Economic Commission for Europe and other mode-specific transport authorities such as ICAO, IMO, RID and ADR.

Product safety, labelling CE

The CE marking is a widely used certification for certain products, including battery electronics, which indicates that an assessment has been made by its manufacturer as to whether the product conforms to EU safety, health, and environmental protection requirements. The CE marking applies to products which are being traded on the extended Single Market in the European Economic Area (EEA), regardless of where they have been manufactured.

Waste Regulations

Batteries are subject to the following pieces of legislation:

- The Waste Electrical and Electronic Equipment Directive (WEEE): Extended Producer Responsibility legislation for electrical and electronic equipment (EEE). Important for the collection of batteries found in waste EEE;
- the Waste Framework Directive (WFD): specifies waste management principles and covers the recycling of battery waste, among others;
- End-of-waste criteria: specify when certain waste streams cease to be waste and obtain a product status;
- List of Hazardous Waste: details certain types of batteries as requiring a stricter control regime and is intended to facilitate waste management through a common terminology;
- Batteries are also subject to the Waste Shipment Regulation which supervises the shipments of waste in line with the protection of the environment.

Local permits

In addition to European regulations, the battery industry is subject to local environmental regulations in the form of permits, emissions and releases controls which affect various activities such as mining, refining, manufacturing and recycling. In addition, battery manufacturing plants need to conform to health and safety regulations for manufacturing in general.

B. Chemicals and materials management

REACH Regulation: Regulation (EC) No 1907/2006

The REACH Regulation, which entered into force in 2007, puts a procedure in place for the collection and assessment of information on the properties and hazards of chemical substances and as such, places obligations on the battery industry, among others, for registering and declaring substances of very high concern used in batteries.

Restriction of Hazardous Substances Directive 2002/95/EC (RoHS)

This Directive restricts the use of certain hazardous substances in electrical and electronic equipment, including equipment containing batteries, and promotes their collection and recycling. In 2011 it was recast to deal with the increased waste stream from electrical and electronic equipment. For the time being, batteries are outside of the scope of the EU's RoHS. However, it remains a Directive of interest and enduring concern as battery raw materials could conceivably be impacted.

List of Critical Raw Materials (2017): COM (2017)

In its Critical Raw Materials list, subject to periodic review, the European Commission uses two main parameters to measure whether a raw material is critical or not: its economic importance and the supply risk. Cobalt and natural graphite, which are essential battery raw materials, are considered to be critical raw materials by the EU.

C. Product Environmental Footprint & Ecodesign Directive

Two elements of the EU's batteries policy have been of particular importance in devising RECHARGE's new indicators for identifying batteries fit for the European market:

Product Environmental Footprint

The European Commission's Product Environmental Footprint (PEF) was launched in 2013 and aims at defining a reference methodology for environmental impact assessment, based on a lifecycle analysis approach, for which RECHARGE successfully conducted the pilot for batteries upon request of the Commission, in parallel with more than 20 other industry sectors, and published the batteries PEFCR (Product Environmental Footprint Category Rules).

Ecodesign Directive: Directive 2009/125/EC

The Ecodesign Directive lays down rules for improving the environmental performance of energy-consuming products (such as household appliances) by setting out minimum mandatory requirements for the energy efficiency of these products. Initially, the Commission had considered expanding the scope of this directive to batteries but as, on the one hand, batteries are not energy-consuming products but rather energy-storing devices and, on the other hand, they are still an emerging technology which means that placing strict energy-efficiency requirements on those products could hinder innovation (and thus, the further development of low-emission mobility solutions), the idea was abandoned. Further, design requirements, such as for repair, recycling or minimum recycling content, could hamper the intended performance of the battery per application or device.

More recently, however, DG GROW has started to reconsider this possibility from a new angle, namely through an Initiative on Sustainability Requirements for Batteries. RECHARGE supports this new approach for two reasons:

1. Some requirements outlined within the Ecodesign Directive are already covered by other battery-specific legislation, designed to meet the very specific needs of batteries and battery-powered products. Thus, extending the scope of the Ecodesign Directive to batteries would only result in additional layers of complexity and administrative work.
2. Meaningful environmental and social indicators are required to unlock the full potential of battery power in the transition towards a climate-neutral economy and society.

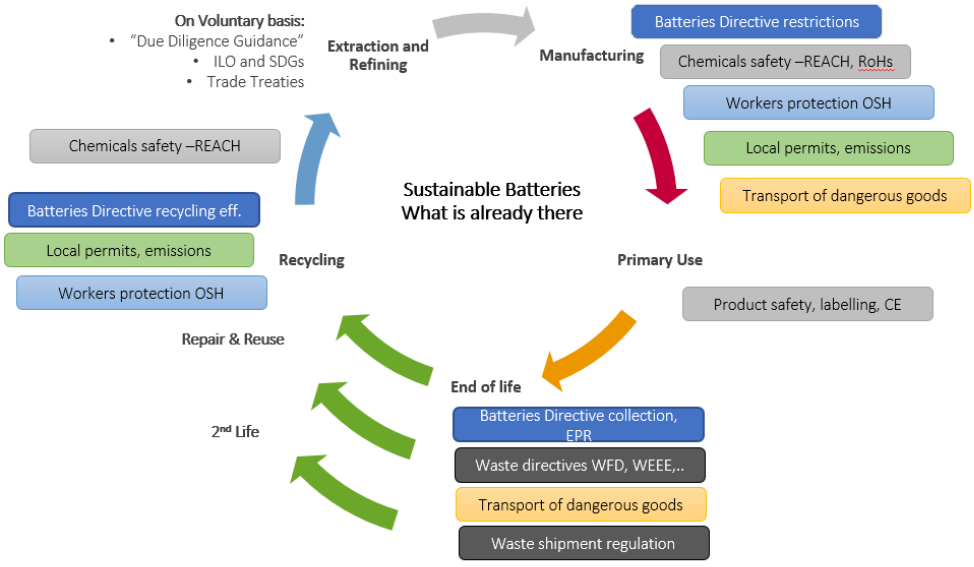


Fig 1: The policy framework throughout the battery lifecycle

RECOMMENDATIONS

Key sustainability indicators for a thriving battery industry in Europe

At RECHARGE we put all our efforts in ensuring that any battery put on the European market is produced, used - and treated at its end-of-life phase - in a safe, efficient as well as environmentally and ethically sound manner. In order to encourage those additional legislative adjustments which are truly relevant, RECHARGE wants to bring forward five key indicators as cornerstones for identifying batteries fit for the European market.

Those sustainability indicators are based on our contributions to the "Ecodesign" initiative and the PEF pilot, as well as our industry expertise. The following five indicators identified by RECHARGE will better enable the consumer to identify batteries with a superior environmental and social profile, will continue to allow Europe to meet the 2050 targets and establish a prosperous European battery industry, while creating more and more an international level playing field:

1. **Carbon footprint content as a pivotal environmental and qualitative indicator**
2. **Mandatory requirements for human, social and labour rights along the value chain**
3. **Traceability of materials throughout the lifecycle of a battery**
4. **Recycling of high-impact materials for improved resource efficiency**
5. **Facilitation of repair and refurbishment to extend the lifetime of batteries**

1. Carbon footprint content as a pivotal environmental and qualitative indicator

RECHARGE believes in establishing and promoting meaningful environmental impact indicators that are of real value to the user and the overall environmental footprint. As part of our contributions to the PEFCR for advanced rechargeable batteries, RECHARGE has identified the carbon footprint as the most suitable indicator both for environmental profiling as well as the quality (lifetime reference) of a battery. Other environmental impact indicators have proved to be of little relevance or to not be robust enough. For example, because their databases are incomplete, or the calculation is too complex.

Carbon footprint content, calculated based on a PEF methodology[i] using harmonized databases, is useful because it is a known indicator for consumers and allows them to identify batteries with a superior environmental profile easier. The carbon footprint also gives the necessary signals to poorly performing industry actors, incentivising them to adopt measurements relevant to improving the carbon profile of their product. Such measurements could be improved product design and longer life duration, more efficient processes, reduced energy needs or the selection of low-carbon energy sources, amongst others. For a thriving, innovative industry it is important to retain the flexibility to choose freely amongst the options, however.

2. Mandatory requirements for human, social and labour rights along the value chain

A socially sustainable battery value chain, covering all steps from raw materials extraction to battery manufacturing, is a key objective of the European advanced rechargeable battery industry as represented by RECHARGE. This objective is achieved through corporate governance, best practice sharing, regulatory instruments and the implementation of fundamental international conventions to help improve working conditions at all stages of the value chain and to ensure that our human, social, and labour rights are respected at all times.

RECHARGE generally supports the OECD Due Diligence Requirements, applicable for all batteries and battery chemistries put on the EU market.

In addition, RECHARGE is calling upon the Commission to extend the scope to human, social, and labour rights along the entire value chain, from raw materials extraction and materials refining to cell and battery/battery pack manufacturing.

RECHARGE also supports the use of ISO 14001 (EMS) and ISO 45001 (HSMS) since these are commonly known standards and already applied in many companies. However, the certification of these standards is complex and not suitable for market surveillance. Moreover, these standards are voluntary and do not address human and social aspects well enough to ensure sustainable batteries fit for the high standards of the European market.

Therefore, and as outlined in our position paper on sustainability criteria for batteries in January 2019[ii], the legislative environment should encourage industry players to source from supply chains that have fully implemented the four fundamental International Labour Organization (ILO) Principles and Rights at Work:

1. Freedom of association and the effective recognition of the right to collective bargaining
2. The elimination of all forms of forced or compulsory labour
3. The effective elimination of child labour
4. The elimination of discrimination in respect of employment and occupation

3. Traceability of materials throughout the lifecycle of a battery

The traceability of information is already required for a substantive amount of data in the industry. Nevertheless, traceability could be improved through harmonisation within a simplified marking. In that sense, a QR code system on the battery itself or a battery passport would be practical tools to allow greater traceability.

Still missing, however, is the traceability of materials, which could impact the environmentally and socially sound manner in which those materials are extracted, refined, and manufactured. Here as well, a QR code system, battery passport or more innovative technologies such as blockchain could be introduced.

Traceability is also needed in the end-of-life phase of batteries or battery-powered products. In that perspective, the traceability of exported end-of-life vehicles (and possibly associated batteries) should be improved.

The aim is to increase the pressure to improve environmental and social performance along the value chain. In any case, the provision of information must not be at the cost of safety. RECHARGE does not support making information available to allow or encourage unqualified refurbishment or even manipulation of batteries.

4. Recycling of high-impact materials for improved resource efficiency

Ensuring materials availability – both through the responsible use of primary raw materials and an increased share of secondary raw materials in the supply mix – is critical to meeting the steadily increasing demand for battery power.

Recycling is one of the most effective ways towards an efficient use of our resources in the battery industry. Especially the recovery of high-impact materials brings a true improvement to the environmental and social profile of batteries.

Such an approach would need to be constructed around a new concept for recycling efficiency in which the materials on which the battery industry can deliver a relevant impact are identified based on:

- their availability,
- their use in the battery industry and
- the efficiency of the recycling process.

The aim of such a concept would be to tackle relevant resource dissipation, related to batteries, and counter the lack of economic incentives for recycling certain materials with a low marketability but a high environmental impact.

5. Facilitation of repair and refurbishment to extend the lifetime of batteries

Batteries can, under certain conditions, be suited for refurbishment for second life use or repair. However, safety must be a key criterion for defining this suitability. Avoiding unnecessary safety risks is of great importance. For this reason, untrained personnel should not be encouraged to handle batteries. Batteries, as electrochemical devices carefully designed to meet the needs of a specific application, should only be handled by qualified professionals.

The design of large batteries is complex, and the safety relies on the combination of mechanic, electric, and electronic protections, applied - and tested according to mandatory UNECE - to each battery level (cell, module, pack).

In this context, large batteries should never be dismantled below the level of safe units, except if the remanufacturer has access to publicly available battery information (such as State Of Health) and the technically required information for design safety (either based on the original OEM information, or in-depth expertise of the battery).

For a well-functioning repair and refurbishment sector, policymakers will have to work on the right legal framework to resolve open questions regarding the transfer of liability, Extended Producer Responsibility and warranty claims, too.

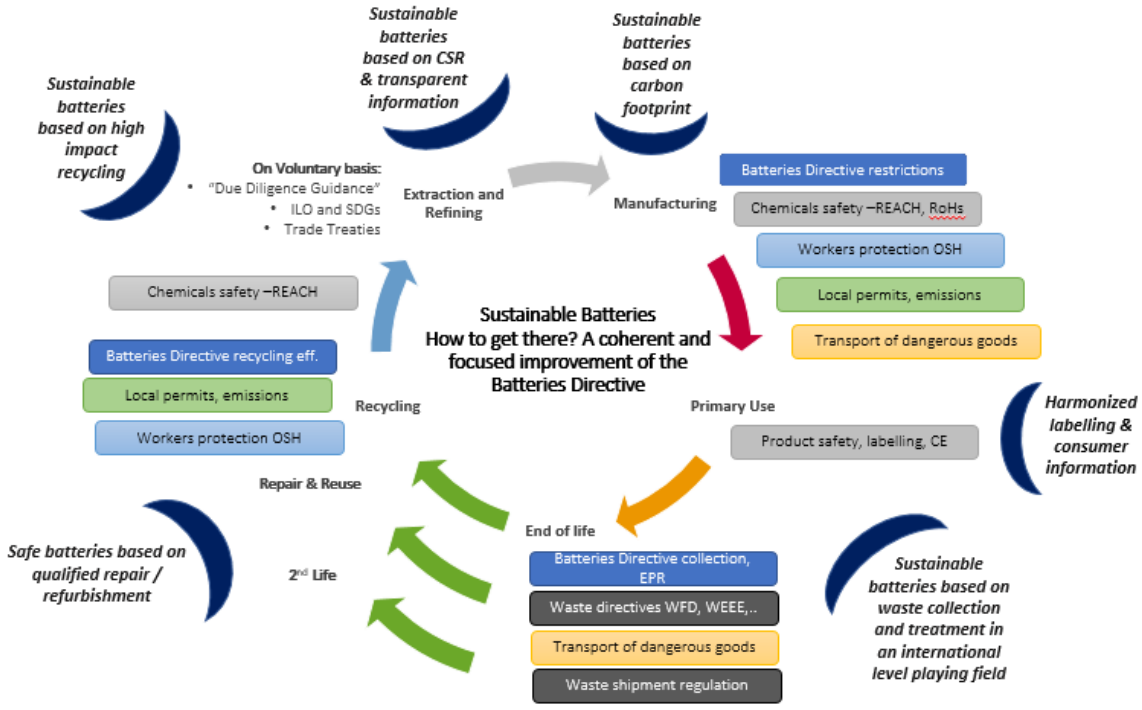


Fig 2: The policy framework throughout the battery lifecycle and recommendations for a thriving battery industry

REFERENCES

Detailed RECHARGE position on the PEFCR can be found at www.rechargebatteries.org

Detailed RECHARGE position on the Ecodesign Directive – Criteria for Sustainable Batteries can be found at www.rechargebatteries.org.

The Four Fundamental Principles and Rights at Work are enshrined in the ILO Declaration adopted at its 86th session on June 18th, 1998 and revised on June 15th, 2010. They are implemented through Eight Fundamental ILO Conventions:

1. Freedom of Association and Protection of the Right to Organise Convention, 1948 (No. 87)
2. Right to Organise and Collective Bargaining Convention, 1949 (No. 98)
3. Forced Labour Convention, 1930 (No. 29) (and its 2014 Protocol)
4. Abolition of Forced Labour Convention, 1957 (No. 105)
5. Minimum Age Convention, 1973 (No. 138)
6. Worst Forms of Child Labour Convention, 1999 (No. 182)
7. Equal Remuneration Convention, 1951 (No. 100)
8. Discrimination (Employment and Occupation) Convention, 1958 (No. 111)

CONCLUDING REMARKS

As covered in the sections above, batteries are already covered by a wide range of EU legislation. Moving forward, it will be key for the European Commission to provide meaningful, clear, simple and consumer-oriented sustainability indicators in order for consumers to take informed purchase decisions.

The advanced rechargeable and lithium batteries industry in Europe, represented by RECHARGE, strongly support the European Commission's decarbonisation, environmental, and consumer and workers protection objectives and welcomes the Sustainable Batteries Policy Initiative of the European Commission. With consumer empowerment in mind, RECHARGE calls upon policymakers to extend current legal requirements applicable in the industry to a set of key environmental and social indicators, namely:

1. Carbon footprint content as a pivotal environmental and qualitative indicator
2. Mandatory requirements for human, social, and labour rights along the value chain
3. Traceability of materials throughout the lifecycle of a battery
4. Recycling of high-impact materials for improved resource efficiency
5. Facilitation of repair and refurbishment to extend the lifetime of batteries

RECHARGE

ADVANCED RECHARGEABLE & LITHIUM BATTERIES ASSOCIATION

Founded in 1998, RECHARGE represents the multifold interests of the advanced rechargeable and lithium battery industry in Europe. Our unique membership covers all aspects of the advanced rechargeable batteries value chain, from suppliers of raw materials and battery manufacturers to OEMs, logistic partners, and battery recyclers. To act on our mission of promoting advanced rechargeable batteries as a core technology that will contribute to the industrial and social revolution towards a more empowered, sustainable, and circular Europe, we put all our efforts in improving battery acceptance while ensuring an international level playing field that provides continued market access for new and existing products.