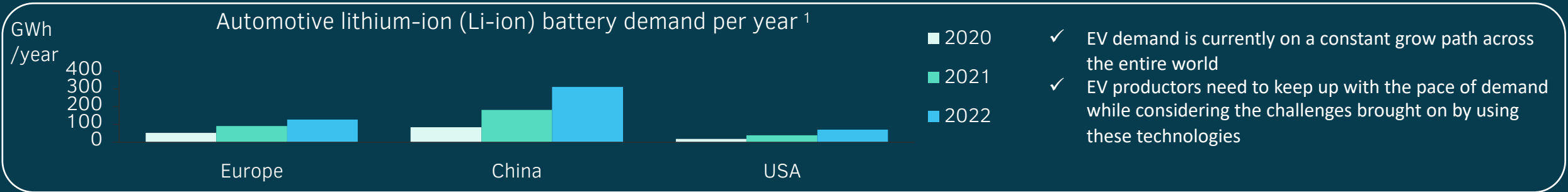


accilium Primer: Battery Regulation Challenges and Potential Solutions

January 2024



The current growth of electric mobility is impacted by sustainability challenges in the battery production



Increasing demand accelerates challenges



Raw material extraction

- Increase in environmental issues, including **severe groundwater depletion** and **water pollution**
- The production of raw materials (i.e. lithium) is highly susceptible to **disruption by political instability**, raising concerns about the security of the supply of the raw materials to OEMs



Supply chain social impact

- The extraction of materials needed for EV batteries is oftentimes conducted in **severe working conditions**
- Cobalt, a major component of EV batteries, is partly extracted using **child labor**. Its extraction also may cause health issues when the exposure is prolonged



Battery recycling process

- Solid electrolyte and electrode materials are commonly fused, **complicating the separation** for recycling purposes
- Disassembling batteries can generate dust and particles, including **toxic elements** that can generate respiratory and cardiovascular diseases

¹ Source: IFA

To drive up the growth through transparency, legislative organisms across the world are seeking to strengthen regulation on EV batteries



Battery regulation

Deep Dive

- Requires battery manufacturers and sellers (e.g. vehicle manufacturers) to adhere to EU-wide formal requirements for many different types of batteries, including responsibilities, recycling and supply chain transparency
- Implementation planned from 2024 onwards
- Information on battery recyclability and CO2 footprint
- Requirement of the introduction of a digital “battery pass”



ZEV3

- Requires vehicle manufacturers to make information on EVs easily available through a website and to offer emission reports to government agencies
- Adopted by California Air Resources Board, potential legal validity in the whole country from 2025 onwards
- Reports on fleet data sustainability
- Information on the battery made available to the end user “as easy as possible”



Emissions disclosure regulation

- Requires the OEMs to calculate and report the amount of carbon dioxide emitted during the production of batteries
- Implementation planned on EVs and plug-in hybrids in 2024.
- EVs will be eligible for subsidies by simply disclosing the information. Eventually the government will set a cap on emissions

The battery regulation in the EU challenges firms to comply with diverse regulatory aspects for their products

Category	Battery weight	Affected product	Exemplary implications
Electric vehicle (EV)	> 25 kg		<ul style="list-style-type: none"> ➤ Introduction of a digital battery pass (2027)
Light means of transport	</= 25 kg		<ul style="list-style-type: none"> ➤ Dedicated collection objective for waste (51% by 2028, 61% by 2031) ➤ Introduction of a digital battery pass (2027)
Industrial battery	> 5 kg		<ul style="list-style-type: none"> ➤ Introduction of battery performance and durability parameters ➤ Introduction of a digital battery pass (2027)
Starter, lighting or ignition battery	-		<ul style="list-style-type: none"> ➤ Demonstrated minimum % share of recovered minerals from battery manufacturing waste (2036)
Portable batteries	</= 5 kg		<ul style="list-style-type: none"> ➤ Portable batteries to be easily removable and replaceable by end-users (2027)
Portable batteries for daily usage	-		<ul style="list-style-type: none"> ➤ Collection targets (63% by 2027, 73% by 2030) ➤ Phase out portable batteries of general use (2027)

Deep Dive

Automotive OEMs are challenged by the battery regulation to increase the transparency of their supply chain



The new Battery Regulation targets a **low carbon footprint by all batteries**, aiming to decrease the need for raw materials from non-EU countries. Moreover, collection, reuse and recycling targets are to be introduced



Starting from 2025, the Regulation will gradually introduce **declaration requirements**, performance classes and maximum limits on the carbon footprint of electric vehicles and rechargeable industrial batteries



The Battery Regulation will only allow for batteries sold in the EU market to contain **restricted amounts of harmful substances**



Supply chain transparency

A digital battery pass will help consumers and professionals in the value chain in their efforts to achieve and obtain supply chain transparency for batteries



Potential circular economy

Will increase security of supply for raw materials and energy and enhance the EU's strategic autonomy

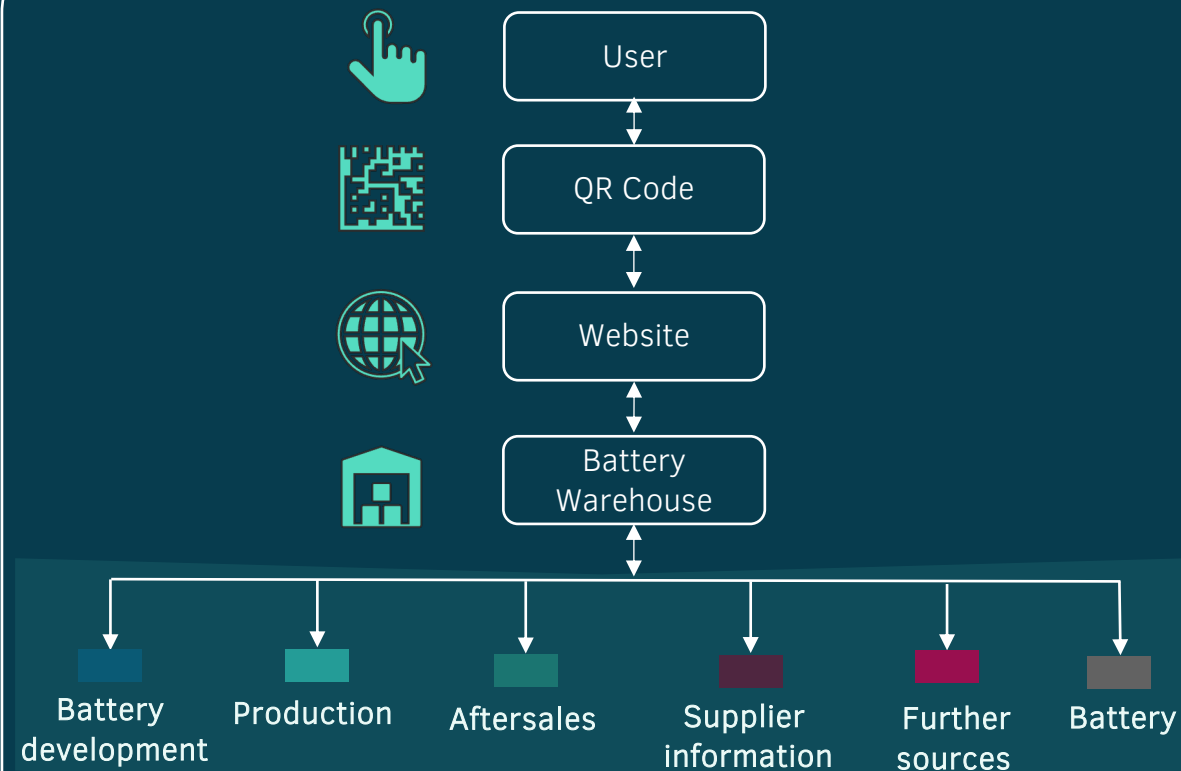


Recycling quotes

All collected EV waste batteries will have to be recycled and high levels of recovery will have to be achieved

The implementation battery pass will challenge most OEMs to revise processes of several kinds

Required battery pass solution



Implications for automotive OEMs and suppliers



Create a systematic gathering of battery data, e.g.

- CO2-impact of each sold battery
- Materials contained in the battery
- Information on battery disassembly



Adaptation of processes, e.g.

- Substantial modifications in production of batteries and EVs
- Systematic gathering of increased information inflow from suppliers, including information not currently available for suppliers



Creation of an IT infrastructure to support automated data transfer to authorities and public, including connecting and collaborating with supplier's data warehouses

accilium's approach towards complying with the new EU battery regulation is based on real implementation use-cases

Process Overview

- 1** Identify relevant regulation components
- 2** Identify affected business processes
- 3** Determine possible IT actions
- 4** Establish a solution
- 5** Maintain solution continuously

Implications

- Study regulatory requirements
 - Narrow down information relevant for the company
- Define required actions
 - Match actions to existing processes
 - Identify possible information gaps
- Formulate singular solution steps to fill the information gaps
 - Identify potential synergies with further business processes to enable automatization
- Define implementation requirements
 - Organize implementation process across the organization
- Identify new concerning regulation
 - Plan requirements into the implementation process



Create a list of all required information



Involve business process stakeholders in the conception process



Align IT implementation plan with corporate data strategy



Organize work in agile sprints and releases



Define responsibilities for tracking of new regulatory

Let's overcome regulatory hurdles to create a seamless battery data landscape!

Why you should act now



What's in it for you



The current automotive landscape is **increasingly regulated by sustainability directives**. Especially but not exclusively within Europe, upcoming laws can have a decisive impact on both production processes, sourcing as well as on IT processes. Not complying with these laws might bring about severe legal and business implications, such as high-figure fines or prohibition to sell certain products.

Anticipating the impact of the new regulations on your business will not only avoid unnecessary litigation costs, but also enable new opportunities on the base of the needed process adaptations.

A holistic solution design is highly advisable for ensuring battery sustainability compliance and battery data compliance. Opportunities derived from adapting the needed processes may reach from process automatization up to gathering your data in a more efficient manner by reassessing your data infrastructure strategy internally, potentially enabling a data-based approach on decision-making.

An end-to-end solution to ensure compliance of said regulations is therefore not only a must-have to avoid risks but is expected have a positive impact on your development and supplier costs.



accilium serves as a sparring partner and supports clients through the entire process with strong focus on strategy and IT transformation

Contact our battery regulation team for more insights



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