【欧州】【自動車】

Road/Railways - Environmentally friendly vehicle: Latest progress in the establishment of a European battery industry - Moving forward on introducing a new EU Battery Regulation and launching a European Battery Academy

Andrea Antolini Former Researcher JTTRI

【概要：Summary】

The European Green Deal includes a GHG emission reduction target for transport. The objective is to reach a reduction of 90% of GHG emissions by 2050. Since the road transport sector in the EU is responsible for about 72% of the whole transport sector's GHG emissions, one key element to achieve this Green Deal's reduction target is the deployment of low- and zero-emission vehicles, such as electric vehicles, for the mass market. The European automobile manufacturers are significantly increasing their production of electric vehicles, after they started the production of electric vehicles (EVs) with some years of delay. However, this delay in the production of EVs for the mass market has also delayed the decision on how to deal with the problem of the European dependence on battery imports. Batteries are essential to the automotive sector's competitiveness, and they are a strategic part of Europe's clean and digital transition. Therefore, the European Battery Alliance (EBA) was launched in 2017 by the European Commission, the EU Member States, industry, and the scientific community. The launch of the EBA, the Batteries Europe Platform, and the Strategic Action Plan for Batteries have been the first steps on the way to introduce battery mass production in the EU. On 10 December 2020, the European Commission published a proposal for a new Battery Regulation to be applied in principle to all battery types, including automotive, electric vehicle, and industrial batteries. It supports the establishment of a sustainable value chain of batteries, from the supply of raw materials to the recycling of end-of-life batteries. Meanwhile, the European Parliament adopted its position on the proposal for a new EU Battery Regulation, and the Council of the European Union agreed on its general approach. The final agreement on the Battery Regulation is expected to be reached in 2022.

Furthermore, on the sidelines of the European Battery Alliance's Sixth High-Level Meeting, the European Battery Academy was launched for training workers for a fast-growing battery industry in Europe.

【記事：Article】

1. Background of the EU's policy for an independent battery cell production

Currently, there are still more than 90% of automobiles in the EU using fossil fuels and the

EU road transport sector was responsible for 72% of all GHG emissions in the transport sector in 2019 (EEA 2021). The road transport sector's share of the EU's overall CO2 emissions was 26% in 2018, compared to 16% in 1990 (destatis n.y.). To ensuring the EU's compliance with the Paris Agreement as well as with reaching the long-term goal of the European Green Deal to achieving net-zero GHG emissions by 2050, it will need considerable efforts to decarbonise the economy and mobility (COM/2019/640 final). Regarding the road transport sector and a reduction of the transport sector's GHG emissions by 90% by 2050, the deployment of low- and zero-emission vehicles will have to increase substantially.

In the energy sector, storage technologies and batteries contribute significantly to the uptake of renewables, such as solar and wind power. The varying levels of energy produced by these renewable energy sources could be compensated by storing electricity in batteries (European Commission 2021).

In the past years, Europe has also gone through the initial adoption phase of electric mobility with the introduction of electric vehicles (EVs). Batteries are at the core of the electrification of the transport sector, in particular of the road transport (European Commission 2021).

The automotive industry in Europe is under regulatory pressure to end production of vehicles with combustion engines by 2035 and turn to electric drives. However, while automobile manufacturers start to produce EVs at a greater scale, they are still highly dependent on imports of the latest lithium-ion cells and batteries for their EVs (European Commission 2021).

All parts of the battery value chain are currently dominated by Asian producers, mainly in China. At the same time, established battery companies and technologies have been developed outside of the automotive sector and lithium-ion battery technology is traditionally associated with the chemical industry rather than automotive (Harrison 2022). Therefore, it also needs a closer collaboration with chemical and mining companies for the raw materials used in lithium-ion battery making (Harrison 2022).

The European Commission has underlined the importance of building a significant battery production industry in Europe, as without the setting up of a battery production industry of significant size in Europe, the European automobile industry is believed to face competition disadvantages (European Commission 2021). It is estimated that the EU's automobile industry will need about 10 to 20 large-scale battery cell production facilities for battery cells production to meet the future demand. The set-up of a high-performance battery cell production in Europe will also have importance for the electric power sector to become independent from the imports of batteries. As a first step, the European Commission supported the set-up of the European Battery Alliance (EBA).

2. The European Battery Alliance and the Strategic Action Plan for Batteries

The European Battery Alliance (EBA) was launched on 11 October 2017 with the objective to create a competitive manufacturing value chain for sustainable battery cells in the EU (European Commission n.y.). The key players involved in the EBA are the European Commission, interested EU Member States, the European Investment Bank (EIB), key industrial stakeholders and innovation actors. The main objective is to set up a competitive manufacturing industry for producing sustainable battery cells of significant size in Europe and to support the European Industry that covers the needs along the value chain from access to raw and refined materials for battery cell production to repurposing and recycling (Perez Casado/ Von Dalwigk 2020). The market could reach an estimated annual value of up to €250 billion by 2025 (EBA 250 n.y.).

The establishment of the EBA was followed by the presentation of the Strategic Action Plan for Batteries on 17 May 2018 (COM (2018) 293 final) as part of the third package of the Europe on the Move proposals. It contains clean mobility - Legislative initiatives, accompanied by an Action Plan for Batteries (European Parliament n.y.).

The Strategic Action Plan for Batteries includes measures for the whole battery value chain, starting with the extraction and processing of raw materials, the design and manufacturing phase of battery cells and battery packs, and their use, their second use, recycling, and disposal in a circular economy context, as well as the connected regulatory requirements.

The Strategic Action Plan for Batteries aims to secure access to raw materials for batteries outside the EU and facilitate access to European sources of raw materials. The plan intends to strengthen industrial leadership through accelerated research and innovation support to advanced (e.g., Lithium-ion) and disruptive (e.g., solid state) technologies and to develop and strengthen a highly skilled workforce along the whole value chain to close the skills gap (COM/2019/176 final). The plan also supports the sustainability of EU battery cell manufacturing industry, setting requirements for safe and sustainable battery production in Europe (COM/2019/176 final). It also aims to access secondary raw materials by recycling in a circular economy of batteries (COM/2019/176 final). Furthermore, on 5 February 2019, the European Technology, and Innovation Platform (ETIP) on Batteries, BatteRIes Europe was presented to drive research and innovation, knowledge transfer and competitiveness across the European battery value chain. This Platform on Batteries is led by the Europe's sustainable energy innovation engine InnoEnergy supported by the European Institute of Innovation and Technology (EIT) together with the European Energy Research Alliance (EERA) and the European Association for Storage of Energy (EASE)(EBA250 2019). The BatteRIes Europe Platform is the Batteries "Research and Innovation" (R&I) pillar of the European Battery Alliance and will be a "one-stop shop" for the battery-related R&I in Europe. It is expected to bring together public and private stakeholders along the whole value chain of battery production, research, industry as well as representatives from several Commission Services and EU Member States to identify, prioritise and co-ordinate the main research and innovation needed to build up a significant sustainable battery industry in Europe (EBA250 2019).

3. The critical raw materials' action plan and the new EU Battery Regulation

To further push ahead the establishment of a sustainable battery production in Europe, the European Commission also sets up a critical raw materials action plan to address the challenge of securing sustainable raw materials for the battery production. The Action Plan on Critical Raw Materials in the Commission's Communication COM/2020/474 final on "Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability" was announced on 3 September 2020, including the announcement of the European Raw Materials Alliance (ERMA) as part of the Action Plan. The Action Plan on Critical Raw Materials outlines the challenges ahead and is accompanied by a list of 30 critical raw materials, and a foresight study on future raw materials demand for strategic technologies and sectors (European Commission 2022a). The Commission's approach to securing supplies of critical raw materials is based on developing most valuable and sustainable domestic projects. All potentially viable projects will allow the EU to keep the wider objective to cover up to 80% of Europe's lithium needs from EU domestic sources (European Commission 2022a). Regarding the regulation of batteries and waste batteries they

are covered by the EU Batteries Directive (2006/66/EC) since 2006. However, in the light of the significant increase in their utilisation and the push for producing more sustainable batteries in the EU, a modernisation of the legislation for batteries has become necessary.

On 10 December 2020, the European Commission presented the Proposal for a Regulation of the Parliament and of the Council concerning batteries and waste batteries, repealing Directive 2006/66/EC, and amending Regulation (EU) No 2019/1020 (COM/2020/798 final). The proposal aims at strengthening the functioning of the internal market, promoting a circular economy, and reducing environmental and social impacts throughout all stages of the batteries' life cycle. Since all steps along the life cycle of batteries have a potential impact on the environmental and human health, the Commission's batteries regulation proposal lays down strict due diligence requirements for all battery raw materials-related activities (European Commission 2020). The requirements and provisions proposed aim at decreasing such impacts to the highest possible extent and they are based on the guidelines of the Organisation for Economic Co-operation and Development (OECD) (European Commission 2022a). The Commission Proposal for a regulation concerning batteries and waste batteries (COM (2020) 798, 2020/353 (COD)) addresses the social, economic, and environmental issues related to all types of batteries. The regulation intends to improve the sustainability of batteries along their entire life cycle with the lowest possible environmental impact regarding their production, use and recycling. Batteries at the end of their life should be repurposed, re-manufactured or recycled, feeding valuable materials back into the economy. Therefore, in its proposal for a regulation concerning batteries and waste batteries (COM (2020) 798), the Commission proposes mandatory requirements for all batteries, including industrial, automotive, and electric vehicles. The requirements include the use of materials with restricted use of hazardous substances, a minimum content of recycled materials, the carbon footprint, as well as meeting collection and recycling targets, among others. From 1 July 2024, only rechargeable industrial and electric vehicles batteries for which a carbon footprint declaration has been established, can be placed on the market (European Commission 2020). All these requirements are also essential and mandatory for the development of a sustainable and competitive battery industry in Europe.

Furthermore, in September 2021, the Commission published the EU Principles for Sustainable Raw Materials. These voluntary guidelines provide an approach to sustainable raw materials extraction and processing in Europe in terms of social, environmental, and economic performance. In 2021, the Commission also published a report, which provides examples of best practices and a list of recommendations for the environmental impact assessments of minerals extraction projects (European Commission 2022a).

4. The ENVI Committee, European Parliament and the Council move forward on the new EU battery regulation

Meanwhile, after weeks of negotiations, the European Parliament's Environment Committee (ENVI Committee) voted on 10 February 2022 on amendments to the proposal for an EU Battery Regulation, supporting higher collection targets for portable batteries and increased materials recovery levels. The Battery Regulation lays down a holistic set of rules to govern an entire battery product life cycle, from the design phase to end-of-life. The MEPs agreed with the Commission's approach to overhaul current legislation and to consider technological developments and amended provisions in several areas. This also includes the introduction of a

new category of “batteries for “light means of transport” (LMT), such as e-bikes (ENVI 2022). The MEPs backed the proposed rules on a carbon footprint declaration and label, a maximum value for the life cycle carbon footprint, as well as minimum levels of recovered cobalt, lead, lithium, and nickel from waste for reuse in new batteries, but also called for more stringent targets for waste collection, recycling efficiency and material recovery (ENVI 2022). This includes more stringent collection targets for portable batteries (70% by 2025, compared to the Commission’s original proposal of 65%; and 80% by 2030 instead of 70%) (ENVI 2022). They also introduce minimum collection rates for LMT batteries (75% by 2025 and 85% by 2030). By 2024, portable batteries in appliances, such as smartphones, and batteries for LMT must be designed for easy and safe removal and replacement by consumers or independent operators. MEPs also insist on assessing the feasibility of introducing standards for common chargers for a variety of rechargeable batteries.

On 10 March 2022, the draft legislation was adopted by the European Parliament’s Plenary with 584 votes in favour, 67 against and 40 abstentions (European Parliament 2022).

The draft regulation including the amendments constitutes Parliament’s negotiation position with EU governments on the final shape of the legislation (European Parliament 2022).

However, the considered targets regarding the levels adopted for lithium of material recovery, which will rise for lithium from 35% to 70% in 2026 and from 70% to 90% in 2030, raise concerns within the European waste management association FEAD. While the FEAD welcomes the other compromises on amendments, notably on replaceability of batteries, it also underlines that a recovery rate of 90% in 2030 will be problematic (FEAD 2022).

Meanwhile, the Council meeting of the EU’s environment ministers resulted in the adoption of a general approach for the EU batteries regulation on 17 March 2022. The Council’s general approach for the EU batteries regulation aims at promoting the clean and safe battery production chains throughout their life cycle and create a level playing field on the internal market, while promoting the implementation of a circular economy (Council 2022). The Council’s general approach to the regulation retains key elements of the Commission’s initial proposal including the extension of producer responsibility on recycled materials, reinforcing the due diligence of supply chains, and the battery passport. The new rules will promote the competitiveness of European industry and production chains and make more batteries available for a shift towards zero-emission modes of transport (Council 2022). The Council and Parliament will now start trilogue negotiations with a view to progressing towards an agreement on the final text in first reading (Council 2022).

5. The launch of the European Battery Academy and Sweden’s next Gigafactory

Regarding the latest progress on the establishment of the European battery production, the European Battery Alliance’s Sixth High-Level Meeting discussed the progress in developing the battery value chain in Europe and the European Commission presented priority areas for the work of the European Battery Alliance in 2022. Furthermore, since the fast-growing battery industry in Europe expects to face a gap of skilled workers, which is estimated to reach a lack of 800.000 people by 2025, the European Battery Academy was formally launched on the sidelines of the High-level meeting.

Based on a letter of intent between the European Institute of Innovation and Technology and EIT InnoEnergy, and the financial support of the European Commission with a grant of €10 million under the REACT-EU, this European Battery Academy is designed to identify and frame the main skill

demands across the European battery value chain. The Academy is expected to boost skills and it aims to effectively coordinate re-skilling and up-skilling efforts at European level (European Commission 2022c).

The European Battery Academy will develop training programmes and learning content to address skill gaps, including online learning modules, in-person training and training manuals (European Commission 2022a). Three EU Member States including Spain, France and Hungary have already engaged with the European Battery Academy by signing Memoranda of Understanding to train up to 150,000 workers in each of the first two countries and up to 40,000 workers in the latter. It complements the industry-led Automotive Skills Alliance launched in November 2020, as one of the first sectoral partnerships created under the Commission's European Skills Agenda (European Commission 2022a).

Therefore, the launch of the European Battery Academy is a concrete action to make sure Europe has a sufficient number of skilled workers in the battery industry to ensure its continued successful growth.

The European Battery Alliance's Sixth High-Level Meeting also noted that 111 major battery projects are being developed across EU Member States, with the total level of investment along the entire value chain amounting to €127 billion (European Commission 2022a).

At the High-Level Meeting, the Commission also presented the priority areas for action in 2022, namely the swift agreement on and the adoption of the new Regulation on batteries and waste batteries (COM(2020) 798 final), the continued diversification of sources of battery raw materials through cooperation with trade partner countries, streamlining permitting procedures for battery raw material projects in EU Member States, in line with highest environmental standards among others. Regarding the European Battery Academy, the European Commission prepares the rollout country-specific re-skilling and up-skilling programmes by taking advantage of the newly established EBA Academy (European Commission 2022b). The overarching aim of all the battery production related measures is to reach a production level for batteries covering the supply for up to 11 million cars per year (European Commission 2022c).

Regarding the establishment of lithium-ion battery manufacturing in Europe, more companies are planning factories for lithium-ion battery manufacturing in Europe. The EU-based Northvolt is constructing Europe's largest Gigafactory for lithium-ion battery cells in Sweden and will continue with a Gigafactory in Germany (European Commission 2021). Furthermore, a joint venture between Total and the car manufacturing group PSA (including Peugeot, Citroen, DS, Opel, and Vauxhall) will establish mass-production battery plants in France and Germany, while VARTA is targeting further expansion of its lithium-ion battery production in Germany and beyond (European Commission 2021). At the same time, Asian companies, such as LG Chem, Samsung SDI, CATL and SK Innovation, as well as Tesla, are advancing with their Gigafactory projects in different EU countries. (European Commission 2021). In February 2022, the British-Korean company Eurocell announced plans to build a "Gigafactory" for battery cells in Western Europe. This will also produce cells for electric cars with an initial investment of around €715 million (Schaal 2022). While the company has not yet determined the location of its new European plant, Eurocell considers to establishing the production in the UK, the Netherlands or Spain, with the final choice depending on getting a high level of support and investment from the country's government (Schaal 2022).

Moreover, Sweden celebrates the 5th anniversary of the EBA with the announcement to establish a second Gigafactory. In late December 2021, the Northvolt company announced that the Skellefteå

Northvolt Ett (“One”) Gigafactory, with 500 workers, had produced its first batch of prismatic cells, as part of its machinery commissioning process, the first customer shipments are expected in 2022 (wikipedia 2022). On 4 February 2022, Volvo Car and Northvolt announced to invest €2.9 billion in the establishment of a second Gigafactory for battery production in Sweden near Gothenburg (EBA 250 2022b).

6. Conclusion

The deployment of low- and zero-emission vehicles such as EVs for the mass market plays an important role for achieving the envisaged decarbonisation and the European Green Deal’s target.

However, the EU’s dependence on battery imports to produce EVs is considered being a competition disadvantage for the European automobile industry. Therefore, the establishment of a strong battery cell production industry in Europe has become one of the main political targets at EU level.

However, the EU’s automobile industry not only needs to become more independent from imports of batteries from third countries, but the EU’s internal battery production will also have to be sustainable in the entire battery value chain. Therefore, it will be important to introduce a new battery and waste battery related legislation at EU level, which includes sustainable solutions for entire battery value chain. The EU institutions prepare a robust sustainable battery regulation (COM (2020) 793), which will secure the sustainability of the battery value chain, from critical raw materials to the end-of-life recycling of batteries.

Finally, against the backdrop of the impact of the COVID-19 pandemic and the problem of a possible interruption of international supply chains, due to manifold reasons, it will be important to reduce the EU’s dependence from imports of batteries. The aim is to establish a sustainable battery industry in the EU, which will increase the European automobile industry‘s competitiveness while making more batteries available for a shift towards zero-emission modes of transport.

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