

TOWARDS A EUROPEAN SUSTAINABLE BATTERY INDUSTRY

HOW TO CREATE JOBS FOR A LOW CARBON SOCIETY

On **April 2nd 2019**, the European Policy Centre hosted an event in collaboration with the Konrad Adenauer Stiftung and the Bellona Foundation.

The event featured:

- **Marco Giuli**, Policy Analyst at the **European Policy Centre**
- **Johannes Huegel**, Research Associate at the **Konrad Adenauer Stiftung**
- **Joanna Szychowska**, Head of Unit C4 'Automotive and Mobility Industries' at the **European Commission**
- **Frederic Hauge**, Founder and President of the **Bellona Foundation**
- **Josef Affenzeller**, Secretary General of the **European Green Vehicle Initiative**
- **Annika Hedberg**, Head of Sustainable Prosperity for Europe programme and Senior Policy Analyst at the **European Policy Centre**

“THERE IS WEAK GLOBAL APPETITE FOR GLOBAL GOVERNANCE”

MARCO GIULI from the **EPC**, opened the discussion, reminding of the European Battery Alliance, a Pan-European group of stakeholders from across the entire battery value chain launched in 2013 by the European Commission. Giuli pointed out that there are numerous long term challenges to be addressed, such as climate change and the transition to clean mobility, and that Europe should seek to create industrial clusters in a strategic sector where Europe is lagging in comparison to its competitors, most notably China and the USA. He assured that it is important that Europe secures access to critical raw materials, remove barriers to the deployment of alternative fuels and establish norms for the interoperability of infrastructure, all in the context of a weak global appetite for global governance.



“EUROPE MUST SAFEGUARD ITS COMPETITIVENESS WHILE PROTECTING THE ENVIRONMENT”

JOHANNES HUEGEL from **KAS**, welcomed this first collaboration with Bellona and EPC, stating **KAS'** interest in competitiveness and environmental protection. He was delighted with the timing of the event, given the CEO of Volkswagen had only recently announced that the future of the industry lies with electric vehicles, reinforcing the need for Europe to develop a battery industry. In Germany, Huegel said, cities urged the government to expand charging infrastructure. Subsequently, a €1 billion program to provide financial support for this effort was implemented, with up to 50% financing for private charging at home and at work, where most charging takes place.

Huegel insisted that it is crucial that Europe becomes the home of the mobility of tomorrow and maintain technological leadership both with electric vehicles and autonomous driving. To stay competitive with China and the USA, there is a clear need for battery cell manufacturing, especially since batteries are increasingly imported from abroad. However, he emphasised that it is important not to prioritise one particular technology and to remain open to innovation. Huegel concluded his remarks by deliberating about the implications on developing countries, specifically asking about what would happen to older cars which may be exported to lower-income countries, essentially exporting Europe's problems.

“THE CHALLENGE AHEAD IS HUGE, BUT SO ARE THE OPPORTUNITIES”

JOANNA SZYCHOWSKA then took the floor with a presentation on the **European Commission's** work on batteries. She announced that in the coming weeks the EC would publish a progress report on the Batteries Action Plan. The report is set to discuss how electrification is necessary for carbon neutrality and how batteries are intrinsically linked to the clean energy transition and the electrification of the vehicle fleet.

She pointed out that globally, there are 3 million EVs currently on the road, with the 4 million threshold to be broken soon. Meanwhile, there are 235 million passenger cars in China, which will have to shift to zero-emission technology. As such, Szychowska argued that there will be huge demand for batteries from the transport sector alone and it is therefore critical to develop a battery strategy, so as to avoid being left behind. It was with this in mind that the EC created the European Battery Alliance, uniting stakeholders across the battery supply chain. She explained that this alliance does not mean the Commission is picking technologies but that batteries are the focus at the moment. Since, the EU only represents 3% of the global battery market, compared to 85% for its Asian counterparts, the gap will widen if nothing is done.

Szychowska emphasised the need to address both the production of batteries and the sourcing, refining and processing of raw materials in the EU, which is currently very small. This would need to be addressed through financial and regulatory support, in a collaboration between industry and lawmakers. The money spent on research had not been as successful as initially hoped and the EC is seeking a more coordinated approach via an ETIP platform for batteries. This may be done by leveraging public money with private sources of funding, working with the European Investment Bank to finance gaps between applied research and early commercialisation, such as Northvolt who are currently building a factory. Szychowska said the EC would also be looking at cross-border projects, citing a project driven by Slovakia working on innovative materials and funded by the EU's structural funds. The Commission is now reflecting on how to launch an IPCEI without a limit for state aid.

Regarding policy, Szychowska noted the progress made on CO2 standards and public procurement, but that more needed to be done on sustainability criteria of batteries. She concluded her presentation by stating that the challenge ahead is huge, but if nothing is done failure is a guarantee.



“INNOVATIVE BATTERY CHEMISTRIES AND RECYCLING METHODS CAN MAKE EUROPE COMPETITIVE”

FREDERIC HAUGE, from the **Bellona Foundation**, started his statement by sharing the news of Norway's record-breaking EV sales in the month of March 2019, where 58% of all new car sales were fully electric. The fact that a quarter of those sales were Tesla cars demonstrates that the American firm has outcompeted its European counterparts. In addition, Europe only accounts 3% of global battery cell production and close to all equipment is manufactured in China. Hauge expressed concern over the cyclical prices of raw materials, and explained that a strong strategy for the reuse and recycling of batteries is crucial for Europe, citing that 80% of the cobalt in batteries can be recovered. However, the market for recycling and reuse is not there yet because batteries have lasted longer than anticipated. Despite this, there is huge potential for batteries to have a second-life in the energy sector, storing variable solar and wind power, and this potential is not yet fully understood.

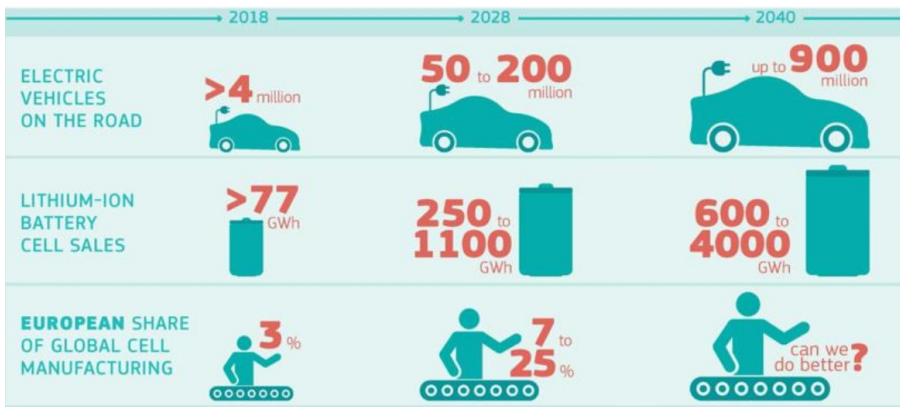
Hauge deliberated about the environmental impact of mining, which would be an inevitable outcome of the energy and mobility transition, and insisted that this is not a discussion the green movement can ignore. Many mines and factories should be in Europe, where standards are likely to be higher.

Nonetheless, Hauge insisted that other sectors can use batteries, such as shipping and other non-road applications. These sectors would require next generation batteries, such as Lithium-Sulfur which has a much higher capacity but needs a stable cathode. As such, next generation batteries would not necessarily compete with current batteries. Hauge announced that the battery company BEBA has made strong progress and would be presenting some results very soon.

Hauge concluded his remarks by reminding of Norway's oil fund, which he hoped would be used to fund development of batteries as opposed to feeding the country's petrolic habit.

“EUROPEAN WORKERS NEED TRAINING AND RESEARCH MUST ACCELERATE”

JOSEF AFFENZELLER explained the EGVI’s role in developing a strategic research agenda for electric vehicles. He agreed that the development and deployment of electro-mobility should intensify and that there is still a long way to go. Nonetheless, he was firm on the idea that within the next few years, most new cars would be electric. So far, the EGVI had spent €430m of the €750m in its funds, on 52 projects and with the participation of 154 SMEs. Affenzeller stated that since cobalt is the main component of batteries, more would need to be done in Europe to gain an advantage over China. As such, there had been progress in developing solid state batteries, but he expressed concerns that if they are not fully developed soon, it will be too late to catch up with China. However, Affenzeller was confident that Europe is strong on research. He mentioned that China forces carmakers to use Chinese batteries and questioned whether Europe should do the same. He finished his statement by emphasising the need to train European workers to work on batteries, claiming that Northvolt’s production line was composed mostly of non-European experts.



Global supply and demand of Li-ion batteries today and in the future and the European share in manufacturing.

Source: JRC

“THERE IS A STRONG RATIONALE FOR DEVELOPING BATTERIES IN EUROPE”

ANNIKA HEDBERG, from the EPC, expressed some joy at the encouraging remarks that had been made regarding the potential for Europe to still have a foot in the race regarding batteries. The discussion was taking place in the wider context of climate change and sustainable development concerns and the EU had agreed to global commitments such as the Paris Agreement and the SDGs. This wider context was of particular relevance for road transport in the EU, which remains a significant source of greenhouse gas emissions and air pollutants. She emphasised the potential of electrification to address these challenges, and the growing demand for zero-emission vehicles. For example, India aims to fully electrify its road transport sector by 2030 and China is strongly promoting EVs and outcompeting Europe. Hedberg ensured the clean energy transition is here to stay, taking also EVs and batteries role as a storage instrument for intermittent renewable energy. However, she reminded that developing and deploying EVs and batteries is a multidisciplinary and cross-sectoral issue. She then explained the rationale for battery development in Europe, focusing on competitiveness and sustainability. Given the role of the car industry in the EU, representing 6.8% of GDP and 6% of workers, makes it important for Europe’s competitiveness. The challenge is that the industry has for long fought against the transition to electromobility, and question now remains whether the ongoing shift is happening fast enough coupled with enough investments for the industry to be able to compete on the future market. The biggest challenge would be the car parts, which for petrol and diesel cars have been made in Europe, but in case of EVs may be increasingly imported from abroad. This is of particular concern since the battery is the most valuable component of an EV.

Relating to raw materials, Hedberg mentioned that there were sustainability concerns. Almost all rare-earth elements were produced in China and for example, refining 1 ton of rare-earth elements produced 75 tons of acidic waste. As such, developing battery production in Europe would allow the EU to follow high environmental and social standards. The EU had already agreed to check that supply chains do not contain conflict minerals, and extending this also to other critical raw materials could help to control negative impacts. Therefore, Hedberg argued, there were already tools at the EU’s disposal to address these concerns. Moreover, she insisted that it is in the EU’s interest to reduce dependence on foreign materials, from a small number of suppliers, via material extraction in Europe and by re-using, recycling and substituting critical materials. Hedberg mentioned Finland’s production of cobalt and Europe’s potential for lithium mining. She also reminded that phones and tablets globally contain enough cobalt to produce 1.5 million new EVs, but only 10% get recycled. Recycling materials has huge potential, but this would need to be considered already during the design phase of products, and Europe should invest in infrastructure and technologies to recycle EV batteries and critical materials from electric appliances. Hedberg finished by calling for the EU’s budget to be used as an investment for the future, given it signals what matters for the EU.

QUESTIONS FROM THE AUDIENCE

The first question pertained to the necessary steps towards battery recycling. The panel agreed that this was a difficult question but that there is a business case. **Frederic Hauge** discussed the fake news relating to the sustainability of batteries and EVs in general. He emphasised that batteries have lasted longer than expected and that they may develop in such a way where it makes more sense to recycle than to reuse a battery. It would therefore be important to develop the technology to assess the state of health of batteries.

The second question touched on the car industry and whether the vision is to replace conventional cars with EVs or with a new mobility system. Joanna **Szychowska** could not say what the end game would be but that there are clear trends towards a general mobility shift and that Europeans were increasingly calling for cleaner air. She then asserted that the value of cars in the future will lie in batteries, for EVs, and in IT, for autonomous transport. Frederic Hauge agreed that the end game is not clear but that cars would still be an essential component of transport and should therefore be electrified as soon as possible.

The panel discussion ended by discussing Tesla's business model. **Affenzeller** explained that Tesla build their own batteries, whereas European companies build the cars to fit the battery. This point was concurred by **Hauge**, who cited the example of Audi having to accept higher prices from their battery supplier LG Chem.

TAKE-AWAY POINTS

- Europe is lagging behind its North American and Asian competitors;
- Europe is currently highly dependent on imports for its batteries;
- Recycling and reusing batteries can vastly improve access to raw materials and the business cases for this are there;
- European manufacturing can tackle sustainability issues battery production such as the raw materials issue while also creating job opportunities;
- Sustainability criteria are needed for the sourcing and refining of materials;
- Demand for batteries will be there and Europe must be prepared for this;
- Europe is good at research and can take the lead on the next generation batteries for non-road applications and energy storage.



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