

European Battery Alliance Q&A

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Why does the EU need to produce batteries instead of importing them?

The battery will represent a high proportion of the value added in the car of the future. Since the car industry is a major player in the European economy, our aim is to retain as much of the value creation in Europe as possible. If battery production is primarily sourced from third countries, European manufacturers will be vulnerable to disturbances in the supply chain. At the same time, Europe will have less influence over standards setting to minimise the environmental impact of battery manufacture.

Currently, the EU has no capability to mass produce battery cells. Europe relies on battery cells from foreign, mainly Asian suppliers. The lack of European cell manufacturing base puts the EU at a competitive disadvantage – it jeopardises the position of EU's industry because of security of supply chain issues and increases costs due to transportation, time delays, weaker quality control or limitation on the design.

Europe has what it takes to become a world leader in sustainable battery technology. The EU is already a leader in many sectors of the battery value chain and has great potential in recycling and the circular economy. We are acting fast to establish a full and innovative, competitive and sustainable battery value chain, with large-scale battery cells production at its core.

It is important to act now and fast. With the shift towards e-mobility, battery demand is expected to surge. Batteries can be a major source of jobs, economic growth and investment for the EU. Some 4-5 million jobs may be created as a result of the EU taking the lead in this sector.

How can the EU compete with its Asian competitors who currently have the lead and can deliver a cheaper product?

The technology of batteries evolves rapidly. In any high-tech field, today's leaders cannot rest on their laurels. Investment in R&D underpinned by a strong scientific base and commitment by all stakeholders can take Europe into the lead.

The EU has invested a lot of money to support research and innovation in batteries. Now it is time to capitalise on these investments and create the partnerships and factories to produce the batteries Europe needs. The next field for competition will be the Li-ion solid state.

What EU-based consortia are emerging and where does the money come from?

- **Northvolt** has started the construction of a demonstration line in Sweden in Vasteras, with a €52.5 million loan from the European Investment Bank. The production is to start in the second half of 2019. Moreover, Northvolt has also obtained a permit to construct a larger scale

facility in Skellefteå in Sweden. The company is also teaming up with **the BMW Group** and **Umicore** in a consortium covering a complete and sustainable value chain for battery cells for electrified vehicles in Europe. It is being financed from their own resources.

- The battery maker **SAFT** announced in February 2018 a consortium with **Solvay**, **Umicore**, **Siemens** and **Manz** to develop and industrialize next generations of battery cells with solid state technology and some preliminary development on advanced lithium-ion.
- Companies and research institutions in Germany are working with great ambition to establish a battery cell production in Germany in due time.
- **Siemens** is working with the entire cell manufacturing value chain on manufacturing challenges and solutions, and has recently engaged in piloting the first fully automated and digitized production lines in Europe.
- **Umicore** announced in June 2018 a major investment in Poland – Nysa – for the production of cathode materials. The plant will build upon the state-of-the-art technologies and is due to start deliveries in late 2020. Furthermore, a new Process Competence Centre will be built in Belgium to develop and scale up high-efficiency production technologies.
- **BASF** is a strong player in the battery materials market. The company expects the market for lithium-ion batteries to grow rapidly and plans to add production capabilities in Europe.
- **Solvay** is working on developing state-of-the-art electrolytes and electrode binders and separators that are needed for highly efficient batteries. The company is considering building a plant in Europe.

What role the state aid will play and is the public funding in general justified?

Leaving aside any other uses of batteries in the future, the car industry needs batteries to stay globally competitive and a globally competitive car industry is very important for the EU economy. However, the creation of an EU-based battery industry is a long term strategic goal. One which we cannot expect car manufacturers to support on their own. Given the promise a long term rewards for the EU, public investment in developing the battery industry is a no-brainer.

Where projects require State Aid, different rules may apply. For example, collaborative Research, Development and Innovation (R&D&I) projects may receive high levels of support (up to 70% of the costs of applied research for large enterprises and even higher for SMEs). Moreover, production investments in disadvantaged areas of the EU can be eligible for support under Regional aid rules.

As part of the 2018 Action Plan on batteries, Important Projects of Common European Interest (IPCEI) may be set up. Such a project can benefit from high levels of aid (up to 100% of the funding gap). They must involve several Member States, generate positive spill-overs across the EU and be extremely

ambitious in terms of research and innovation.

How will the EU ensure that the battery sector does not cause environmental disasters because of its raw material intensity?

Future batteries will play a key role in enabling a green and secure energy supply for Europe. Their development can create jobs and support growth in key industries. But the pursuit of commercially competitive, high-performance batteries needs to go hand-in-hand with the quest to lower their environmental impact.

Considering the entire lifecycle of batteries, the environmental gains of using batteries offsets the environmental impact triggered by their production. Recycling plays an essential role to ensure this. Recovering materials at the end of the life of batteries reduces the impact of mining and manufacturing: CO₂ emissions are lowered, less hazardous substances are used and the local impact of mining activities is reduced. This is why the EU has a policy aimed to ensure the recycling of spent batteries, the Batteries Directive. However, the full potential of recycling still needs to be untapped.

Other opportunities to tackle a range of environmental issues exist, such as using non-toxic materials; increasing energy density; extending battery lifespan or improving charging efficiency. Changes in design and production could bring about substantial environmental benefits: more efficient use of raw materials, reduced impacts of pollutants on human health and nature, plus fewer GHG emissions and lower energy consumption associated with the manufacture and use of batteries.

When it comes to the extraction of the minerals and the treatment of metals used in batteries, these processes usually take place outside of the EU, and in some cases in countries unable or unwilling to implement adequate health, labour and environmental protection conditions. The EU should not offshore the environmental impact of the production of the batteries used in Europe. Environmental, health and social conditions within the EU are amongst the highest in the world, but nothing prevents the development of fully compliant extractive activities here as it is already the case for some metals.

How is the development of infrastructure keeping up with an ongoing shift to e-mobility?

Having the right infrastructure is key for e-mobility to take off. People won't buy electric cars if they can't recharge them, but why invest in infrastructure if people aren't buying e-vehicles? To break this vicious circle, investment is needed.

We now have almost 135.000 public rechargers in place across the EU. However, it is estimated that by 2020, 440.000 publicly accessible recharging points would be needed – a significant increase compared to today. Reaching this objective would require significant investments, especially in urban areas. Besides expanding the network, it will also need to be improved. Most importantly, the network needs to be interoperable cross-borders.

The roll-out of alternative fuels infrastructure is supported by the Connecting Europe Facility (CEF), the EU's financial mechanism to support the development and modernisation of infrastructure. In total, CEF has so far supported 641 projects with a total amount of €22.3 billion. Additionally, €450 million is made available to finance alternative fuel infrastructure through the InnovFin Energy Demo Projects (EDP) and CEF Debt Instrument. They are managed by the European Investment Bank.

Is the EU only investing in batteries as key technology for mobility and decarbonisation?

In the context of decarbonisation, the EU also supports research and innovation in Fuel Cells and Hydrogen technologies both for energy and mobility applications. Within the Horizon 2020 framework programme the EU invests €665 million in the Fuel Cells and Hydrogen Joint Undertaking – a public-private partnership with the hydrogen industry.

Moreover, within the European Green Vehicles Initiative, energy efficiency of vehicles and alternative powertrain projects are funded, such as natural gas.

Within more basic experimental research programmes, a large portfolio of research topics is funded to explore the potential of future technologies to decarbonise transport.