



THOUGHT LEADERSHIP BRIEF

The Future of Electric Vehicles in Asia

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Photo by Joshua Fernandez on Unsplash

KEY QUESTIONS

► **Why so much attention is being paid to electric vehicles (EVs) in the green transition?**

The main reason is that the technology already exists to help governments reduce emissions at reasonable costs. By pushing the shift towards EVs, governments can buy time to develop the technology to reduce emissions in other sectors at a reasonable cost. A second reason is that the EV sector offers a great industrial opportunity, not only for those who have traditionally produced cars, but also for newcomers.

► **Who is leading the race?**

The EU and China are so far leading but in different ways. The EU was the first to encourage the demand for sustainable cars, and to a lesser extent to produce them. China encourages productions with subsidies and is expected to benefit from the huge potential demands

from Asia. China also leads in battery components and controls the supply of related raw materials. The more batteries become a bottleneck to production, the more China can lead the race.

► **Can the EV industry become another geopolitical battlefield?**

Components for EV batteries could easily become another geopolitical standoff and, possibly, a new bottleneck in the global supply chain. Countries that have benefited from Europe's leadership position in the automotive sector need to get their act together by starting production and ensuring the supply of their components. As for Asia ex-China, it is time to think of stepping up production of EVs and batteries to avoid excessive reliance on Chinese exports.

ISSUE

As the green transition takes off globally, the adoption of electric vehicles (EVs) has become a fundamental part of this strategy because cars are an important source of carbon emissions (about 12% globally), although not as much as industrial production and supply chains, which are responsible for at least half of global emissions. One might wonder why so much attention is being paid to electric vehicles in the green transition if other sectors are bigger emitters. Furthermore, analyzing which countries leading the race, who dominating the heart of EVs and the risks that the sector facing also provides a clue for its future evolution.

ASSESSMENT

The answer to the first question, why EVs stand out in the green transition, lies in the technical and commercial feasibility of EVs to reduce emissions. In fact, substituting traditional cars with EVs could help governments meet their pledges to cut emissions while buying time for sectors where technology is not yet sufficiently developed to reduce emissions at a reasonable cost. On the other hand, the EV sector offers a great industrial opportunity, and not only for the companies and countries that have traditionally produced cars, but also for newcomers. In fact, some of the most successful EV companies did not exist before, with Tesla as the best example, or have come from very different sectors, as is the case of Foxconn, one of the largest producers of electrical components, having embarked on the production of electric cars.

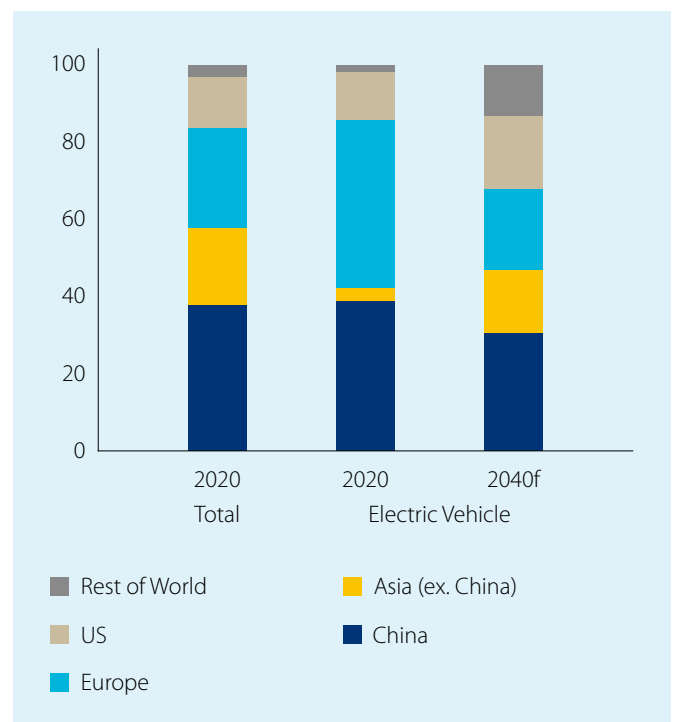
The Eu and China are so far Leading but in Different Ways

The European Union, the first economic giant to take serious measures in the face of the challenge of climate change, was also the first to encourage the demand for sustainable cars, and to a lesser extent to produce them, though not necessarily completely electric ones, but rather hybrids, probably because of the interests of the existing European automotive companies.

In China, on the other hand, the commitment has clearly been for the fully electric car, both for production and consumption. In this sense, subsidies have been concentrated on the producers, and less so on consumers, to encourage investment in research and development, which to date has been the most determining variable for the success of EV companies, with Tesla as the best example.

The reality is that the growth of the EV market has just begun. Sales of EVs are expected to grow from 4% of total car sales in 2020 to 70% by 2040, with China as the main market, followed by the EU, while Asia outside China should become more relevant from 2025 onward (Figure 1). In fact, the adoption of EVs in Asia ex-China has been slow, with only 3% of its total car sales. The main reason for the delay is the very limited government support, except in South Korea. But this also means massive growth opportunities, as Asia excluding China accounts for 20% of the global traditional-car market.

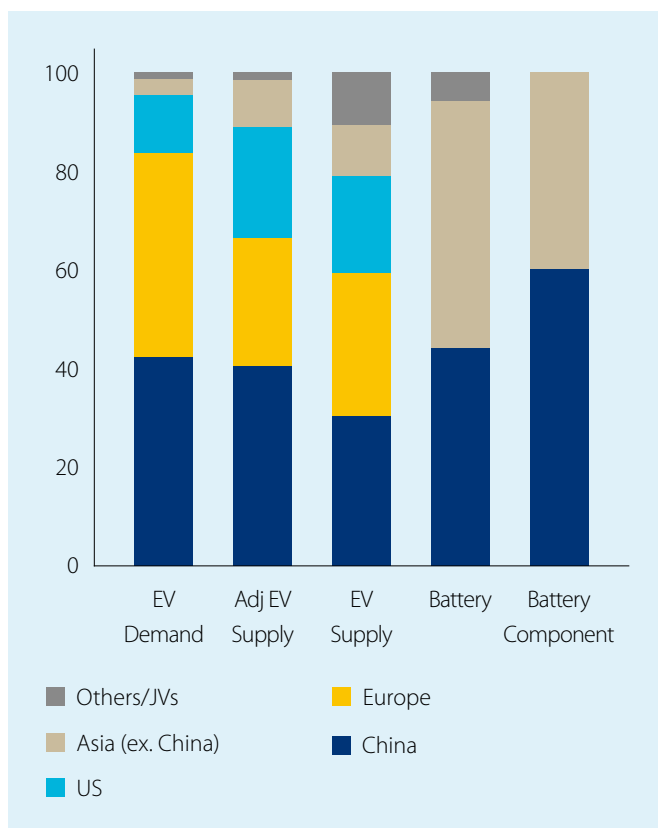
Figure 1. Global Traditional and Vehicle Sales (%)



Source: Natixis, International Organization of Motor Vehicle Manufacturers, MarkLines, BNEF

EV producers in China, which already account for 40% of the world market, are in an enviable position to benefit from the strong growth expected in the rest of the Asian market thanks to the signing of regional trade agreements. As if this were not enough, the production of the heart of electric cars, batteries, which represent more than 40% of the total cost of an EV, is also concentrated in Asia, among South Korea, Japan and China. Again, China leads in battery components after a long struggle with Japan for component-supply dominance. Thus, China's market share for battery components increased from 43% in 2014 to 60% in 2020 thanks to the tight control of the supply of raw materials such as lithium, cobalt and nickel, for which prices have grown exorbitantly in recent years (Figure 2).

Figure 2. Global Electric Vehicle Demand/Supply and Batteries (% of Total)



Note: EV demand and supply as of 2021f. In adjusted supply joint ventures are reclassified by the origin of owners in supply. Battery as of September 2021. Battery component as of 2020. Source: Natixis, MarkLines, BNEF, SNE Research, Yano Research Institute

The World of EV Batteries

As electric vehicle (EV) makers ramp up supply to feed the growing demand, the most important component determining car performance is the battery, with 40% of total cost. Lithium-ion is the mainstream type and is dominated by Asian firms. As of September 2021, China has a global market share of 44%, followed by South Korea (35%) and Japan (16%). Among all, Chinese battery maker Contemporary Amperex Technology Ltd (CATL) is the leader with a market share of 31%. The leading role of China comes with challenges from South Korea. LG Chem is the second largest battery maker with a global market share of 25%. In non-China market, LG Chem captures 36% of sales versus 10% by CATL. The profitability of LG Chem has also matched that of CATL, showing why South Korea is a strong competitor in car batteries. Conversely, Japan seems to be falling behind in market share. For value added, though, Japan dominates high-end batteries while South Korea and China are in the medium to low space. In any event, innovation remains a key factor to determine evolution of the EV battery market. The composition and shape of lithium-ion batteries from car makers remain decisive with challenges also from new technologies, which may outdate old forms of batteries. Beyond innovation, another challenge is batter components. Although China may be leading in EV battery making and the related components, challenges still exist in securing supply of new materials, such as lithium, cobalt and nickel. In Asia Pacific, Australia can be the winner with large reserves to feed such demand, even though the main supply may come from other countries, such as Chile and Congo.

Given the above, China's dominance in the production of EV batteries and the increasing interest for other producers to diversify the sourcing of batteries points to another potential bottleneck in the global supply chain, feeding geopolitical tensions.

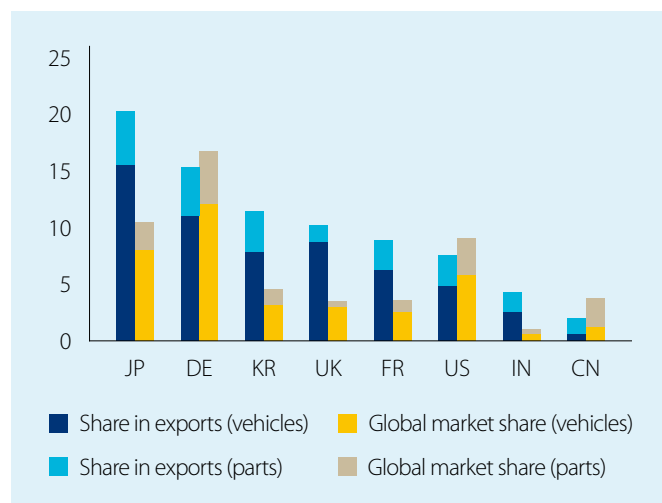
In other words, the EV sector could soon look similar to that of semiconductors.

RECOMMENDATIONS

As EV manufacturers ramp up supply to meet growing demand, geopolitical risks are clearly emerging. The growing concern of many governments about supply-chain security is only set to increase in the EV sector, given China's dominance in battery components. Being such a useful tool for governments to showcase their efforts to combat climate change, components for EV batteries could easily become another key geopolitical standoff and, possibly, a new bottleneck in the global supply chain, as semiconductors now are.

The difference is that mainland China is trying to reduce its lag in the semiconductor industry compared with the US or even Taiwan in recent years, while it is clearly ahead in battery components. This becomes a much more obvious challenge when Chinese exports of EVs grow beyond the current rather meager share (Figure 3).

Figure 3. Key Producers of Automobiles (%)



Note: Data as of 2019. Automobiles include motor vehicles and their parts and accessories. Source: Natixis, UNCTAD

In short, in the race to dominate the electric-vehicle sector, China is clearly ahead in demand - currently from its own consumers and soon from the rest of Asia - but also in supply, since China not only accounts for a good part of the world's automobile production, but more important, it controls battery components.

Faced with this reality, countries that have benefited from Europe's leadership position in the automotive sector need to get their act together by starting production and ensuring the supply of their components. As for Asia ex-China, it is time to think of stepping up production of EVs and batteries to avoid excessive reliance on Chinese exports.

All in all, another potential bottleneck in the global supply chain, centered to batteries for EVs, seems unavoidable with obvious consequences in terms of reinforced industrial policy in major countries and a reshuffling of the EV supply chain to avoid bottlenecks. The story of the semiconductor industry can serve as a good example.



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