Europe's auto supply chains must be mapped to mitigate risk

A new approach to supply chain management will be needed for European automakers to navigate threats to procurement and manufacturing. By Will Girling

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2023 is set to be a defining year for the European automotive industry. In addition to dealing with exterior challenges (https://www.automotiveworld.com/articles/can-european-oems-respond-effectively-to-china-and-the-us) posed by the US and China, it must also consolidate its vision (https://www.automotiveworld.com/articles/consensus-is-needed-for-europes-electrification-strategy) for electric vehicle (EV) adoption in order to secure the support of investors and customers.

However, reaching the desired consensus could prove challenging: the war in Ukraine, China's COVID lockdowns, and shortages of both raw materials and labour are complicating vehicle production. At a time when Europe is leading the world in terms of EV penetration, protracted supply chain issues mean the industry risks failing to meet consumer demand and potentially reversing the trend.

Automotive World spoke with Bindiya Vakil, Chief Executive of Resilinc, about the challenges, risks, and opportunities confronting European automakers. A leader of artificial intelligence-based supply chain data monitoring, resilience and risk management, Resilinc has mapped more than 65% of the global automotive supply chain. It counts General Motors, Toyota, and Stellantis among its clients.

How have global socio-political issues impacted European EV supply chains?

Production of EVs in Europe has remained stunted over the past 12 months. This can be attributed somewhat to the fallout of China's COVID policies—the country is a crucial supplier of components such as lithium batteries and raw materials, as well as accounting for over half of all EV sales in 2022. Further strains on EV supply chains are expected with the implementation of new ESG legislation in Germany (https://www.automotiveworld.com/articles/where-next-for-ev-battery-manufacturing-and-sourcing/) (The German Supply Chain Due Diligence Act). Many larger companies such as BMW and Tesla are already making the necessary changes to fully comply with recent changes to ESG criteria, hence compliance will be a key priority going forwards.

Why has ESG become interconnected with supply chain issues?

Companies must be certain that their supply chains are clean and clear of labour, safety and/or pollution violations. Any violations or compliance issues could result in a supplier being put out of action through factory shutdowns if the breach is serious enough. This is why it is crucial that automotive companies map all suppliers (both direct and indirect) to ensure compliant supply chains are upheld. By employing a supply chain resiliency programme, companies have significantly more control over their supply chains and can identify potential compliance issues in advance of wider problems emerging.

EV batteries manufactured at Mercedes-Benz's plant in Untertürkheim

European gigafactory projects seem to have slowed or been cancelled in recent months. Is this indicative of a general downturn?

Within the context of the past five years, there has been a slowdown in the pace of the European EV market in recent months. However, growth in the sector has remained promising. Despite delays, many projects continue to be given the green light, with Volkswagen proceeding with plans to build a gigafactory in Spain over the coming years. Part of the current bottleneck can be found in the shortage of available lithium-ion batteries. In fact, a third of all lithium batteries across the world are produced by Chinese company CATL.

What effect is this production localisation having?

It puts the EV market in Europe on a delicate balance. As a result, Chinese COVID lockdowns and labour shortages have strained supply across the continent. This also explains much of the current impasse in finalising new gigafactory projects. However, given that this strained supply of batteries exists—with battery production lead times stretching to one and a half years from order to commission—there

remains a strong demand for gigafactory construction. They will be required to curtail the excessive waiting times caused by a lack of capacity, strained access to raw materials, and labour shortages.

What specific raw material supply chains should the industry be concerned about?

Certain raw materials are crucial to the creation of lithium-ion batteries, as well as to most other components within EV production. Supply chains for lithium, cobalt, and rare earth metals such as neodymium and dysprosium must be secured. However, this has come under much pressure due to political decisions and a severe lack of availability.

In order to secure domestic supply, Zimbabwe imposed restrictions on the export of lithium over December 2022. The result of this is a further strained lithium supply (https://www.automotiveworld.com/articles/massive-supply-chain-investment-needed-for-li-ion-ev-battery-targets/), contributing to incredibly volatile prices for crucial materials. Neon, which is essential to the semiconductor manufacturing process, is also significantly constrained as a result of the Russian invasion of Ukraine (https://www.automotiveworld.com/articles/russia-ukraines-impact-on-the-looming-automotive-recession/)—where roughly half of the world's supply of purified neon gas is produced by two companies.

Are there any other material shortages to monitor?

Raw materials aside, there is also an on-going shortage of semiconductors, which are fundamental to the electrification of the automotive industry. Rising demand is a major factor (https://www.automotiveworld.com/articles/resolution-to-ukraine-war-wont-end-battery-metal-shortages/) in the global chip shortage, and passenger vehicles are using an increasing number of microchips as they become more technologically advanced.

> Chinese COVID lockdowns and labour shortages have strained supply across the continent

Will these supply chain problems impede the Europe's shift to electrification?

Yes, global pressures are certainly having an impact upon Europe's ability to create resilient EV supply chains. However, there are a growing number of companies that believe the Chinese market is more susceptible to supply disruption. Tesla, for example, has further curtailed production at its plant in Shanghai, leading to a greater focus on diversification away from China. Still, China produces 85% of the world's refining output of rare earth metals, meaning that any supply chain disruption will have global consequences, and the price of these metals has exploded as a result.

Political developments are also likely in future, with the EU proposing its own version of the CHIPS Act (https://www.automotiveworld.com/articles/chips-act-could-make-the-us-a-semiconductor-powerhouse/) in the hope of doubling its share of global chip production to 20% in 2030. So, while supply chain disruptions are an inevitability, the European market is already establishing new methods to secure future supply.

What are the best strategies for building automotive supply chain resilience in Europe?

There is one strategy for building resilience that overrides all others: mapping and monitoring your supply chain to ensure greater oversight and a continuity of supply. A supply chain resiliency programme of this sort is the most effective way to mitigate risk and disruptions within the EV market. Real-time event monitoring and alerts allow businesses to get ahead of any potential disruptions, and mapping down multi-tiers to a part's origin means you can take action to remedy any bottlenecks.

Tied to this strategy is the need for organisations to prioritise supply chain risk management based on potential revenue rather than spend. After all, countless disruptions in supply chains are not caused by the high-spend items from Tier 1 suppliers. On the contrary, they are often low-cost items like connectors and it's these items which cause the greatest impact to company revenues.