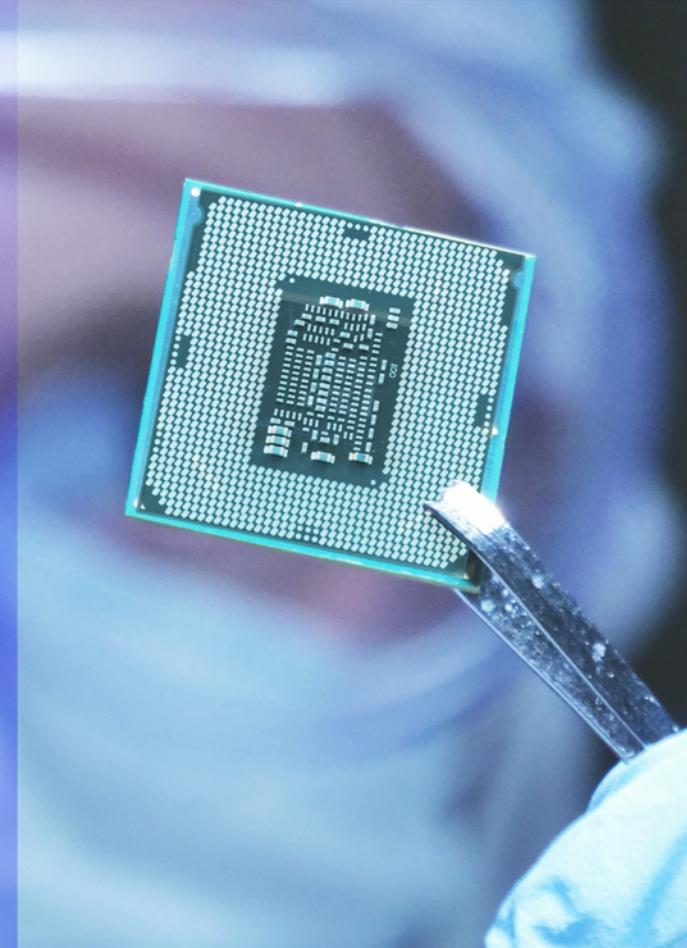


Vulnerable supply

**Using an ESG and tech-based approach
to secure the future of supply chains**

Automotive industry insights



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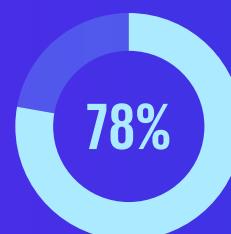


Current situation

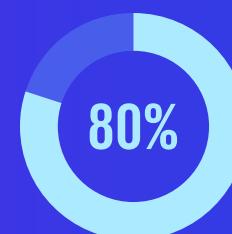
The automotive industry is currently being affected by many disruptive influences. However, one issue that is quite common to trends relating to vehicle electrification, the effects of COVID-19, geopolitical disturbances and the implementation of new regulations is supply chain vulnerability. Meeting stringent decarbonization goals, addressing chip and raw material shortages, overcoming challenges related to electric motors and charging stations, resolving staff shortages, complying with ESG requirements and the implementation of new digital technologies are all high on the executive agenda.

Higher and all-encompassing visibility and transparency of the supply chain has now become a commercial prerequisite. However, in many cases this has still not been fully addressed and too much reliance has been placed on self-disclosures from automotive OEMs and suppliers. Companies need a complete overview of their entire supply chain (including all N-Tiered suppliers) to not only remain competitive but also to ensure compliance. A sustainable supply chain combined with technology-based reporting will likely be an important competitive differentiator and, accordingly, a key success factor for automotive OEMs and suppliers.

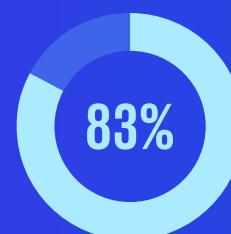
Figure 1:
Key insights from KPMG's 22nd global automotive executive survey



... think that recent volatility in commodity prices will adversely impact their business in 2022.

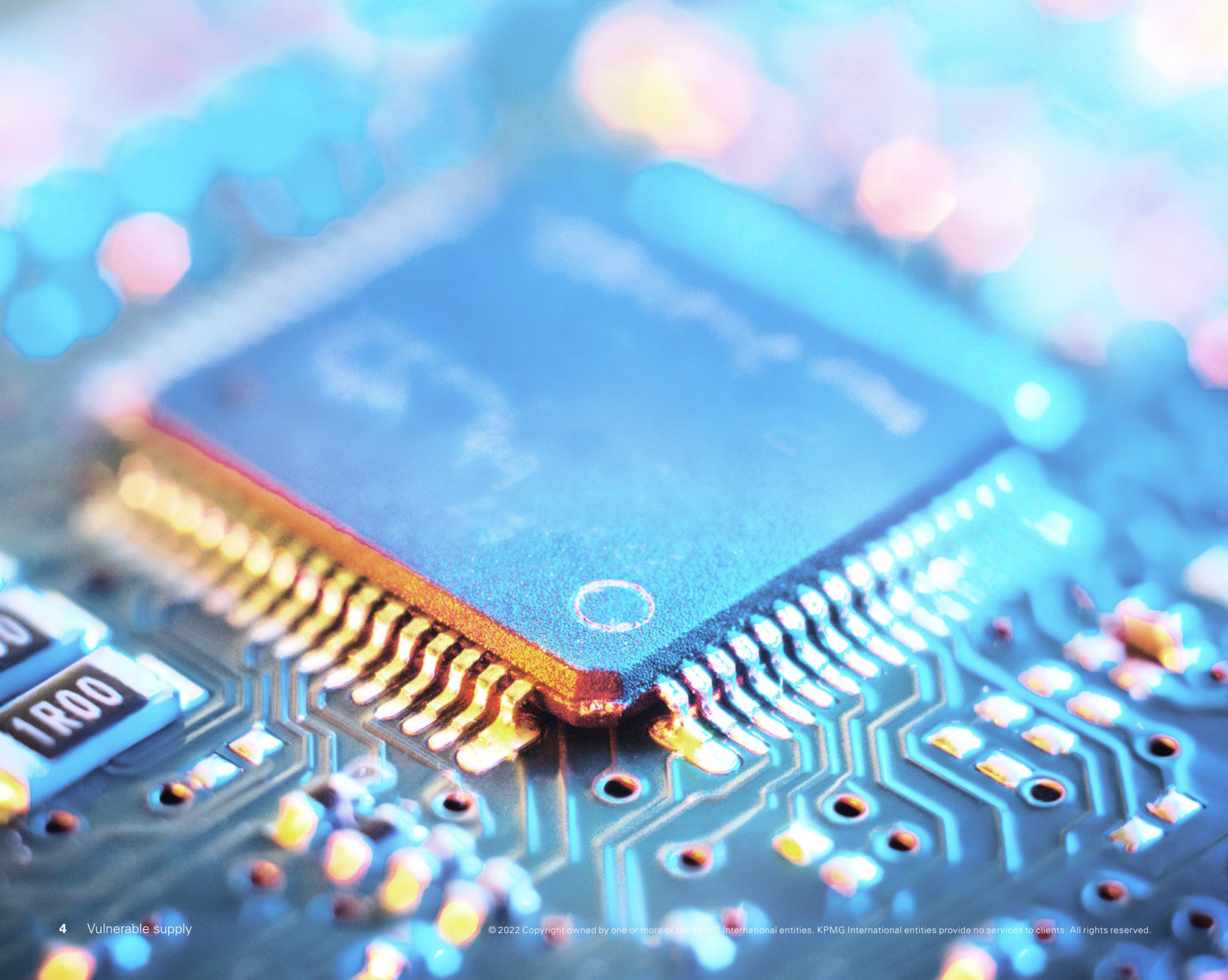


... believe that labor shortages or wage increases will adversely impact their business in 2022.



... are moderately, very, or extremely concerned about semiconductor supply in 2022.

Source: KPMG's 22nd global automotive executive survey



Challenges to overcome

Material shortages and uncertainty of demand

Automotive OEMs and suppliers are struggling to meet the demand for cars amid limited availability of numerous components and/or materials, such as semiconductor chips, aluminum or lithium. Scarcity or limited availability of these precious components and materials has meant that many automakers have halted or delayed production of vehicles, removed features or systems from their models that require more chip usage, increased prices of certain models, and even offered car models that have fewer chip-dependent features with an option to have them retrofitted later.¹

However, these temporary measures cannot fully resolve this ongoing issue. Due to the gradual transition to electric vehicles and demand shocks caused by crises such as the COVID-19 pandemic, what is needed are revised forecasts based on the amount and type of materials available. And while many automakers and chip manufacturers are taking the appropriate measures to expand chip manufacturing and supply capacity, a typical chip manufacturing plant takes years to set up and a few additional years to reach full capacity.² Also, while many automakers predict that this current shortage will be resolved by the second half of 2022, chip manufacturers actually expect this issue to persist for longer – which adds more uncertainty.³

Increasingly stringent environmental regulations

Consumer concerns and increasingly stringent decarbonization targets (at national and international level) are placing additional pressure on automotive OEMs and their suppliers to significantly boost Capex and R&D monies directed towards development and production of EV fleets. For example, the EU's "Fit-for-55" plan states that from 2035 onwards the sale of cars that have an internal combustion engine will be banned in EU countries, which will eventually lead to a majority share of EVs in the new mobility mix.⁴

However, it's not just about producing a higher proportion of EVs and thereby attaining net-zero targets with regards to Scope 1 and Scope 2 emissions. Most of the emissions during the entire lifecycle of a vehicle fall under Scope 3 - emissions which emanate directly from the supply chain and are directly linked to logistics or transportation of components and materials, as well as their upstream production. Measuring and managing these Scope 3 emissions is in itself a hotly debated and controversial issue.⁵ Additional issues related to supply chain management of End-of-Life recycling (of vehicles and batteries) also pose serious challenges.



The current Russia-Ukraine war will likely exacerbate the already vulnerable state of the automotive supply chain with the issue extending to precious metals as well.

Goran Mazar, EMA Head of ESG and Automotive, KPMG International

¹ "Way ahead for global automotive industry amid semiconductor chip shortage" – KPMG, January 2022

² "Automakers, chip firms differ on when semiconductor shortage will abate" – Reuters, February 2022

³ "Automakers, chip firms differ on when semiconductor shortage will abate" – Reuters, February 2022

⁴ "Fit for 55" – European Council, December 2021

⁵ "Decarbonizing the supply chain will be a gradual effort" – Automotive Logistics, February 2021



Scarcity in the labor market

The additional backlog created by continued sales during COVID-19 lockdowns must be cleared, even though vehicle inventories are a long way from recovered in most plants. To compensate for quarantine absences, leaves of absence while waiting for test results and/or fear of infection in general, companies have been looking to take on more employees (than usual).

However, the aforementioned issues are merely short-term. As a result of a shift to vehicle electrification, more job losses or redundancies are predicted globally in the automotive industry (EVs are easier to manufacture as they have fewer parts and do not require in-house powertrain development and production). In the wake of the rapid shift to EVs more than 200,000 jobs in Europe and 75,000 jobs in the US are expected to be lost by 2030.⁶ And within the automotive supply chain, while job losses at the supplier end will be less than those on the OEM side, there is no doubt that automation, digitalization, robotics and reduced car ownership will contribute in equal measures to this trend.

Continuous disruption due to the global nature of the automotive industry

Due to the global nature of the automotive industry it is exposed to substantial political, economic, environmental, market and other factors. Recent examples that immediately come to mind are the threat of the possible reintroduction of travel restrictions as COVID-19 variants spread, as well as the continued Russia-Ukraine war – these would compound supply chain interruptions and in doing so affect foreign trade. In addition, new Arctic maritime routes (which could become a reality due to global warming), weather disruptions and natural disasters (earthquakes and

volcanic activity in countries like Japan and Indonesia), the emergence of new automotive manufacturing hubs (like Morocco for European vehicle manufacturers) and localization of key raw materials like lithium (from a procurement perspective) will likely further challenge and change the current supply chain landscape.⁷

Increasing complexity and cost of tariffs and trade regulations

Most executives featured in KPMG's 22nd Global Automotive Executive Survey expect cost and complexity of tariffs, trade rules and commerce regulations to increase over the next five years.⁸ The US-China trade spat notwithstanding, the rise of protectionist sentiments and restrictive trade policies in other key countries to safeguard strategic national companies, plus competitor interests and jobs are also casting a long shadow of uncertainty over the current supply of key commodities and components. For example, a leading EV manufacturer is facing supply concerns over the import of various forms of artificial and natural graphite (from China), which it plans to use to develop a battery cell in the US. In another example, the Indian government recently rejected this leading US-based EV manufacturer's proposal for import duty cuts because the EV maker failed to promise that it would set up a domestic manufacturing facility in India.

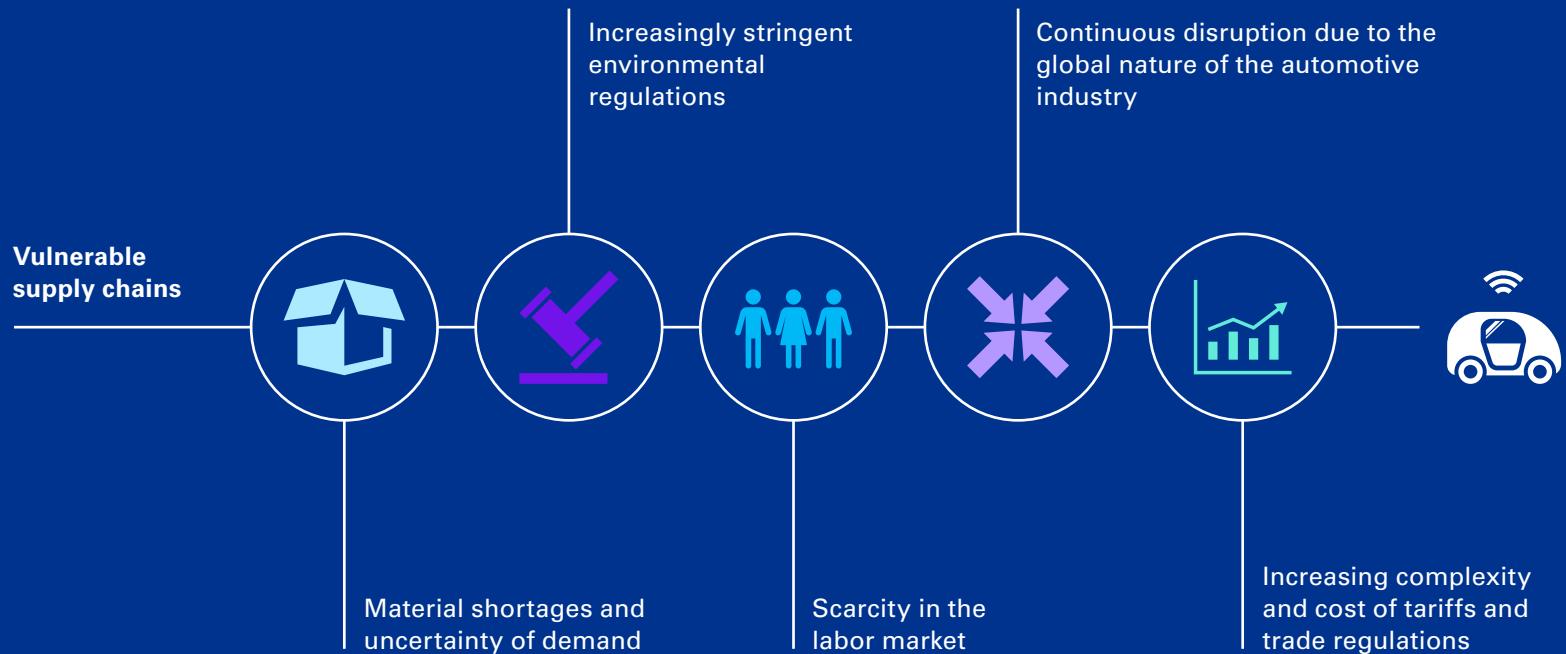
⁶ "Auto industry ready to witness job losses and major skill transitioning" – Just Auto, October 2021

⁷ "Opinion: Changes in global trade dynamics shift automotive supply chain hubs" – ET Auto, September 2021

⁸ "22nd Global Automotive Executive Survey: A European Perspective" – KPMG, December 2021

Figure 2:

Automotive supply chain challenges



Source: KPMG in Germany 2022

The way forward

Regionalizing and optimizing the supply chain

Regionalization ensures that companies are less vulnerable in terms of production and procurement, as proximity to the sales market has already been well established; although this only applies to use cases in which it is feasible and reasonable to do so. Digitalization of the supply chain also plays a key role here, as it helps increase real-time visibility and transparency, as well as making it easier to predict demand-supply imbalance with greater accuracy.

Ensuring supply chain diversity

Automakers and Tier-I suppliers are already adopting strategies that move away from the single-sourcing trend – when a company is dependent on a single supplier – to dual-sourcing, e.g., with a different regional focus – where their company is much more diversified and, therefore, less exposed to the risk of supplier failure. Apart from dual-sourcing, doing near-shoring of critical materials, while at the same time sourcing from somewhere other than at-risk suppliers is also key.

Establishing a task force for the management of critical commodities

Establishing a task force to manage scarce resources and to avoid plant closures can help tide companies over a supply chain crisis. Planning the implementation of a shortage management system is necessary so as to be ready for and meet any challenges ahead. This task force and related governance systems can also ensure that sustainable sourcing and supply chain transparency are a pivotal part of the overall business strategy.

Entering into strategic partnerships or joint ventures

Long-term partnerships are extremely important for those seeking to achieve future success, as can be seen in some of the current collaborations between companies in the automotive and semiconductor industries. Relevant ecosystem players must be included throughout the entire supply chain. For example, a prominent global carmaker has recently partnered with US-based chipmaker GlobalFoundries Inc to reduce its dependency on chips manufactured by and sourced from TSMC – the Taiwan-based chipmaker.

However, it's not just about ensuring the availability of critical raw materials and components. Partnerships

are also key when it comes to complying with increasingly stringent ESG regulations. For example, Volkswagen with its truck brands Scania, MAN and Navistar will have more Euro 6 diesel-heavy, long-haul trucks and CNG-powered shorter-haul trucks in the US – and thereby reducing its supply chain carbon footprint. Hydrogen, ammonia, ethanol or synthetic fuels can also be the fuel(s) of choice for long-haul transportation like trucks and container ships, if economic viability can be achieved through fruitful partnerships in the next 10–15 years.

Complying with regulations and ensuring transparency

Automakers also need to introduce an ESG assessment to evaluate whether the necessary transparency has been created that complies with any new legislation like, for example, the Supply Chain Due Diligence Act in Germany. Compliance with regulations is not only important for customers and the environment in general but also for getting loans granted under the Green Deal. Many new solutions are already available on the market that help track, identify, trade and offset emissions related to all ESG-relevant areas across a company's supply chain. AI, Big Data, Blockchain and data analytics capabilities are all an integral part of these solutions.

Figure 3:

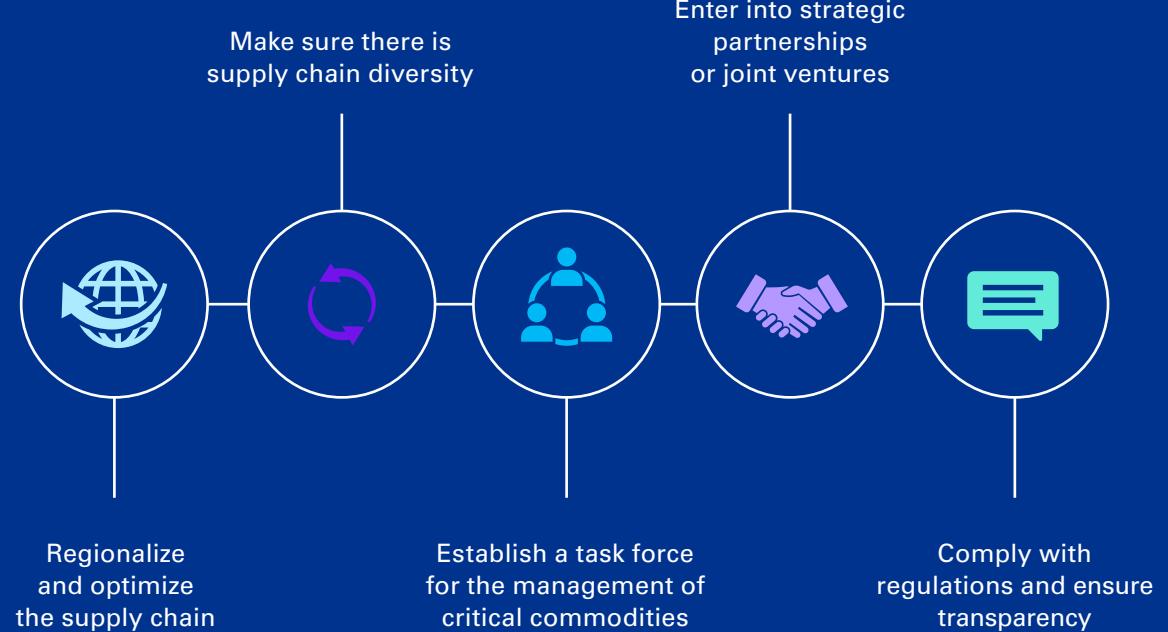
Recommendations for overcoming supply chain challenges

Increasing demand for digital solutions, the switch to EVs and compliance with increasingly stringent ESG regulations also means that future automaker and supplier workforces need to be ready to act accordingly. Despite automakers preparing themselves for future layoffs, there are, at the same time, high-skilled jobs being created across chemicals, materials, electronics and software/IT. In order to make themselves future-ready, companies should appropriately upskill retained workers and hire optimally across their production (and sales) footprint.



UK's Modern Slavery Act and Germany's Supply Chain Act are making sure that automotive companies also comply with the 'S' component of ESG.

Sylvia Trage, Director, Consulting, Value Chain Transformation, KPMG in Germany



Source: KPMG in Germany 2022

Current experiences

Shortage control task force for premium German automotive OEM

A leading German car manufacturer has set up a task force to manage material shortages in the chip manufacturing sector. This type of bottleneck management is important for negotiating supply difficulties and identifying alternatives as early as possible. The chip shortage is affecting many manufacturers and delivery delays are a common occurrence, which results in customers receiving their cars later than promised. To counteract this, a company task force is trying to resolve emerging problems as quickly as possible, to ensure delays do not impact so heavily on production. KPMG in Germany holds daily meetings with suppliers of the car manufacturer's critical commodities. The current status of the inventory is assessed and planned deliveries are discussed. In terms of logistics management, the list of parts that are still available is updated, the next deliveries are included, and thus a daily consolidation is made of how many items are in stock, at what point critical periods are likely to arise and the planning that needs to happen so that a reliable supply is maintained.

Supplier enablement for a premium German automotive OEM

Ever increasing and heterogeneous risk requires higher transparency and faster response times with regards to matters such as sustainability and compliance, regulatory requirements, globalization and geopolitical influences. A key factor in dealing with risk-related issues of this nature, is a fully comprehensive supplier management process based on reliable supplier performance. To proactively avoid delivery problems, the automotive manufacturer's suppliers are enabled (electronically connected to the company supply line) in order to be better positioned to fulfill the manufacturer's prerequisites. This ensures that there are no disruptions and no quality losses throughout the supply chain. In conjunction with manufacturers, and in a systematic process, KPMG in Germany analyzes critical suppliers and identifies optimization measures for them. Existing suppliers are analyzed in detail and then, based on this assessment, risk is continuously scrutinized to estimate the probability of supply issues occurring and to understand and lessen their impact on the supply chain. In this way, the volume of supply-related problems can be minimized.

Partnerships and site selection for a global semiconductor manufacturer

Strategic partnerships are essential in an age of commodity scarcity and labor shortages. This holds particularly true for automotive manufacturers and suppliers within the semiconductor industry. In order to cope with this critical chip shortage situation, the case study client has decided to set up a plant in Germany, in close cooperation with a strategic customer. It has identified a couple of target locations for operations. KPMG in Germany helped to establish the partnerships; assessing major customers from the outset is important for companies setting up their sites in a new country. This ensured planning security and a smooth transition into the new business environment. At the same time KPMG also conducted a site analysis so as to present the most suitable regions in Germany to the client. In addition to cost, environmental and subsidy-related factors, this also involved looking at a number of strategic aspects, as well as the proximity to suitable partners. The various possible locations for this latest partnership were evaluated and benchmarked using the above criteria.

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