Merge ahead: Electric vehicles and the impact on the automotive supply chain
New technologies, changing consumer preferences and intensifying regulation will help reshape the automotive industry in the years ahead. Though autonomous vehicles may pose the ultimate test of automakers and their suppliers’ adaptability, truly driverless cars are still many years away. The transition toward electric vehicles (EVs) and away from those with internal combustion engines (ICE) is a nearer-term, if no less significant, challenge. Auto companies will need to remain nimble to thrive amid this shift.

The rise of EVs poses a particular risk for auto suppliers. Major systems that are essential to ICE vehicles engines are absent from EVs. Makers of exhaust systems, fuel systems, and transmissions face the prospect of disruption as EVs become more mainstream. Those lacking financial flexibility and digital wherewithal are likely to struggle the most. Although PwC expects that adoption will grow at a modest pace for now, EVs’ share of the automobile market will likely begin to expand more rapidly in the medium term. OEMs and suppliers alike should start preparing for that future today.
The automotive market is in for a shock

Transportation accounts for approximately 23% of global energy-related greenhouse gas emissions, and road transport makes up 72% of that, according to the Intergovernmental Panel on Climate Change. In an effort to combat climate change, governments around the world have adopted increasingly stringent emissions limits for light-duty vehicles like passenger cars. While the industry has historically met these higher standards through incrementally improving fuel economy, vehicle aerodynamics and tire technologies, proposed regulations in some automotive markets will require a steep change.

Europe and China will lead the way on EV adoption. The United Kingdom and France both intend to ban the sale of fossil fuel-powered vehicles by 2040, and Germany is offering sizable financial incentives to prod consumers to purchase EVs. For its part, China, the world’s largest automobile market, will begin requiring at least 10% of new car sales be fully electric or plug-in hybrid starting in 2019. To help encourage adoption, the Chinese government offers generous subsidies that averaged $15,000 per vehicle in 2016. Notwithstanding these incentives, our view is the main drivers of sustainable EV adoption will be economic
rather than regulatory, and only when parity in total cost of ownership is achieved will EVs begin to make up a significant share of new vehicle sales. Because we expect this to occur later in the U.S. than Europe and China, we forecast that adoption there will lag behind somewhat. But due to the global nature of the automotive supply chain, OEMs and their suppliers should prepare for the shift toward EVs and away from ICE vehicles regardless of where they are based.

Even though the road to mainstream EV adoption may be lengthy, long vehicle development cycles and lead times mean that important decisions and investments are already being made. Auto companies continue to invest heavily in the technologies that will power the vehicles of tomorrow, even though they are unlikely to see them pay off anytime soon. They have spent $90 billion in EV-focused research and development, an amount which is certain to climb, according to an analysis by Reuters. These investments will drive sourcing decisions in the years ahead.
Does electrification have suppliers on a collision course?
Adoption of EVs will have a profound impact on the automotive supply chain. Even if some markets, such as the U.S., remain heavily ICE-focused in the near term, the global shift to EVs should be top of mind for suppliers everywhere. Indeed, PwC analysis shows that EVs may represent approximately 14% global new vehicle sales in Europe and China by 2025 — up from 1% in 2017. Many suppliers that provide components for vehicles powered by internal combustion engines may face a significant threat if they cannot adapt. Key differences between the makeup of EVs and ICE vehicles reveal which supplier subsectors are most at risk.

**EVs lack many systems essential to ICE vehicles**

Source: UBS Group analysis
In contrast, suppliers are likely to face significant challenges as EVs enter the mainstream. There are two main reasons for this:

- **EVs are radically simpler in mechanical terms...** The electric motors that power EVs comprise far fewer components than a traditional ICE. In fact, the UBS Group compared the Chevrolet Bolt’s engine to a four-cylinder internal-combustion engine and found that the electric motor had three moving parts, compared to the ICE’s 113.\(^7\) In addition, most EVs have single-speed transmissions and have no need for turbo- or superchargers to provide additional oxygen to the engine or exhaust systems to remove waste gases.

- **...But they’re much more complicated in other ways.** PwC Strategy\& anticipates that the share of a car’s value attributable to the powertrain and electronics will rise significantly by 2025, to a combined 52% from 44% in 2015, at the expense of the chassis, body, and interior components, driven in part by a shift toward EVs (increasing in-car connectivity and advancements in driver-assist technology are also factors).\(^8\) The lithium-ion battery pack alone can account for up to 50% of the value of today’s EVs.\(^9\) Battery prices have fallen steadily in recent years and that share will likely be much lower over time. But even so, these batteries are primarily made by companies outside the traditional auto supply chain, creating new competition for legacy suppliers. The fact that some EV battery suppliers are developing expertise in manufacturing electric powertrains further illustrates the risk.
These changes will naturally shrink suppliers’ potential addressable market as EV adoption rises. The share of EVs’ value added by component suppliers might total 35% to 40%, compared with 50% to 55% of an ICE-powered car.¹⁰

**Navigating the road to an EV future**

Change and evolution are a part of all industries. The auto industry has been given a governmental nudge to boost fuel economy in key global markets such as Europe and China, and it seems possible, if not likely, that there will be a substantial shift towards EVs. Were this to happen, the disruption on the automotive supplier base will be profound. For those suppliers that are heavily leveraged and unable to adapt, it could spell financial troubles ahead.

**Suppliers should begin considering how the mainstreaming of EVs will affect their business:**

- **Assess the risk.** Suppliers should develop a realistic point of view on EV adoption in key markets that takes into account the technological and regulatory landscapes and consumer preferences. Then they must take a critical look at product portfolios and determine which components could see slowing demand as EV sales increase.

- **Determine their digital fitness and take a frank measurement of their capacity to innovate.** To compete in the automotive market of the future, suppliers will need more than manufacturing expertise. A high degree of technological acumen will also be required. It will be important for suppliers to honestly assess their ability to compete to provide software and advanced electronics with technology firms outside the traditional automotive supply chain. This competition will take place on their turf.
**Take a hard look at their capital structure.** As competition from non-traditional suppliers ramps up and demand for ICE-related components cools, suppliers need to ask themselves if they have the financial flexibility to remain strategically nimble. Substantial debt burdens may make it more difficult to take risks that will pay off in the long run. While interest rates and risk premiums remain relatively low, it may be a good time to deleverage your capital structure.

**Decide on the best path forward.** EVs won’t enter the mainstream until the mid-2020s, according to PwC’s forecasts. That provides suppliers with a 7-10 year window to prepare. Possible strategic moves include adding software or advanced electronics capabilities, either organically or through acquisitions, joint ventures or partnerships, or planning to exit lines of business that may see slower growth as EV adoption.

Automakers should proactively manage their own exposure to the coming changes in the market, as well. Suppliers that aren’t ready to meet the challenges that rising EV adoption will bring could present a risk to automobile manufacturers at the same time as their own business is evolving. It would be wise for OEMs to future-proof their supply chains to determine if key suppliers are taking the necessary steps to maintain their place as valuable partners in a changing world.
To have deeper conversations about how these trends may affect your business, please contact:

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**Endnotes**

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