

Global overview

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A once-in-a-century transition complicated by geopolitics

A change in technology: from ICE to EVs and software

Many have long anticipated a once-in-a-century transition of the automotive industry oriented around a change in technology.

Most industry analysts expected significant challenges with the transition away from the internal combustion engine (ICE) towards electric vehicles (EVs). Further complexity was expected with the fundamental shift in the driving experience and new sources of revenue enabled by connectivity, sensors and software.

That technological transition, long in process, is accelerating into the mainstream. The share of EVs in the market, while still relatively small, is growing and moving beyond early adopters. Advanced driving technology is becoming ever more prevalent as technology becomes both more robust and less expensive.

Government policy: geopolitics, climate change and energy security

Taking a profound shift in technology into the mainstream is always a complex undertaking, but it is particularly so for the automotive and mobility industry. The industry is massive, operates on a global scale and is economically important in all major markets. The industry's size is not, however, in itself the challenge.

Global scale and economic importance mean the industry is the focus of government policy and of activists. The industry does not have the luxury of focusing solely on commercial issues by 'merely' working to modulate technological change and consumer acceptance in a way that reasonably ensures profitability. Instead, government policy is an increasingly significant factor for the industry. The automotive and mobility industry has always been highly regulated, but geopolitical factors are now increasingly important in government policy, impacting the industry's core operating parameters.

Geopolitics: the United States and the global west versus China and Russia

Geopolitical competition between the United States and China – the world's two largest economies and auto markets – has increased over the past several years. That competition accelerated dramatically as covid-19 laid bare the vulnerability of supply chains. That competition exploded with Russia's war on Ukraine and China's 'unlimited' partnership with Russia.

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These events also expanded the range of governments on the 'front lines' of this geopolitical competition. Increasingly, the United States and the global west (ie, North America, Europe and allies in Asia) are in tension with China (the origin of so many supply chains) and Russia (a major producer of energy and raw materials).

While geopolitical tensions have grown in significance for all major industries, commercial ties remain robust. Cross-border trade between the United States and China again broke records in 2022.

The automotive and mobility industry and its supply chains are strategically valuable

These political and commercial realities are ever more in tension for the automotive and mobility industry because the industry, its core technologies and its supply chains are strategically significant.

Electric vehicles are seen as the future of mobility. Nothing is more critical to an EV than the battery. Battery technology is thus now seen as a strategically significant industry, essential to future economic success.

China is, by volume, the dominant producer of batteries for EVs. China also dominates the supply lines of critical minerals and metals essential to EV production. Many policymakers in the global west have begun to worry that dependence on China for battery supply and critical materials could be more strategically challenging than the world's reliance on OPEC for petroleum resources, particularly if tensions build and commercial relationships are deeply fractured.

China has long recognised the strategic potential of EVs to ease their energy security concerns and allow the nation to capture a strategically significant industry. China's industrial policy has assiduously built this capacity through a particularly deep interconnection between government and industry.

The United States is now responding with its own entry into industrial policy. The Inflation Reduction Act (IRA) and other legislation passed in the United States in 2022 will invest dramatic sums into critical infrastructure, the production of semiconductors and new energy technologies. Batteries for EVs and their supply lines of critical minerals and metals are a particular focus of the IRA.

This industrial policy initiative seeks to bring production to the United States and North America. The considerable subsidies involved around EVs and batteries have concerned allies in Europe and Asia. Those concerns are easing somewhat as the United States has sought to accommodate some concerns while also encouraging those governments to enact their own policies to rapidly increase capacity beyond China.

Batteries are not the only focus of this competition. Advanced vehicles are at the forefront of integrating sensors, artificial intelligence and software to offer rapidly advancing driver assistance and connectivity-related functions. The production of semiconductors and the development of artificial intelligence are also areas of growing geopolitical competition, and thus governmental engagement with the market. Again, the United States feels China's

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industrial policy has given it an edge that US policy seeks to respond to and overcome by leveraging US leadership in technology development.

In past years, we have noted geopolitical concerns impacting policy and forecast their growing importance, but this year those concerns have accelerated to a magnitude of prominence that requires significant attention. As commercial enterprises that operate on a global scale, geopolitical issues are increasingly challenging for all major players in the automotive and mobility industry. This challenge is perhaps most simply evident when one notes that China is now the largest single auto market and the origin of many supply chains, while the United States and the global west summed are an even bigger market and a more open one, but one that relies on Chinese supply for many components. If government policy forces choices, they will be difficult because they will be economically and operationally consequential.

Rapid EV transition: climate change, energy security and economic security

The transition to EVs has long been seen as critical to combating climate change. While EVs take more greenhouse gases (GHGs) to produce than a traditional vehicle with an internal combustion engine, over time the climate impact of EVs is less. The GHG imbalance favouring EVs is expected to become greater over time as battery production becomes more sustainable and energy transition advances to more sustainable generation of electricity.

Concerns about climate change have, particularly in Europe, motivated government policy to require a very rapid transition to EVs.

In China, energy security has been the dominant factor in policies that have advantaged EV production and consumer adoption.

In the United States, concerns about climate change have impacted emissions policy more sporadically and less aggressively than in Europe. Under the Biden Administration, climate and geopolitical concerns have combined to stimulate proposed emissions rules that will force a much more rapid shift to EVs than previously contemplated.

Advanced driving capacity but not robo-taxis

Some envisioned a rapid transition to (fully) autonomous vehicles (AVs) with mobility services provided by 'robo-taxis'. Technical issues were seen as soluble in the very near future and this capacity would pull along consumer acceptance and regulatory development.

This extreme optimism has, in many circles, shifted to extreme pessimism as many assume AV investments are a lost cause.

We have long argued that as to autonomous drive technology, the issue is not so much when as where. Robo-taxis will not in the near-to-medium term be a widely available mobility solution. Yet this reality does not mean that autonomous driving technology is not developing and having a significant impact.

AV technology is advancing in off-road application in agriculture and industry. This capacity will further transform as sensors and artificial intelligence increase capacity.

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Driver assistance technology continues to advance, and its applications are increasingly both more robust and more widespread within new vehicles. This technological revolution is neither as rapid nor occurring where some had expected, but that does not mean it is not continuing to both develop and transform the on-road driving experience.

Cybersecurity and privacy

As advanced driving features expand and connectivity becomes even more robust, vehicles generate ever more massive amounts of data that is economically valuable.

As the value of data expands, so does concern about privacy. Again, government policy is a critical factor. Europe's rules are more rigorous and are expected to remain so. China's rules optimise for national security with little real concern for individual privacy. Rules in the United States are less aggressive than in Europe but evolving.

With connectivity comes concern about cybersecurity, both to protect sensitive data and to ensure the safe operation of the vehicle. In this area, government policy is again key but has been reasonably stable over recent years.

ESG and activism: the 'new' political risk

Environmental, social and governance (ESG) concerns are of increasing importance to every business. ESG disclosures initially were exclusively voluntary and largely seen as a branding function, but such disclosures are increasingly compelled by government action in the United States and Europe.

Sustainability, labour practices, governance rules, data protection, privacy and other issues have long been regulated by governments. ESG concerns add more force and depth to those regulatory efforts. Again, because the automotive and mobility industry is massive in scale and economic significance, it is greatly impacted by these efforts as the industry is a target for activism and governmental action.

Activism over ESG issues is particularly important for the industry. All major companies report on ESG factors. These reports are increasingly the focus of activist groups that use research and social media to advance their cause through publicity that impacts brand value. This research and publicity can also stimulate litigation. Publicity and litigation can also foster government action.

This 'new' political risk is of increasing importance to the automotive and mobility industry. The challenges here will grow as geopolitical factors advance. For example, in the global west, concerns about labour practices in China have received recent attention. This attention poses branding issues for the industry and raises concerns about compliance with current regulations and the development of more stringent rules in the future.

In China, activists have used social media on occasion to generate consumer action against companies that are perceived, either by themselves or by the governments where they are headquartered, to have inappropriately addressed China's concerns. These actions are often paired with governmental action by China to create a powerful dynamic designed to force corporate action.

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Given the increasing geopolitical tensions, it is not surprising that activist activities in China and the global west are sometimes in tension. Appeasing one group can create further issues in another jurisdiction.

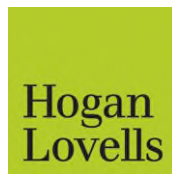
Tension between the demands of activists is far from limited to the geopolitical realm. Often enough, there is significant tension between the goals of competing activists even within a single economy. Addressing the concerns of activists is both of increasing importance and complexity.

Choices and trade-offs but marvellous transformation, too

Aggressive technological change in the context of increasingly challenging geopolitical and climate concerns, all while activism becomes more aggressive, means a time of challenging choices and trade-offs for all in the automotive and mobility industry.

We do not want to minimise those challenges. So much of our work is directed at identifying those issues and trends so we can help those in the industry make informed choices to meet their goals.

Focusing on these challenges, however, obscures the marvellous evolution taking place in the automotive and mobility industry that is positively transforming the future, because transportation is critical to economic, social and personal development. We have expressed this optimism in other forums by discussing what we have termed 'Living Mobility' – a mobility environment that is more inclusive, objective, unifying and sustainable.



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