

Global Trade Virtual Week

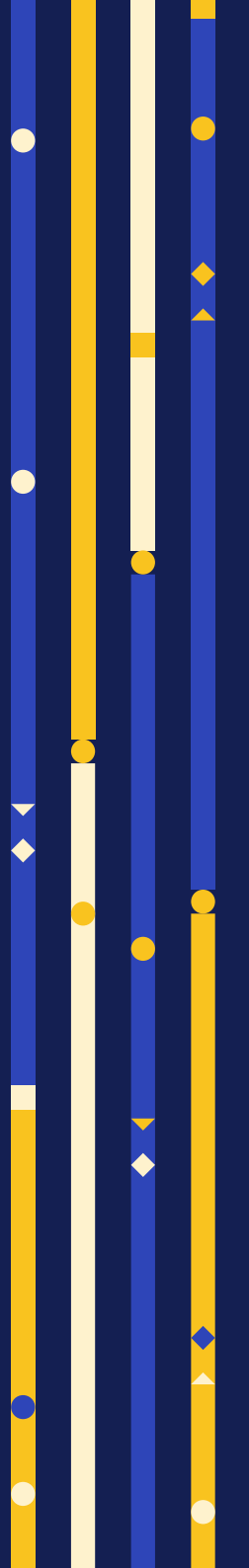
How electric vehicles will redefine geopolitics and why it matters:

Collaboration and strategies for managing the
transition to a greener future

Executive summary, June 28th 2021

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Key takeaways

China has a lead in some areas of electric vehicle (EV) production, but it is not insurmountable. Chinese EV-makers have already gone through multiple product iterations and are way ahead in gigawatt hours of battery capacity produced. But global market penetration for EVs is still low and there is ample room for automakers from other countries to catch up.

Managing when EVs are charging provides most of the benefit of vehicle-to-grid, while being simpler to deploy. Much has been made of the ability of EV batteries to feed back into the grid to smooth the availability of renewable energy. But telematics data suggests there is low-hanging fruit to be grabbed first by optimising one-way flow.

International collaboration in developing the EV ecosystem can take multiple forms. The MIH Alliance is gathering participants from across global supply chains to build on an open EV platform. It is already commonplace to co-ordinate developers from around the world in producing software for the EV ecosystem. Even building local infrastructure can help make EVs more practical in one's region.

EVs may change geopolitics in shape but not in nature. The move from combustion vehicles to EVs will reduce the importance of fossil fuels and the countries that supply them, while suppliers of lithium, cobalt and rare-earth metals will rise in stature. But resources will not cease to be a source of wealth and influence to compete over. Fortunately, EVs shift the key resource dependencies from fuelling the vehicle to producing the vehicle. As a result, price surges or supply limitations aren't as acute and will only affect those buying the particular make and model instead of everyone that operates a vehicle of the same fuel type.

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What have we learned about supply-chain disaster-preparedness?

Are EVs redefining geopolitics?

Sales of battery electric and plug-in hybrid electric cars tipped over the 2m-vehicle mark for the first time in 2019. The achievement reflects changing consumer attitudes and OEMs' investment of billions into R&D and factory redesigns to deliver new electric models. But to meet their full growth potential, the cost of EVs must fall rapidly while driving range increases. This may take advances in battery technology, reduced battery costs and a deepening of global supply chains.

Overcoming the final barriers to EV adoption offers an exciting opportunity for the many automotive collaborations and partnerships now emerging. To consider progress on the transition to a greener future for motoring, on June 28th 2021 three industry leaders took part in a discussion moderated by Roger Atkins as part of The Economist Events' Global Trade Week. Sponsored by Geotab, the session delved into how EVs are changing automotive supply chains and even geopolitics.

The world is playing catch-up to China on "new-energy vehicles"

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Mr Atkins began the discussion by noting that a significant part of the "epic shift" from combustion-engine vehicles to EVs is China's strategy to lead in "new-energy vehicles" and artificial intelligence. In asking panellists whether others could catch up on China's lead, he turned first to insider Jack Cheng, chief executive of the MIH Alliance at Foxconn and co-founder of electric-car company NIO. Mr Cheng considers government support, local initiatives and consumer appetite for change as advantages that distinguish China. The presence of foreign car brands in the country, such as Tesla, also contributes to a dynamic EV-manufacturing ecosystem. Meanwhile, some European players are working hard to gain ground on China.

“

If you want to compare China to others, [the difference] is very strong support from the government and also local initiatives. People here very much like to embrace change, so I think there's more of a chance for China to go into the leadership position [on EVs]. ”

Jack Cheng
Chief executive, MIH Alliance, Foxconn

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Ian Howells, senior vice-president of Honda Motor Europe, concurred that China leads in some areas. For instance, China is way ahead in gigawatt hours of battery capacity produced, “ready to be churning out many times more than Europe and the United States put together”. But electric vehicles still account for less than 1% of those on the roads today, so there is plenty of space for others, including Japanese carmakers, to make up the difference.

Performance data from Chinese EVs, such as those from BYD, Geely, GAC and SAIC, suggests that the designs have already undergone refinements through multiple iterations, says Matt Stevens, board member and electric vehicle strategist at Geotab, a provider of telematics and fleet-management solutions. This is comparable to the refinements Tesla drivers have seen from the original Roadster to the Model 3. Though Chinese manufacturers may have a lead in some areas, “traditional” automakers in the West should not be counted out.

Alternative energy systems are one area where firms outside China are making unique contributions. Although the EV scene is currently dominated by rechargeable lithium-ion batteries, the development of hydrogen fuel-cell technology continues apace”, says Mr Howells of Honda, especially for heavy vehicles. There is also work to be done in making the electricity used for charging or hydrogen fuel production sustainable. Mr Cheng of Foxconn also talked about battery swapping as an alternative model for power delivery. In Taiwan, for example, some scooter and motorcycle brands have swappable batteries that users can charge indoors, including inside the home.

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I worry sometimes that as an industry, we get too excited by the shiny penny of bi-directional flow when we can dramatically increase renewables integration by just having better-managed one-way flow.”

Matt Stevens

Board member and electric vehicle strategist,
Geotab

Mr Howells also looked to the prospect of two-way energy flow, where vehicles whose batteries charge from the grid overnight, when electricity demand is lowest, can feed back into it during high-demand periods. The ability to do this will vary between countries, depending on the available infrastructure. Geotab also sees opportunities in two-way flow, but Mr Stevens wondered whether these distract from the more easily reachable improvements in managing one-way flow, which it has realised in some large fleet deployments.

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Geopolitics and the global EV ecosystem

As the discussion turned to global trade in EVs, Mr Cheng of Foxconn extolled the possibilities for international collaboration through the MIH Alliance initiative, which aims to build an open platform for EVs to speed innovation. The alliance already has 1,680 partners, of which 70% are in Asia and 30% are around the world. Software and ICT-related partners make up 20% of the total. Mr Cheng drew an analogy with the global response to the covid-19 pandemic, which showed the rapid progress that can be made when there is international co-operation and data is shared rather than secret.

In response to Mr Atkins wondering whether it is possible to be too idealistic about global collaboration, Mr Howells of Honda said that at first, the international response to the pandemic had not been encouraging. But eventually barriers started to come down; this will occur in the EV ecosystem as well if it's seen that everybody has something to gain. Infrastructure is currently a sticking point in global adoption of EVs, with some countries, in Eastern Europe for example, having underdeveloped infrastructure to support it.

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If you...start to build the infrastructure in a way where everybody is starting to benefit from it, hopefully that starts to drive co-operation and collaboration, and moves you away from the illusion of self-dependency. ”

Ian Howells

Senior vice-president, **Honda Motor Europe**

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The global supply chains necessary to enable greater EV take-up will eventually come together, but there will be “bumps in the road”, says Mr Stevens of Geotab. The software developers that are part of initiatives like the MIH Alliance are among the easiest parts of the chain to coordinate. As the other links in supply chains are connected and there is a broad migration away from combustion vehicles, it will change the resources that are in demand and the countries that matter, with lithium, cobalt and rare-earth metals taking over from fossil fuels as hot commodities.

Covid-19 has exposed the fragility of complex global supply chains, and Mr Atkins asked whether it is possible to localise them for EVs. This is especially worthwhile for batteries, said Mr Howells of Honda. Batteries don’t travel well, so producing locally improves logistics and speed. There may also be room to localise other elements of vehicle supply chains that are globally distributed today. But he wonders if the shift in resource dependencies from the combustion to EV era will simply shift who has control and ownership rather than distributing it.

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The nice thing about software development is you really can get the best of humanity around the world. ... The kind of software development we’re talking about is new for automotive. It’s not new broadly. So there are a lot of really talented software developers in other industries that we can pull into the automotive pool. ”

Matt Stevens

Board member and electric vehicle strategist,
Geotab

Finding the right balance between privacy, security and the flow of transportation data to unlock supply chains

Key takeaways

Vehicle data is not a monolith. There are different types of data: data that is generated by the driver and is private, data that is proprietary to the companies that produce the engine technology, and aggregate data. Sharing aggregate and anonymised data enables companies and organisations to enhance their operations and use data for good.

The winning cities of the future will be those that master data. Planning and smart-city systems informed by telematics data can make the built environment safer and more efficient for the benefit of all. You can't manage what you don't measure.

The benefits of a data ecosystem

Neil Cawse, the founder and chief executive of Geotab, in his own presentation, discussed how to use transport data to unlock supply chains while maintaining privacy and security.

Over roughly 20 years in business, Geotab has become the world's largest telematics company. Connecting over 2.3m vehicles, the company also leads the drive towards electrification through its proprietary Electric Vehicle Suitability Assessment and by providing support for the largest set of EV makes and models. Nearly half of fleets use telematics solutions to gather rich data insights to enhance fleet management capabilities and to help improve safety, efficiency, productivity and sustainability. Rather than seeing data as a resource, Mr Cawse describes it as being more like a skill: you can combine data as you can combine skills, and you can transfer it to others, improving them as you do so.

Putting data to use entails a balance between maintaining people's privacy and harnessing the opportunity to make the world better that data presents. Fortunately, since combining data makes it a more powerful source of insights, aggregating private data is an attractive solution to privacy issues. Meanwhile, there are also proprietary forms of data, such as those that car manufacturers collect about engine performance using telematics systems, which deserve protection.

Although we may think about the data coming from a vehicle as "a big lump", Mr Cawse says it can be more appropriate to break it up into key parts and send each one to the person or organisation

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that owns or needs it. What is important to understand is that there are different types of data: data that is private, data that is aggregate and data that is proprietary. Understanding the difference and then leveraging the appropriate data can benefit organisations. For instance, when customers share aggregate data from their fleets, they all get the benefit of benchmarking their performance and safety against other fleets, without having to forfeit their privacy. And they can start answering questions like whether their fleet would gain from containing EVs.

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One company can't own all the data. You need to have an ecosystem around data because combining it together makes the data and the insights more powerful.”

Neil Cawse

Founder and chief executive, **Geotab**

Data for good

Data-sharing also has broader benefits. Geotab provides access to free datasets for cities, governments and universities, such as one on dangerous intersections that uses data from areas that see a lot of hard braking. Officials can use that data to investigate those intersections and make them safer. The wide range of data that Geotab's systems process can be put to many and sometimes surprising uses. Windscreen-wiper and air-temperature data can be turned into hyper-local weather reports that warn of dangerous driving conditions like ice on the road, and data sets that show traffic flow between zip codes can inform driver planning. Vibration data from vehicles can identify roads with potholes that need fixing.

For fleet operators or individual drivers, real-world data on vehicle utilisation can help with selecting which EV to buy for a particular use, or when to sell. Traffic data can help work out when is the best time to cross a border or visit a port, speeding along the flow of goods through supply chains.

Although telematics data has great utility, Geotab weighs many considerations—legal, statistical, commercial and political—with stakeholders before deciding to make a dataset available. As one example, could criminals use data on truck parking to find opportunities for theft? Such risks need to be weighed against the ability of governments, businesses and researchers to use that data to improve the world.

Geotab is also willing to work with customers to tailor data-sharing. Mr Cawse described a chemical company that wanted to know what its data was being used for, before it was willing

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to share anything. Their concern was that the data would reveal patented spraying patterns, so Geotab had to customise their agreement to protect the company's proprietary information.

Looking towards the future, Mr Cawse sees a continued role for telematics data in making road and vehicle use more efficient, by simplifying or eliminating toll-booth infrastructure and ticket systems for parking, or calculating new road-use charges to replace revenue from fuel excise as EVs take over from combustion vehicles. In New York, which leads the world in the use of telematics, location data on specific vehicles helps route and service emergency vehicles, street sweepers and snowploughs, while in Sweden, telematics datasets are used in the Vision Zero programme, which is working towards eliminating road deaths. Among cities and towns, says Mr Cawse, the winners of tomorrow will be those that use transport data to plan and optimise their built environment and the activity that takes place within it, improving operations and discovering new efficiencies.

“

These data sets are used by governments and universities around the world in order to analyse smart-city behaviour and make the world a better place for people. ”

Neil Cawse

Founder and chief executive, **Geotab**

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