

Driving the e-mobility revolution

Supportive policies and domestic innovators put China's electric vehicle market streets ahead of global counterparts

By EDWARD TSE and BILL RUSSO

The electric vehicle (EV) market is growing rapidly in China and is now outpacing its Western counterparts. Already the largest auto market in the world, China is now also the largest EV market. It is also the largest car market for many global automakers, including Volkswagen, BMW, General Motors and Mercedes-Benz. As a result, it is becoming essential for these companies to follow China's mandate to electrify transportation.

China's EV policy is largely an outgrowth of the nation's desire to secure the energy resources needed to power China's economic development, along with a desire to level the competitive playing field with global automakers who have long dominated the auto industry with the intellectual property related to conventional fossil-fuel-based propulsion technologies.

China's electrification plans are designed to build a globally competitive domestic set of capabilities that help establish China as the leading supplier of the raw materials and products needed to repower transportation.

Electrification will also permit China to alter its energy mix and expand its use of renewable energy sources. In addition, electrification provides China with an opportunity to establish leadership in segments where foreign companies do not have a deeply rooted technological advantage.

China has selected new energy vehicles, which include battery EVs and plug-in hybrid EVs, for its electrification push, since they offer Chinese companies a chance to leverage China's favorable EV policies and large market scale to secure a place of strength as these enterprises strive to become global electric carmakers. For these reasons, the Chinese government is using a variety of incentives to promote and support the development of the EV industry. These include purchase subsidies as well as tax and license plate exemptions.

In September, China announced its intention to ban the sale of fossil-fuel-powered vehicles, and regulators are working on an implementation timetable. There is also a strong correlation between license plate restrictions and EV penetration for cities that have implemented such measures. By simply making it easi-

er and cheaper to get a license plate, China has significantly expanded the electric car population in these cities. A carbon trading program will be phased in from 2019, and this will push automakers to add more EVs to their product mix in order to avoid a tax penalty.

Facing these dynamic changes, local and foreign original equipment makers are accelerating their investments in EV product development.

Competing in this new business model is no longer just about the engineering of physical hardware. It includes the capability of building a digital ecosystem relationship with consumers, especially in a market like China where companies like Baidu, Alibaba and Tencent are actively investing in future mobility technologies around connected, electric and autonomous cars.

NIO, a Chinese EV startup backed by Tencent, has raised more than \$1 billion and will release its first mass-production EV, the ES8, in early 2018. Tesla, a global pioneer in the electrification of transportation, is planning to build a wholly owned factory in Shanghai's Pilot Free Trade Zone. Tencent, which now owns 5 percent of Tesla, is also investing in NIO and another

emerging disruptor, Byton, in the race to dominate the future of mobility.

Tencent is a cofounder (with Alibaba) of Didi Chuxing, China's top mobility service provider, and is also the lead investor in Mobike, a leading bike-sharing mobility platform. The Internet companies believe that connected, electric and shared mobility is an integral part of Chinese consumers' connected lifestyle. E-mobility is not just about the vehicle hardware, but also about the broader digital ecosystem relationship with the everyday users of the mobility services platform.

There is already a strong indication that the rise of connected, on-demand mobility is accelerating EV adoption in mobility services fleets.

At a sustainable energy summit in November sponsored by the United Nations and the Global Energy Interconnection Development and Cooperation Organization, Didi CEO Cheng Wei said the future of transportation "is new energy vehicles, and ride sharing will be a key link in promoting new energy on the road".

He aims to have 1 million EVs on Didi's platform by the end of the decade, which will account for around 20 percent of the total

number of EVs in China by 2020. Didi has also partnered with NEVS, a Sino-Swedish venture that will manufacture EVs in North China's Tianjin for the ride-hailing giant.

EV technology developments are paving the way for large-scale electrification of transportation.

For more than 30 years, China's auto policy has required foreign original equipment manufacturers to establish joint ventures with local partners in order to access the market. However, in the age of e-mobility, industry dynamics are being fundamentally altered.

Increasingly, Chinese companies are creating product and digital service brands that shift the focus from the hardware to the ecosystem of services that are derived from the hardware. In this new digitally enabled business model, Chinese companies are no longer following, but rather leading, the auto mobility revolution.

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Automakers must look beyond EVs

Manufacturers need to offer sharing and on-demand systems together with mobility services

By AXEL SCHMIDT

The electric drivetrain, which ensures that power gets to the wheels that drive a vehicle, is here to stay. After about 100 years or so in the making, the technology is now close to becoming mainstream.

Last year, electronic vehicle sales grew by about 60 percent worldwide, and industry watchers predict that sales are likely to reach 100 million registered electric cars, or 30 percent of the worldwide market, in 2030.

At the same time, costs for electric drivetrain technology are falling: These are projected to become as cheap as cars with internal combustion engines as early as 2025.

China arguably offers the biggest potential for electric vehicle (EV) sales, due in part to the size and growth of its already existing EV market, and to new regulations. New rules will soon tighten restrictions on carbon dioxide emissions even further, and will require origi-

nal equipment manufacturers, or OEMs, to meet set targets for EV sales.

Chinese OEMs are already among the leaders in EV technologies: All the key players have begun to bring EVs to the market, and the sales for some of these — such as the BAIC EV Series, the BYD e6 or the Geely Emgrand EV — already are in the tens of thousands annually. While this is impressive, there are more opportunities for Chinese automakers.

EV technology not only replaces internal combustion engines, it is poised to change the entire auto industry. That is because it will usher in new industry concepts, business models and strategies. Automakers that want to win in the future must radically rethink their current approach.

For example, since electric drivetrains are much less complex than gasoline or diesel ones, this enables new business models around simplified, cheaper car builds, new infrastructure and new services.

But, even though most OEMs are aware of this, only a few have tried to build such a business.

As a result, new players are entering the market. For example, United States-based EV manufacturer Tesla not only pioneered the idea of a mass-market EV, but has also revolutionized the OEM business model by integrating solar energy and energy storage solutions. And the company continues to innovate around marketing, vehicle sales and charging services.

The electric drivetrain will also be a catalyst for the "mobility-as-a-service" business model, which is set to disrupt the Chinese auto industry as well as other major markets. Mobility-as-a-service integrates a variety of transportation services into a single mobility service that is accessible on demand.

In the next 15 years, EV technology will converge with connected-car and self-driving technology, which will change everything about the way vehicles are built and used.

Self-driving and connected-car

technology will allow for the free sharing and on-demand use of cars that drive themselves, their owners or other passengers to wherever they want to go. And the electric drivetrain will make sure that they do so at very high use rates, with limited need for maintenance and repairs. That is because EVs have fewer moving parts that can wear, tear and break.

The results of this could be revolutionary. Fewer people may choose to buy a car. Some experts believe that the cost of buying a ride in a shared, self-driving electric car could fall below 5 cents per kilometer.

Sales of "legacy" cars are forecast to begin to slow, and the market for "mobility-as-a-service" is expected to explode. Shared vehicles will likely be driven more than unshared ones. And the more EV cars are driven, the more economical battery packs will become.

None of this could happen with EV technology alone — but none of it could happen without it, either. And that is the key takeaway for

every OEM, supplier, and startup: The auto industry of the future will not be run by those who master EV technology alone, but by those who are in the position to master the electric drivetrain, connected-car and self-driving technology, and mobility services.

This means automakers that want to secure a significant share in these markets must not stop at building EVs — but continue to make bold moves in order to master the other three required capabilities.

So, if you are working in the Chinese auto industry, continue to push for new, electric versions of existing models. But do look further also: Pursue bigger ideas and broader strategies that make use of your business' existing strengths and add new ones that will be needed to win the future.

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