Preliminary Analysis of Global NEV Industry Landscape for 2030

Unprecedented changes are currently transforming the global automotive industry, with the rise of new energy vehicles (NEV) set to disrupt the long-established landscape of the industry. A recent analysis conducted by China EV100 and McKinsey & Company (McKinsey) on the global NEV industry landscape for 2030 has identified seven landmark trends and five development paths that provide references for the industry.

I. Seven Landmark Trends of Global NEVs for 2030

1. Development Trends of Global NEV Market for 2030

The global penetration rate of new energy passenger cars is expected to reach 50% by 2030. According to McKinsey forecast, the global passenger car market is estimated to exceed 80 million units by 2030, with nearly 40 million being NEVs. In terms of car parc, the global fleet of new energy passenger cars is on track to achieve 240 million units, nearly 20% of the total.

Figure 1 Development Trends of Global NEV Market for 2030

Source: Public information and McKinsey, compiled by EV100plus

NEV market development varies across regions globally due to different policies, strategies, and promotion efforts. With the increasingly evident economic benefits of NEV's total cost of ownership (TCO) and the enhanced consumer experience brought by intelligent vehicles, The new energy passenger car penetration rate in China is likely to approach 70% by 2030, with sales volume reaching 18 million units. Meanwhile, driven by the ban on internal combustion engine (ICE) vehicles and the development of the local battery industry chain, the EU envisions a sales of 8 million units of new energy passenger cars, leading the industry together with China. In the U.S., thanks to the multi-pronged policies, such as fiscal and tax incentives of the Inflation Reduction Act (IRA) and investments in local industry chains and infrastructure, the vehicle electrification process will gather pace, with an estimated sales of 7 million units and a penetration rate of more than 50% by 2030.

Despite the late start in NEV development and a current penetration rate of only about 2% for new energy passenger cars, Southeast Asia anticipates further growth in the NEV market, spurred by a series of supportive policies and initiatives introduced by countries in the region in recent years. These measures include subsidizing vehicle purchases, accelerating the construction of charging

infrastructure, providing tariff incentives, establishing multilateral trade and cooperation mechanisms, and setting specific development goals. Chances are that the penetration rate will top 20% by 2030, with Thailand, Indonesia, and Malaysia becoming the locomotives.

2. Consumption Trends in Global NEV Industry for 2030

Consumption trends in the global NEV industry are showing a step-change pattern, with intelligent and personalized applications becoming consumers' primary interest in the future. In China, owners of both entry-level and premium NEVs, especially the latter, express a willingness to pay an extra for high-level driving automation due to its widespread adoption. Market research reveals that 53% of premium NEV owners would switch brands to access such a feature.

Consumers in Europe and the U.S. will follow this trend and shift their focus from range, cost of ownership, and battery degradation to intelligent features such as driving automation and smart cockpit applications. By 2030, intelligent features will become more popular and widely accepted by global consumers. China's automotive market will continue to lead global consumption trends and become a key hub for global research and development (R&D). The level of vehicle intelligence will become the main competitive arena for car manufacturers.

3. Global NEV Technology Development Trends for 2030

The cost reduction and iteration of power batteries, as well as the massive application of intelligent technologies such as generative artificial intelligence (AI), will speed up the global adoption of NEVs. In terms of electrification, iterative breakthroughs in power battery technologies, refined processes, increased production capacity, and stabilized raw material prices are projected to axe the cost of lithium batteries by around a quarter by 2030, bringing the costs of ICE and electric vehicles (EV) closer to parity.

In addition, with the prospect of a full-fledged all-solid-state battery industry chain by 2030, the mass production of high-specific-energy and high-safety batteries will further boost the adoption of NEVs. In terms of intelligent technology, intelligent driving will grow more mature and reliable with the advancement in sensors, algorithms, and data processing capabilities. The development of AI, especially the application of generative AI, will also deliver more innovations to the automotive industry, such as driving automation decision-making and customized user experience. Hopefully, the extensive adoption and iteration of intelligent technologies will help slash the selling price of various premium NEVs from around RMB 250,000 to approximately RMB 150,000. The price drop will enable more consumers to access higher-level intelligent features during the vehicle lifecycle, thereby enhancing their driving experience.

4. Development Trends of Global NEV Functions for 2030

Automobile is transitioning from a traditional transportation tool into a mobile intelligent space. With the rise of software-defined vehicles as a trend, the differentiated competition within the industry is focusing more on software and ecosystems than on traditional hardware. Vehicles are

transitioning from mere transportation tools in the past to a third living space and a mobile intelligent space, gradually converging with consumer electronics. They are evolving into products with electronic/electrical architecture at their core, connecting the body domain, intelligent driving domain, power domain, and cockpit domain, and based on vehicle-infrastructure-cloud collaboration.

Empowered by cutting-edge technologies such as generative AI, the NEV's core features will evolve over time and space. In the next 5 to 10 years, the NEV industry will accelerate electrification, connectivity, digital intelligence, and green development. NEVs are poised to become the ultimate carrier for the integration of revolutions in energy, automobiles, consumption, and intelligence.

5. Development Trends of Global NEV Supply Chain for 2023

The global NEV supply chain is witnessing an evolving landscape from "global standardization" to "global regionalization" and "regional differentiation". However, no single country can claim to be self-sufficient in the complete vehicle supply chain. The regionalized large-scale development of NEVs has transformed the previous model of a single supply chain serving the global standardized supply system. By 2030, it is expected that at least eight regions worldwide will each see annual NEV sales exceeding one million units. Moreover, it will drive localized investments in emerging key parts such as power batteries. For instance, with the U.S., Mexico, and Canada in collaboration, North America plans to invest USD 57.6 billion to establish EV and power battery industry chains. According to data from the U.S. Department of Energy, the planned power battery production capacity in North America is expected to reach 1,000 GWh by 2030, nearly 20 times the capacity in 2021. This will be sufficient to support the battery supply for 10 to 13 million local EVs.

Europe is also accelerating the development of its local supply chain and striving to foster domestic enterprises. According to announcements from various European power battery manufacturers, Europe is expected to achieve a local battery production capacity of 1,200 GWh by 2030. In addition to the capacity expansion of European battery plants, power battery manufacturers from China, the U.S., Japan, and the ROK are also establishing plants in Europe at a faster pace, especially in regions close to major automakers, such as Germany and Hungary. Additionally, their supply chain model has shifted from parts exports to "local production for local sales".

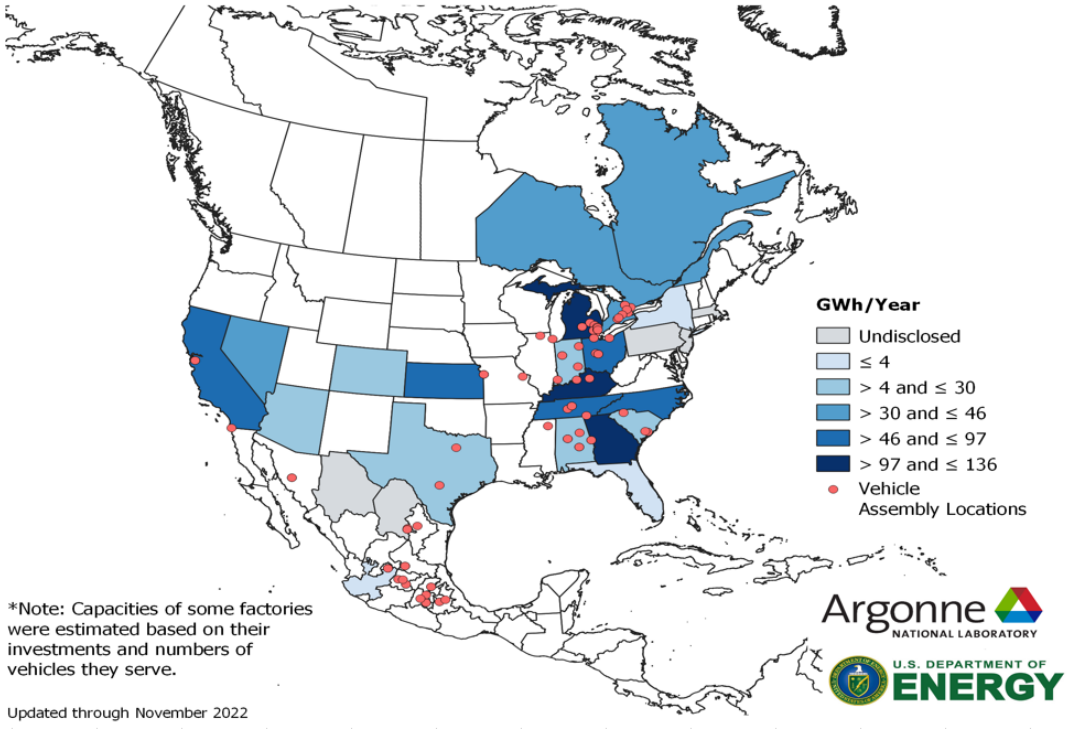

Figure 2 Planned Power Battery Production Capacity in North America by 2030

Source: U.S. Department of Energy, Argonne National Laboratory

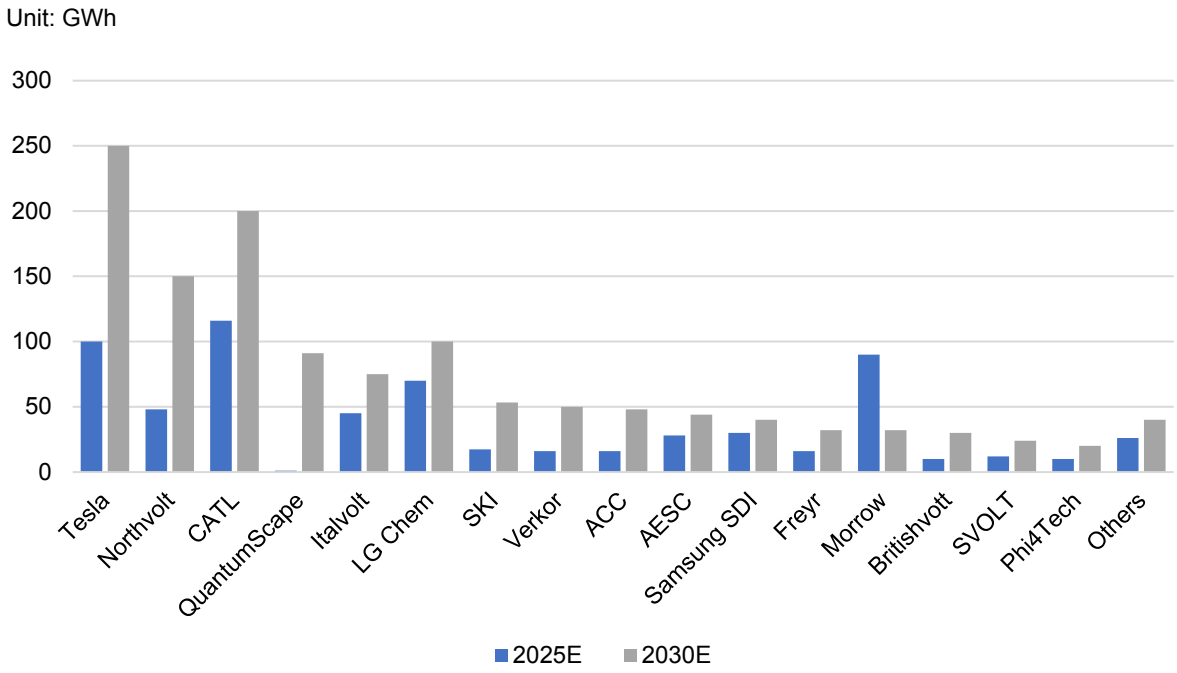

Figure 3 Planned Power Battery Production Capacity in Europe by 2030

Source: Public information, compiled by EV100plus

On one hand, China and Western countries will play different roles in the supply chain. China will become the supply chain center focusing on R&D and production, while Europe and the U.S. will play a key role in innovation. The previous supply chain system driven by Europe and the U.S. will embrace a new development landscape of the "China-Europe-the U.S. triangle". Each region will give full play to its unique strengths based on respective development characteristics. On the other hand, the movement trend toward global regionalization does not suggest a retreat from collaborative development. The top five automakers in terms of vehicle-related patent fillings are dispersed in four different countries, so no single country can completely monopolize or isolate all patent technologies. As is evident, global cooperation in the industry and supply chains will persist.

6. Competition Trends of the Global NEV Market for 2030

China's NEV development is reshaping the global automotive industry landscape. By 2030, Chinese automakers are expected to hold multiple spots among the top ten in global sales. Calculations and deductions of the market share of China's homegrown brands indicate that the country's automotive industry may present two scenarios in the future.

Scenario I: If China's homegrown car brands maintain their current market share of 50% domestically and 7% overseas, the country is expected to occupy 2-3 spots among the top ten global automakers by 2030, in line with the growth of the global car market.

Scenario II: If China's homegrown car brands witness a steady increase in their market share both domestically and internationally, and establish a global competitive edge through NEV exports, China could occupy 3-5 spots among the top ten global automakers by 2030. This may require a domestic market share of 60%-75% and an overseas market share of 10%-20%.

7. Competition Trends of Global Automakers for 2030

In contrast to the relatively stable competition in mature overseas automotive markets, China is experiencing a more intense competitive environment. To address rapidly growing user demands and fierce market competition, Chinese automakers are employing strategies such as speeding up the development of new vehicle models and lowering prices to gain a competitive edge. For instance, the average R&D cycle for a new car model in China has been reduced to 2-3 years, with over 700 new models launched in 2023 alone. Data indicates that the average selling price of vehicles made in China dropped by 15% in 2023, and in February 2024, the price war intensified further, with price cuts ranging from 20% to 30% on some models.

Looking ahead to 2030, as competition intensifies in China's automotive market, mergers and acquisitions among enterprises will gather pace, ultimately leading to a market structure dominated by a few leading players. Over the past decade, the top ten passenger car manufacturers in core automotive markets such as the U.S., Germany, and Japan have remained largely unchanged, collectively holding over 90% of the local market share. Looking ahead, Chinese automakers will move from the current explosive growth to a competition landscape dominated by leading players. The combined market share of the top ten automakers is expected to increase from the current 70%-75% to 90%.

II. Five Development Paths for Enhancing the Core Competitiveness of Global Automakers for 2030

1. In-house Development and Iteration of Core Software and Hardware

Automakers should equip themselves with the capacity to promptly respond to market and user demands for sustained enhancement of product competitiveness. This entails shortening the R&D cycle for new vehicles and accelerating iteration via means such as software and hardware separation and agile development. In this way, continuous over-the-air (OTA) updates throughout the vehicle life cycle can be realized. For automakers with annual sales of around 1 million vehicles, enhancing software R&D can improve production efficiency, potentially reducing costs by USD 210 million and boosting customer satisfaction by 20% to 30%.

2. Exceptional Cost Control

It is critical for automakers to secure a resilient supply chain and cost-effective products in the new energy era. The exceptional control by China's leading players over the end-to-end supply chain can result in an average cost reduction of around 10%. Those leading automakers that have already made a profit can even collaborate with partners in procurement, manufacturing, and engineering and large-scale production across the battery value chain to achieve a cost-down of nearly 20%.

3. Cross-Ecosystem Platform Operation

To enhance global competitiveness, automakers should actively understand and adapt to the specific demands and regulations of different regional markets. This involves the development of specialized models and services customized for each market, as well as deep collaboration with leading enterprises within the local ecological chain. Such regional differentiation, on a global scale, allows for efficient resource allocation, product promotion, and market penetration for automakers.

4. Precise Grasping of Consumer Demands

With a focus on the consumer, the key to the success of automakers lies in improving or even reshaping the customer experience. From a market perspective, total returns are positively correlated with customer experience. Companies that lead in customer experience (with a Net Promoter Score, or NPS, exceeding 28) have seen returns approximately three times those of other companies over the past decade.

5. Efficient and Systematic Organizational Structure

Automakers need to optimize their organizational structure, establish a harmonized corporate

culture, dismantle the “departmental silos” that hinder collaboration among different functional areas, and create a cohesive value assessment system. Through agile transformation, NEV manufacturers can boost their R&D efficiency by an average of 15%, thus significantly strengthening their competitive edge in the market.

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EV100plus is a professional research institution jointly initiated by China EV 100 , authoritative agencies, and leading enterprises in the industry. It carries out research in various fields, including the electrification, intelligence, connectivity and green development of automobiles, as well as the revolution of energy, transportation and urbanization.

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