

Whitepaper on China's Manned eVTOL Market

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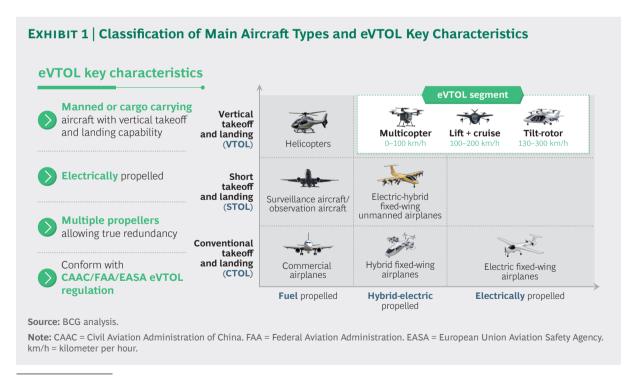
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Whitepaper for China Manned eVTOL Market

1. Market Enablers: China's Skies Are Clearing up for eVTOLs

eVTOL stands for electric vertical takeoff and landing—a new class of aircraft that combines the vertical lift capability of helicopters with the efficiency of fixed-wing flight, powered entirely by electric propulsion. Free from reliance on runways and offering quieter, cleaner operations, eVTOLs are widely seen as the technological foundation for the next era of low-altitude urban and regional air mobility.

From a classification perspective, eVTOLs differ significantly from helicopters, short takeoff and landing (STOL) aircraft, and conventional fixed-wing aviation. Within electric aviation, eVTOLs further segment into configurations such as multicopters, lift-plus-cruise models, and tilt-rotor designs, forming a diverse product ecosystem alongside hybrid and electric fixed-wing aircraft¹. (See Exhibit 1.)



¹ This whitepaper is limited to research in the civilian and commercial sectors, explicitly excluding military applications or activities.

1.1 Key Technological Breakthroughs Unlocking a New Class of Aircraft

The emergence of eVTOL is driven by the convergence of four key technological breakthroughs: electric propulsion, distributed propulsion architecture, next-generation aircraft configurations, and intelligent flight systems. Together, these foundational innovations have redefined what is possible in aircraft design and operation and have laid the technical groundwork for eVTOLs to become both viable and commercially scalable.

• Electrification: Redefining the Powertrain

Unlike traditional internal combustion engines, electric motors are quieter, cleaner, and structurally simpler, dramatically improving the feasibility of low-altitude operations within and around urban environments. Fewer moving parts also mean lower maintenance costs and improved operational reliability.

• Distributed Propulsion: Enabling Redundancy and Aerodynamic Flexibility

In a shift away from the single- or twin-engine configurations of traditional fixed-wing aircraft, eVTOLs typically employ multiple smaller propulsors arranged in a distributed layout. This significantly enhances system redundancy and safety, supports unconventional aerodynamic forms like lift-plus-cruise or tilt-rotor designs, and is foundational for intelligent flight control and dynamic altitude management.

• New Configurations: Architectures Built for Low-Altitude Flight

Enabled by electrification and distributed propulsion, eVTOLs are no longer bound by conventional fixed-wing layouts. They offer new capabilities such as hovering, precision takeoff and landing, and efficient short-range travel—optimized for operations in constrained airspace. A broad spectrum of configurations is emerging, each tailored to specific operational needs, making the eVTOL ecosystem highly versatile.

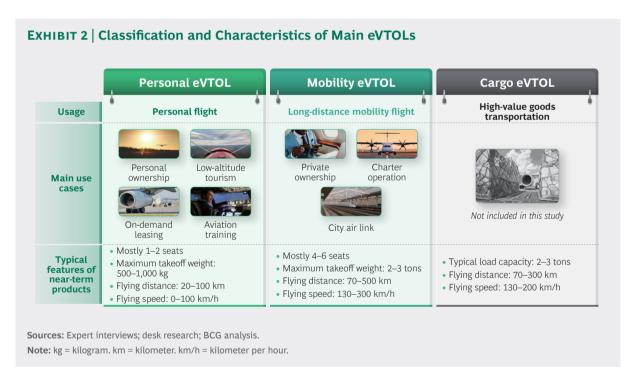
• Intelligence: Smarter and Safer Flight

Advancements in sensing, flight control algorithms, and autonomous piloting have significantly lowered the barrier to entry for eVTOL operations. These technologies are rapidly improving safety and operational efficiency. Looking ahead, they will be essential for enabling autonomous flights and large-scale fleet coordination for eVTOLs.

In summary, the convergence of electrification, distributed propulsion, next-generation configurations, and intelligent systems marks an inflection point where eVTOLs move from conceptual novelty to engineering feasibility. These breakthroughs are not only expanding the design frontier of aircraft but also clearing the path for real-world deployment across a wide range of low-altitude use cases.

1.2 Expanding Use Cases Driving Product Differentiation

As foundational technologies continue to mature and practical pilots progress, China's eVTOL market is beginning to segment by use case. Across aircraft design, technical specifications, and operating models, a growing divergence is emerging, driven by distinct user needs across different flight scenarios. Currently, China's eVTOL market is rapidly evolving into three primary use cases with differing technical characteristics. (See Exhibit 2.)



This whitepaper focuses specifically on the manned eVTOL segment, comprising two primary product categories: personal eVTOLs and mobility eVTOLs. An additional category, cargo eVTOLs, is acknowledged but falls outside the scope of this whitepaper.

- **Personal eVTOLs** serve private flying needs, including direct ownership, weekend tours, road trips, low-altitude tourism, and rental scenarios. These lightweight aircraft typically seat 1–2 passengers, with ranges of up to 100 kilometers and top speeds of around 100 kilometers per hour.
- **Mobility eVTOLs** enable mid-range urban and intercity travel, private charters, and airport/rail transfers. These are generally 4–6 seat aircraft with ranges of 70–500 kilometers and top speeds of 130–300 kilometers per hour.
- Cargo eVTOLs, positioned as low-altitude unmanned freight carriers, can transport 2–3 tons of cargo, cruise distances of 70–300 kilometers, and reach speeds of 130–200 kilometers per hour. They are well suited for urgent "last-mile" deliveries (for example, medical supplies, high-value packages) and transportation in remote regions such as islands and mountainous areas.

1.3 Foundational Enablers Accelerating True Commercialization

For years, eVTOLs have promised to unlock a "third dimension" of transportation, offering a new form of mobility that bridges the gap between road-based travel and conventional aviation. However, for much of the past decade, technical constraints, regulatory uncertainty, and infrastructure gaps have prevented this vision from becoming a reality. Today, that vision is beginning to materialize in China. As foundational market conditions begin to align, the eVTOL sector is transitioning from a niche concept to an industrial-scale pursuit. Players ranging from early-stage startups to leading automotive original equipment manufacturers (OEMs) are accelerating efforts to bring flying vehicles to market.

This momentum is not coincidental. It is the result of four critical enablers maturing simultaneously: strong top-down policy support, a shift from regulatory exemptions to institutionalized approvals, accelerating infrastructure rollout, and a supply chain increasingly ready to deliver at scale. Together, these forces are creating the conditions for eVTOLs to take off—positioning China as one of the most promising markets to achieve scaled commercialization in the coming years.

1.3.1 Policy: Low-Altitude Economy Supported by Central and Local Governments

Since 2021, China has introduced a series of central-level policies focused on developing the low-altitude economy and supporting the eVTOL sector. The term "低空经济" (low-altitude economy) first appeared in the 2021 National Comprehensive Three-Dimensional

Transportation Network Planning Outline, jointly released by the Central Committee and the State Council. It was later emphasized at the 2023 Central Economic Work Conference, which listed low-altitude economy as one of several strategic emerging industries. In both the 2024 and 2025 Reports on the Work of the Government, the term was formally incorporated, marking its recognition as a key component of China's pursuit of "new quality productive forces".

A significant structural development came in late 2024 with the establishment of the Low-Altitude Economy Development Division under the National Development and Reform Commission (NDRC). This division is responsible for formulating and implementing low-altitude development strategies, coordinating mid- to long-term planning, and proposing relevant policy measures. Its establishment signals that the low-altitude economy has been formally integrated into routine governance at the central government level, with greater clarity on its administrative positioning and long-term direction.

At the local level, over 20 provinces and cities have published dedicated development plans or incentive schemes for the low-altitude sector. Many explicitly reference eVTOLs as enabling technologies and include targets such as the construction of landing pads, the launch of air routes, and the clustering of relevant industries. Local policy support is reflected not only in direction guidance, but also in fiscal funding and project implementation mechanisms, providing substantial support for industrial development.

With central-level coordination and local execution, policy framework is taking shape rapidly. With clear direction, established governance structures, and emerging fiscal support mechanisms, China is laying a strong foundation for the accelerated development of eVTOLs under the broader low-altitude economy framework.

1.3.2 Regulation: From Exceptional Approvals to Institutionalized Pathways

The commercialization of eVTOLs depends heavily on the evolution of a fit-for-purpose regulatory framework, including airworthiness certification, pilot licensing, airspace access, and operational standards. In the past, due to the absence of such systems, most eVTOL projects in China could only proceed under special exemptions as experimental flights. Today, the Civil Aviation Administration of China (CAAC) is working closely with industry players to develop a regulatory architecture tailored to the operational characteristics of eVTOLs. This includes dedicated type certification processes, simplified pilot license categories, and a gradual relaxation of low-altitude airspace access. (See Exhibit 3.)

| | Type Certificate (TC) | Production Certificate (PC) | Airworthiness Certificate (AC) | Operation Certificate (OC) |
|---------------------------------|--------------------------------|--|---|--|
| Key concern of regulators | Reliable and safe eVTOL design | Standardized production with aviation-grade quality | Readiness of eVTOL to be delivered to end-customers | Competence to operate eVTOL safely and compliantly |
| Necessity | • Fundamental for eVTOL sales | • Fundamental for mass production | • Fundamental for eVTOL sales | Must-have if used for business purpose |
| Time required | • 2–5 years | • 3–6 months, can apply for PC during TC application | Minimal time needed after obtaining both TC and PC | • 6–12 months |
| Applicant | • eVTOL OEMs | • eVTOL OEMs | eVTOL OEMs applying for a specific product | eVTOL operation companies |
| Authority | • CAAC | • CAAC | • CAAC | Local civil aviation administration |

Under the current regulatory framework, eVTOLs must secure multiple certifications to achieve production and sales, including:

- Type Certificate (TC): Verifies that the aircraft design meets applicable airworthiness standards.
- Production Certificate (PC): Authorizes mass production based on certified standards.
- Airworthiness Certificate (AC): Confirms that each unit is flightworthy.
- Operation Certificate (OC) (where applicable): Required for commercial service.

Among these, the type certificate is the most critical milestone. It ensures that the aircraft meets all required safety and performance benchmarks. In 2023, China issued its first-ever eVTOL type certificate, marking a pivotal shift toward formal regulatory recognition. Multiple models are currently progressing through CAAC's dedicated eVTOL certification pathway, and additional certifications expected in the second half of 2025.

In parallel, China is actively exploring new training systems tailored to eVTOLs. Compared with the conventional private pilot license (PPL), the sport pilot license (SPL) is designed for sport aircraft and applies to operations under visual flight rules. Its training duration is shorter than that of a single-engine PPL (which requires at least 40 hours) and has lower entry requirements, making it well suited for flight experience or lightweight applications. Meanwhile, leading eVTOL products in the market are simplifying pilot operations through intelligent features, thereby reducing barriers to flying and broadening the pool of potential pilots.

Airspace governance is also advancing. In 2024, China released its *National Airspace Classification Guidelines*, formally defining non-controlled zones such as Class G (below 300 meters) and Class W (below 120 meters). These classifications provide eVTOLs with clearly defined operating areas. Local governments, such as those in Shenzhen and Sichuan, are already piloting new application and coordination mechanisms for low-altitude airspace, with simplified and more transparent procedures. Looking forward, there is potential for China's sub-600-meter airspace to be co-managed by local authorities, increasing operational efficiency and flight flexibility.

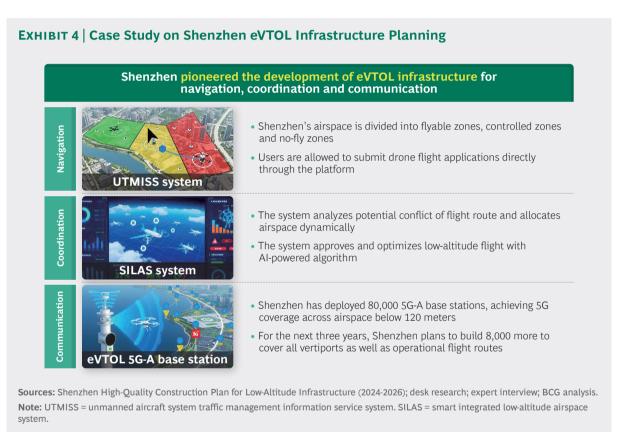
Taken together, these developments signal a decisive shift from ad hoc regulatory exceptions to systematized governance. With institutional progress in certification, licensing, and airspace management, China is laying the groundwork for scaled and sustainable eVTOL operations.

1.3.3 Infrastructure: Implementation of Key Infrastructure Is Accelerating

Compared to traditional civil aviation which typically requires large-scale airports, runways, and radar installations, eVTOLs demand far less from ground infrastructure. In most cases, small landing pads, global navigation satellite system (GNSS)-based navigation, and basic communication links are sufficient. This lightweight configuration lowers the deployment threshold, supports modular and decentralized rollouts, and allows infrastructure to expand incrementally in low-density areas without heavy capital investment.

Leading Chinese eVTOL players are leveraging the technological and industrial leadership of the new energy vehicle sector to pioneer new product architectures. The "vehicle + eVTOL" configuration cleverly integrates ground vehicles to transport eVTOLs and enables access to charge through the existing electric vehicle charger network. Foldable eVTOL designs are also being explored to ease ground storage and parking constraints. These approaches directly address long-standing infrastructure challenges in general aviation and represent a uniquely Chinese solution.

Shenzhen has emerged as a leading pilot city in low-altitude infrastructure planning. Its "four-network system" for low-altitude operations includes integrated navigation, surveillance, communications, and flight services. Local platforms such as the unmanned aircraft system traffic management information service system (UTMISS) and the smart integrated low-altitude airspace system (SILAS) already enable digital airspace segmentation, automated flight plan approvals, and AI-driven route optimization. In parallel, the city has installed over 80,000 5G-A base stations, including several hundred specifically designed for low-altitude air-to-ground connectivity—laying the groundwork for high-frequency, semi-autonomous flight operations in urban areas. (See Exhibit 4.)



That said, infrastructure requirements diverge significantly depending on the use case. Personal eVTOLs, typically flying in isolated, pre-approved suburban areas, require minimal technical support. In contrast, mobility eVTOLs—designed for intercity travel, point-to-point commuting, or public transportation—demand more stringent infrastructure: certified takeoff and landing points, redundant communication systems, integrated flight surveillance, and advanced weather monitoring. These higher operational standards inherently lead to longer deployment timelines and greater system complexity. These factors are expected to drive the development of a more mature mobility eVTOL infrastructure over the next three to five years. (See Exhibit 5.)

| | Personal eVTOL | Mobility eVTOL | | |
|--------------------|--|---|--|--|
| | Typically operates in isolated, pre-approved airspace for short period of time | Designed for longer, higher, and more integrated airspace missions | | |
| Vertiport | Simple pads without permanent infrastructure; FATO ≥1.5x aircraft and TLOF ≥1.0x; low construction cost Regulatory guidance for landing field released | Likely requires certified heliport-grade sites with clear zoning and safety buffers Additional supporting infrastructure (power, parking, access control) needed | | |
| Navigation | in 2024 • GNSS/RTK-based navigation sufficient for point-to-point VFR flights • Minimal complexity or regulatory burden | Requires higher-precision systems (e.g., SBAS, PBN) for route-based navigation Must incorporate terrain and topography data | | |
| Communi- cation | Commercial 4G networks sufficient for low-frequency, visual-flight communications | Typically requires dual-redundant systems (e.g., VHF + 5G) with ATC interface and always-on connectivity | | |
| Surveillance | Normally operating in isolated airspace with limited flight range, thus require minimum surveillance or ATC involvement | Operating in integrated airspace with potential interactions with other users Requires full integration with traffic management | | |
| Weather service | Small flight radius and low altitude allow basic weather visibility, where ground feed often sufficient | Extended range and higher altitudes require aviation-grade weather radar and predictive systems for wind shear, icing, cloud ceiling, etc. | | |
| | Infrastructure needs (e.g., basic GNSS navigation and landing pads) are minimal and low-cost to build Easy to scale if not already built | Longer route-based flights in mixed airspace means more complex infrastructure in all aspects Maturity likely in around five years, with leading cities like Shenzhen actively piloting | | |
| ces: Internation | nal Civil Aviation Organization (ICAO); Civil Aviation Admi | nistration of China (CAAC); China Civil Airports Associatio | | |

Overall, China's eVTOL infrastructure build-out is gaining momentum. Leading cities such as Shenzhen are setting critical benchmarks for what a full-stack, low-altitude digital infrastructure might look like, providing valuable references for other cities in China and accelerating the overall readiness for scaled operations.

1.3.4 Industry: Products Are Maturing as Supply Chain Gets Ready to Scale

Under unique development pathways such as supply chain localization and the integration of advanced aviation technologies with the modernized automotive supply chain system, many of China's leading eVTOL manufacturers are transitioning from research and development stage to production readiness after years of technical validation and iterative development. Several personal eVTOL models are in the final stages of type certification.

This transition is supported by a rapidly maturing domestic supply chain. Core subsystems, including electric propulsion, composite fuselage structures, flight control modules, and navigation systems, are increasingly sourced from leading players across China's aviation and automotive sectors. These suppliers bring proven experience in large-scale manufacturing, cost control, and quality assurance, providing a strong foundation for commercial-grade production. (See Exhibit 6.)

EXHIBIT 6 | Representative Upstream Suppliers for Key eVTOL Subsystems in China

| Key | components | Requirements | Leading | g suppliers (exa | mples) |
|-----------------------|---------------------------|---|-------------------------|-------------------------|------------------------|
| (Dimin) Propulsion | Battery | High energy density and discharge rates (C-rate) | CATL | Farasis Energy | Gotion |
| | Motor | Precision axial/coaxial permanent magnet motors for stable propulsion | Wolong Electric | Enpower | Yingliu |
| Fuselage | Carbon composite airframe | Lightweight composite frame with aerodynamic efficiency | GLAVI Aviation | Hengshen | GuangWei Composites |
| Flight control | Avionics | Real-time flight computing and fault-tolerant control systems | AVIC | Freely Communication | HemsTec |
| | Sensors | Fast and accurate sensing | AVIC | CASC | StarNeto |
| Navigation | GPS/AND unit | Secure satellite LTE/5G data communication with fallback redundancy | Freely Communication | BDStar | ZTE |

Sources: Expert interview; analyst reports; public disclosures; BCG analysis.

As product design and supply chain capabilities continue to align, Chinese OEMs are building a solid foundation for the scaled production of complete eVTOL products. The next wave of flagship models is expected to meet the near-term needs of domestic personal aviation scenarios, while also laying the groundwork for potential international deployment and ecosystem replication.

Overall, China has successfully transitioned from the early concept stage to an eVTOL industry ready to scale. With critical enablers now converging across policy, regulation, infrastructure, and supply chain, the eVTOL segment in China is approaching a structural inflection point. Not only China is on track to become the first major market to achieve scaled deployment, but it is also positioned to build a comprehensive ecosystem, solidifying itself as a long-term global leader in the aerial mobility space.

2. Market Outlook: eVTOL Market Is Poised for Takeoff

China's eVTOL market is approaching a critical inflection point. By 2040, the total market potential is expected to reach USD 41 billion, with an annual sales volume of around 160,000 units. Among these, personal eVTOLs—driven by high-net-worth individuals' demand for premium flight experiences, cutting-edge technology, and outdoor leisure—are expected to lead the charge, reaching a market size of USD 23 billion by 2040, or approximately 55% of the total. Mobility eVTOLs—targeted at private and public transportation—are forecasted to reach USD 18 billion, accounting for the remaining 45%. (See Exhibit 7.)



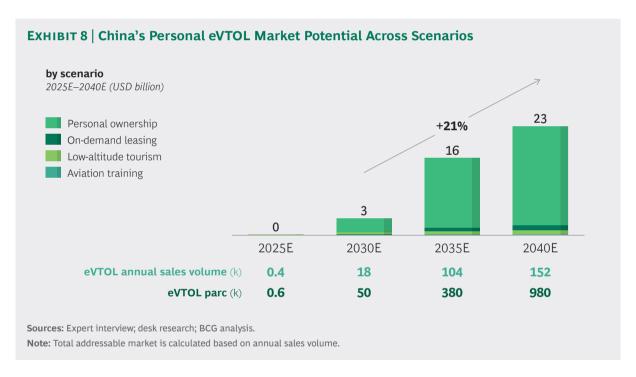
2.1 Personal eVTOLs: Carrier for a Diversified Flight Experience

China's high-net-worth households² are showing increasing demand for premium consumption products—a trend clearly visible in the luxury auto market. Over the past decade, annual sales of vehicles priced above RMB 0.6 million (around USD 80,000) have surged from fewer than 100,000 units to more than 400,000 units, with China's share of the global luxury car segment jumping from 10% to over 20%. This sharp rise highlights

² High-net-worth households are defined as those with net assets exceeding RMB 10 million.

the explosive growth in discretionary spending among affluent consumers. As the broader low-altitude mobility ecosystem matures, personal eVTOLs are expected to ride this wave of demand, emerging as the next-generation lifestyle icon—following in the footsteps of high-end automobiles as a must-have among high-net-worth households.

According to BCG's multi-dimensional model, China's personal eVTOL market potential is projected to reach USD 23 billion by 2040, with annual sales of approximately 150,000 units. More than 90% of 2040 market value is expected to come from individual ownership, driven by rising wealth and demand for status-defining technology products. Complementary use cases such as low-altitude tourism, rental operations, and flight training schools will also play meaningful roles in expanding the addressable market. (See Exhibit 8.)



2.1.1 Personal Ownership

Personal eVTOLs are poised to become a new frontier of flight experience for China's high-net-worth households. Beyond transportation, they offer passengers a sense of personal freedom and aerial exploration, positioning themselves as a next-generation lifestyle icon that bridges upscale consumption with airborne living.

China is home to the world's second-largest population of high-net-worth individuals. By 2024, the number of high-net-worth and affluent households³ in China had reached 7.4 million, growing at an average annual rate of 3% since 2016⁴. This expanding demographic represents the most promising base for early adoption of personal eVTOLs.

Beyond size, China's wealthy households have demonstrated a strong appetite for lifestyle and innovation-driven technologies. Products such as high-end drones, quadruped robots, and experiences such as luxury travel or golfing have seen rapid penetration in this segment—motivated not only by utility but also by identity, novelty, and technological affinity. They will not only be the first to own personal eVTOLs but also play a critical role in driving broader market conversion from curiosity to purchase intent.

Early Market Formation: Led by Mid- to High-End Products

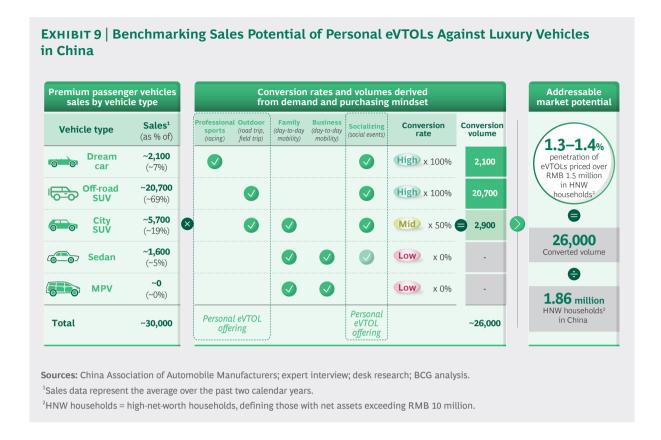
Pioneering OEMs such as XPeng AeroHT are already bringing personal eVTOLs to the market, with initial models of mid- to high-end products priced below RMB 2 million (approximately USD 280,000). These products are targeted at high-net-worth households with net assets exceeding RMB 10 million and are envisioned primarily for weekend recreational flights, family outdoor road trips, and aviation experiences.

To estimate future sales volume for this segment, BCG benchmarked sales of luxury vehicles in the same price range (above RMB 1.5 million, or around USD 210,000), particularly those satisfying similar motivations around exploration, identity, and performance. (See Exhibit 9.) The calculation logic is as follows:

- Surveys and interviews indicate that personal eVTOLs serve demands such as aerial sports, off-grid travel, and social adventure.
- Comparable demand is currently captured by sports cars, off-road SUVs, and urban luxury SUVs.
- Based on a bottom-up estimate of luxury car sales that reflect similar motivations, BCG projects a steady-state annual volume of around 20,000 units for mid- to highend eVTOLs, with penetration potential of about 1.3%–1.4% among target households.

³ High-net-worth households are defined as those with net assets exceeding RMB 10 million, while affluent households are those with net assets exceeding RMB 6 million.

⁴ Data from Hurun China Wealth Report 2024.

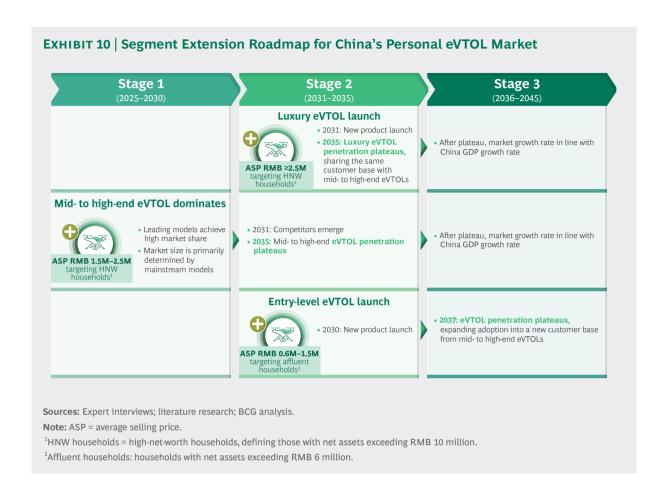


• BCG also reviewed the penetration of other high-end technology, consumer, and premium sports products and services among target households—such as premium cameras, robotic dogs, luxury watches and bags, as well as pilot licenses in the US, golf participation in China, and luxury motorcycles. Across these benchmarks, typical penetration rates range from 1% to 1.7%, supporting the reasonableness of BCG's estimate.

Based on supply and demand trend analysis, we expect the mid- to high-end eVTOL sales to grow rapidly over the next three years. By 2040, sales are projected to reach 24,000 units, with a market potential of USD 5 billion.

Market Segmentation: Expansion into Luxury and Entry-Level Tiers

As the market matures, the personal eVTOL product portfolio is expected to evolve from a single flagship to a stratified lineup—following a typical "first-generation validation, layered iteration" pattern. Within five years of the first product launch, both luxury and entry-level models are expected to be introduced to address broader consumer tiers. (See Exhibit 10.)



BCG anticipates that luxury eVTOLs (priced over RMB 2.5 million, approximately USD 350,000) and entry-level eVTOLs (priced between RMB 0.6 million and RMB 1.5 million, or USD 80,000–210,000) will be launched by 2030. Luxury eVTOLs will continue to target high-net-worth households, while entry-level eVTOLs will focus on affluent households with net assets of over RMB 6 million.

Benchmarking the sales of these products against luxury cars in a similar price range (luxury eVTOLs corresponding to luxury cars at RMB 2.5 million, roughly USD 350,000 and above; entry-level eVTOLs corresponding to luxury cars at RMB 0.6 million–1.5 million, roughly USD 80,000–210,000), as well as considering demand and purchasing mentality, we estimate that by 2040 luxury eVTOLs will reach about 8,000 units annually, with a USD 3 billion market potential, while entry-level eVTOLs will reach around 110,000 units annually, with a USD 13 billion market potential.

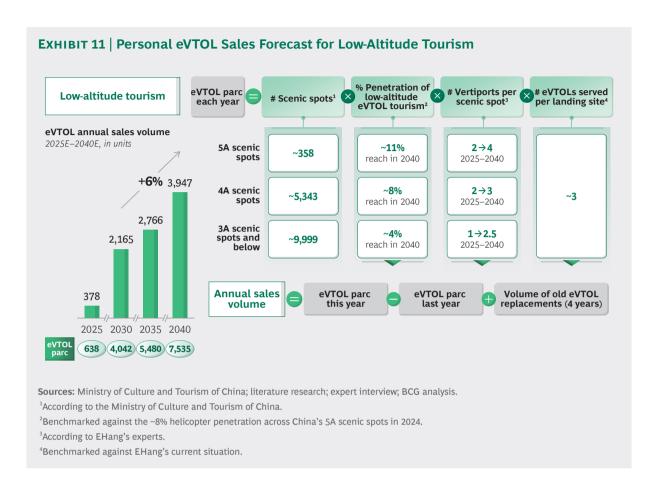
2.1.2 Low-Altitude Tourism

In the low-altitude tourism scenario, personal eVTOLs are emerging as "aerial observation decks," offering travelers new perspectives and reshaping traditional sightseeing experiences. Compared with conventional helicopters, personal eVTOLs demonstrate unique advantages in adapting to both cultural heritage sites and natural landscapes:

- **Lower noise:** eVTOLs generate significantly less noise than helicopters, making them well-suited for flying over nature reserves or heritage sites without disturbing wildlife or disrupting the visitor experience.
- **Greater flexibility:** eVTOLs offer superior operational flexibility, enabling closer flight paths over canyons, lakes, and other hard-to-reach areas—revealing secluded landscapes typically inaccessible to helicopters.
- Lower costs: eVTOLs have lower operating costs. They are cheaper per flight, easier to maintain, and better suited for regularized operation.

As eVTOL products mature, demand for low-altitude tourism is rising rapidly, with operators placing pre-orders for eVTOLs approaching market launch. Benchmarking against current helicopter usage (8% penetration across China's 5A-rated scenic spots), BCG projects that eVTOLs—with their lower cost and superior experience—could achieve 4%–11% penetration across Class-A scenic zones by 2040.

As the market evolves, more areas are expected to open for low-altitude tourism and to build supporting vertiports. Personal eVTOLs will likely expand from flagship attractions to a broader range of tourism destinations, becoming a standardized solution for "aerial sightseeing + short-distance shuttle." These aircraft will connect dispersed scenic points into continuous aerial route networks, further expanding the market scale of this application. By 2040, BCG projects annual sales of around 4,000 units in the low-altitude tourism segment, with a market potential of about USD 800 million. (See Exhibit 11.)



2.1.3 Other Scenarios

Beyond personal ownership and low-altitude tourism, personal eVTOLs will also serve in short-term rental and pilot training scenarios.

Rental use cases are expected to scale in tandem with personal ownership, creating a reinforcing loop of product exposure and consumer adoption. As eVTOLs mature and use cases are validated, outdoor flight camps are projected to attract not only aviation enthusiasts but also mainstream consumers seeking novel experiences—starting as early as 2027.

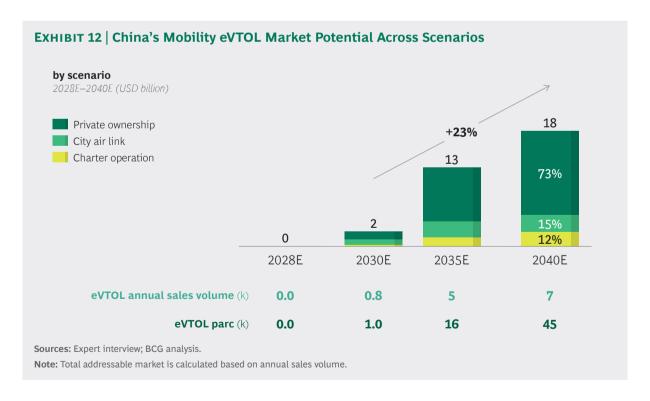
For market potential estimation, BCG benchmarks the rental-to-sales ratio of comparable products and expects personal eVTOLs to achieve a similar rental share of about 5% of personal sales.

Looking ahead, as OEMs and operators accelerate the rollout of flight camp networks—supported by standardized service models and curated flight experiences—the eVTOL rental market is expected to shift from niche novelty to mainstream leisure. By 2040, annual rental fleet sales could reach around 7,000 units, representing a market potential of about USD 1 billion.

In aviation training, eVTOL demand will grow alongside user interest in personal flying. Based on annual license issuance and enrollment trends, this segment is projected to reach a market size of USD 150–190 million over the mid- to long-term.

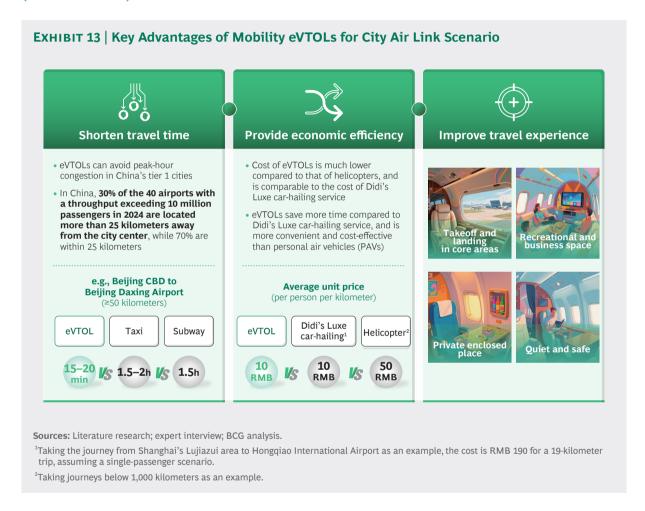
2.2 Mobility eVTOLs: Unlocking Private and Public Aerial Transit

China's mobility eVTOL market is projected to reach USD 18 billion by 2040, with annual sales of more than 7,000 units. From a scenario breakdown, private ownership is expected to contribute approximately 73% of total market potential by 2040. Airport and high-speed rail transfers will account for around 15%, while private charter flights will represent about 12%—forming a market structure where private ownership is the core, supplemented by public transit and charter operations. (See Exhibit 12.)



2.2.1 City Air Link

Airport and high-speed rail transfers are expected to be among the earliest and most promising public use cases for mobility eVTOLs. In these scenarios, eVTOLs are poised to reshape intermodal connectivity with advantages in speed, cost, and passenger experience. (See Exhibit 13.)

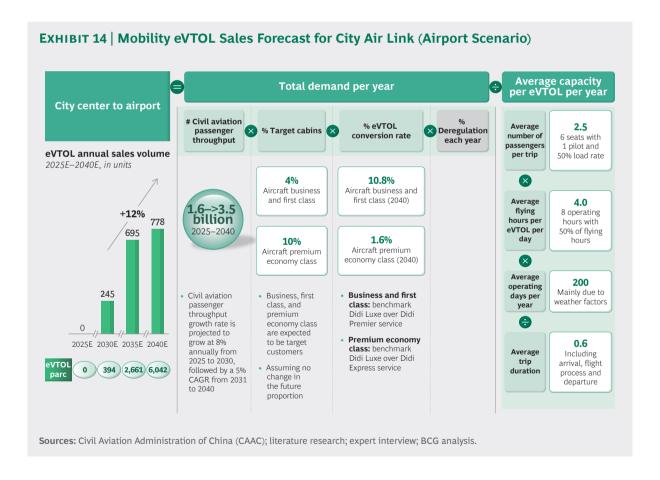


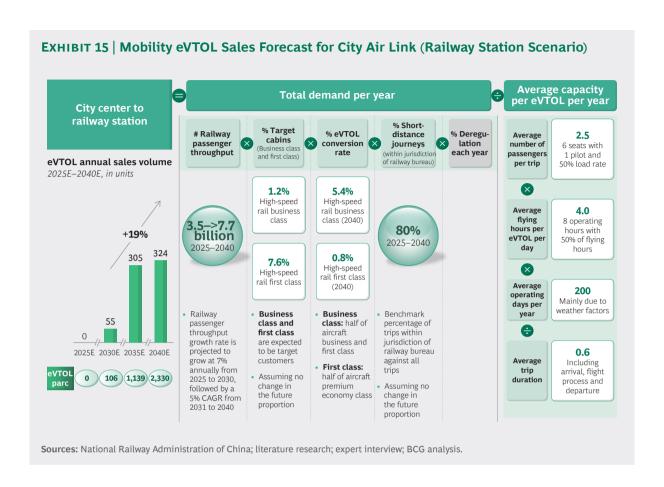
- **Speed:** The key advantage lies in bypassing road congestion in megacities. For instance, traveling from Beijing's central business district to a major airport by eVTOL takes only 15–20 minutes (compared with 1.5–2 hours by car or subway), dramatically reducing travel time for time-sensitive travelers.
- Affordability: The cost of eVTOL travel is projected at RMB 10 per passenger per kilometer, significantly lower than helicopter transfers (around RMB 50 per passenger per kilometer) and comparable to premium ride-hailing fares. For solo business travelers, eVTOLs offer competitive pricing without compromising efficiency.

• **Experience:** eVTOLs will deliver a premium travel experience through central-city takeoff and landing, quiet and private cabins designed for both work and rest, and highly reliable, low-noise operations—offering comfort and convenience beyond current ground transportation options.

Target users for airport links will initially be business and first-class passengers. Over time, with cost optimization and broader consumer acceptance, adoption is expected to expand to premium economy travelers. For high-speed rail transfers, eVTOLs will primarily serve first-class and business passengers.

With accelerating airspace liberalization and vertiport deployment, BCG estimates that city air link applications—spanning both airport and railway terminals—will generate a combined market potential of USD 2.5 billion by 2040, with annual eVTOL sales over 1,000 units. (See Exhibits 14 and 15.)





2.2.2 Private Ownership and Charter Flights

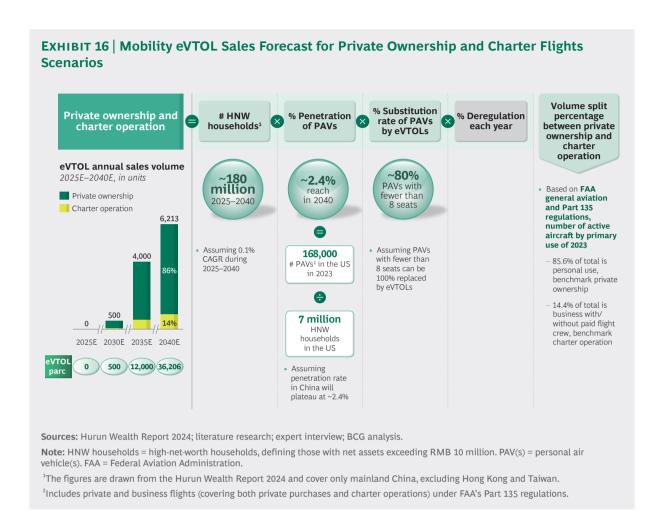
In both private ownership and charter use cases, mobility eVTOLs offer a compelling value proposition for high-net-worth individuals, combining five core advantages: privacy, efficiency, flexibility, safety, and affordability. For this segment, mobility is not merely about point-to-point transportation; it is closely tied to time, discretion, and elevated travel experience. eVTOLs directly address these evolving expectations.

- **Privacy:** Compared with business-class travel on traditional trains or planes, eVTOLs eliminate the need to appear in public spaces, offering discreet transfers—especially appealing to celebrities and other high-profile individuals.
- **Efficiency:** eVTOLs can cut commute times by up to two-thirds compared with private cars, helping high-net-worth individuals reclaim hours lost to traffic and redirect time to higher-value activities.

- **Flexibility:** Unlike trains or planes bound to fixed schedules and routes, eVTOLs enable mid- to long-distance point-to-point flights, removing the need to travel to airports or rail terminals.
- **Safety:** In low-altitude scenarios, compared with single-engine helicopters, eVTOLs equipped with distributed and redundant propulsion systems can be designed with overall configurations tailored to their use cases, incorporate flight safety strategies, and achieve flexible obstacle avoidance during low-altitude flights, enabling them to complete complex missions.
- Affordability: With an estimated price of RMB 20 million (around USD 2.8 million), mobility eVTOLs cost significantly less than traditional business helicopters, making private aerial transportation accessible to a broader range of high-net-worth individuals.

Historically, China's general aviation market has lagged due to tight airspace controls and high purchase and operating costs, resulting in few private aircraft. In a mature market such as the US, private aircraft operate under Part 135 regulations, with a fleet of around 168,000 aircraft for personal and business charter use, and an estimated penetration of 2.4% among individuals with over USD 1 million in assets.

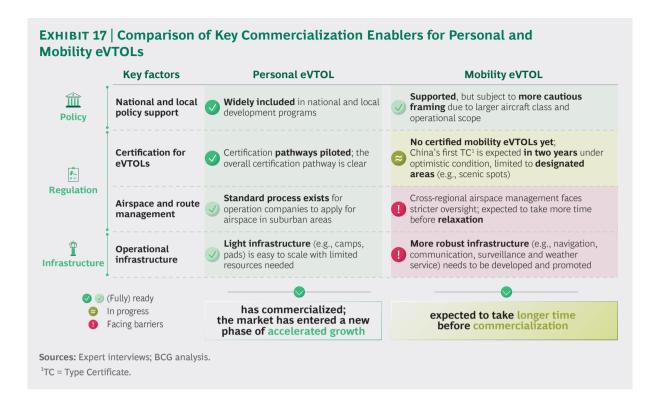
Looking ahead, as airspace management liberalizes, regulatory frameworks evolve, and infrastructure rapidly expands, China's mobility eVTOL market is expected to break out of these constraints and mirror the scale of today's US market by 2040. Based on the US mix of 86% private ownership and 14% charter, and factoring in China-specific market conditions, BCG projects that by 2040 private ownership will reach annual sales of over 5,000 units with market potential of USD 13 billion, while charter flights will reach annual sales of about 9,000 units with market potential of USD 2.3 billion. (See Exhibit 16.)



2.3 Diverging Commercialization Timelines for Personal and Mobility eVTOLs

Both personal and mobility eVTOLs hold significant long-term market potential. However, their commercialization paths diverge notably in pace and complexity. Based on current progress across policy, regulation, and infrastructure, personal eVTOLs are expected to achieve scaled commercialization within one to two years, while mobility eVTOLs are likely to follow a more measured rollout over the next three to five years. (See Exhibit 17.)

Personal eVTOLs, with their lightweight architecture, clearer certification pathways, and growing consumer interest, are emerging as the front-runners. Progress has been made across several key enablers—including type certification approvals, low-altitude airspace applications, and the development of lightweight infrastructure—laying the groundwork for near-term market readiness.



In contrast, mobility eVTOLs are designed for longer distances, higher payloads, and frequent operations, typically within urban transportation contexts. These use cases require higher safety standards and more robust regulatory and infrastructure support. As of July 2025, no mobility eVTOL model has received type certification in China. Achieving true urban air mobility will require significant progress in areas such as airspace integration, vertiport construction, and advanced navigation and communication systems.

Traditionally, commercial aviation sectors have followed a "B2B-first" trajectory—serving institutional users before reaching the broader consumer market. However, recent trends in China's emerging technology sectors have inverted this model. The explosive growth of the drone market, for example, was not driven by enterprise applications such as crop spraying or powerline inspection, but rather by personal users through photography, recreation, and content creation. These consumer use cases enabled rapid product scaling and catalyzed the ecosystem's expansion.

Personal eVTOLs share many of the same characteristics: emotional appeal, experiential value, and alignment with early adopter mindsets. With fewer regulatory barriers and lower infrastructure demands, they are likely to represent the initial commercial breakthrough. By taking off from the consumer side, personal eVTOLs can help mature upstream components and supply chains, paving the way for broader applications and mass adoption over time.

3. Strategic Prospects: Charting the Skies for China's eVTOL Players

A wave of innovation is emerging across China's eVTOL industry, with players making notable progress in components, flight control systems, and full-vehicle OEM development. Within the OEM segment, two distinct business model archetypes have taken shape. (See Exhibit 18.)

| Personal eVTOL | Mobility eVTOL |
|-------------------------|--------------------------|
| XPeng AeroHT X3 | Aerofugia AE200 |
| EHang EH216-S | AutoFlight PROSPERITY |
| GOVY AirCab | TCab Tech E20 |
| ZeroG ZG-ONE | Volant Aerotech VE25-100 |
| Hongqi "Tian Nian No.1" | Vertaxi M1 |
| CHERY flying car | |
| | |

- **Personal eVTOL models**, which center on end-user ownership and use cases such as weekend leisure flights, self-guided air travel, and low-altitude tourism.
- **Mobility eVTOL models**, aimed at commuting and point-to-point transportation, including private air taxis, chartered services, and medium-range corporate travel.

3.1 Development Pathways

Within personal air mobility, leading Chinese eVTOL players are already pursuing differentiated strategies, each targeting distinct market segments through product innovation.

One strategic approach—exemplified by XPeng AeroHT's X3 "Land Aircraft Carrier"—focuses on creating consumer-grade dual-mode products through an integrated "aircraft + ground vehicle" platform. Designed for individual users, the system combines adaptability with ease of daily use: the flying module can be transported and parked within the ground vehicle, deploying seamlessly through automated separation mechanisms; the ground unit recharges the flying module while in motion or parked; and simple controls, supported by intelligent assisted-driving functions, further enhance usability.

Another model, exemplified by EHang's EH216-S, offers eVTOL services through regulated operators in partnership with scenic destinations and tourism groups. In this case, the OEM provides the aircraft while licensed third parties manage operations.

In the mobility eVTOL segment, commercialization remains at an early stage due to regulatory complexity, infrastructure requirements and technical readiness. Potential future business models include pay-per-use air taxi networks and mid-range private aircraft sales or leasing to high-net-worth individuals and corporations.

3.2 Key Capabilities: Navigation for Market Leadership

As China stands on the cusp of unlocking a trillion-RMB eVTOL market, OEMs must act decisively. In the near term, they need to identify and scale commercially viable models to sustain operations. In parallel, they must lay the technical and organizational foundations for long-term competitiveness. We identify four key capabilities to navigate both near-term survival and long-term leadership:

• Prioritize Stable Cash Flow over Long-Cycle Innovation

eVTOL development is capital-intensive and inherently long-cycle. For instance, Joby Aviation, one of the global pioneers, has raised over USD 3 billion across multiple rounds (including post-IPO proceeds), yet has only begun approaching commercial viability. Meanwhile, China's macro headwinds and rising investor caution have led to a downturn in equity financing volumes. While expanding financing channels remains important, OEMs must place greater emphasis on commercialization. Prioritizing near-term revenue streams, especially in models with faster regulatory pathways such as personal eVTOLs, can help secure operational cash flow.

Build Forward-Looking Research and Development Capabilities

Core eVTOL technologies, including airframe design, propulsion, energy systems, flight control, and autonomy, require continuous innovation to meet regulatory and customer standards. While China has strong foundations in powertrain and battery systems, OEMs must adopt a system-level approach to airworthiness, improving safety redundancy and ensuring component-level compliance. They should pursue a technology-first, design-led approach that supports the transition to scaled mass production in the low-altitude economy.

• Establish an Agile and Efficient Supply Chain

Currently, cost-reduction opportunities remain in key eVTOL components such as carbon fiber structures, which are often built to general aviation or commercial aircraft standards. Looking ahead, OEMs must reimagine aerospace supply chains for greater efficiency. One promising path is the "automotive-ization" of the aviation supply chain: through design optimization and supplier management, OEMs can leverage the mass-production capabilities of the automotive industry to deliver components that meet eVTOL airworthiness requirements, while enabling dynamic replacement and cost savings.

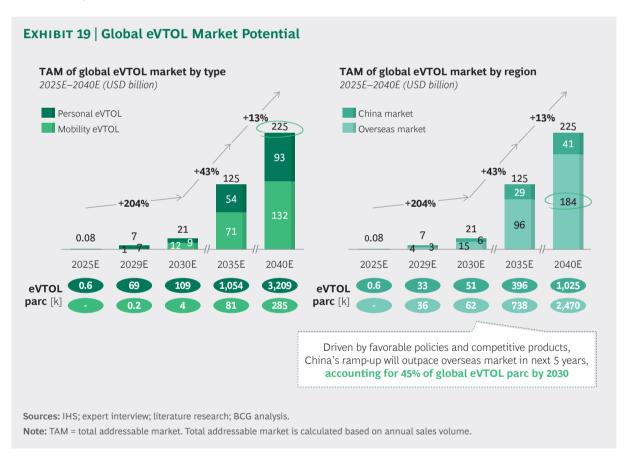
Cultivate a Comprehensive eVTOL Ecosystem

China now hosts over 100 general aviation camps and an increasing number of provincial low-altitude infrastructure initiatives, laying a foundation for the eVTOL industry. Yet challenges remain: existing eVTOL flight infrastructure remains insufficient, and supporting systems—spanning sales, delivery, maintenance, financing, and insurance—are nascent, with limited reference cases and technical standards. To address these gaps, OEMs should adopt a hybrid strategy of direct build-out and strategic partnerships to co-develop ecosystem touchpoints, prioritizing reliability, safety, and customer experience.

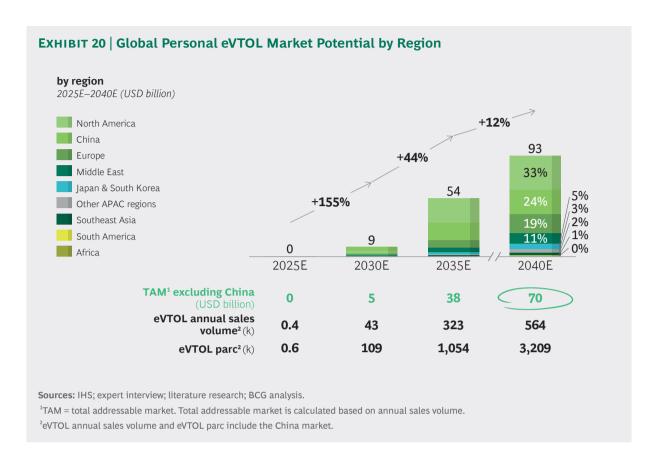
4. Global Potential: New Courses Across Global Crosswinds

Amid the global rise of the low-altitude economy, the eVTOL industry is rapidly transitioning from technology validation to commercial deployment. This evolution is unfolding across diverse trajectories, shaped by varying degrees of regulatory openness, technological maturity, and localized market demand.

Beyond China, the international eVTOL market is projected to reach USD 184 billion by 2040, driven by accelerating innovation and growing ecosystem readiness across key regions. For Chinese eVTOL OEMs, this represents the most significant growth opportunity over the next 10 to 15 years—a new frontier for scale, revenue, and global relevance. (See Exhibit 19.)

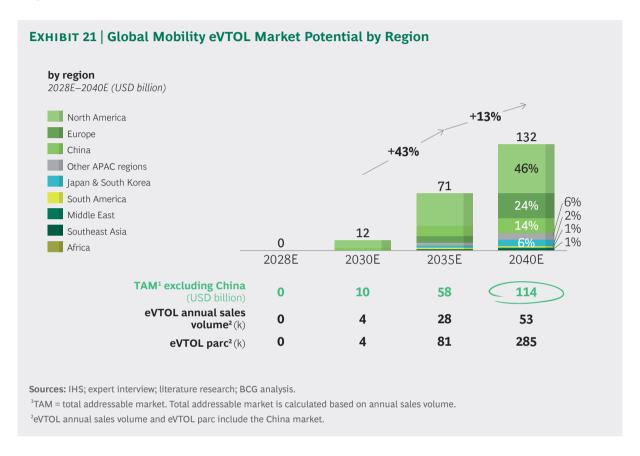


The global personal eVTOL market is projected to reach USD 93 billion by 2040, with North America, China, and Europe forming the three primary growth poles. The Middle East also stands out as a high-potential market. (See Exhibit 20.)



- North America leads with a mature base of affluent consumers, accounting for 33% of global luxury vehicle sales and 43% of global high-net-worth households. Its open airspace—85% of which is classified as non-controlled (Class G)—supports flexible low-altitude operations and nurtures a strong culture of private aviation, such as helicopters and light aircraft. This makes the region a natural early adopter for personal eVTOLs.
- **Europe** has strong technical depth in eVTOL design and propulsion but faces a slower commercial rollout due to stringent certification and urban integration regulations. However, rising consumer interest in sustainable travel and gradual regulatory relaxation are expected to unlock the region's market potential.
- The Middle East is emerging as a dynamic testbed. With high luxury spending and strong government backing, particularly in Saudi Arabia and the UAE, personal eVTOLs are being positioned as strategic infrastructure supported by large-scale pilot projects and regulatory sandboxes.

The global mobility eVTOL market is forecast to reach USD 132 billion by 2040, again led by North America, Europe, and China, with Oceania also gaining momentum. (See Exhibit 21.)



- North America maintains a clear first-mover advantage. Pioneers like Joby Aviation plan to launch services by 2029. The Federal Aviation Administration (FAA)'s Part 23 and Part 135 frameworks provide a clear pathway for eVTOLs to integrate into controlled airspace. Severe traffic congestion in cities such as Los Angeles and New York is also creating real demand for aerial commuting.
- **Europe** imposes stricter standards, including DAL-A safety levels for urban operations, tighter than the DAL-B requirements used elsewhere. Nonetheless, the EU's Single European Sky (SES) initiative is harmonizing airspace, and cities like Paris and London are piloting airport-to-city-center eVTOL routes.

• Oceania is proving to be a policy-friendly frontier. The Australian and New Zealand governments actively support eVTOL trials, simplifying airspace approvals, subsidizing vertiport construction, and positioning eVTOLs as a mobility solution for remote and regional areas. Commercialization of regional interconnection scenarios in these countries is already ahead of some developed markets.

Despite favorable global trends, Chinese eVTOL manufacturers will face four core challenges as they expand internationally:

- Certification Complexity: Global certification standards for eVTOLs remain fragmented and are typically evaluated case by case. Chinese OEMs must repeat certification processes in each market. Even under bilateral airworthiness agreements, the FAA and the European Union Aviation Safety Agency (EASA) impose strict scrutiny on Chinese products. For instance, EASA's SCE-19 standard sets specific requirements for electric propulsion. Certification cycles can exceed three years, significantly longer than those for traditional aircraft.
- Localized Operations: Successful market entry requires localized sales and
 operational networks. OEMs must build relationships with local authorities or form
 joint ventures to secure maintenance, repair, and overhaul (MRO) certifications. In
 Japan, for example, eVTOL operators must obtain Japan Civil Aviation Bureau
 (JCAB)-certified maintenance credentials, which drives up both costs and complexity.
- Infrastructure Bottlenecks: Vertiport construction faces land-use challenges, long permitting cycles, and high costs. Charging infrastructure is another barrier, since eVTOLs demand higher power than electric vehicles, and Chinese firms have limited overseas experience in grid upgrades. Building charging or battery-swapping networks also requires significant capital investment.
- Export and Local Assembly Complications: Products exported abroad must meet the target market's Airworthiness Certificate (AC) and Production Certificate (PC) standards. Local assembly further requires component certification, adding technical and regulatory burdens to overseas manufacturing.

5. Horizons Unbound: China's eVTOL Sector Poised for Ascent

The age of eVTOL is taking flight. What was once considered a bold vision of an "aerial new dimension" is now accelerating toward reality, as policy frameworks, regulatory systems, infrastructure, and industrial capabilities advance in parallel. China's eVTOL sector now stands at a defining inflection point, with the shift from technical validation to commercial scale within arm's reach.

We are witnessing the emergence of a dynamic new industry. Visionary Chinese eVTOL players—driven by foresight and ambition—are rapidly scaling their presence, and a growing spectrum of use case scenarios, from personal ownership to low-altitude mobility services, is beginning to take shape. Looking ahead, eVTOLs are poised not only to redefine the boundaries of flight but also to become a central pillar of the low-altitude economy, unlocking new frontiers in technology, industry, and the market.

Yet the journey ahead is not one to be traveled alone. Every leap in technology requires a collective push—a coordinated effort across government, regulators, enterprises, and ecosystem players. Bridging the gap from takeoff to sustained flight will demand more than capital and innovation; it will require long-term alignment across airspace governance, certification pathways, vertiport infrastructure, operational readiness, and more.

China's eVTOL industry is no longer taxiing. It is ready for liftoff. The skies are open, and the weather is perfect.

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