

Trillion-Yuan Blue Ocean Creates a New Frontier: How to Seize Opportunities Amid the Boom of the Low-Altitude Economy

Xu Yihang

Hefei 168 High School, Hefei, China

Abstract: From the perspective of support priorities, the development of low-altitude economy primarily focuses on four aspects. First, logistics and transportation highlight the use of drone-based delivery and emergency medical transport, enabling faster and more flexible service models. Second, in the area of emergency rescue, drones play an increasingly vital role in disaster monitoring and the supply of essential materials. Third, urban mobility emphasizes pilot programs for electric vertical take-off and landing (eVTOL) aircraft and explores the potential of “air taxi” services, which may transform future commuting patterns. Finally, the advancement of low-altitude infrastructure, including the construction of drone takeoff and landing sites, as well as communication and navigation systems, provides critical support for the sustainable and large-scale development of the sector. Together, these measures create a comprehensive foundation for the integration of drones and eVTOLs into urban and emergency service systems.

Keywords: Low-Altitude Economy; Drone Applications; eVTOL; Urban Mobility; Emergency Rescue; Infrastructure Construction

I. Introduction

The low-altitude economy refers to an integrated economic model centered on low-altitude airspace (generally below 1,000 meters) and powered by carriers such as drones, eVTOLs (electric vertical take-off and landing aircraft), and general aviation aircraft. It covers a wide range of fields, including logistics and transportation, emergency rescue, agricultural protection, and urban mobility. At present, the low-altitude economy is entering a golden era of rapid development. Forecasts suggest that the scale of China’s low-altitude economy will soar to 1.5 trillion yuan this year, and by 2035, it is expected to expand further to 3.5 trillion yuan.

Such a vast market potential undoubtedly provides broad space for growth.

2. National Planning and Support Policies for the Low-Altitude Economy

China attaches great importance to the development of the low-altitude economy and has introduced intensive policies in recent years to promote airspace opening and industrial innovation. In 2010, the central government released the *Opinions on Deepening Reform of Low-Altitude Airspace Management*. In 2021, the *Outline of the National Comprehensive Three-Dimensional Transportation Network Plan* was issued, explicitly incorporating the low-altitude economy into the national strategy. In 2022, the *14th Five-Year Civil Aviation Development Plan* proposed advancing general aviation and the drone industry while supporting urban air mobility (UAM) pilot programs. In 2023, the *Overall Plan for Building a Low-Altitude Flight Service Support System* was issued, aiming to establish a comprehensive service and classified management framework. In 2024, the *Interim Regulations on the Administration of Unmanned Aerial Vehicle Flights* were promulgated, marking the first systematic regulation of drone operations and providing a legal foundation for commercialization. Meanwhile, the *National Airspace Basic Classification Method* was introduced to optimize airspace allocation and accelerate the opening of low-altitude airspace. At this year’s “Two Sessions,” the low-altitude economy was once again elevated to the status of a strategic emerging industry, and the National Development and Reform Commission (NDRC) even established a dedicated Department of Low-Altitude Economy.

From the perspective of support priorities, the focus lies in four key areas: advancing logistics and transportation through drone-based delivery and emergency medical transport; strengthening emergency rescue capabilities with applications in disaster monitoring and material supply;

promoting urban mobility by encouraging eVTOL pilot programs and exploring “air taxi” models; and accelerating the development of low-altitude infrastructure, including drone takeoff and landing sites as well as communication and navigation facilities.

3. Local Practices and Typical Cases

In recent years, many regions across China have listed the low-altitude economy as a key annual task, showing unprecedented enthusiasm for development. Several cities have taken the lead, piloting initiatives and accumulating valuable experience. Among them, Hefei, Hangzhou, Shenzhen, Suzhou, Chengdu, and Chongqing have been designated as pilot cities for the low-altitude economy, each with distinctive strengths that serve as models for others. Hefei leverages its artificial intelligence and integrated circuit industries to focus on intelligent aircraft R&D; Hangzhou capitalizes on its robust internet economy to integrate low-altitude logistics with e-commerce; Shenzhen has achieved significant progress in building a complete UAV industrial chain; Suzhou, with its strong advanced manufacturing foundation, specializes in precision production of low-altitude aircraft components; Chengdu excels in expanding UAV application scenarios; while Chongqing, utilizing its unique mountainous terrain, emphasizes low-altitude emergency rescue and related services.

3.1 Logistics and Transportation

The rapid expansion of China’s e-commerce market has heightened logistics demands, especially in overcoming challenges of high “last-mile” delivery costs, efficiency bottlenecks, labor shortages, and rising costs. Meanwhile, advancements in artificial intelligence, autonomous driving, and the Internet of Things have provided a technological foundation for unmanned delivery, catalyzing a transformation in logistics models.

Shenzhen leads the nation in UAV logistics. For instance, Meituan’s drone delivery service had, by 2024, launched 20 flight routes in Shenzhen, completing more than 200,000 orders with an average delivery time of just 12 minutes—boosting efficiency by 50% compared with traditional methods. In medical logistics, SF Express piloted drone-based blood sample transportation between hospitals, reducing delivery time to 10 minutes, three times faster

than conventional transport.

Hangzhou, leveraging companies such as Alibaba and Cainiao, integrates UAV logistics with smart city development, advancing the “low-altitude economy + digital economy” model. Cainiao’s UAV express service in Future Sci-Tech City covers a 3 km radius, with daily deliveries exceeding 1,000 orders. Notably, in 2023 Hangzhou achieved China’s first intercity UAV organ transport (liver delivery from Hangzhou to Jiaxing), completing the route in just 30 minutes—saving two hours compared with traditional methods.

Hainan, taking advantage of free trade port policies, actively explores low-altitude tourism and cross-border logistics. In 2024, EHang’s eVTOL aircraft launched an aerial sightseeing pilot in Sanya. In 2025, a Haikou–Zhanjiang cross-border UAV cargo route was tested, with a payload capacity of 50 kg and a flight time of only 40 minutes.

Sichuan’s Liangshan Prefecture, a relatively remote region, has seen JD.com establish a UAV logistics network that now delivers medicine and fresh produce to 30 remote townships, cutting delivery costs by 60%.

3.2 Emergency Rescue

During the 2008 Wenchuan earthquake in Sichuan, Mao County became isolated due to disrupted communications and transportation. Fifteen paratroopers risked their lives by making blind jumps from nearly 5,000 meters without ground guidance, weather data, or landing markers—opening a critical aerial rescue channel. Since then, China’s emergency rescue capabilities have advanced significantly, with UAVs playing increasingly important roles in reconnaissance, search and rescue, communications, and supply transport. Their rapid-response capability has proven crucial in disaster relief, significantly improving efficiency.

In 2025, a 6.8-magnitude earthquake struck Shigatse, Tibet, at altitudes above 4,000 meters. Despite harsh terrain and conditions, emergency communication drones were airborne within seven minutes, and rescue teams began operations within 30 minutes. By the following afternoon, authorities announced that “rescue supplies had reached full saturation,” once again showcasing the remarkable speed of China’s emergency response. UAVs equipped with LiDAR and optical cameras enabled 3D

scanning and real-time damage modeling of collapsed structures, allowing command centers to allocate resources accurately while keeping rescue personnel out of high-risk areas. Some UAVs were outfitted with high-powered lighting systems illuminating over 10,000 square meters, providing stable imagery and data—making them indispensable “night-operation tools” for rescuers.

China’s UAV-based rescue technology has also been deployed internationally. During the 2023 Turkey earthquake (magnitude 7.8) and the 2025 Myanmar earthquake (magnitude 7.9), Chinese rescue teams utilized UAVs and advanced technologies, earning widespread recognition for their professionalism, speed, and effectiveness.

Domestically, UAVs are also widely used in forestry disaster prevention, geological surveying, and firefighting. They provide real-time monitoring of forest fires, landslides, and mudslides, support search and rescue operations, and assist in fire suppression. For instance, in July 2025, when a man was stranded in the middle of the Linxi River in Shou’an, Chengdu, firefighters used a UAV to deliver life-saving equipment before deploying a larger drone to airlift the victim to safety.

3.3 Urban Transportation

First, drones are increasingly applied in intelligent traffic management, leveraging their aerial perspective, flexible maneuverability, high-definition imaging, and AI-powered analysis. They can quickly complete tasks such as road condition monitoring, traffic violation detection, accident investigation, and congestion management, significantly enhancing efficiency in traffic operations and emergency response.

Second, drones are being explored as a new mode of transportation. In 2018, the Civil Aviation Administration of China (CAAC) designated EHang’s passenger-grade autonomous aerial vehicle (AAV) as a pilot project for airworthiness certification. Data from EHang’s experiments will serve as a reference for the development of standards in the emerging urban air mobility (UAM) sector. In 2025, EHang established a test flight route in Tianhe District, Guangzhou: a half-hour car journey could be completed in just two minutes by drone, signaling the potential for future “autonomous aerial buses.”

In Tianjin, a new “rail + low-altitude” integrated transportation model is being developed. At

Tuanbo Health City Station on the Jin-Jing metro line (opened in September 2024), the underground level at -30 meters houses high-speed subway trains, the ground level features a smart bus hub, and the rooftop includes a 314-square-meter UAV takeoff and landing platform. This three-dimensional system of “underground rail + ground transport hub + low-altitude network” improves land-use efficiency by 1.8 times, with spatial utilization rising from 62% to 91%.

3.4 Equipment Manufacturing

The UAV equipment manufacturing sector is witnessing robust demand, but it also faces challenges such as rapid technological iteration and intense competition. Shenzhen, leveraging its longstanding strengths in the electronics and information industries and an open innovation ecosystem, evolved from early model aircraft manufacturing to become a global UAV hub. After more than a decade of industrial clustering, Shenzhen has built a complete ecosystem covering R&D, design, production, sales, and after-sales services. It is now home to leading enterprises such as DJI and Fengyi Technology, earning the title of “global capital of drones.”

Chengdu, meanwhile, pioneered the establishment of the nation’s first “UAV 4S store,” leveraging its position as a major transportation hub in Southwest China and its large consumer market. This initiative provides one-stop services including sales, maintenance, repair, and training, effectively driving integrated development across the UAV value chain.

4. Market Outlook for the Next 5–10 Years

With accelerating reforms in low-altitude airspace management, the expansion of pilot cities, advances in battery endurance (e.g., solid-state batteries), chip technology, communications, artificial intelligence, and supporting infrastructure, autonomous flight technology is expected to mature rapidly. Combined with the surging demand for scenarios such as instant delivery and emergency medical transport, both domestic and international institutions generally agree that the low-altitude economy will experience explosive growth over the next 5–10 years.

4.1 Global Market Forecast

According to Morgan Stanley, the global

low-altitude economy is projected to exceed USD 1 trillion by 2030, with China expected to account for more than 30% of the market. The Chinese market for UAV logistics is forecast to expand from RMB 20 billion in 2023 to RMB 200 billion by 2030. Commercial pilots for eVTOL (air taxis) are expected to begin in 2025,

with the market potentially surpassing RMB 50 billion by 2030. By 2025, the market of medical transport is projected to reach RMB 5 billion.

4.2 Growth Forecast of Key Domestic Application Scenarios

Table 1. Growth Forecast of Key Domestic Application Scenarios

Application Scenario	Market Size (2023)	Forecast Size (2030)	Key Growth Drivers
UAV Food Delivery	RMB 2 billion	RMB 50 billion	Instant delivery demand, policy pilots
Medical Supply Transport	RMB 1 billion	RMB 30 billion	Emergency efficiency needs, hospital partnerships
Organ Transplant Delivery	RMB 0.5 billion	RMB 20 billion	Time sensitivity, policy support
Agricultural Plant Protection	RMB 8 billion	RMB 60 billion	Precision agriculture, subsidy policies

5. Development Recommendations

At present, application scenarios such as drone-based food delivery and medical transportation have already demonstrated tremendous potential. In the next 5–10 years, with stronger policy support, technological breakthroughs, and surging market demand, the low-altitude economy is expected to sustain rapid growth and emerge as a new engine of China’s economic development. It is recommended that government agencies, enterprises, and research institutions collaborate to build an integrated development ecosystem featuring

Policy–Infrastructure–Technology–Application, thereby securing China’s leading position in the global low-altitude economy.

5.1 Improve the Policy and Planning Framework

Given the current legal bottlenecks in areas such as airspace rights, liability attribution, insurance, and data security, it is advisable to accelerate legislative efforts on low-altitude airspace management and promote the enactment of a Law on Unmanned Aerial Vehicles. At the national level, UAV operations should be incorporated into strategic plans such as the Outline for Building a Strong Transportation Power, ensuring unified regulation and management.

Local governments may draw on the experiences of cities such as Beijing, Shanghai, and Shenzhen while tailoring policies to their own geographic and economic conditions. For instance, plains regions with convenient transportation could prioritize the development of drone logistics and aerial tourism, while

mountainous areas with complex terrain and limited ground transport may focus on emergency rescue and agricultural applications.

5.2 Accelerate Infrastructure Construction

High-quality development of the low-altitude economy requires robust infrastructure support. In line with national plans for the construction of general aviation airports, it is essential to proactively plan UAV air routes, takeoff and landing sites, and other hardware facilities based on anticipated application scenarios. At the same time, active efforts should be made to integrate 5G networks and BeiDou-based high-precision navigation to enhance flight control and operational safety.

5.3 Promote Technological Innovation in Equipment

Efforts should focus on extending UAV endurance, strengthening control systems, expanding functionality, and improving adaptability to special environments such as extreme temperatures, strong winds, and complex terrains. Through supportive policies, resources from across society should be mobilized to advance UAV hardware and software R&D, while also facilitating airworthiness certification to accelerate commercialization.

Regions that are currently lagging behind in development may attract technologically advanced enterprises with proven operational experience through cooperation, joint ventures, or investment, thereby achieving rapid local growth in the low-altitude economy. Additionally, governments can foster innovation by establishing industrial support funds, offering R&D subsidies, and organizing innovation and

entrepreneurship competitions, encouraging local enterprises to strengthen technological breakthroughs and expand business applications.

6. Conclusion

The rapid advancement of drone and eVTOL technologies highlights their growing importance in logistics, emergency rescue, urban mobility, and low-altitude infrastructure. By fostering supportive policies, building pilot programs, and strengthening infrastructure, these innovations can significantly improve efficiency, safety, and connectivity in modern society. However, challenges remain in regulatory frameworks, airspace management, and technological integration. Moving forward, collaborative efforts between government, industry, and research institutions will be crucial to fully unlock the potential of low-altitude economy and ensure its sustainable development.

References

- [1] Civil Aviation Administration of China (CAAC). (2023). *Guidelines for the Development of Low-altitude Economy*. Beijing: CAAC.
- [2] Liu, Y., & Zhang, H. (2022). "Development prospects and challenges of eVTOL in urban air mobility." *Journal of Transportation Systems Engineering and Information Technology*, 22(5), 45–54.
- [3] Campbell, J., & Racherla, P. (2021). "Drone logistics and the future of last-mile delivery." *International Journal of Logistics Research and Applications*, 24(2), 123–139.
- [4] Yang, M., & Chen, X. (2022). "Application of UAVs in emergency rescue and disaster management." *Natural Hazards*, 113(1), 567–583.
- [5] Thippavong, D., Apaza, R., Barmore, B., et al. (2018). "Urban Air Mobility Airspace Integration Concepts and Considerations." *AIAA Aviation Forum*, Atlanta, GA.