

The Operation Mechanism and Path Selection of Low-Altitude Economy to Boost New Quality Productivity

Ji Yaming

Hebei Provincial Transportation Planning and Design Research Institute Co., LTD., Shijiazhuang, Hebei, China

Abstract: New quality productivity represents the direction of advanced productive forces and is a key force driving high-quality economic development. As an emerging economic form, the low-altitude economy harbors significant potential for fostering and developing new quality productivity. This paper delves into the operational mechanisms by which the low-altitude economy promotes new quality productivity and explores corresponding path choices, aiming to provide theoretical support and practical guidance for achieving their coordinated development.

Keywords: Low Air Economy; New Quality Productivity; Operation Mechanism; Path Selection

1. Current Situation of Low-Altitude Economy at Home and Abroad

1.1 Domestic Development Status

In recent years, the domestic low-altitude economy has developed rapidly, making significant progress in policy, technology, and market aspects. The state has provided strong support, with the mention at the Third Plenary Session of the 20th Central Committee and in government work reports, ensuring sufficient policy support for the development of the low-altitude economy. Local governments have responded positively, with over 30 provinces incorporating it into their local reports or issuing policies to provide assistance in various areas such as industrial support, financial backing, and airspace opening, to create a favorable policy environment; in terms of market size, according to calculations by CCID Consulting, China's low-altitude economy market size reached 670.25 billion yuan in 2024, with projections for 2025 The total can reach 859.17 billion yuan. Among this, the market size of low-altitude aircraft manufacturing and low-altitude

operation services accounts for nearly 55%, while other sectors indirectly generated by quality improvements contribute close to 40%. The contribution from low-altitude infrastructure and flight support is relatively low, indicating significant potential for development. In the cutting-edge track, civilian drones have become the main model driving the growth of the low-altitude economy. According to data from the China Air Transport Association, by the end of August 2024, the number of registered drones in China reached 1.987 million, with 220,000 drone pilot licenses issued, representing increases of 56.8% and 13.9% respectively compared to the end of 2023 %; The industrial scale of electric vertical take-off and landing aircraft (eVTOL) has been greatly increased. According to the calculation of CCID Consulting, the market size of eVTOL in China will be 980 million yuan in 2023, and is expected to increase to 5.75 billion yuan in 2025.

1.2 Development Status Abroad

The development of low-altitude economy abroad started earlier, accumulating extensive experience in technology research and development, market application, and operational management. Currently, the United States is the world's largest consumer of general aviation and manufacturer of general aircraft, boasting a fairly complete infrastructure and a large number of general aviation aircraft, with its industrial development level leading other economies. Relevant data shows that the U.S. has over 5,000 general aviation airports; the number of registered aircraft remains stable at more than 200,000; the number of pilots exceeds 800,000, accounting for 0.24% of the total population; and the contribution to U.S. GDP exceeds 0.5%. At the same time, it relies on a solid foundation in general aviation The aviation industry foundation allows the United States to fully tap into market forces, leading the

continuous development of low-altitude economy. The EU primarily focuses on four major areas: airport operations, air traffic services, air traffic management, and aviation infrastructure. Germany, in particular, concentrates on industrial and logistics applications, adopting a social-market model. By combining social demand with market traction, it promotes investment in low-altitude technology and simplifies drone registration for companies, encouraging low-altitude economic firms like Volocopter and Lilium to develop products such as air taxis and manned aircraft, thereby securing a leading position in the low-altitude economy.

2. The Operation Mechanism of Low-Altitude Economy to Boost New Quality Productivity

2.1 Technology-Driven Innovation

In terms of aircraft technology, eVTOL is regarded as a crucial solution for future urban air transportation due to its unique vertical takeoff and landing capabilities and environmental benefits. In recent years, with deeper research and development in eVTOL, its endurance has further improved, and application scenarios have become increasingly diverse. For example, in Shenzhen, low-altitude manned flights exceeded 28,000 times in 2024, and some eVTOL aircraft have achieved an endurance of up to 200 km. This breakthrough makes eVTOL more feasible for applications such as urban commuting and tourism. For instance, Fengfei Aviation's eVTOL "Shengshi Long" was launched at the beginning of 2024. The first demonstration flight across the sea and city between Shenzhen and Zhuhai has been completed, reducing the ground travel time of about 2h between the two cities to 20min, greatly improving the travel efficiency and showing the infinite potential of eVTOL in inter-city transportation.

2.2 Application Scenario Expansion

In the application of low-altitude economy in logistics and public services, significant achievements have been made, bringing new solutions to address the pain points of traditional industries. Taking the logistics sector as an example, the development of drone freight is transforming traditional logistics models. In 2024, 94 new drone freight routes were added nationwide, with Shenzhen seeing over 700,000 cargo flights and a 50% increase in delivery time.

Drone freight, due to its fast speed and no terrain restrictions, can achieve rapid cargo delivery, especially in remote areas and congested regions where the advantages of drone freight are more pronounced. For instance, Meituan's drone delivery service has been implemented regularly in multiple districts of Shenzhen. The commercial operation of the company has been standardized and scaled up, with the average daily transportation volume exceeding 20,000 tickets; the "Greater Bay Area 2-hour logistics circle" created by SF Fengyi has greatly improved the efficiency of logistics distribution and saved logistics costs through the coordinated operation of drones and ground logistics network.

3. Path Selection to Promote New Quality Productivity

3.1 Deepening the Reform of Low-Altitude Airspace

The openness of low-altitude airspace should be further increased, and low-altitude airspace should be reasonably designated. This should take into account the geographical environment, economic development level, and the needs of low-altitude economic activities in each region to finely delineate control airspace, surveillance airspace, and reporting airspace, clarifying their scope and usage rules. The approval procedures for general aviation flights should be further streamlined and simplified to reduce the number of approval steps and operational restrictions. Efforts should also be made to enhance low-altitude flight control capabilities, reasonably designate low-altitude airspace, and reduce safety hazards associated with "low, slow, and small" aircraft. In densely populated urban areas, dedicated airspace should be planned for low-altitude logistics distribution and low-altitude tourism activities to prevent conflicts with other flights. Conflicts are avoided and the safety of airspace use is increased.

3.2 Improve the Layout of Low-Altitude Infrastructure

Construction of takeoff and landing sites should be planned reasonably based on the functional positioning and needs of each area. In urban areas, emphasis can be placed on setting up takeoff and landing points for passenger transport and logistics distribution. For example, Shenzhen has built multiple such points in

densely populated and commercially active areas like Nanshan District to meet the city's low-altitude transportation needs. In contrast, remote regions and rural areas should focus on setting up takeoff and landing points for agricultural operations and emergency rescue, such as establishing points for drone crop protection in major agricultural counties to enhance agricultural productivity. The construction of general aviation airports should take into account factors like geographical location and economic development levels to establish a hierarchical structure. A clear and well-functioning network of general aviation airports. Economically developed areas with active low-altitude economies should accelerate the upgrading and transformation of general aviation airports to enhance their service capabilities and support levels; less economically developed regions should plan the construction of general aviation airports based on local specialty industries and development conditions, thereby reserving space for the development of low-altitude economies.

4. Development Recommendations

4.1 Solve Industry Pain Points and Seize Key Resources

Accelerate the construction of an operational service supervision platform, build a low-altitude intelligent network, and lead the establishment of a low-altitude flight supervision service platform operation and maintenance cooperation alliance. This alliance will include relevant departments of provincial and local governments, leading enterprises in the telecommunications industry such as China Telecom, China Mobile, and China Unicom, as well as low-altitude technology innovation companies like Warrant Aviation and Shishi Technology. Research and layout areas including low-altitude airspace planning, infrastructure construction for low-altitude service centers, operation of flight supervision service platforms, and comprehensive inspection and testing systems.

4.2 Focus on Strategic Cooperation and Build a Shared Park

Leverage the favorable opportunities presented by the state's development of general aviation equipment, low-altitude economy, commercial spaceflight, and Beidou infrastructure, which have been included in the scope of special bonds to support project capital. Focus on resource integration, strengthen leadership and organizational coordination in the industrial chain, actively engage with leading R&D and manufacturing enterprises in industries such as industrial drones and eVTOL, and provide services including technology research and development, production, and operational support. Cultivate new models like capacity sharing and collaborative manufacturing to reduce production and operation costs.

5. Epilogue

In summary, the low-altitude economy, as an emerging economic form, has unique advantages and potential in promoting the development of new-quality productive forces. By deeply understanding its operational mechanisms and choosing appropriate development paths, we can maximize the role of the low-altitude economy to accelerate the rapid development of new-quality productive forces, injecting new momentum into high-quality economic growth.

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