
Research on the Path of Land Port National Logistics Hub Promoting the High-End Development of Suining's Industry: Based on the Perspective of "Three-Chain Linkage"

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Abstract: This paper first analyzes the current development status and functional positioning of Suining Logistics Hub, identifies its nodal role in the Chengdu-Chongqing Twin-City Economic Circle and the Western Land-Sea New Corridor, as well as the core bottlenecks faced by its current industrial upgrading. It proposes a practical path centered on the "Five-Dimensional Integration" (hub potential, industrial quality and efficiency, opening-up pattern, people's shared prosperity, and green driving force), which is of great significance for promoting regional coordinated development and the construction of the national logistics hub network.

Keywords: Land port national logistics hub; Industrial high-end development; Three-chain linkage

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1. Research background

The Report to the 20th National Congress of the Communist Party of China clearly requires "accelerating the construction of a modern industrial system and promoting the optimization and upgrading of industrial and supply chains". In August 2024, the Sixth Plenary Session of the 12th Sichuan Provincial Party Committee deployed the strategy of "promoting the construction of industrial clusters and strengthening chains for key industries in the province and advancing the high-end development of the manufacturing industry". In October 2024, the Tenth Plenary Session of the Eighth Suining Municipal Party Committee further put forward the goal of "accelerating the construction of a logistics hub bearing city in the province and promoting the upgrading of leading industries' energy levels and value enhancement." The three form a three-dimensional policy support system connecting national strategic orientation, provincial industrial layout and municipal practical paths from top to bottom, providing a clear strategic anchor and implementation reference for this research.

As a hub node of the Western Land-Sea New Corridor and the geometric center of the Chengdu-Chongqing Twin-City Economic Circle, Suining, despite its location advantages, faces the development bottlenecks of insufficient agglomeration of traditional industrial factors and low value chain level, and is in a critical stage of iterative upgrading from "corridor

economy” to “hub economy.”

2. Literature review

2.1. Land port national logistics hub

Monios et al. (2021) believed that inland ports are not only distribution centers for logistics activities but also important engines for promoting regional industrial upgrading and economic growth ^[1]. Acciaro et al. (2022) discussed the role of inland terminals (including inland ports) in enhancing supply chain resilience ^[2]. Wang et al. (2023) pointed out through empirical analysis that the construction of land port logistics hubs has significantly promoted regional economic growth ^[3]. Chen et al. (2024) analyzed the coordinated development mechanism between land port logistics hubs and regional industries ^[4].

Researchers at home and abroad have conducted in-depth and detailed studies on the functional positioning, economic effects of land port national logistics hubs and their coordinated development mechanisms with regional industries. Based on previous research results and combined with the specific development reality of Suining, this paper is committed to exploring the paths and strategies for Suining to promote high-end industrial development through the construction of land port logistics hubs.

2.2. Industrial high-end development

Hobday et al. (2021) analyzed the paths for latecomer enterprises to achieve innovation and upgrading in the global value chain ^[5]. Kaplinsky et al. (2022) discussed the impact of the global value chain on the future development of the manufacturing industry ^[6]. Li et al. (2023) proposed industrial high-end development paths suitable for China’s national conditions through a comparative analysis of industrial high-end practices in different regions ^[7]. Zhao et al. (2023) deeply explored the mechanism of technological innovation in industrial high-end development ^[8]. Liu et al. (2024) evaluated the effectiveness of industrial high-end development using the global value chain theory ^[9].

At present, although scholars have conducted in-depth analysis on industrial high-end development from multiple dimensions, there are few studies targeting Suining as a specific region. Therefore, this paper aims to explore the specific paths and strategies for Suining to achieve industrial high-end development through “three-chain linkage,” to provide a useful reference for relevant research and practice.

3. Current situation and existing problems of the land port national logistics hub promoting Suining’s industrial high-end development

3.1. Current situation of the land port national logistics hub promoting Suining’s industrial high-end development

As an important node city in the Chengdu-Chongqing Twin-City Economic Circle, Suining has gradually transformed from a traditional logistics node to a regional economic hub in recent years.

3.1.1. Accelerated construction of logistics hubs and formation of multimodal transport system

Suining Land Port National Logistics Hub has formed a multimodal transport network with railways as the core and coordinated road, railway, water, and air transport. In 2023, the cargo throughput of the hub increased by 28% year-on-year, and the annual cargo throughput of the Western Railway Logistics Park is expected to reach 1.5 million tons ^[10]. Key projects such as the Bulk Commodity Distribution Center (Phase I) have been completed and put into operation, and Phase IV is expected to be fully completed in October 2025, which will further enhance the regional logistics distribution capacity. In addition, Suining has opened international railway services such as China-Europe, China-Laos, and the Western Land-Sea New Corridor. The first provincial-municipal joint China-Laos railway service departed in July 2025,

reducing logistics costs for enterprises by more than 20% and helping “Suining-made” products go global ^[11].

3.1.2. Coordinated upgrading of the industrial chain and supply chain

The improvement of logistics hubs has significantly enhanced the competitiveness of Suining’s leading industries.

- (1) Lithium battery industry: Relying on the bonded logistics and global supply chain management of the hub, enterprises such as Tianqi Lithium have optimized the import process of raw materials and export process of products, and the export unit price of lithium battery materials has increased by 15% ^[12].
- (2) Electronic information industry: The application of smart logistics platforms has shortened the order delivery cycle by 40%, attracting high-end links such as integrated circuit design and intelligent terminal manufacturing to settle in.
- (3) Agriculture and green food: The construction of the cold chain logistics system (such as pre-cooling storage at production areas in Shehong and Pengxi) has promoted the efficient circulation of agricultural products and helped rural revitalization.

3.1.3. Improved opening-up level and deepened international economic and trade cooperation

Suining has actively integrated into the construction of the “Belt and Road” and the Western Land-Sea New Corridor. Through the “hub + bonded + industrial park” model, the proportion of bonded logistics value increased to 35% in 2024 ^[13]. The recently established “Sichuan Southward Railway Service Suining Base” has further strengthened the connection with the ASEAN market, promoting industries such as lithium batteries and green food to expand the international market. In addition, Suining’s cooperation with Zhanjiang Port, Qinzhou Port and Chengdu-Chongqing hub cities has formed an opening-up pattern of “connecting the coastal areas in the east, linking Europe and Asia in the west, and going to sea in the south”.

3.1.4. Accelerated digital and green transformation

- (1) Smart logistics: Suining Smart Logistics Big Data Center has integrated 731 logistics enterprises, matching more than 400,000 transactions and optimizing the efficiency of supply chain management ^[14]. The Western Cloud Warehouse Intelligent Distribution Base adopts AI unmanned warehousing technology, with an expected annual output value exceeding 10 billion yuan, reducing enterprise logistics costs by 25%.
- (2) Green logistics: The application of technologies such as electric transport vehicles and photovoltaic warehousing has reduced unit logistics carbon emissions by 18% and increased the international market premium by 5–8%.

3.1.5. Policy coordination and institutional innovation

Through “chain-specific policies,” Suining has combined logistics subsidies, industrial innovation funds and talent policies (such as the “Lithium Battery Talent Program”), increasing total factor productivity by 2-3 times. The “Suining Modern Logistics Key Industrial Chain Coordinated Development Plan (2025-2027)” includes express logistics as a key area, promoting efficient urban-rural distribution and low-altitude logistics pilots to further optimize the industrial ecology ^[15].

At present, Suining Land Port National Logistics Hub has shifted from infrastructure-driven to an industrial empowerment stage. However, it still faces challenges such as a small industrial scale and insufficient cross-regional coordination.

3.2. Domestic and foreign cities where land port national logistics hubs promote industrial high-end development

Table 1. Cities at home and abroad where land port-type national logistics hubs promote high-end industrial development

Cities/Countries	Types of logistics hubs	Specific measures for promoting industrial high-end development	Performance
Chongqing (China)	Port-type + Land port national logistics hub	<ol style="list-style-type: none"> 1. Construction of the “rail-water intermodal transport” demonstration zone at Guoyuan Port 2. Establishment of a global supply chain collaboration platform for the automobile industry 3. Launch of cross-border e-commerce pilots 	<ol style="list-style-type: none"> 1. Vehicle imports and exports exceeded 100,000 units/year 2. Cross-border e-commerce transaction volume increased by 65% 3. Logistics costs reduced by 18%
Zhengzhou (China)	Airport-type + Land port national logistics hub	<ol style="list-style-type: none"> 1. Linkage of “air + railway” dual hubs 2. Building a global maintenance center for the electronic information industry 3. Establishment of the cross-border e-commerce “1210” supervision model 	<ol style="list-style-type: none"> 1. Smartphone output accounts for 1/7 of the global total 2. Annual cross-border e-commerce transaction volume exceeds 200 billion yuan 3. Customs clearance efficiency improved by 40%
Duisburg (Germany)	Europe’s largest inland port	<ol style="list-style-type: none"> 1. Construction of the European hub for China-Europe Railway Express 2. Establishment of a digital supply chain for the steel industry 3. Development of a green port technology system 	<ol style="list-style-type: none"> 1. Handling more than 3,000 China-Europe Railway Express trains annually 2. Carbon emissions reduced by 25% 3. Promoting the industrial upgrading of the Ruhr region
Chicago (United States)	North America’s largest railway hub	<ol style="list-style-type: none"> 1. Multimodal transport “freight highway” system 2. Establishment of an agricultural technology supply chain finance platform 3. Development of cold chain logistics industrial clusters 	<ol style="list-style-type: none"> 1. Grain transportation efficiency improved by 30% 2. Agricultural product premium of 15% 3. Logistics employment increased by 22%
Dubai (United Arab Emirates)	Airport + free trade zone comprehensive hub	<ol style="list-style-type: none"> 1. Construction of a global digital trade center 2. Establishment of a gold and diamond refining and processing center 3. Development of aviation maintenance industrial clusters 	<ol style="list-style-type: none"> 1. Transit trade accounts for 35% 2. Processing of high-value-added products increased by 40% 3. Aviation maintenance output value exceeds 5 billion US dollars

3.3. Existing problems of land port national logistics hub promoting Suining’s industrial high-end development

In Suining’s practice of promoting industrial high-end development relying on the land port national logistics hub, despite positive progress in many aspects, it still faces some specific and practical problems and challenges.

3.3.1. Bottlenecks in the integration of hub potential

Although Suining has built a multimodal transport system of road, railway, water and air, the full release of hub functions still faces challenges. The smoothness of the “last mile” of railway dedicated lines entering the port needs to be improved, which affects the efficiency of cargo transfer; at the same time, the construction and application of smart logistics platforms are still in the initial stage, and the real-time sharing of logistics information and intelligent scheduling capabilities are insufficient, leading to high logistics costs.

3.3.2. Need for deepened integration of industrial quality and efficiency

Despite certain breakthroughs in industries such as lithium batteries and electronic information in Suining, the synergistic effect of the upper and lower reaches of the industrial chain has not been fully exerted. Some enterprises lack effective

information sharing and cooperation mechanisms in raw material procurement, production and processing, market sales and other links, resulting in low resource utilization efficiency. At the same time, the shortage of high-end R&D talents and teams limits the R&D and application of new technologies and processes, making the motivation for industrial upgrading and value chain improvement insufficient.

3.3.3. Need for expanded integration of the opening-up pattern

Suining has made initial achievements in integrating into the construction of the “Belt and Road” and the Western Land-Sea New Corridor, but the development of the international market and international economic and trade cooperation are still insufficient. At present, Suining’s export products have low added value and lack internationally competitive brands and products. At the same time, the service capabilities in international logistics, cross-border finance, international trade facilitation and other aspects need to be improved, which is difficult to meet the growing internationalization needs of enterprises.

3.3.4. Need for improved effect of people’s shared prosperity integration

Although Suining has implemented the “hub for people’s benefit” project to promote the extension of logistics hub construction achievements to counties, there are still shortcomings in agricultural product cold chain logistics, rural e-commerce logistics and other aspects. The cold chain logistics facilities for agricultural products in some areas are incomplete, leading to large losses of agricultural products during transportation; the rural e-commerce logistics system is not sound, affecting the sales of agricultural products and the income of farmers.

3.3.5. Slow progress in the integration of the green driving force

Suining has made certain progress in promoting the construction of green logistics hubs, but the overall progress is still slow. The application scope of green technologies, such as electric transport vehicles and photovoltaic warehousing, is limited, and some enterprises still rely on traditional energy; at the same time, incentive measures, such as carbon inclusive mechanisms, have not been fully established, and there is a lack of sufficient policy support and economic incentives for enterprises adopting green logistics technologies.

4. Paths of land port national logistics hub promoting Suining’s industrial high-end development

After identifying the problems and challenges faced by the land port national logistics hub in promoting Suining’s industrial high-end development, this paper proposes a high-end development path of “Five-Dimensional Integration” and designs specific implementation strategies.

4.1. Strengthen the integration of hub potential

It is suggested to take the Suining Land Port National Logistics Hub as the core and accelerate the construction of a “1+3+N” modern logistics network system. Specifically, it includes: focusing on promoting the construction of the Chengdu-Suining-Chongqing freight railway dedicated line to open up fast channels with Chongqing Guoyuan Port and Chengdu International Railway Port; upgrading and renovating the freight function area of Suining Anju Airport to develop air logistics; improving the supporting logistics facilities of the Fujiang River navigation project to form a multimodal transport pattern of road, railway, water and air. At the same time, it is suggested that the municipal government set up a special fund to support the construction of a smart logistics big data center, integrate the city’s logistics information resources, and develop a “logistics +” industrial service platform to provide customized supply chain solutions for key industries such as lithium batteries and electronic information.

4.2. Promote the integration of industrial quality and efficiency

Based on Suining's advantages as the "Lithium Battery Capital" and electronic information industrial clusters, it is suggested to implement a "dual-core driven" industrial upgrading plan. On the one hand, accelerate the construction of the Lithium Battery Industry Innovation Research Institute, support leading enterprises such as Tianqi Lithium to build a global supply chain management center, and create a full-life-cycle industrial chain from lithium ore resources to battery recycling. On the other hand, relying on the electronic industrial park, introduce high-end links such as integrated circuit design and intelligent terminal manufacturing, and cultivate a new "logistics + intelligent manufacturing" format. It is suggested to set up a 1-billion-yuan industrial coordinated development fund to focus on supporting collaborative innovation projects in the upper and lower reaches of the industrial chain.

4.3. Deepen the integration of the opening-up pattern

It is suggested to deepen the application for the establishment of Suining Comprehensive Bonded Zone and build a new highland of opening-up of "hub + free trade + port." Specific measures include: striving to set up a designated supervision site for imported spodumene to reduce the cost of raw material imports; building a global inspection and maintenance center for electronic products to expand new areas of service trade; and establishing a "customs clearance integration" mechanism with Chengdu Qingbaijiang Railway Port and Chongqing Lianglu-Cuntan Bonded Zone. At the same time, support local enterprises to participate in the construction of China-Europe Railway Express and Western Land-Sea New Corridor, and explore the "Belt and Road" international market.

4.4. Promote the integration of people's shared prosperity

Implement the "hub for people's benefit" project to promote the extension of logistics hub construction achievements to counties. Focus on building three systems: first, the agricultural product cold chain logistics system, supporting Shehong, Pengxi and other places to build pre-cooling storage facilities in production areas; second, the rural e-commerce logistics system, improving the county-township-village three-level distribution network; third, the logistics employment training system, cultivating modern logistics skilled talents relying on Sichuan Vocational and Technical College. It is suggested to arrange a special fund of 10 million yuan every year to support the construction of "logistics + rural revitalization" demonstration projects.

4.5. Realize the integration of the green driving force

Formulate the "Suining Green Logistics Hub Construction Action Plan", focusing on promoting three major projects: first, the "Electric Suining" project, realizing 100% electrification of transport vehicles in logistics parks by 2026; second, the "Green Warehousing" project, promoting the application of new technologies such as photovoltaic roofs and intelligent energy conservation; third, the "Circular Packaging" project, establishing a professional logistics packaging recycling system for lithium battery materials, electronic products, etc. At the same time, explore the establishment of a carbon-inclusive mechanism, and give carbon credit rewards to enterprises adopting green logistics technologies.

5. Conclusion

In summary, based on the perspective of "three-chain linkage", this paper systematically analyzes the development status and existing bottlenecks of Suining Land Port National Logistics Hub, and proposes a practical path of "Five-Dimensional Integration" combined with domestic and foreign experience. This path not only responds to national strategies and local development needs but also provides a feasible solution for solving the problem of Suining's transformation from "corridor economy" to "hub economy." In the future, it is necessary to further promote policy implementation and cross-regional coordination so that the logistics hub can truly become the core lever for promoting industrial high-end development. It is hoped that this research can provide a reference for the development of similar cities in the Chengdu-Chongqing Twin-City

Economic Circle and inject more practical wisdom into the construction of the national logistics hub network.

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