

# A Literature Review on the Economic Development of Zhongxian County

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## Abstract

As a key nodal city in the heart of the Three Gorges Reservoir Area, Zhongxian County boasts multiple resource advantages, including ecological, cultural, and industrial assets. Based on the existing literature on the economic and social development of Zhongxian County, this paper systematically reviews the current state of research regarding its industrial layout, economic and social progress, transportation construction, and environmental protection. Through textual analysis, it identifies several challenges hindering Zhongxian's development, including a relatively small economic aggregate, weak industrial capacity, inadequate transportation convenience, insufficient development of tourism resources, low attractiveness for talent, and a continued need for enhanced ecological and environmental governance. Considering the strategic contexts of the Chengdu-Chongqing economic circle construction and the green development of the Yangtze River Economic Belt, this paper proposes countermeasures and suggestions such as strengthening leading industries, accelerating transportation infrastructure construction, deepening the integration of agriculture, culture, and tourism, enhancing talent cultivation and attraction, promoting green and low-carbon development, and fostering regional coordinated development. The aim is to provide a theoretical reference and practical pathways for achieving high-quality development in Zhongxian County.

## Keywords

Zhongxian County; Economic Development; Industrial Layout; Transportation Construction; Ecological Environment.

## 1. Overview of Zhongxian County

Zhongxian County is located in the central part of Chongqing Municipality, situated in the heart of the Three Gorges Reservoir Area. It borders Shizhu Tujia Autonomous County to the east, Fengdu County to the south, Dianjiang County to the west, and Wanzhou District and Liangping District to the north. It holds a strategic geographical advantage, serving as a link to the Greater Three Gorges area, coordinating with Southeast Chongqing, serving the metropolis, and connecting to Northeast Sichuan. Zhongxian County covers an area of 2,187 square kilometers, administers 29 townships (towns/subdistricts) and 372 villages (communities), and has a total population of 976,000. The county is rich in various resources. As the only new-type tourist city in the Three Gorges Reservoir Area surrounded by water on all sides, integrating the characteristics of a mountain city, bridge city, water city, and island city, it is renowned as the city of "Zhongzhou Eight Sights." Simultaneously, Zhongxian is known as the "City of Loyalty and Righteousness," originating from the loyal act of General Ba Manzi who "sacrificed his head to save the city, upholding loyalty and integrity." It is also called the "City by the River" as it is the only "half-submerged county town" in the Three Gorges Reservoir Area. Furthermore, Zhongxian County is home to the nation's largest NFC orange juice processing center and the

only national rural complex featuring citrus as its leading industry in the Three Gorges Orange Township, earning it the reputation of a "Citrus City"[1].

As the heartland of the Three Gorges Reservoir Area, Zhongxian County underwent thirteen years of research and planning for resettlement and relocation during the Three Gorges Project reservoir relocation. Ultimately, half of the county town (including its most prosperous sections) was submerged under the Yangtze River. This included one county town, 10 market towns, 12 townships, and 71 surface and underground cultural relic sites. The relocation involved 55,446 people, with 18,342 relocating to other provinces. Furthermore, 101 submerged industrial and mining enterprises were closed, leaving only 8 enterprises operating normally, effectively reducing the industrial economy to near zero. It wasn't until after the completion of the second phase of the Three Gorges Project resettlement efforts in 2003 that Zhongxian County promptly adjusted its focus towards industrial development. After going through various twists and turns, the industrial economy has only begun to show improvement in recent years. Concurrently, the accelerated industrial transfer from developed regions presents new opportunities. The Ministry of Industry and Information Technology's "Industrial Development and Transfer Guidance Catalog (2018 Edition)" explicitly states that Zhongxian County is prioritized for undertaking the transfer of chemical active pharmaceutical ingredients, new energy materials, and food industries. This facilitates the accelerated agglomeration of high-quality enterprises in pharmaceuticals, battery materials, food, and equipment manufacturing towards Zhongxian[2]. Additionally, multiple superimposed strategies like the construction of the Chengdu-Chongqing Economic Circle bring new opportunities. Zhongxian County has gained support for "playing a nodal role in Dianjiang, Liangping, Fengdu, Zhongxian, and Yunyang, driving the development of the northern wing of the dual-city Economic Circle," "leveraging the Fengdu-Zhongxian passage role along the river," "building a green economic corridor along the Yangtze River," and "creating the 'Core of the Three Gorges Reservoir Area-Yangtze River Bonsai'." The national goals of "achieving carbon peak by 2030" and "carbon neutrality by 2060" present significant opportunities for accelerating the growth of Zhongxian's industries, particularly lithium batteries, shale gas comprehensive utilization, and green building materials[3].

## 2. Overview of Economic Development Research on Zhongxian County

A search on CNKI (China National Knowledge Infrastructure) using "Zhongxian + Economy" as subject keywords yields 1,329 results, including 464 academic journal articles and 742 degree theses. The main topics involve the Three Gorges Reservoir Area, Chengdu-Chongqing Economic Circle, Chengdu-Chongqing Urban Agglomeration, Northeast Chongqing, urbanization, and rural revitalization. Regarding source classification, there are 115 Peking University Core journals, 38 CSCD journals, and 25 CSSCI journals. By organizing the existing literature, related research on Zhongxian County primarily focuses on spatial layout and morphological scale, agriculture and rural areas, ecological environment, economy and society, and transportation.

### 2.1. Industrial Layout of Zhongxian County

Regarding industrial layout, documents such as the "Notice of the Zhongxian County People's Government on Issuing the '14th Five-Year Plan for Promoting Agricultural and Rural Modernization in Zhongxian County'" and the "Notice of the Zhongxian County People's Government on Issuing the '14th Five-Year Plan for National Economic and Social Development of Zhongxian County and the Outline of Long-term Goals for 2035'" indicate that in agricultural development, priority should be given to stabilizing the three major guarantee industries: grain and oil, livestock and poultry, and vegetables. Two advantageous industries, citrus and bamboo shoots, should be prominently developed, while the condiment, ecological aquaculture, high-

quality fruit, and traditional Chinese medicine industries should be key cultivated industries [4-5]. Paishenbai Company is the first domestic NFC orange juice producer. Zhongxian County is renowned for its citrus industry development chain, encapsulated by the phrase "from a seed to a glass of orange juice." From seedling cultivation and citrus farming to juice processing, Zhongxian County single-handedly completes every step of this modern industrial chain. Furthermore, "Hesperidin" is extracted from orange peels – a substance effective in preventing cardiovascular diseases and inhibiting pigmentation. The orange residue left after extracting "Hesperidin" is then processed into organic fertilizer. Yet, this is not the "ultimate version" of the citrus industry development. Recently, the National Citrus Trading Center platform, located in Zhongxian County, is about to commence trial operations. It will provide a platform for selling over 34 million mu of citrus nationwide to the world, aiming to become China's citrus big data and pricing center. Regarding industrial layout, the "14th Five-Year Plan for High-Quality Industrial Development of Zhongxian County (2021-2025)" points out that new energy, biomedicine, intelligent equipment, and resource processing industries are the key development directions [6]. Simultaneously, Zhongxian County is fostering a complete industrial chain for new energy vehicles. Lithium ore purchased from Australia undergoes refining locally to produce lithium batteries, which then serve as the "heart" installed in locally manufactured "Changan Star" new energy vehicles. The waste residue generated from ore refining is sent to nearby cement plants; this ore residue helps improve cement grade and increase its price. In the service sector, Zhongxian's 14th Five-Year Plan Outline highlights the key construction of modern logistics, financial services, e-commerce, and e-sports. Zhongxian County possesses the most complete e-sports industry chain, having hosted the National Mobile E-sports Grand Finals from 2017 to 2021, around which an entire industrial ecosystem has been built.

## 2.2. Economic and Social Development of Zhongxian County

From the perspective of overall economic development level, Li (2007) constructed an evaluation system for agricultural and rural economic development levels using 17 indicators, including gross output value of agriculture, forestry, animal husbandry and fishery, output value of agricultural services, agricultural commodification rate, rural employees, year-end cultivated land area, sown area of crops, agricultural fertilizer application, rural electricity consumption, pesticide application, grain output, oil crop output, fruit output, vegetable output, total meat output, aquatic product output, and per capita net income of rural residents. The study indicated that areas like Wanzhou District, Kaizhou District, Fuling District, and Zhongxian County were regions with relatively higher agricultural and rural economic development levels in the reservoir area [7]. Cai et al. (2013) found that the living environment in Tianzi Village, Zhongxian County, underwent tremendous changes after the construction of a new rural community, suggesting that new rural construction contributes to balancing urban and rural development in Zhongxian County (Zhao, 2014)[8-9]. However, Wang (2021), by establishing a multi-dimensional measurement and analysis framework for urban spatial performance in the Three Gorges Reservoir Area covering "economy-society, morphology-scale, ecology-environment," discovered that Zhongxian County's economic and social performance level was relatively low, with lagging industrial structure development and social facilities guarantee needing improvement; its morphological scale performance level was medium, with inefficient loose spatial structure and land use structure requiring optimization and adjustment; its ecological environment performance level was medium, with insufficient green space scale and a need for strengthened governance and protection. Ultimately, the study concluded that Zhongxian's urban spatial performance was consistently at a medium-low level [10]. Through a comprehensive evaluation of the human settlement environment in Zhongxian County, Jia (2019) found that the scores for the human society and support system subsystems in Zhongxian were both below standard values, indicating relatively lagging development trends.

In contrast, the environmental system scored above the standard value, showing a good development trend. This implies that the overall quality of human settlement environment development in Zhongxian is relatively low, with significant deficiencies in soft power aspects like population, economy, and society, as well as urban land use. Therefore, the author proposed positioning Zhongxian's future urban development as a node city in the Yangtze River Economic Belt, an industrial supporting base in Northeast Chongqing, an important logistics base, a significant agricultural product base, and a key destination on the National Golden Tourism Belt of the Three Gorges [11].

In terms of characteristic agricultural industries, Li and Chang (2011), using the land suitability evaluation for land consolidation projects in three villages including Banzhu Village, Huangjin Town, Zhongxian County, as an example, analyzed and found that the area was generally highly suitable for citrus cultivation, rated as highly suitable. The main limiting factors were poor irrigation and drainage conditions and transportation, with some land suffering from severe soil erosion [12]. Tan and Liu (2021) analyzed the comprehensive competitiveness of the citrus industry in Chongqing and the Three Gorges Reservoir Area from the perspectives of industrial resource endowment advantages, efficiency comparative advantage, scale comparative advantage, comprehensive comparative advantage, and concentration degree. They compared the advantages of Chongqing's Three Gorges Reservoir Area with those of eight major citrus-producing provinces (including Guangdong, Jiangxi, and Fujian). The study found that the development of Chongqing's citrus industry exhibited prominent scale advantages but lacked prominent efficiency advantages. It also noted that Zhongxian County possessed a strong comprehensive comparative advantage within Chongqing, contributing significantly to the city's citrus industry [13]. Yin and Guo (2021), and Guo and Yin (2020) analyzed that the "Three Gorges Orange Township" rural complex implementation area in Zhongxian County positively impacted farmers' livelihood recovery, although there were intra-regional differences [14-15]. Regarding the service sector, Zhang (2018), starting from three aspects – "industrial positioning, industrial layout, industrial characteristic connotations" – and considering the current situation of Zhongxian's e-sports town, determined suitable core IP, industry types, and industrial extensions for Zhongxian. Integrating industrial economics and urban-rural planning, the study defined the town's spatial development structure, industrial spatial structure, spatial functional layout model, and style shaping aligned with industrial characteristics [16]. Additionally, Gao et al. (2014), based on the development of the Liangyu's Hometown tourist attraction in Zhongxian County, analyzed the transformation path of tourism attraction development in the Three Gorges Reservoir Area under the backdrop of the "post-sightseeing era." They pointed out that against a background of weakening specificity of natural landscapes, the development of unique Three Gorges cultural tourism resources would inevitably become subsequent tourism products. Deep exploration of cultural resources should become an urgent task for scenic areas. Locking onto specific markets, subdividing demand levels, and designing corresponding tourism products is the essential path for transformation [17].

### **2.3. Transportation Construction in Zhongxian County**

Regarding transportation, Liu et al. (2019) analyzed the highway transportation accessibility of 11 districts and counties in Northeast Chongqing based on the shortest travel time and lowest cost from county seats to Chongqing city and various townships. They concluded that Zhongxian County had the highest comprehensive transportation accessibility among the 11 districts and counties [18]. Ren et al. (2022) explored the coordination degree between transportation infrastructure interconnectivity and economic linkages in the Chengdu-Chongqing Economic Circle. They found that the traffic connection strength index between Zhongxian County and Chongqing's main urban area was relatively low, primarily due to the absence of railway connections between cities. Similarly, the connection strength with other

cities in Sichuan was not high, hindering the cities' ability to fully leverage functional polycentric effects (Li and Zong, 2019)[19-20]. Furthermore, the economic linkage strength between Chongqing's main urban area and Zhongxian County was also at a relatively low level, while linkage strengths with Guang'an, Nanchong (in Sichuan), and Chengdu were relatively high. Moreover, Xinsheng Port in Zhongxian is the first 10,000-ton deep-water port in the upper reaches of the Yangtze River, serving as a crucial node for goods from Northeast Sichuan and Northeast Chongqing to reach the sea via the river. Shi (2017) indicated that the core hinterland of Zhongxian Port is Zhongxian County itself. Its direct hinterland includes Dianjiang, Changshou, Fuling, Fengdu, and Shizhu in Chongqing, while its indirect hinterland encompasses other districts and counties in Chongqing not part of the direct hinterland, as well as parts of Northeast Sichuan, Western Hubei, and Southern Shaanxi[21].

#### **2.4. Ecological Environment Protection in Zhongxian County**

Regarding the ecological environment, the ecological environment performance level is medium, with insufficient green space scale and a need for strengthened governance and protection efforts (Wang, 2021)[10]. Zhang et al. (2024) analyzed the changes in ecological quality of rural settlements in Zhongxian County from 2002 to 2019, pointing out that while the overall ecological environment in Zhongxian improved, conditions in rural residential areas generally worsened[22]. The characteristics of land use transformation in Zhongxian County mainly manifest as a significant increase in ecological land area, continuous expansion of living land area, and a noticeable decrease in production land area; the centers of gravity of ecological land and agricultural production land showed insignificant spatial changes, while the centers of gravity of urban and rural living land and industrial and mining production land experienced significant shifts. The overall ecological environment quality index in Zhongxian County increased slightly, with trends of both ecological improvement and deterioration coexisting within the region, but the improvement trend outweighed the deterioration trend (Tan, 2017)[23].

### **3. Existing Problems**

Although Zhongxian County has achieved certain progress in economic and social development in recent years, with gradual optimization of industrial structure, continuous improvement of infrastructure, and increasing attention to ecological environment protection, the following problems still exist based on existing literature and actual development conditions.

#### **3.1. Relatively Small Economic Aggregate and Low Development Quality**

Although Zhongxian County's economic aggregate has been growing year by year, its share of Chongqing's overall GDP remains relatively small. Economic growth primarily relies on a few key industries, and the overall economic foundation remains weak. According to Wang (2021) research, Zhongxian County's economic and social performance level is relatively low, with lagging industrial structure development and insufficient social facility guarantee capacity. The overall urban spatial performance is at a medium-low level, reflecting that the quality of Zhongxian's economic development still needs improvement.

#### **3.2. Low Industrial Structure Level and Imperfect Industrial Chain**

Zhongxian County's industry is primarily focused on new energy, biomedicine, and intelligent equipment. Although it has reached a certain scale, overall it remains at the middle and low ends of the industrial chain. Most enterprises have low product added value, severe homogenization, and lack core technological support. Moreover, the supporting and collaborative relationships with other enterprises within the county and key industries outside the county (such as the electronic information and automobile industries in Chongqing's main

urban area) are weak, making it difficult to form industrial cluster effects. In agriculture, although dominated by the citrus industry, the degree of industrial integration is not high, and the capacity for deep processing of agricultural products and brand marketing is insufficient, failing to fully release agricultural added value.

### **3.3. Incomplete Transportation Infrastructure and Insufficient External Connectivity**

Although Zhongxian County possesses Xinsheng Port, the first 10,000-ton deep-water port in the upper reaches of the Yangtze River, giving it certain water transportation advantages, land transportation, especially railway construction, lags behind. According to Ren et al (2022) research, the economic connection strength between Zhongxian County and Chongqing's main urban area as well as some cities in Sichuan is relatively low, lacking fast railway channels, which limits the agglomeration and radiation capacity of people flow, logistics, and capital flow. The high-speed railway station is not expected to be completed and operational until 2027, making the transportation bottleneck a significant factor restricting Zhongxian County's integration into the Chengdu-Chongqing Economic Circle in the short term.

### **3.4. Insufficient Development of Tourism Resources, Cultural Advantages Not Transformed into Economic Advantages**

Zhongxian County possesses unique tourism resources such as the "Zhongzhou Eight Sights," "Core of the Three Gorges Reservoir Area·Yangtze River Bonsai," and the E-sports Town. However, the current development level of tourism products is shallow, cultural connotations are insufficiently explored, tourism supporting facilities are imperfect, and the tourist experience is not strong. Gao et al. (2014) pointed out that the development of cultural tourism resources in Zhongxian County has not yet formed a systematic and differentiated tourism product system, making it difficult to attract mid-to-high-end consumer groups, and the contribution of tourism to the economy is limited.

### **3.5. Difficulty in Attracting Talents and Insufficient Innovation Capacity**

Zhongxian County is located in the hinterland of the Three Gorges Reservoir Area, far from the main urban economic center, with relatively scarce high-quality educational, medical, and cultural resources. This leads to difficulties in attracting high-level talents, and the mechanisms for cultivating and retaining local talents are imperfect. Enterprises generally report a shortage of management talents, professional technical personnel, and high-end R&D talents, which restricts their ability to transform and upgrade towards technology-oriented and R&D-oriented models.

### **3.6. Ecological Environment Governance Still Needs Strengthening**

Although the overall ecological environment in Zhongxian County shows an improving trend, there are still deterioration tendencies in some local areas, such as certain rural residential areas and areas around industrial and mining enterprises. Tan (2017) pointed out that although ecological land in Zhongxian County has increased, governance and protection efforts still need to be strengthened, particularly in terms of rural living environment improvement, restoration of industrial and mining wasteland, and expansion of green spaces, which require continuous investment.

## **4. Countermeasures and Suggestions**

### **4.1. Strengthen Leading Industries and Enhance Industrial Chain Capability**

Zhongxian County should adhere to the strategy of "revitalizing the county through industry," focusing on key industries such as new energy, biomedicine, and intelligent equipment, and

promoting the extension of industrial chains towards the mid-to-high end. Relying on the existing lithium battery industry foundation, it should further attract the agglomeration of upstream and downstream enterprises to build a complete industrial chain from raw materials to end products. Enterprises should be encouraged to increase R&D investment and promote product structure diversification and high added value. Simultaneously, it should actively connect with key industries in Chongqing's main urban area and the Chengdu-Chongqing region, integrating into the city's pillar industries such as electronic information and automobiles, forming a new pattern of differentiated development and collaborative supporting.

#### **4.2. Accelerate Transportation Infrastructure Construction and Enhance Regional Connectivity**

Accelerate the construction of major transportation projects such as the Chongqing-Wanzhou High-Speed Railway and the rapid railway from Zhongxian County to Chongqing's main urban area, striving for early completion and operation to open up external channels. Improve the network of expressways, national and provincial trunk roads, and rural roads within the county, enhancing road network density and accessibility. Fully leverage the advantages of Xinsheng Port's water transportation, promote the development of "highway-railway-waterway" multimodal transport, and establish Zhongxian County as an important logistics hub in Northeast Chongqing and Northeast Sichuan.

#### **4.3. Deepen the Integration of Agriculture, Culture, and Tourism to Enhance Service Industry Quality and Efficiency**

Focusing on core IPs such as the "Core of the Three Gorges Reservoir Area-Yangtze River Bonsai" and the E-sports Town, promote the in-depth development of tourism resources, enhance cultural connotations, and improve tourist experiences. Combining the advantages of the citrus industry, develop integrated agriculture-culture-tourism projects such as citrus picking experiences, rural complex sightseeing, and orange juice processing study tours, creating distinctive tourism routes. Introduce professional operation teams to improve scenic area management levels, promote "tourism circle breakthrough" and "commerce and trade expansion," and achieve high-quality development of the tourism economy.

#### **4.4. Strengthen Talent Introduction and Cultivation Mechanisms to Enhance Innovation Development Momentum**

Establish and improve mechanisms for talent introduction, cultivation, and incentive, optimizing the talent development environment. Strengthen cooperation with universities and research institutions, promote deep integration of industry, academia, and research, and build a number of enterprise technology centers and postdoctoral workstations. Enhance the level of public services such as education and healthcare, improve living conditions for talents, and strengthen their sense of belonging. Encourage enterprises to carry out skills training and career development planning, improve the quality of the local labor force, and provide talent support for industrial transformation and upgrading.

#### **4.5. Promote Green and Low-Carbon Development to Improve Ecological Environment Quality**

Adhere to ecological priority and green development, strictly implementing the requirement of "jointly pursuing major protection, not pursuing major development" in the Yangtze River Economic Belt. Strengthen the improvement of rural living environments, promote projects such as waste classification, sewage treatment, and toilet revolution. Promote the green transformation of industrial and mining enterprises, encouraging them to carry out cleaner production and circular economy pilot projects. Increase ecological restoration efforts, improve

the quality of green spaces, build a community of life comprising mountains, rivers, forests, farmlands, lakes, and grasslands, and create a beautiful Zhongxian where humanity and nature coexist harmoniously.

#### 4.6. Promote Regional Coordinated Development and Integrate into the Construction of the Dual-City Economic Circle

Actively integrate into the construction of the Chengdu-Chongqing Economic Circle, playing the role of Zhongxian County as a nodal city in the "Dianjiang-Liangping-Fengdu-Zhongxian-Yunyang" axis. Strengthen cooperation and coordination with surrounding districts and counties in industries, transportation, tourism, and ecology, promoting resource sharing and complementary advantages. Actively participate in the construction of the Yangtze River Green Economy Corridor, build the regional brand of "Core of the Three Gorges Reservoir Area-Yangtze River Bonsai," and enhance Zhongxian County's position and influence in the regional development pattern.

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