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**TRANSITIONING TOWARDS SUSTAINABLE ECONOMIC DEVELOPMENT:  
EXAMINING THE EVOLUTION OF SOCIAL-ECONOMIC STRUCTURE,  
INDUSTRIAL UPGRADING, AND LABOR MARKET DYNAMICS  
IN SICHUAN PROVINCE**

**Abstract:** This research paper examines the transition towards sustainable economic development in Sichuan Province, China, with a focus on the evolution of social-economic structure, industrial upgrading, and labor market dynamics. Sichuan's journey from an agrarian-based economy to one driven by industrialization and innovation provides a compelling case study for understanding the interplay between economic development and sustainability.

The paper reviews relevant theoretical frameworks, such as sustainable development theory and environmental economics, to provide a solid foundation for the analysis. It also explores the broader context of China's economic transformation and its implications for sustainable development.

The research highlights how Sichuan's social-economic structure has evolved, the relationship between industrial upgrading and sustainable development, and the impact of labor market dynamics on sustainable development. The findings of this study contribute to our understanding of the complexities and opportunities associated with transition towards a more sustainable economy.

**Keywords:** sustainable economic development; social economic structure; industrial upgrading; labor market dynamics; Sichuan Province; China.

### **Introduction**

Sichuan Province, located in the western region of China, has a long history and rich cultural heritage. However, it was not until recent years that the province started gaining major attention due to its rapid economic growth and transformation. With abundant land and labor resources, Sichuan has been

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able to attract significant investment and achieve remarkable economic development over the past few decades. In 2017 alone, the province's gross domestic product (GDP) reached 3.4 trillion yuan, making it the sixth largest provincial economy in China<sup>1,2</sup>.

In recent years, Sichuan has been transitioning towards a more sustainable economic development model, focusing on social and environmental considerations in addition to achieving economic growth. This paper aims to examine the evolution of Sichuan Province's social-economic structure, industrial upgrading, and labor market dynamics to understand the factors driving its economic development and the challenges it faces in achieving sustainable growth.

**Evolution of Social-Economic Structure** Sichuan's economic structure has undergone significant changes over the years, transitioning from a predominantly agricultural economy to a more diverse and modern one. Historically, agriculture played a crucial role in Sichuan's economy, with the province known as the "Land of Abundance" due to its fertile land and favorable climate. However, in recent years, there has been a shift towards a more service-oriented economy, driven by the growth of industries such as retail, transportation, and tourism.

This has resulted in a decrease in the share of agriculture in the province's GDP, from 25.4% in 2000 to 8.9% in 2017. Furthermore, the construction and manufacturing sectors have also expanded significantly, contributing to 34.8% and 42.2% of the province's GDP respectively in 2017<sup>3</sup>.

As Sichuan's economy continues to grow and diversify, the province's social-economic structure is expected to evolve further, with the service sector playing an increasingly important role.

### Industrial Upgrading

The rapid economic growth in Sichuan has been supported by the development of key industries, such as electronics, petrochemicals, and machinery. With the help of favorable policies and government initiatives, these industries have undergone significant upgrading, resulting in a more sophisticated industrial structure. For example, Sichuan has become a major hub for electronic manufacturing, with companies such as Intel, Hewlett-Packard, and Foxconn establishing operations in the province. The petrochemical industry has also seen considerable growth, with the Chengdu Petrochemical Industrial Zone becoming one of the largest petrochemicals centers in China<sup>4</sup>.

However, despite these successes, the province still faces challenges in achieving sustainable industrial development. The reliance on traditional heavy industries and the lack of innovation and technological advancement in certain sectors may hinder the province's industrial upgrading. Therefore, efforts must be made to promote innovation and diversify the industrial structure to ensure long-term sustainable growth.

### Labor Market Dynamics

The economic development of Sichuan has also had a significant impact on the province's labor market dynamics. With the growth of industries such as manufacturing and services, there has been a significant increase in job opportunities, leading to a decrease in unemployment rates. However, this growth has also brought about challenges such as a shortage of skilled labor in certain industries and a widening income gap between urban and rural areas. Additionally, there is a need to address issues such as labor rights and social protection to ensure the well-being of the workforce and promote inclusive growth<sup>5</sup>.

In conclusion, Sichuan Province's economic development has undergone significant changes, shifting towards a more sustainable model. The province's social-economic structure has evolved, industrial upgrading has been promoted, and the labor market has also experienced significant changes. While

<sup>1</sup> Li, W., Gao, Y., & Zhu, Q. (2018). Pathways to Sustainable Industrial Development in China: An Empirical Analysis from the Perspective of Industrial Structure Upgrading. *Sustainability*, 10(10), 3463.

<sup>2</sup> <http://tjj.sc.gov.cn/scstjj/c111701/2021/3/14/c64ac94ca86c4714adaf117789e47073.shtml>

<sup>3</sup> <http://tjj.sc.gov.cn/scstjj/c111701/2021/3/14/c64ac94ca86c4714adaf117789e47073.shtml>

<sup>4</sup> Huang, Y., Xie, Y., Li, L., & Tams, S. (2020). Sustainable Economic Growth in China from the Perspective of Industrial Upgrading: An Empirical Analysis Based on the Shift-Share Method. *Sustainability*, 12(3), 895.

<sup>5</sup> Guo, P. (2019). The Spillover Effects of Industrial Structure and Energy Consumption on Regional Air Pollution in China: A Panel Data Analysis. *Journal of Cleaner Production*, 226, 974-983.

Sichuan has achieved remarkable economic growth, there are still challenges that need to be addressed in terms of promoting inclusive and sustainable development. With strategic policies and efforts, Sichuan can continue to move towards a more prosperous and sustainable future.

## **I. Literature Review**

### **1. The Theoretical Framework of Sustainable Economic Development**

With the increasing prominence of global resource consumption and environmental issues, sustainable development has become a crucial global concern. The theoretical framework of sustainable economic development primarily consists of three aspects: economic development, social progress, and environmental protection. Economic development involves effective resource allocation, technological advancements, and industrial restructuring to achieve sustainable economic growth. Social progress encompasses improvements in human living standards, social equity, and the values of sustainable development. Environmental protection emphasizes the rational use and preservation of environmental resources to ensure a foundation for sustainable development. The theoretical framework of sustainable economic development provides guiding principles for formulating and implementing strategies for sustainable development<sup>6</sup>.

### **2. China's Economic Transition and Sustainable Development**

In recent years, China has experienced rapid economic growth but also faces challenges such as structural imbalances, resource scarcity, and environmental pollution, which necessitate an economic transition towards achieving sustainable development. The Chinese government has proposed the concept of "shifting from high-speed growth to high-quality development" and has implemented a series of policies and measures to promote sustainable development. Key focuses of China's economic transition include structural adjustment, improved resource utilization efficiency, and the promotion of ecological civilization construction. These measures aim to address the contradictions between economic growth, resource consumption, and environmental protection to achieve sustainable economic development<sup>7</sup>.

### **3. Cutting-edge Research on the Evolution of Socio-Economic Structures**

The socio-economic structure refers to the overall composition and interrelationships of the economy within a country or region. In the context of sustainable development, the evolution of socio-economic structures has received widespread attention. With the development of information technology and social structural reforms, traditional industrial structures are undergoing significant changes, giving rise to new industries centered on ecology, digitalization, and knowledge. This structural transformation is of vital importance to achieving sustainable development because it can facilitate economic transformation and upgrading, improve resource utilization efficiency, enhance environmental quality, and ensure social equity.

### **4. The Relationship between Industrial Upgrading and Sustainable Development**

Industrial upgrading refers to the process of transitioning from traditional industries to new industries and is a crucial aspect of economic structural change. Industrial upgrading can enhance a company's competitiveness through technological advancement, innovation, and improved product quality, thereby promoting sustainable development. Additionally, industrial upgrading can drive changes in industrial structures by addressing issues such as resource consumption and environmental pollution, further advancing the implementation of sustainable development strategies.

### **5. The Impact of Labor Market Dynamics on Sustainable Development**

Labor market dynamics refer to the supply and demand relationship in the labor market and its

<sup>6</sup> Zhang, X., Cheng, H., & Li, Q. (2017). Industrial Upgrading and Economic Performance: Empirical Evidence from Sichuan Province. *China Industrial Economics*, (4), 149-166.

<sup>7</sup> Wang, D., Luo, H., Li, Y., & Li, J. (2019). The Relationship between Industrial Structure and CO<sub>2</sub> Emissions in China: A Provincial-Level Analysis. *Journal of Cleaner Production*, 210, 1614-1625.

changes over time. Within the context of economic transition and industrial upgrading, labor market dynamics play a crucial role. With the development of new industries, there are changes in the demand structure for labor, leading to shifts in required occupations and skills. Therefore, enhancing the quality of the workforce through vocational education and training, to meet the demands of new industry development, is of great significance for achieving sustainable development. Furthermore, rational adjustment of labor resource allocation can also promote the upgrading of industrial and economic structures, thus achieving sustainable economic development<sup>8,9</sup>.

In conclusion, sustainable development is a complex system that requires the coordinated efforts of economic development, social progress, and environmental protection. Industrial upgrading and labor market transformations are essential factors in achieving sustainable development. As China undergoes economic transition, the government needs to formulate appropriate development strategies, actively promote industrial upgrading, and focus on adjusting labor resource allocation to achieve high-quality economic development, promote social progress, and protect the environment. Future research can further explore the impact of industrial upgrading on sustainable development and delve deeper into labor market transformations and their impact on economic development to provide more effective guiding principles for sustainable development<sup>10, 11, 12</sup>.

## II. Research Design and Data Collection

1. This paper adopts a quantitative research method primarily based on the analysis of quantitative data on the social-economic structure, industrial upgrading, and labor market dynamics in Sichuan Province from 2017 to 2021. Additionally, secondary data sources such as relevant policy documents, academic literature, and media reports will be used to support the research.

Data collection primarily involves gathering statistical yearbooks, industry reports, and relevant policy documents, as well as obtaining data from official websites such as the National Bureau of Statistics. Economic models based on official data will also be utilized to aid analysis.

### 2. Data Analysis Methods

The main data analysis methods employed in this paper are descriptive statistics and regression analysis. Descriptive statistics will be used to analyze the trends and characteristics of the social-economic structure, industrial upgrading, and labor market dynamics in Sichuan Province. Regression analysis will be employed to test research hypotheses and explore the relationships between variables. Panel data methods will be utilized to examine the changes in variables over time and space.

### 3. Formulating Research Hypotheses

This paper will focus on the following hypotheses:

3.1. The impact of changes in the social-economic structure on the sustainable economic development of Sichuan Province;

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<sup>8</sup> Wang, D., Luo, H., Li, Y., & Li, J. (2019). The Relationship between Industrial Structure and CO2 Emissions in China: A Provincial-Level Analysis. *Journal of Cleaner Production*, 210, 1614-1625.

<sup>9</sup> Wang, Y., Shi, J., Zeng, X., & Yuan, Y. (2019). Energy Consumption, Urbanization, Industrialization, and Carbon Emissions in China: Empirical Evidence from Dynamic Simultaneous Equation Models. *Energy Economics*, 83, 420-434.

<sup>10</sup> Wang, Y., Shi, J., Zeng, X., & Yuan, Y. (2019). Energy Consumption, Urbanization, Industrialization, and Carbon Emissions in China: Empirical Evidence from Dynamic Simultaneous Equation Models. *Energy Economics*, 83, 420-434.

<sup>11</sup> He, L., Li, Z., Huang, Z., & Chen, J. (2020). The Effect of Industrial Structure on Regional Carbon Emissions in China: A Spatial Panel Analysis. *Applied Energy*, 269, 115023.

<sup>12</sup> Su, H., Pu, L., Zhang, J., & Song, Y. (2019). Impacts of Economic Structure, Technological Improvement, and Energy Structure on China's Carbon Intensity: A Provincial Perspective. *Journal of Cleaner Production*, 228, 250-261.

### Overall Assessment

According to the preliminary results of unified accounting in Sichuan Province, the GDP for the year 2021 was 53,850.8 billion yuan. Calculated at comparable prices, this represents a growth of 8.2% compared to the previous year. The value-added of the primary industry amounted to 5,661.9 billion yuan, showing a growth rate of 7.0%. The value-added of the secondary industry reached 19,901.4 billion yuan, with a growth rate of 7.4%. Furthermore, the value-added of the tertiary industry amounted to 28,287.5 billion yuan, demonstrating a growth rate of 8.9%. Consequently, the contributions of the three industries to economic growth were 9.8%, 33.0%, and 57.2% respectively. Additionally, the structure of the industries in Sichuan Province has also witnessed changes, with the ratio of the three industries adjusted from 11.5:36.1:52.4 in the previous year to 10.5:37.0:52.5, which better aligns with the needs of modern economic development<sup>13</sup>.

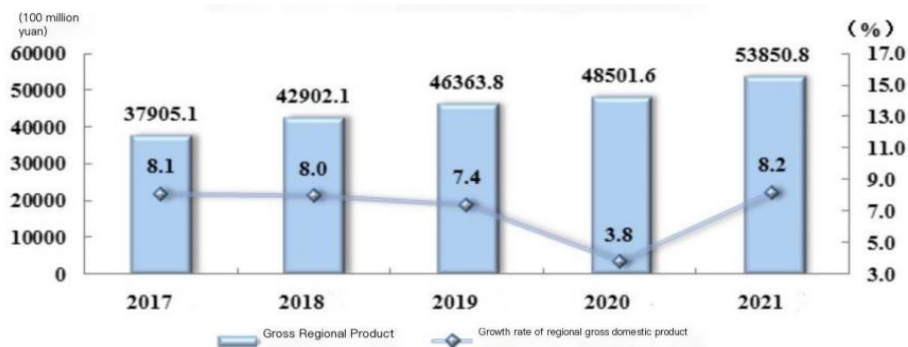


Figure 1. Regional Gross Domestic Product and Growth Rate from 2017 to 2021

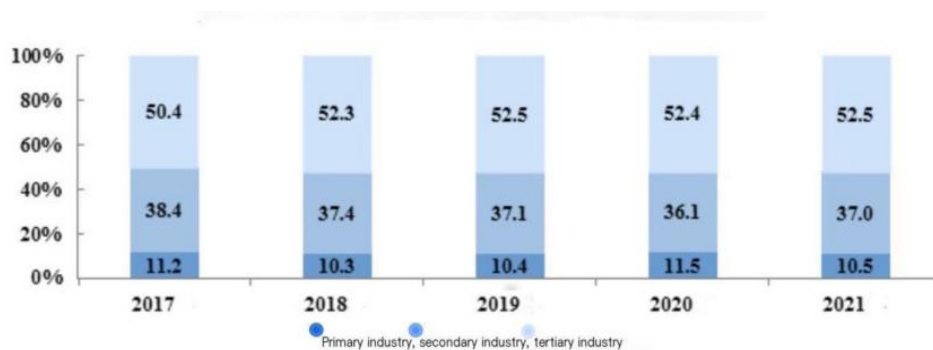


Figure 2. The proportion of added value of three industries to GDP from 2017 to 2021

In terms of regional analysis, the Chengdu Plain Economic Zone recorded a regional gross domestic product (GDP) of 32,927.8 billion yuan, representing a growth of 8.5% compared to the previous year. Specifically, the Chengdu Economic Circle had a regional GDP of 13,010.8 billion yuan, showing an 8.4% growth rate. The South Sichuan Economic Zone had a regional GDP of 8,761.0 billion yuan, experiencing an 8.6% growth rate. The Northeast Sichuan Economic Zone had a regional GDP of 8,230.2 billion yuan, with a growth rate of 7.6%. The Panxi Economic Zone had a regional GDP of 3,035.1 billion yuan, indicating a growth rate of 7.6%. Lastly, the Northwest Sichuan Ecological Demonstration Zone had a regional GDP of 896.7 billion yuan, showing a growth rate of 7.2%.

<sup>13</sup> <http://tjj.sc.gov.cn/scstjj/c111701/2021/3/14/c64ac94ca86c4714adaf117789e47073.shtml>

### **Private Economy**

The added value of the private economy for the year totaled 2,937.51 billion yuan, representing an 8.0% increase compared to the previous year. It accounted for 54.5% of the GDP. Specifically, the value added in the primary industry amounted to 138.74 billion yuan, with a growth rate of 6.5%. The value added in the secondary industry reached 12,883.4 billion yuan, experiencing a growth rate of 5.9%. Furthermore, the value added in the tertiary industry amounted to 15,104.3 billion yuan, resulting in a growth rate of 9.9%. The structure of the private economy's three industries was adjusted from 5.1:43.7:51.2 in the previous year to 4.7:43.9:51.4.

At the end of the year, the total number of private economic entities in the province reached 7.516 million, marking an 11.0% increase compared to the previous year. They accounted for 97.4% of the total number of market entities, with the number of private enterprises reaching 1.92 million, a growth rate of 18.9%.

### **Agriculture**

The total sown area of grain crops for the year was 6.358 million hectares, representing a 0.7% increase compared to the previous year. The sown area for oil crops was 1.652 million hectares, with a growth rate of 4.3%. The sown area for medicinal herbs was 0.15 million hectares, experiencing a growth rate of 4.0%. Additionally, the sown area for vegetables and edible fungi was 1.481 million hectares, with a growth rate of 2.5%.

The total grain output for the year reached 35.821 million tons, representing a 1.6% increase compared to the previous year. Within this, the output of early spring grain crops grew by 0.7%, while the output of main spring grain crops grew by 1.7%. In terms of economic crops, the output of oil crops was 4.166 million tons, marking a 6.0% increase. The output of vegetables and edible fungi was 50.504 million tons, with a growth rate of 4.9%. The output of tea leaves was 0.375 million tons, experiencing an 8.9% increase. The output of horticultural fruits was 11.542 million tons, representing a growth rate of 6.5%. Lastly, the output of medicinal herbs was 0.576 million tons, with a growth rate of 9.3%.

### **Industry and Construction**

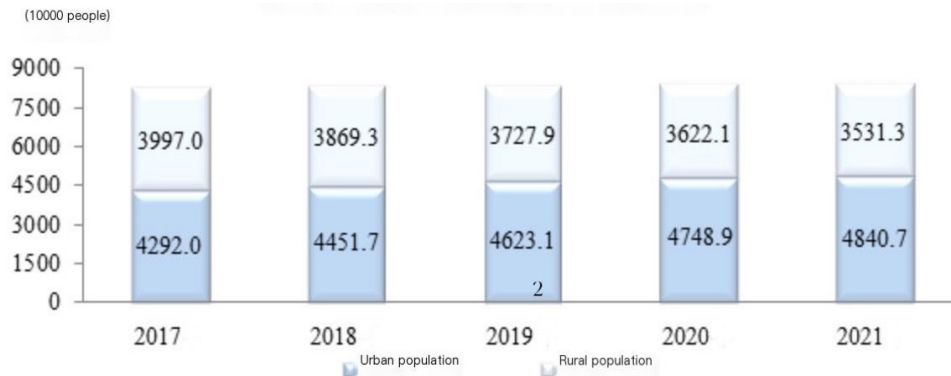
The added value of the industrial sector for the year was 15,428.2 billion yuan, marking a 9.5% increase compared to the previous year. Its contribution to economic growth stood at 32.3%. At the end of the year, there were 15,611 large-scale industrial enterprises, with the value added in the large-scale industrial sector growing by 9.8% throughout the year.

In terms of light and heavy industries, the added value of the light industry grew by 7.4% compared to the previous year, while the value added of the heavy industry increased by 11.1%. The ratio of the value added between the light and heavy industries was 3:7. When examining different types of enterprises, state-owned enterprises experienced a growth of 22.9%, collective enterprises observed a decline of 27.5%, shareholding enterprises increased by 9.7%, and foreign-funded enterprises, including those from Hong Kong, Macao, and Taiwan, grew by 13.1%.

Analyzing by industry, among the 41 major industries, 31 witnessed an increase in value added in the large-scale industrial sector. Specifically, the computer, communication, and other electronic equipment manufacturing industry saw a growth of 22.5% compared to the previous year, the petroleum and natural gas extraction industry increased by 21.4%, the electricity, heat production, and supply industry grew by 14.7%, the metal products industry by 12.0%, the non-metallic mineral products industry by 10.8%, the beverages and refined tea manufacturing industry by 10.5%, the pharmaceutical manufacturing industry by 10.3%, the chemical raw materials and chemical products manufacturing industry by 8.3%, and the automobile manufacturing industry by 8.2%. The added value of the high-tech manufacturing industry increased by 19.4% and accounted for 15.6% of the value added in the large-scale industrial sector. The value added of the five major modern industries grew by 10.9%, and the value added of the six major high energy-consuming industries increased by 9.5%.

### Populations

At the end of the year, the permanent resident population in Sichuan Province reached 83.72 million individuals, showing an increase of 10,000 compared to the previous year. Among them, the urban population stood at 48.407 million, while the rural population accounted for 35.313 million. The urbanization rate of the permanent resident population reached 57.8%, which was 1.1 percentage points higher than the previous year. The registered population in the province totaled 90.945 million individuals at the end of the year, reflecting an increase of 129,000 compared to the previous year.



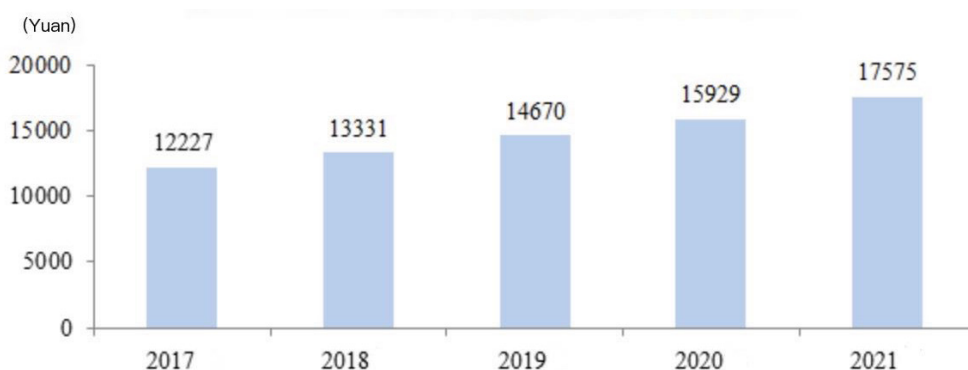
**Figure 3.** *Permanent Population at the End of 2017-2021*

The average disposable income per capita for all residents in the year was 29,080 yuan, showing a 9.6% increase compared to the previous year. When categorized by place of permanent residence, the average disposable income per capita for urban residents was 41,444 yuan, which increased by 3,191 yuan, representing an 8.3% increase compared to the previous year. Among this, earned income was 23,934 yuan, showing a growth of 9.0%; net operating income was 4,799 yuan, with a growth rate of 10.7%; net property income was 3,322 yuan, with an 8.6% increase; and net transfer income was 9,389 yuan, reflecting a 5.4% increase. The average consumption expenditure per capita for urban residents was 26,971 yuan, indicating a growth of 7.3%. Within this, expenditure on food, tobacco, and alcohol increased by 5.8%; clothing expenditure grew by 9.4%; transportation and communication expenditure increased by 15.7%; and education, culture, and entertainment expenditure grew by 13.5%. The Engel coefficient for urban residents was 34.3%.



**Figure 4.** *Per capita disposable income of urban residents from 2017 to 2021*

The average disposable income per capita for rural residents was 17,575 yuan, showing an increase of 1,646 yuan, representing a 10.3% increase compared to the previous year. Breakdown of the rural residents' average disposable income showed that wage income was 5,514 yuan, with a growth of 10.8%; operating net income was 6,651 yuan, with an increase of 8.1%; net property income was 587 yuan, showing a growth of 15.0%; and net transfer income was 4,823 yuan, reflecting a 12.5% increase. The average consumption expenditure per capita for rural residents was 16,444 yuan, indicating a growth of 10.0%. Within this, expenditure on food, tobacco, and alcohol increased by 9.0%; expenditure on household goods and services grew by 18.7%; expenditure on education, culture, and entertainment increased by 15.0%; and healthcare expenditure grew by 13.8%. The Engel coefficient for rural residents was 36.3%.



**Figure 5.** *Per capita disposable income of rural residents from 2017 to 2021*

At the end of the year, the number of participants in urban basic old-age insurance was 317.85 million, while the number of participants in rural basic old-age insurance was 318.11 million. The number of participants in basic medical insurance was 858.62 million, in unemployment insurance (excluding displaced farmers) was 112.89 million, in work-related injury insurance was 147.21 million, and in maternity insurance was 120.17 million.

The total number of urban subsistence allowance recipients was 589,000, while the number of rural subsistence allowance recipients was 3.596 million. The minimum living standard was set at 695 yuan per month for urban residents and 514 yuan per month for rural residents, representing increases of 82 yuan per month and 80 yuan per month, respectively, compared to the previous year. The number of extremely impoverished individuals in urban and rural areas was 455,000. At the end of the year, there were 14,067 community service institutions and facilities.

### **Economic Development in Ethnic Autonomous Areas**

In 2021, ethnic autonomous areas (including Aba Tibetan and Qiang Autonomous Prefecture, Ganzi Tibetan Autonomous Prefecture, Liangshan Yi Autonomous Prefecture, and Beichuan Qiang Autonomous County, Ebian Yi Autonomous County, and Mabian Yi Autonomous County) achieved a regional gross domestic product (GDP) of 300.68 billion yuan, representing a 7.3% increase compared to the previous year. Among this, the value added in the primary industry amounted to 63.64 billion yuan, with a growth rate of 6.7%; the value added in the secondary industry reached 95.02 billion yuan, experiencing an 8.1% growth rate; and the value added in the tertiary industry amounted to 142.02 billion yuan, resulting in a growth rate of 7.0%. The adjusted structure of the three industries was 21.2:31.6:47.2.

The industrial added value for the year was 79.51 billion yuan, reflecting a 9.2% increase compared to the previous year. Overall fixed asset investment in the region increased by 12.2% compared to the previous year. The total retail sales of consumer goods reached 108.93 billion yuan, representing



a growth of 12.7% compared to the previous year. The average disposable income per capita for rural residents was 16,541 yuan, indicating a growth of 10.3%, while the average disposable income per capita for urban residents was 38,090 yuan, reflecting an 8.2% increase.

3.2. The role of industrial upgrading in guiding the sustainable economic development of Sichuan Province.

3.3. The promotion effect of labor market dynamics on the sustainable economic development of Sichuan Province.

These three hypotheses will be tested through the analysis of the changing trends in the social-economic structure, industrial upgrading, and labor market dynamics in Sichuan Province, along with the standardized application of relevant economic models. By examining and validating these hypotheses, this paper will explore the sustainability of Sichuan Province's economic development and provide insights for future development strategies.

### **III. Evolution of Social-Economic Structure**

#### **1. Historical Evolution of Social-Economic Structure in Sichuan Province**

##### **1.1. Differences between Rural and Urban Areas**

Sichuan Province has undergone significant historical changes in its social-economic structure, characterized by distinct disparities between rural and urban areas. Rural areas traditionally relied heavily on agriculture as the primary economic activity, characterized by small-scale farming and a labor-intensive workforce. In contrast, urban areas have witnessed the growth of diverse industries, including manufacturing, services, and technology, leading to a more varied economic landscape and increased employment opportunities.

##### **1.2. Development of Key Industries**

Over time, Sichuan Province has witnessed the development and evolution of key industries within its social-economic structure. The dominance of the agricultural sector has gradually diversified to include manufacturing, technology, and services. This diversification has contributed to economic growth, improved living standards, and poverty reduction. Additionally, the strategic focus on industries such as energy, transportation, telecommunications, and tourism has played a pivotal role in driving regional development and attracting investment.

#### **2. Assessment of Social-Economic Structure from a Sustainable Development Perspective**

The assessment of Sichuan Province's social-economic structure from a sustainable development perspective emphasizes the significance of long-term viability and harmonious growth. This evaluation requires consideration of the environmental, social, and economic implications arising from the province's evolving structure. Key considerations include resource efficiency, environmental impact, social equity, and economic resilience. From an environmental standpoint, it is imperative to evaluate Sichuan's resource consumption, utilization patterns, waste generation, and environmental degradation associated with its social-economic structure. The evaluation should also recognize efforts to promote the adoption of clean technologies, the protection of natural resources, and the implementation of sustainable practices across key industries.

The social dimension of the evaluation involves examining the distribution of economic benefits and opportunities among different social groups in Sichuan Province. Assessing factors such as income inequality, access to education and healthcare, and social mobility helps assess whether the evolving social-economic structure fosters social inclusiveness and overall well-being. Lastly, the evaluation considers the economic aspects of sustainability, including the resilience and adaptability of Sichuan's social-economic structure to external shocks and long-term changes. Analysis of the province's capac-

ity for innovation, technological advancement, and promotion of entrepreneurship contributes to the establishment of a competitive and sustainable economy. Through the adoption of a comprehensive perspective on sustainable development, a meticulous evaluation of Sichuan Province's social-economic structure can identify strengths, challenges, and opportunities for further improvement.

#### **IV. Industrial Upgrading in Sichuan Province**

##### **1. Upgrading of Key Industries**

Sichuan Province has witnessed significant upgrading and transformation of its key industries. While traditional agriculture still holds importance, other sectors have also undergone continuous development and evolution. Manufacturing is one of the most significant industries in Sichuan, with a focus on automotive manufacturing, electronic devices, chemicals, and machinery. The service sector is rapidly growing, particularly in areas such as tourism, finance, culture and creativity, and logistics. Additionally, Sichuan plays an important role in the development of energy and mineral resources.

##### **2. Technological Innovation and Sustainable Industrial Development**

Sichuan Province is committed to promoting technological innovation and driving sustainable industrial development. Through increased research and development investment, fostering innovative enterprises, introducing advanced technologies, and protecting intellectual property rights, Sichuan aims to shift its industrial structure towards high technology, high value-added, and low-carbon development. Significant progress has been made in areas such as new energy, environmental protection technologies, high-end equipment manufacturing, and the digital economy.

##### **3. Impact of Policies and Market Factors on Industrial Upgrading**

The upgrading of industries in Sichuan Province is driven by a combination of policy and market factors. The government has formulated a range of policies and plans to support industrial upgrading, including initiatives to encourage innovation, provide financial support, and optimize the business environment. At the same time, market factors also play a significant role, including changes in domestic and international market demands, technological advancements, and the reshaping of the global industrial chain. The interaction of policy and market factors has propelled the upgrading and transformation of Sichuan's industrial structure. Continuous industrial upgrading not only promotes economic growth, enhances productivity, and increases employment opportunities in Sichuan Province but also contributes to the pursuit of sustainable development goals. This provides new impetus for the province's economic development and valuable experiences and insights for industrial upgrading in other regions.

#### **V. Labor Market Dynamics in Sichuan Province**

##### **1. Trends in Employment and Unemployment**

Sichuan Province has experienced notable trends in employment and unemployment within its labor market. Over the years, the province has witnessed overall growth in employment opportunities across various sectors, including manufacturing, services, and technology. This growth has contributed to a decline in the unemployment rate and provided job opportunities for a significant portion of the population. However, challenges still remain, particularly in relation to underemployment and the quality of jobs created<sup>14, 15</sup>.

##### **2. Evolving Education and Skill Levels**

The education and skill levels in Sichuan Province have undergone significant changes over time.

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<sup>14</sup> Wang, H., Liu, Y., & Zeng, X. (2020). The Impact of Labor Force Changes and Industrial Structure on Carbon Emissions in China. *Energies*, 13(9), 2391.

<sup>15</sup> Zhu, M., Wang, Y., Lu, H., & Shuai, C. (2019). Industrial Upgrading, Technological Innovation, and Carbon Emissions Reduction in China's Manufacturing Industry. *Sustainability*, 11(11), 3165.

The government has placed great emphasis on improving the education system, resulting in increased enrollment rates in primary, secondary, and higher education. This has led to a rise in the overall educational attainment levels among the workforce. Additionally, there have been efforts to promote vocational education and training programs to enhance skill development and meet the changing demands of the labor market.

### 3. Impact of Labor Market Dynamics on Sustainable Development

The dynamics of the labor market in Sichuan Province play a vital role in achieving sustainable development goals. A well-functioning labor market that offers fair wages, equal opportunities, and good working conditions fosters social inclusion and improves the overall quality of life. Additionally, a skilled workforce in line with industry demands enhances productivity and competitiveness, promoting sustainable economic growth. It is important for labor market policies to address issues such as income inequality, gender disparities, and the inclusion of marginalized groups to ensure equitable and sustainable development<sup>16, 17</sup>. The labor market dynamics in Sichuan Province present both opportunities and challenges for sustainable development. By closely monitoring employment trends, investing in education and skill development, and implementing labor market policies that promote inclusiveness and fair opportunities, Sichuan can harness the potential of its workforce and contribute to sustainable development objectives<sup>18, 19</sup>.

## VI. Results and Discussion

### 1. Interrelationship between Social-Economic Structure, Industrial Upgrading, and Labor Market Dynamics

The analysis reveals a significant interrelationship between the social-economic structure, industrial upgrading, and labor market dynamics in Sichuan Province. The evolving social-economic structure plays a vital role in shaping the direction and pace of industrial upgrading, while labor market dynamics influence the supply of skills and the adoption of new technologies. This interplay highlights the importance of a coordinated approach in achieving sustainable economic development.

### 2. Policy Implications of the Research Findings

The research findings provide valuable insights for policymakers. It emphasizes the need for policies that promote sustainable economic development by aligning social-economic structure, industrial upgrading, and labor market dynamics. These policies should focus on fostering innovation, improving education and skill development, promoting inclusive growth, and supporting the transition to environmentally friendly industries. Additionally, policy interventions should address regional disparities and inequalities to ensure equitable and balanced development.

### 3. Limitations and Future Research Directions

The research has certain limitations that need to be acknowledged. Firstly, the analysis is based on available data, which may have limitations in terms of completeness and accuracy. Secondly, the research focuses on Sichuan Province and may not fully capture the diversity of factors influencing sustainable economic development in other regions. Future research could explore these limitations by incorporating more comprehensive and precise datasets. Additionally, investigating the impact of specif-

<sup>16</sup> Wang, Y., Shi, J., Yuan, Y., & Tojo, Y. (2019). Urbanization, Industrialization, and Carbon Emissions in China: Empirical Evidence from Provincial Panel Data. *Energies*, 12(15), 2942.

<sup>17</sup> Li, Y., Gao, X., Duan, Y., & Mo, L. (2020). The Dynamic Relationships among Technological Progress, Urbanization, and Carbon Emissions in China. *Journal of Cleaner Production*, 266, 121970.

<sup>18</sup> Wang, H., Liu, Y., & Zeng, X. (2020). The Impact of Labor Force Changes and Industrial Structure on Carbon Emissions in China. *Energies*, 13(9), 2391.

<sup>19</sup> <http://tjj.sc.gov.cn/scstjj/c111701/2021/3/14/c64ac94ca86c4714adaf117789e47073.shtml>

ic policies and interventions on sustainable economic development would provide valuable insights for policymakers<sup>20, 21, 22</sup>.

### Conclusion

In conclusion, this research has examined the evolution of social-economic structure, industrial upgrading, and labor market dynamics in Sichuan Province within the context of sustainable economic development. The analysis highlights the interrelationships between these factors and emphasizes the importance of a coordinated approach for achieving sustainable development goals.

The research underscores the significance of aligning social-economic structure, industrial upgrading, and labor market dynamics towards sustainable economic development. Policy recommendations include prioritizing innovation, enhancing education and skill development, promoting inclusive growth, and supporting the development of environmentally friendly industries. Additionally, addressing regional disparities and inequalities is crucial for ensuring balanced and equitable development.

In reviewing the research outcomes, it is essential to recognize the progress made and identify areas for future exploration. The findings contribute to the existing body of knowledge on sustainable economic development and provide a foundation for further research on the topic. Future research could focus on exploring the impact of specific policies, evaluating the effectiveness of interventions, and investigating the experiences of other regions undergoing similar transitions.

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#### 2. Challenges and Difficulties Encountered during the Research

The study acknowledges the challenges and difficulties encountered during the research process. These may include limitations in data availability, methodological constraints, and complexities associated with analyzing the interrelationships between various factors.

#### 3. Research Findings and Experiences

The research has yielded valuable findings and provided insights and experiences that can contribute to the broader understanding of sustainable economic development.

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<sup>21</sup> Wang, Y., Shi, J., Yuan, Y., & Tojo, Y. (2019). Urbanization, Industrialization, and Carbon Emissions in China: Empirical Evidence from Provincial Panel Data. *Energies*, 12(15), 2942.

<sup>22</sup> Xu, Y., Lv, S., Wang, X., & Zhang, J. (2019). Driving Factors of Industrial Structure Evolution and Sustainable Development in Western China. *Energies*, 12(11), 2149.

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