

Research on the Strategies of Smart Transformation of Resource-based Cities: Taking Panzhihua City as an Example

Feng Yu, Luo Pinjie

Chengdu Neusoft University, Chengdu, Sichuan, China

Keywords: Resource-based city; Smart transformation; Panzhihua City

Abstract: This article takes Panzhihua City as an example to explore the strategies of smart transformation of resource-based cities. Through in-depth analysis of the characteristics of Panzhihua City as a resource-based city, the status quo of smart transformation, and the problems faced, this article proposes strategic suggestions for the smart transformation of Panzhihua City. This article believes that Panzhihua City should promote smart transformation from the aspects of industrial structure optimization, intelligent urban planning, ecological environment protection, urban management refinement, and intelligent public service to achieve sustainable urban development.

1. Introduction

With the acceleration of the global urbanization process, resource-based cities are facing problems such as heavy ecological and environmental pressure, single industrial structure, and unreasonable urban planning. In order to achieve sustainable urban development, resource-based cities need to accelerate the pace of smart transformation. This article takes Panzhihua City as an example to explore the strategies for the smart transformation of resource-based cities, with a view to providing reference for the development of similar cities.

2. Overview of resource-based cities

2.1 Definition and characteristics of resource-based cities

A resource-based city refers to a city that has emerged or developed based on the exploitation of natural resources. These cities usually have abundant natural resource reserves, such as mineral, forest, and agricultural resources. However, as the exploitation of resources gradually depletes, resource-based cities often face a series of problems, such as a single industrial structure, deterioration of the ecological environment, and unreasonable urban planning. In order to achieve sustainable development of the city, resource-based cities need to undergo a smart transformation.

2.2 Development stages and transformation necessity of resource-based cities

The development of resource-based cities is usually divided into three stages: the resource exploitation period, the resource dependence period, and the transformation and development period. During the resource exploitation period, cities mainly rely on the development and utilization of natural resources to promote economic development. However, as the reserves of resources decrease, cities gradually enter the resource dependence period, at which point they need to seek new ways of development to support sustained economic growth. In order to achieve sustainable urban development, resource-based cities ultimately need to enter the transformation and development period, shift their economic development mode, and promote industrial upgrading and transformation^[1].

2.3 The status and role of Panzhihua as a resource-based city

Panzhihua is a resource-based city in Sichuan Province, rich in mineral and vanadium-titanium resources. As an important steel, vanadium-titanium, and energy base in China, Panzhihua plays an important role in national strategy. However, with the decrease of resource reserves and the increase

of ecological environmental pressure, Panzhihua is facing severe challenges. In order to achieve sustainable development of the city, Panzhihua needs to accelerate the pace of smart transformation, optimize industrial structure, improve urban planning and management level, strengthen ecological environmental protection, and promote the intelligentization of public services.

3. Overview of Smart City

3.1 Definition and characteristics of smart cities

Smart city refers to a city form that uses modern technology and intelligent equipment to improve urban transportation, energy, environment, public services, and other aspects, and enhance urban management efficiency and people's quality of life. Smart cities usually have the following characteristics:

1) Construction of information infrastructure: Smart cities need to build a sound information infrastructure, including the Internet, the Internet of Things, and big data centers, to achieve information exchange and data sharing in various fields of the city.

2) Intelligent public services: Smart cities provide more convenient and efficient public services through intelligent equipment and service platforms, such as intelligent transportation, smart healthcare, and smart education.

3) Green and sustainable development: Smart cities focus on environmental protection and sustainable development, optimizing urban resource utilization and environmental protection through intelligent management and monitoring methods.

4) Innovation industry development and talent cultivation: Smart cities actively promote the development of innovative industries, attract and cultivate high-quality talents, and enhance the city's innovation capabilities and competitiveness.

3.2 Development Trends and International Experience of Smart City

1) Development trend: With the continuous advancement of science and technology and the acceleration of urbanization, the development trend of smart cities is becoming more diversified and personalized, involving multiple fields such as urban planning, management, service, and industry. At the same time, smart cities also pay more attention to data sharing and openness, promoting cooperation between government and enterprises, and realizing intelligent upgrading in various fields of the city.

2) International experience: Many developed countries have begun to build smart cities and have gained some successful experience. For example, Singapore has become one of the world's leading smart cities through the "Smart Nation 2025" plan; Silicon Valley in the United States is one of the centers of global scientific and technological innovation, and its smart city construction focuses on the development of innovative industries and the cultivation of talents. These international experiences can provide useful reference for the construction of smart cities in China^[2].

3) Integrated development of smart cities and resource-based cities

Resource-based cities face problems such as a single industrial structure and deteriorating ecological environment in the process of development, while the construction of smart cities can provide new development impetus and ideas. By introducing the technology and concept of smart cities into resource-based cities, it can promote the upgrading and transformation of the industrial structure of the city, improve the level of urban planning and management, and promote green and sustainable development. At the same time, resource-based cities can also use their rich natural resources and development experience to provide support and guarantee for the construction of smart cities. Therefore, the integrated development of smart cities and resource-based cities has broad prospects and potential.

4. Analysis of Problems in Panzhihua's Smart Transformation

4.1 Status Quo of Panzhihua's Smart Transformation

As a resource-based city, Panzhihua has actively promoted its smart transformation in recent years and achieved certain results. In terms of information infrastructure construction, Panzhihua has built a relatively complete information infrastructure, including the Internet, the Internet of Things, and a big data center, basically achieving information interflow and data sharing in all fields of the city. In terms of intelligent public services, Panzhihua has launched public services such as intelligent transportation, smart healthcare, and smart education, improving the quality of citizens' lives and the efficiency of the city's operation. In terms of green and sustainable development, Panzhihua has begun to focus on environmental protection and sustainable development, optimizing urban resource utilization and environmental protection through intelligent management and monitoring methods.

4.2 Problems Faced by Panzhihua's Smart Transformation

Although Panzhihua has achieved certain results in its smart transformation, it still faces some problems. Firstly, the industrial structure of Panzhihua is relatively single, mainly relying on traditional industries such as steel and coal, with relatively few emerging industries and high-tech industries, which restricts the development of Panzhihua's smart transformation. Secondly, the information technology level in Panzhihua is relatively low, lacking professional technical talents and innovation capabilities, which is difficult to meet the needs of smart city construction. In addition, there are still some obstacles to data sharing and openness in Panzhihua, and cooperation between government and enterprises needs to be further strengthened.

4.3 Analysis of the Causes of the Problems

The reasons for the problems in Panzhihua's smart transformation are various. Firstly, the single industrial structure mainly relies on traditional industries, which limits the development of emerging industries and high-tech industries. Secondly, the information technology level in Panzhihua is relatively low, lacking professional technical talents and innovation capabilities, which is difficult to meet the needs of smart city construction. In addition, there are still some obstacles to data sharing and openness in Panzhihua's government cooperation between government and enterprises needs to be further strengthened. Therefore, to solve the problems facing Panzhihua's smart transformation, it is necessary to start from aspects such as industrial structure, information technology level, and government cooperation to promote the healthy development of smart cities.

5. Strategic suggestions for the smart transformation of Panzhihua City

5.1 Strategy for optimizing industrial structure

The problem of a single industrial structure in Panzhihua City can be solved by implementing strategies to optimize the industrial structure. On the one hand, it is possible to actively develop emerging industries and high-tech industries, encourage enterprises to carry out technological innovation and industrial upgrading, and promote the diversified development of industries. On the other hand, it is possible to promote the transformation and upgrading of traditional industries through policy guidance and market mechanisms, improve the technological level and added value of industries. In addition, it is also possible to strengthen cooperation with neighboring regions, promote regional coordinated development, and achieve resource sharing and complementary advantages^[3].

5.2 Intelligent strategy for urban planning

The intelligentization of urban planning in Panzhihua needs to be supported by intelligent means to achieve the digitalization and refinement of urban planning. Advanced information technologies such as big data, artificial intelligence, and cloud computing can be introduced to comprehensively perceive and analyze urban resources, and formulate more scientific and reasonable urban planning

schemes. At the same time, attention should be paid to the rational use of urban space and environmental protection to achieve sustainable urban development.

5.3 Ecological environment protection strategy

Ecological environment protection in Panzhihua City is one of the important aspects of smart transformation. It can be achieved by promoting the concept of green and low-carbon development, strengthening environmental protection publicity and education, and enhancing the public's awareness of environmental protection and participation. At the same time, effective measures should be taken to protect the ecological environment, such as promoting clean energy, strengthening environmental monitoring and governance. In addition, it is also possible to achieve a positive interaction between economic development and environmental protection through the development of eco-tourism and other industries.

5.4 Strategies for refined urban management and intelligent public services

The refinement of urban management and the intelligence of public services in Panzhihua City need to be supported by information technology to improve the efficiency and quality of urban management and public services. The digitization and refinement of urban management and public services can be achieved through the construction of a digital urban management platform and an intelligent public service system. At the same time, it is necessary to strengthen the construction of talent teams for urban management and public services to improve the management and service level.

5.5 Guarantee measures and suggestions

In order to ensure the smooth progress of the smart transformation of Panzhihua City, a series of safeguard measures and suggestions are needed. Firstly, it is necessary to strengthen policy support, formulate policies and regulations conducive to smart transformation, and encourage enterprises and individuals to participate in the construction of smart cities. Secondly, it is necessary to increase investment, attract social capital to invest in the construction of smart cities, and promote the sustainable development of smart cities. In addition, it is necessary to strengthen the training and introduction of talents, and establish a talent team for the construction of smart cities. Finally, it is necessary to strengthen publicity and education, and improve the public's awareness and participation in the construction of smart cities.

6. Conclusion

Through the above content, we can see that as a resource-based city, Panzhihua's smart transformation is an inevitable choice for its sustainable development. In terms of industrial structure, urban planning, ecological environment protection, urban management, and public services, Panzhihua needs to actively introduce intelligent means to optimize urban development strategies to achieve sustainable urban development. At the same time, Panzhihua's smart transformation will also provide beneficial reference and inspiration for other resource-based cities.

Acknowledgements

Specialized Key Program of the Center for Resource-based City Development Studies in 2022 Implementing the Spirit of the 20th National Congress of the Communist Party of China Research on Smart City Construction of Resource-based City in the New Era: Taking Panzhihua as An Example (ZYZX-ZXZD-2203)

References

[1] Li Bo, Shi Shixin A Study on the Transformation and Development Motivation of Resource based Cities - Taking Panzhihua City as an Example [J] Chongqing and the World (Academic

Edition), 2015, 32 (10): 1-5+8

[2] Qin Xiao, Zhen Feng, Zhu Chuangyuan, et al. Content and Considerations of Building a Smart City Spatial-temporal Big Data Platform. *Geomatics World*, vol. 21, no. 5, 2014, pp. 17-20.

[3] Li Dong Industrial transformation strategies for high-quality economic development in resource-based cities: A case study of Panzhihua City *China's Land and Resources Economy*, 2021, 34 (05): 40-44+82