

## **Green Transformation Research overview of resource-based cities domestic and overseas**

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**Abstract:** Most resource-based cities are facing many issues which impact urban development during the growing period, such as depleted resource and declining city, and worsening environmental pollution. Sustainable development of resource-based cities demands a green transformation. This paper, based on vast quantity of references, reviews each stage of urban transformation and sustainable development, studies the concept of resource-based city, developing stage, theoretical advances domestic and overseas, sets up and optimizes theoretical index system for resource-based cities and sustainable development. Quantitative analysis is the current research focus.

### **1. Definition of relevant concepts.**

#### **1.1 Resource-based cities**

(1)The broad sense: Resource-based cities refer to cities that take the exploitation and processing of natural resources as the leading industry or pillar industry, and the development of resource-based industries plays an irreplaceable role in the economic and social development.

(2)The narrow sense: Some people think that the narrow sense of resource-based city refers to the mining and primary processing of mineral resources, mineral resources industry in the local economic structure occupies a relatively important position in the city, the primary processing of mineral resources including iron and steel industry, non-ferrous metallurgy industry and petroleum industry. Most of the studies in China focus on narrow resource-oriented cities, with similar concepts such as industrial and mining cities and mining cities.

#### **1.2 Green transformations**

Green transformation refers to the transformation of development mode to sustainable development with ecological civilization construction as the leading factor, circular economy as the foundation and green management as the guarantee, so as to realize resource conservation, environmental friendliness and ecological balance, and harmonious development of human, nature and society.

### **2. Literature review at home and abroad**

#### **2.1 foreign research reviews**

According to different research contents, historical background, research methods and theoretical basis, the development process of foreign resource-based city research can be divided into four stages, as shown in table 1:

Table 1 Research development stages of resource-based cities domestic and overseas

Phase	Theory
<b>Theoretical foundation and initial stage</b>	In the initial stage, Stephen Jones analyzed and compared be can more, a Canadian mining city, and Banff, a tourist city, but it was still in the descriptive stage. Previous studies have shown that Watkins Melville and Gordon have verified and improved the commodity theory by studying the economic growth of resource cities in Canada, and have a great influence on the research in this field. It has been prove that Siemens from the community residential research center of the university of Manitoba in Canada started the research on resource-based towns in the 1970s.
<b>The stage of theoretical normalization</b>	In the late 1960 s, the capitalist countries for more than 20 years of economic structure adjustment process, the developed capitalist countries conducted a series of dramatic social and economic change, begin to pay attention to the study of resource-based cities and towns, for resource-based cities and towns the lack of related research, Bradbury thinks that widespread social problems in the work of resource-based cities and towns should be fully studied, so as to make a concrete analysis to find problems, the related study is pointed out that the basis of the theory of resource-based urban development is not balanced development of the region. Bradbury made applicable supplements to the resource-based town development life cycle theory proposed by Lucas, adding two new stages, namely the recession stage and the closure stage; And through specific empirical analysis to do a summary study.
<b>Transformation research stage</b>	Studies have demonstrated that since the late 1980s, with the progress of The Times, economic globalization and the emergence of multinational companies, resource-based cities have entered a period of stagnation. Economic development started from resource-dependent to technology-driven, which also promoted the research on resource-based cities. The theories in this aspect mainly include labor market theory, industrial development theory and international trade theory. In the 1990s, Hayter and Barns summarized the distinctive development trend of Canadian continentalism in the development of economic globalization. It is pointed out that the resources of small towns in the core of Canada are the principle foundation of the economic and social development of Canada.
<b>The stage of sustainable development</b>	At the stage of sustainable development of resource-based cities, the research on resource-based towns has become the principle direction of the research. Related research is mainly carried out from the aspects of resource development, regional development, community construction and environmental protection, etc. The development of resource-based cities is mainly considered from the aspects of labor market and industrial transformation. Markey and Sean concluded that the comparative competitive advantage of cities is of strategic significance in the transformation of resource cities.

## 2.2 Domestic research reviews.

Existing studies have shown that, for resource-based cities, domestic scholars carry out research on the concept of resource-based cities, the major economic and social problems they are facing, and the transformation mode, efficiency, countermeasures and evaluation system of traditional economic production mode of resource-based cities. Some people indicate that there are four types of industrial transformation paths for China's resource-based cities. 2) path of renewal of exogenous leading industry; 3) extension path of resource-based leading industry; 4) development path of

resource-processing hybrid industry. Delete the gradual deepening of the transformation of resource-based cities, more and more attention has been paid to the evaluation of the effectiveness of the transformation of resource-based cities and the degree of sustainable development.

### 3. Research methods

By reading literatures, there are mainly the following researches on the transformation of resource-based cities at home and abroad, as shown in table 2:

Table 2 Transformation research methods of resource-based cities

Research methods	The research content
<b>Mathematical model construction method</b>	Some scholars built and applied the dynamic SSA model to analyze and study the industrial structure and life cycle of resource-based cities, and concluded the importance of transformation of resource-based cities. Based on the positioning of the transformation subject, internal industrial advantages and various mathematical models, theoretical models of coordination elasticity and life cycle optimization control are established to consider the direction of transformation. By establishing correlation regression equation and structural equation model, the effect and feasibility of resource-based city transformation were evaluated.
<b>SWOT analysis</b>	This paper analyzes the advantages (S), disadvantages (W), opportunities (O) and threats (T) of resource-based cities, analyzes the strategic path of resource-based cities' transformation and sustainable development by using matrix and model, conducts research and evaluation on industrial transformation, and deeply studies the opportunities and challenges of talents, resources and environment in various aspects.
<b>Analytic hierarchy process</b>	Some scholars analyzed the feasibility of the transformation of resource-based cities by using evaluation indexes such as sustainable development ability, economic and social strength and transformation performance, etc., determined the problems encountered by resource-based cities in the green transformation through the analytic hierarchy process, and made countermeasures to improve and perfect the transformation mechanism.
<b>Fuzzy comprehensive evaluation method</b>	The fuzzy comprehensive evaluation method is used to estimate the fuzzy government behaviors and various economic behaviors, and the fuzzy comprehensive evaluation method is adopted to realize the optimization analysis.
<b>Other methods</b>	Various methods, including coefficient of variation method, Delphi method, an energy analysis method, correlation analysis method and location entropy analysis method, have been used to obtain good results.

### 4. Research on green transformation of resource-based cities

"Green economic blue book" is the famous British economist Stuart peace published in 1989, it published on the arrival of the era of green economy, green economy is based on the sustainable development thought, the new concept of economic development, the green economy is defined as starting from the social and ecological conditions to build a "sustainable economy", the aim is to improve human welfare, improve the degree of social justice at the same time, minimize damage to the ecological environment. Under the far-reaching influence of realism and green movement, the thought of sustainable development was gradually introduced into China. In August 1973, the first national environmental protection conference was grandly held in Beijing, which indicated that China's environmental protection cause had taken a solemn opening step. The report of the 18th national congress of the communist party of China clearly put forward the concept of a new

five-pronged layout including ecological civilization, thus laying a solid policy support for the strategic decision of the green economy and green transformation proposed by China.

Firstly, green transformation should be preformed around the transformation of leading industries. For resource-exhausted resource-based cities, the cultivation of emerging leading industries must be preformed, while for resource-abundant resource-based cities, the green transformation of industries must follow the law of gradual transformation. Secondly, the green transformation of resource-based cities also emphasizes the cultivation and growth of emerging non-resource-based industries. Through their own green upgrading, they can cooperate with resource-based industries, promote economic progress and finally complete the construction of green industry system. Thirdly, the green transformation should finally realize the green reconstruction of industry, that is, the establishment of green industry system. This industrial system, unlike the general economic transformation, must take the industrial transformation as the forerunner and the breakthrough, but the agriculture, the industry, the service industry three big industries omni-directional synchronous green construction. Finally, the general economic transformation of resources city to emerging to replace the main selection criteria is the industry leading industry must be "full of vitality", the full of vitality of the industry must be able to prevent failure of the resource-based cities ore exhaust city, however, the breeding process of leading industry is not emphasis on greening, namely the emerging of leading industry in promoting the sustainable development of resources city at the same time, may still lurking ecological hidden trouble, did not completely get rid of the black economy growth model. However, the green transformation of resource-based cities requires not only "full of vitality", but also "greening". Only in this way can the green industrial system be built without any worry about the ecological environment.

## **5. Ways of transformation of resource-based cities in China**

### **5.1 Put people first**

Resource-based cities research in economic geography in our country, mainly for the regional economic development and regional planning and construction services, with a strong color of macro economics and geography, relatively neglected by local residents or laborers as the main body, resource-based city residents before and after the transformation attitude, family life, population structure, behavior and mental changes such as research. While emphasizing the social development of "humanism", China should strengthen the micro-scale study of "human" as the main body in resource-based cities, avoid the phenomenon of "exhausted city" and "ghost city", and promote the harmonious development of urban society.

### **5.2 Put transformations in the national economic system**

The transformation of resource-based cities is not only for the survival and development of resource-based cities, but also for the sustainable development of the entire society. With the rapid development of China's economy from industrialization to modernization, resource-based cities have contributed a lot to China's economic growth. However, it is precisely because of this overuse of resources that excessive exploitation of resources has led to adverse consequences. The green transformation of resource-based cities requires the cooperative efforts of human society. Depending on the problem of single ownership structure of resource-based cities, the state should put the incremental factors of economic transformation of resource-based cities into the national economic system to promote the coordinated and green development of cities. In the comprehensive adjustment of domestic economic structure and the promotion of urban transformation and upgrading, the concept of sustainable development should be used to guide the economic transformation of resource-based cities.

### **5.3 Rational uses of administrative means**

To encourage, support and guide various economic behaviors in the transformation of

resource-based cities by introducing relevant policies in accordance with the law and using administrative means in compliance with the law; In addition, it is necessary to reform relevant improper regulations, introduce relevant countermeasures, pay the necessary costs in the transformation process, strengthen local governments' awareness of the transformation of resource-based cities at all levels, intensify the transformation efforts, promote the green transformation of resource-based cities, and promote the transformation and upgrading of resource-based cities, so as to promote the incremental factors of China's economic development.

## 6. Summary and prospect.

Through the research on the transformation of resource-based cities, it can be seen that the transformation of resource-based cities is a work with a long cycle, extensive content and complicated form. At present, domestic studies on the transformation of resource-based cities basically follow foreign studies, but foreign studies mainly focus on the pre-21st century, and their political, economic, cultural and environmental conditions are quite different from China. Under the new situation of global economic turbulence, we should fully learn from overseas experience and combine with China's development reality to further study the transformation of resource-based cities suitable for China's roads and realize the sustainable development of cities.

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