

Research on the Development Problems and Counter Measures of National Ecological Civilization Construction Demonstration District - A Case Study of Chongqing Bishan District

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Abstract:

The national ecological civilization construction demonstration district represents the leading level of a country's ecological civilization construction, which has a reference significance to the promotion of ecological civilization construction in other parts of the country. Based on the research of for the construction of ecological civilization as the foundation, using the combination of empirical analysis and normative analysis research methods, selection of Chongqing Bishan district as a representative in China, based on the scientific, systematic, accessibility and operability principle, since the selected national demonstration area of ecological civilization construction current situation of the development of comprehensive evaluation. The results reveal there are still some deficiencies in the ecological economy, ecological environment, and ecological system. Through an in-depth analysis of the causes of the issues, this paper finally proposes countermeasures and suggestions from the following five aspects: improving laws and regulations, implementing green development, implementing low-carbon economy, promoting garbage sorting and strengthening publicity and education.

Keywords: *ecological civilization demonstration area; Evaluation index system; Development strategy.*

I. INTRODUCTION

With the rapid development of the economy and society, the excessive exploitation and waste of natural resources are becoming more and more serious. In 2017, Ministry of Environmental Protection of China (now the Ministry of Ecology and Environment) released the list of the first batch of national ecological civilization construction demonstration districts. This has affirmed the work of ecological civilization construction in 46 counties, districts, and cities, and provided a model for the exploration and practice of ecological civilization construction in various regions.

National ecological civilization construction demonstration district refer to their mature development in economic, cultural, environmental and social fields and complete system construction. They are able to

grasp the pulse of The Times, closely follow the major policies of the state, and constantly adjust and optimize on the basis of the changes in various fields at any time. As a classic model of scientific development in the new period, regional development experience can be copied and popularized and can be widely used in all regions of the country.

Chongqing Bishan district, with its emphasis on the construction of ecological civilization and the implementation of the concept of green development, has successfully been selected as a national ecological civilization construction demonstration district, ushering in a good development opportunity and becoming the focus of people's attention. But at the same time, we should see that economics and social development are dynamic, especially the coordination between economic and social and ecological environment, which is often difficult and fragile. With the development of recent years, the first batch of national ecological civilization construction demonstration districts, taking the Chongqing Bishan district as an example, have gradually faced new challenges while enjoying rapid development. The adaptability of policies and measures to the requirements of economic and social development in the new era, the rapid transformation of industrial structure and the adaptability of supporting planning standards, and the adaptability of public ecological civilization quality and ecological civilization atmosphere have gradually formed new constraints. This paper aims at analyzing the status quo of ecological civilization construction in Chongqing Bishan district, revealing the deficiencies in the current stage, and putting forward some suggestions to adapt to the new era. In order to better utilize the ecological dividend to promote economic and social development, so as to enhance the radiation and driving effect of the demonstration district.

The research on the construction of ecological civilization can be divided into three types: the perspective of the evaluation system, the perspective of influencing factors and the perspective of institutional strategy. The evaluation system lay emphasis on the scientific selection of evaluation indicators, the difference and determination of evaluation methods, and the test of evaluation results. The perspective of influencing factors mainly focuses on two aspects: the driving force of promoting the construction of ecological civilization and the restricting factors that restrict its development. The perspective of institutional strategy mainly focuses on the changes brought by different systems and strategies to the goals, methods, measures, and effects of ecological civilization construction in practice. The difference and connection between the three in that the perspective of the evaluation system is often used in the empirical analysis to reflect objective facts. However, the perspective of influencing factors and institutional strategies is often seen in normative analysis, and often add value judgments to reveals the basis for solving problems.^[1-3]

In recent years, the construction of ecological civilization has become the focus of the academic community, with representative research results emerging. Ma Wenbin^[4] focused their attention on the evaluation of ecological civilization demonstration districts in the upper reaches of the Yangtze River and constructed the evaluation index system of ecological civilization from the perspective of scientific nature, operability and suitability. Qin Weishan^[5] took the construction and measurement of the evaluation index system of urban ecological civilization construction as the perspective, and selected 5 typical urban areas with regional differences and large differences in resource endowment for systematic analysis. By using dynamic factor analysis, Cheng Jinhua^[6] made static and dynamic analysis of 10-year data of many

provinces in China, and explored the differences of ecological civilization construction and improvement paths among different regions. In addition, scholars such as Huang Qin^[7], Shu Xiaolin^[8], Lu Feng^[9] and Wen Tiejun^[10] have also carried out similar or different studies and explorations on regional ecological civilization construction from their own perspectives. The existing studies provide the impetus for the in-depth analysis of the development status of the national ecological civilization construction demonstration district from the academic foundation and ideas.

II. ANALYSIS OF THE SITUATION

Chongqing Bishan district, located in the upper reaches of the Yangtze River, has nine towns and six streets under its jurisdiction, with a permanent population of about 730,000 and a land area of 914.55 square kilometers. In the process of economic construction, it always takes a "beautiful green city, vibrant water city, cultural ancient city" as the target, insists on giving priority to environmental construction, and pays attention to high-quality economic development. While protecting the environment, the economy is growing at a high rate. At present, it has made outstanding achievements in ecological environment construction, with a public green space area of 18 million square meters. It has won the national water and soil conservation ecological environment construction demonstration county, China habitat environment model award, national water conservancy scenic spot, national low-carbon industrial park pilot, national water ecological civilization city construction pilot and other national titles.

2.1 Economic Development Status

According to the data of 2020, the total GDP of Chongqing Bishan district is 74.71 billion yuan, the per capita GDP is 99,479 yuan, and the total GDP growth rate is 4.8%, which is higher than the city's average level. As shown in Figure 1, its economy has maintained rapid growth in the past 10 years, and its regional GDP has grown significantly, with an annual growth rate greater than 10%. In 2020, its total GDP will increase by 56.17 billion yuan compared with 2010, an increase of 4 times. On the whole, although its economic development has been affected by the epidemic, the overall situation is relatively good.

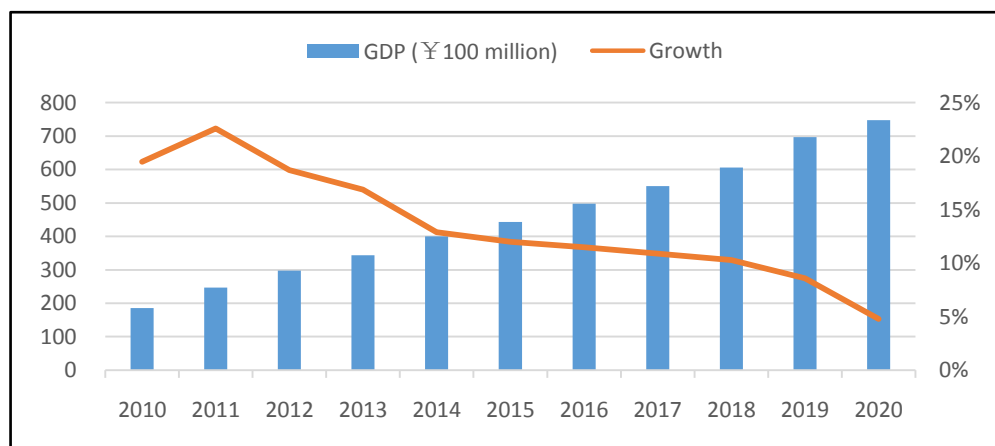


Figure 1: GDP of Bishan district 2010-2020

2.2 Ecological Environment Status

Chongqing Bishan district has introduced many measures and invested a lot of financial resources in the governance of the ecological environment, and the improvement of environmental quality within the jurisdiction has achieved initial results. In terms of institutional measures, the river chief system is implemented to implement the responsibility for river water pollution; the environmental pollution accident responsibility system is to increase pollution punishment; the introduction of enterprises is related to regional financial rewards and punishments; carbon development + circular economy” development path and other measures. In 2020, 5 new wetland parks were added, 3 wetland parks were under construction, the number of district and county parks exceeded 35, the urban public green space area reached 19 million square meters, the per capita green space area reached 29 square meters, and the urban plant species exceeded 2,800. Greening reaches 250,000 square meters. The current construction of "sponge city" has been completed. The urban water area accounts for 10.6%, the per capita water surface area reaches 10.2 square meters, and the density of streams exceeds 3.3 kilometers per square kilometer. The structure of "one river, six lakes and eighteen wetlands" is basically formed.

III. ASSESSMENT

3.1 Index Selection

The ministry of environmental protection of China (now the ministry of ecology and environment) has promulgated in 2016 the index system of national demonstration county and city for ecological civilization construction (trial). According to the new situation and new requirements of national ecological civilization construction, the indicator system follows the development concept of innovation, coordination, green, openness and sharing, and sets 35 indicators for demonstration city construction from six aspects: ecological space, ecological economy, ecological environment, ecological life, ecological system, and ecological culture. This index has become the basis to measure whether a region meets the national ecological civilization construction demonstration county, city standard. This paper is based on the principles of scientificity, systematicness, operability, and accessibility, and based on the indicators of national demonstration county and city for ecological civilization construction (trial). A total of 4 items of ecological space, 3 items of ecological economy, 5 items of ecological environment, 7 items of ecological life, 3 items of ecological system and 4 items of ecological progress, forming an indicator system with 6 items of first-level indicators and 26 items of second-level indicators.^[11-13]

3.2 Assessment Result

Based on the first-hand data collected from the field survey and the second-hand data collected from the government yearbook, this paper evaluates the current situation of ecological civilization construction in Chongqing Bishan district, as shown in TABLE 1.

TABLE 1: Evaluation of ecological civilization development in Chongqing Bishan district

| Level indicators | The secondary indicators | Unit | Observations | Result |
|------------------------|---|---|----------------------------|-------------|
| Ecological space | Ecological wealth | - | Delineation and compliance | Reached |
| | Red line | - | Delineation and compliance | Reached |
| | The protected areas occupy an area of land | % | ≥ 22 | Reached |
| | Planning environmental assessment implementation rate | % | 100 | Reached |
| Ecological economy | Energy consumption per unit of GDP | Ton standard coal/Ten thousand(¥) | ≤ 0.45 | Not reached |
| | Water consumption per unit of GDP | Cubic meter/Ten thousand(¥) | ≤ 80 | Reached |
| | Output value per unit industrial land | 100 million(¥)/Square kilometer | ≥ 55 | Reached |
| Ecological environment | Emission intensity of major pollutants | Sulfur dioxide | ≤ 3.5 | Not reached |
| | | Nitrogen oxides | ≤ 4 | |
| | | Particulate matter | ≤ 4.5 | |
| | Environmental quality of surface water | To meet or exceed class III proportions | ≥ 75 | Reached |
| | Forest coverage | % | ≥ 40 | Reached |
| Ecological life | Safe disposal rate of hazardous waste | % | 100 | Reached |
| | Major and major environmental emergencies | - | Not occurred | Reached |
| | Urban sewage treatment rate | % | ≥ 95 | Not reached |
| | Harmless disposal rate of urban household garbage | % | ≥ 85 | Not reached |
| | Urban per capita park green area | Square meters/person | ≥ 13 | Reached |
| | Proportion of new green buildings | % | ≥ 30 | Reached |
| | Proportion of public transport trips | % | ≥ 50 | Not reached |
| | Penetration rate of energy-saving equipment | % | ≥ 65 | Reached |
| | Government green procurement ratio | % | ≥ 80 | Reached |

| | | | | |
|----------------------------|--|---|--------------|-------------|
| Ecological system | Plan for ecological progress | - | To implement | Reached |
| | The construction of ecological civilization accounts for the proportion of the party and government assessment | % | ≥ 20 | Reached |
| | Accountability system for ecological and environmental damage | - | To implement | Reached |
| Ecological progress | The proportion of party and government cadres who participate in training on ecological civilization | % | 100 | Reached |
| | Public awareness of ecological civilization | % | ≥ 80 | Not reached |
| | Environmental information disclosure rate | % | ≥ 80 | Reached |
| | Public satisfaction with the construction of ecological civilization | % | ≥ 80 | Reached |

According to the evaluation results, 20 of the observed indicators of ecological civilization construction in the Chongqing Bishan district reached the standard. However, there are still 6 items that fail to meet the standards, namely energy consumption per unit of GDP, the emission intensity of major pollutants, urban sewage treatment rate, urban household garbage harmless treatment rate, public transport travel ratio, and public awareness of ecological civilization. Generally speaking, the construction of ecological civilization in the Chongqing Bishan district is at a high level in recent years. However, there are still some deficiencies:

1)Energy consumption per unit of GDP. Its total energy consumption was 291.63 tons of standard coal, its GDP was 52.7 billion yuan, and its energy consumption per unit GDP was 0.5533 tons of standard coal per 10,000 yuan, exceeding the evaluation index of the national ecological civilization demonstration district by 0.45 tons of standard coal per 10,000 yuan. From the perspective of causes, its jurisdiction is sandwiched between two mountains, and it is distributed in a north-south direction. The urban area has a low radiation effect, and the gap between an urban area and the rural economy is large. In the suburbs and villages, there are still many small workshops and small processing enterprises represented by low technology content and high labor intensity. The products are low in industrial added value and high in energy consumption.

2)The emission intensity of major pollutants. Its annual emissions of sulfur dioxide in 2018 were 13,574 tons with an emission intensity of 14.84 tons per square kilometer. The annual emission of NOx was 9,955 tons and the emission intensity was 10.88 tons/K m². The annual emission of particulate matter was 6,019 tons and the emission intensity was 6.58 tons/K m². The three indicators all exceed the standard, it can be seen that the pollutant discharge should be strengthened. From the perspective of causes, although it actively responds to the national call to eliminate backward industries, it still plays a certain role in promoting local economic growth in the short term due to its large base and wide distribution of traditional enterprises, leading to its deficiencies in regulation and elimination speed and industrial structure to be optimized.

3)Urban sewage treatment rate and urban household garbage harmless treatment rate. Through the field investigation, it is found that there is still the phenomenon of sewage direct discharge in urban areas, and the sewage treatment rate is not up to 95%. There is still a phenomenon of disunity in the treatment of household garbage in suburban and rural areas, and the rate of harmless treatment of urban household garbage has not reached 85%. From the perspective of the causes, the sewage treatment facilities are relatively old, the domestic sewage in some areas is not connected to the urban sewage treatment network, the garbage recycling facilities coverage is not high, the utilization rate is low, landfill-based garbage treatment method has a greater impact on the environment.

4)The proportion of public transport trips. Employing a random sampling questionnaire survey, the public transport travel situation and satisfaction of its residents were investigated. The results showed that only 41 percent of residents chose to travel by public transport. From the perspective of causes, although its public transport network can satisfy the daily travel of residents, there are still some problems such as insufficient coverage density and poor route design in some areas, and it affects residents' travel experience and reduces the utilization rate of public transport.

5)Public awareness of ecological civilization. Its ecological environment education covers about 60% of the population, which has certain advantages in the whole country. However, it still lags behind 80% of the national standard for ecological civilization construction. From the perspective of causes, although the government has issued measures to improve the cultural quality of residents, the improvement of the overall cultural level still needs time to accumulate due to its large population base and largely rural population, and the overall improvement effect is not significant. Public awareness of regional economic and social development is still not strong, and participation in ecological civilization construction is still not high enough.

IV.COUNTERMEASURES AND SUGGESTIONS

As one of the first batch of national ecological civilization construction demonstration districts, Chongqing Bishan district has been recognized by the country and the society for its achievements in ecological civilization construction, which has played a demonstration role for other regions to take the road of ecological civilization construction. Its development course and experience exploration are of good reference significance, and its shortcomings and detours are of strong representativeness and research value. Taking the development of ecological civilization construction in the Chongqing Bishan district as an example, this paper puts forward some general countermeasures and suggestions for the promotion of overall ecological civilization construction.

4.1 Improve Protection of Laws and Regulations

The role of laws and regulations is to clarify the scope and red line of rights and responsibilities of each subject and to constrain each subject to exercise their rights and fulfill their obligations within the scope of legal provisions. In the construction of ecological civilization, we should further improve the ecological planning and strict ecological standards, internalize the externalities of resource waste and environmental pollution, and return them to the production and management decision-making. We will improve the

supervision and supervision system for the ecological environment, clarify the division of responsibilities among management bodies, and fill in gaps in supervision. We should improve the punishment system for excessive emissions of enterprises so that enterprises can form a new form of self-regulation, self-control, and self-supervision. We will improve the incentive system for enterprises to participate in ecological and environmental governance, and encourage them to participate actively to form positive incentives. Improve the public participation system, let the public participate in environmental protection supervision, restrain the behavior of all parties; We will encourage the public to participate in the decision-making of regional economic and social development, and improve residents' happiness and satisfaction.^[14]

4.2 Insist Green Development

The concept of green development is a new development model that meets the needs of the development of socialism with Chinese characteristics in the new era. In the process of development, we should further adjust the industrial structure, vigorously develop new and high technology industries, improve the system of resource valuation and environmental impact assessment, resolutely close down backward production capacity, and work in the same direction as the national supply-side structural reform strategy. We will support the development of the circular economy, learn from domestic and foreign excellent cases, and provide policy, system, technology, talent, and another guarantee for the circular economy. We should give full play to resource endowment and regional advantages, make scientific use of environmental capacity, and coordinate economic and social development with ecological and environmental development.^[15]

4.3 Implement Low-carbon Economy

The essence of the low-carbon economy is to reduce greenhouse gas emissions as the goal of a new economic development model. At present, the main task is to reduce coal, oil, and other energy consumption, and develop and use environmental protection, efficient, clean new energy. On the one hand, in the long run, we should start with reducing the use of energy with high pollution and high consumption, actively lead enterprises to transition to new technologies and technologies, and lead enterprises to find alternative energy. On the other hand, in the short term, the government and the market should be used to increase the proportion of high-quality energy in the market. Also, we will promote new ways of clean production and low-carbon life in the whole society, to cut off the market supply and market demand for traditional high-carbon development at the source.

4.4 Promote Garbage Sorting

Garbage sorting is an important means to solve the problems of the reuse of garbage resources and the harmless disposal of garbage. The utilization of garbage resources can not only reduce the occupation of land resources, reduce environmental pollution, but also create economic benefits. The government attach great importance to the garbage sorting work, which provides a fundamental guarantee for promoting the garbage sorting legislation and making the system come first. In the process of development, we should make clear the responsibilities and obligations of all parties involved in garbage sorting, assist the rapid

development of related industries, learn advanced experience, introduce superior technologies, make good use of incentives, and fully mobilize the enthusiasm of the public to participate.

4.5 Strengthen Publicity and Education

People can understand the world, but also can change the world, we should give full play to the subjective initiative of people. The key to the success of ecological civilization construction lies in the recognition and practice of the public. To be specific, in the course of development, the public should be more aware of the construction of ecological civilization, pay more attention to the waste of resources, environmental pollution, and ecological crisis, pay more attention to the publicity effect, improve the coverage of education, and create a spiritual atmosphere for the whole society to build an ecological civilization and a beautiful home together. We will introduce a new mechanism of reward and punishment, supervision and self-supervision, governance, and prevention. Make the government, enterprises, the public, and other stakeholders form a joint force.^[16]

ACKNOWLEDGEMENTS

Supported by the project grants from the Ministry of Education Project of Humanities and Social Sciences (Grand No.20YJC790128), and the Chongqing Education Commission Project of Humanities and Social Sciences (Grand No.20SKGH244).

REFERENCES

- [1] Yuan Guangda, Wu Jie. Research on the Game Mechanism of Determining the Ecological Pollution Compensation Standards from the Perspective of Environmental Cost. *Journal of Audit & Economics*,2016,31(01):65-74.
- [2] Tao Yu. Study on corporate social responsibility behavior from trade-off perspectives. *Journal of Chongqing University (Social Science Edition)*,2019,25(01):96-106.
- [3] Yao Shi, Yang Hongjuan. Identification of key factors of ecological civilization construction. *China Population, Resources and Environment*,2017,27(04):119-127.
- [4] Ma Wenbin, Yang Lihua, Wen Chuanhao. Evaluation index system of ecological civilization demonstration area and its measurement. *Statistics & Decision*,2012(06):39-42.
- [5] Qin Weishan, Zhang Yifeng, Yuan Jing. Measuring and Defining Eco-civilization Cities in China. *Resources Science*,2013,35(08):1677-1684.
- [6] Cheng Jinhua, Li Yue, Chen Jun. Regional Difference and Convergence of Ecological Civilization Level in China. *China Population, Resources and Environment*,2015,25(05):1-9.
- [7] Huang Qin, Zeng Yuan, Jiang Qin. Progress and Prospect of the Study on“Making Great Efforts to Promote Ecological Civilization Construction”. *China Population, Resources and Environment*,2015,25(02):111-120.
- [8] Shu Xiaolin, Gao Yingbei, Zhang Yuanxia, Yang Chunyu. Study on the Coupling Relationship and Coordinative Development between Tourism Industry and Eco-civilization City. *China Population, Resources and Environment*,2015,25(03):82-90.
- [9] Lu Feng. Key to and Fundamentals of Green Development and Ecological Civilization Construction. *Journal of China University of Geosciences (Social Sciences Edition)*,2017,17(01):1-9.
- [10] Wen Tiejun. The Rural Rejuvenation Initiative in the Perspective of Eco-civilization and Comparison. *Journal of Shanghai University (Social Sciences Edition)*,2018,35(01):1-10.

- [11] Qi Yue, Zhao Chenhui, Liao Kezhi, Wang Zhihao. Construction and demonstration of ecological civilization evaluation index system. *Statistics & Decision*,2018,34(24):60-63.
- [12] Chai Qichen, GuoYajun, Gong Chengju, Li Weiwei. Comprehensive Evaluation of Chinese Provincial Ecological Civilization Coordinated Development Degree. *Chinese Journal of Management Science*,2017,25(07):184-190.
- [13] Tang Bin, Peng Guofu. Study on Mechanism Innovation of Performance evaluation on the Development of Ecological Civilization of Local Governments. *Chinese Public Administration*,2017(05):10-14.
- [14] Li Ganjie. Adhere to the Ecological Priority, Green Development and Advance the Yangtze River Economic Belt of the Ecological Environment Protection Work. *Environmental Protection*,2016,44(11):7-13.
- [15] Li Xuejiao, He Aiping. The Restriction Factor and Path of Green Development. *Reform*,2016(06):90-99.
- [16] Chen Runyang, Hua Ming, Zhang Guixiang. Public participation in the construction of ecological civilization in China. *Jiangxi Social Sciences*,2017,37(03):63-72.