International Journal of Teaching, Learning and Education (IJTLE)
ISSN: XXXX-XXXX
Vol-1, Issue-1, May-Jun 2022
Journal Home Page: https://ijtle.com/

# A Study on the Investigation of Pilot Construction of Low-Carbon Cities

Yikai Ma, Cheng Chung Wu, Meng Jin, Ziqing Ye

*Jiaxing Nanhu University, Zhejiang, China*

***Abstract***

*This paper selects 27 indicators and constructs the evaluation system of Jiaxing low-carbon city pilot construction from the three dimensions of high-quality industrial development, manufacturing integration innovation and long-term environmental governance. The judgment matrix of each level of indicators is constructed by analytic hierarchy process and its weight is calculated. Combined with the residents' questionnaire data, this paper focuses on the score differences between different indicators, comprehensively evaluate the construction effectiveness of Jiaxing since the implementation of the low-carbon pilot policy.*

***Keywords— Investigation, Pilot Construction, Low-Carbon Cities***

## 1. Introduction

In 2016, Jiaxing was not only identified as a provincial low-carbon pilot city, but also selected as a national low-carbon pilot city. Since the pilot work was carried out, Jiaxing has closely focused on the concept of "low-carbon and energy conservation" and promoted the pilot construction of low-carbon cities in the fields of production and life. Investigate the pilot construction of Jiaxing low-carbon city, explore the most effective aspects of the pilot construction of Jiaxing low-carbon city, and try to build indicators suitable for evaluating the pilot construction of low-carbon city. At the same time, explore how to improve the weak links in the pilot construction of low-carbon cities, and hope to understand the degree of difference in the cognition of enterprises and residents on the status and process of the pilot construction of low-carbon cities, so as to provide a practical basis for the development of the pilot construction of low-carbon cities in Jiaxing.

## 2. Review of Literature

Low carbon is not the only goal of urban development. The evaluation index system of low-carbon urban construction should involve multi-objective decision-making performance such as society, economy and environment. Based on this, more and more studies have analyzed the structure of

each subsystem covered by the city, decomposed the indicators of the comprehensive evaluation of low-carbon cities, and put forward the construction idea of the comprehensive evaluation index system of low-carbon cities. Combing the relevant literature of low-carbon city evaluation based on different angles and methods can lay a theoretical foundation for the construction of the index system later. Fu et al. (2010) build a low-carbon city evaluation index system from the three overall levels of society, economy and environment. Xin(2011) according to the connotation of low-carbon city construction, this paper puts forward that the evaluation index system of low-carbon city should be constructed from the six criteria of economy, infrastructure, lifestyle and technology. Yang(2011) taking the thought of sustainable development as the guiding ideology, a low-carbon city evaluation system composed of economy, technology, environment and society is constructed by using AHP. Xiao and Tang (2011) taking a prefecture level city as the research object, this paper constructs the index evaluation system of low-carbon economic development, makes an empirical analysis based on the analytic hierarchy process and the relevant data of Wuzhou City, Guangxi as a sample, and finally puts forward relevant policy suggestions according to the analysis of different index results. This study takes the concept of low-carbon city as the starting point, starts from the perspective of comprehensive evaluation of low-carbon city, selects analytic hierarchy process (AHP) to evaluate the pilot construction level of Jiaxing low-carbon city, and investigates and analyzes the effect of low-carbon policy on the low-carbon concept and behavior of urban residents based on the questionnaire data, By combining the subjective perspective of residents' questionnaire and the objective weighted score of analytic hierarchy process, we can better understand the construction level of Jiaxing low-carbon pilot city.

## 3. Research Method

This paper constructs the evaluation index system of Jiaxing City's low-carbon construction level, establishes the AHP hierarchical model, takes the low-carbon city construction as the target layer, and constructs the index layer and scheme layer under it. Take high-quality industrial development, integrated manufacturing innovation and long-term environmental governance as the index layer, build three scheme layers under each index layer, and design questionnaire questions according to the direction of the scheme layer, so as to make the questionnaire questions more directional and targeted.

## 4. Results of Empirical Analysis

Through the questionnaire survey of relevant experts, determine and construct the judgment matrix of index layer and criterion layer, analyze with software, calculate the total weight of influencing factors of index layer of each criterion layer, and analyze the weight of indicators under each element.

*Table 1 Weight ratio of whole level of low-carbon city construction*

| Target layer | Criterion layer | Construction weight | Index layer | Criterion weight | Total hierarchy weight | Total hierarchy ranking |
|---|---|---|---|---|---|---|

| | | | | | | |
|---|---|---|---|---|---|---|
| **Jiaxing low carbon city construction** | **High quality industrial development** | 0.3369424 | **Low carbon awareness** | 0.3355201 | 0.1130509 | 2 |
| | | | **Green Service** | 0.3355591 | 0.1130640 | 1 |
| | | | **Production process** | 0.3289207 | 0.1108273 | 6 |
| | **Manufacturing integration innovation** | 0.3321590 | **Traditional manufacturing** | 0.3314272 | 0.1100865 | 7 |
| | | | **Internet technology** | 0.3309249 | 0.1099197 | 8 |
| | | | **Green manufacturing** | 0.3376478 | 0.1121527 | 3 |
| | **Long term environmental governance** | 0.3308985 | **Environmental risk** | 0.3353930 | 0.1109810 | 4 |
| | | | **Infrastructure construction** | 0.3292139 | 0.1089364 | 9 |
| | | | **Resource conservation** | 0.3353930 | 0.1109810 | 5 |

It can be seen from the results in the table that among the influencing factors of the standard level, the industrial high-quality development index accounts for the largest proportion, and the influence weights of other factors are: manufacturing integration innovation > long-term environmental governance, the normalization of green services, the popularization of low-carbon awareness and the upgrading of green manufacturing have a great impact on the construction of low-carbon city in Jiaxing, Internet technology empowerment and infrastructure transformation have little impact on the construction of low-carbon cities.

## 5. Conclusion

According to the survey results, it is found that there are great differences in the low-carbon development level among counties and cities in Jiaxing, indicating that Jiaxing Municipal government is still not mature and in-depth in the formulation and implementation of low-carbon city policies. The

development and promotion of low-carbon city construction cannot be separated from the strong support of government policies. The government should fully combine the current development of low-carbon city construction in Jiaxing and adjust and optimize the management of low-carbon city construction. In view of the lowest score of green manufacturing in most of the surveyed areas, the government should formulate more clear guidance plans for technological transformation for high-carbon industries. All industries should abide by the environmental protection regulations formulated by the state, actively promote low-carbon development with the government, develop clean, energy-saving and environmental protection technologies, improve the utilization efficiency of clean energy, and strengthen cooperation with other enterprises in various industries, Actively explore scientific, advanced and effective green and low-carbon development paths, form a low-carbon and green industrial chain, and achieve the goal of urban sustainable development. For the problems of different development levels and different development priorities in various regions, the government needs to adjust measures to local conditions and develop in a coordinated manner. Pay attention to the overall balanced development in the region, and find out the deficiencies of local cities in science and technology industry investment, optimizing industrial structure and energy structure, environmental protection and so on. Take measures according to local conditions, combine with characteristic industries, and tap the development potential of local low-carbon economy by means of scientific and technological innovation and system innovation.

## References

[1] Fu, Y., Liu, Y. J., & Wang, Y. L. (2010). Research on evaluation method and support system of low carbon city. China's population, resources and environment, 20(8): 44-47.

[2] Xin, L. (2011). Construction of low carbon city evaluation index system. Journal of Statistics and Decision Making, 7: 78-80.

[3] Yang, D. Z. (2011). Comprehensive evaluation of low carbon city development based on principal component analysis. Journal of Tonghua Normal University, 32(4): 7-9.

[4] Xiao, C. X., & Tang, S. M. (2011). A study on evaluation index system of urban low carbon economy. Ecological economy, 1: 45-49.