

# Research on the coordinated development of tourism-urbanization-ecological environment—Taking Chongqing as an example

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**Abstract.** The article analyzes the comprehensive development levels of the three subsystems of Chongqing's tourism, urbanization and ecological environment from 2000 to 2017, and the temporal evolution characteristics of the coordinated development of the three. The results show that: (1) The comprehensive evaluation index of Chongqing's tourism industry system and urbanization system is on the rise; the comprehensive ecological environment index showed an upward trend before 2008, and fluctuated greatly after 2008. (2) The degree of coupling and coordination of the three systems in Chongqing City generally shows a transformational trend of maladjustment recession-intermediate transition-coordination improvement. In the future, Chongqing should continue to deepen institutional reforms and continue to develop new tourism markets; improve transportation, promote enterprise transformation and upgrading, implement policies for talent introduction; strengthen the construction of environmental protection talents and capital investment, and vigorously develop ecological industries

## 1 Introduction

With the vigorous development of tourism, it has played an increasingly important role in driving the development of related industries, expanding domestic demand, enhancing economic vitality, balancing international payments, and improving national quality. The rapid development of the national economy has promoted further growth in domestic and foreign tourism demand. The rapid development of tourism has injected new vitality into the development of new urbanization. Urbanization is the destination of tourism development, and its good infrastructure and superstructure are also a strong backing for the rapid development of tourism. However, both the development of tourism and the development of urbanization will have a series of negative effects on the ecological environment, but the development of tourism and urbanization must rely on the ecological environment. The report of the 19th National Congress of the Communist Party of China proposed that the major plan for the sustainable development of the Chinese nation is to build an ecological civilization. It is necessary to elevate ecological civilization and ecological environmental protection to an unprecedented strategic height. The ecological environment has received unprecedented attention. Therefore, how to coordinate the development of tourism, the expansion of urbanization and the protection of the ecological environment has become a hot issue in society

At present, there have been a large number of excellent research results on tourism, new urbanization and ecological environment research. But most of them are based on the coordination between the two systems in the three systems, and mainly use the principal component analysis method, the entropy weight method, and the coupling coordination degree model for empirical analysis. The research on the coordination relationship between tourism and urbanization can be traced back to the 1990s. The basic conceptual framework of tourism urbanization was first proposed by Australian scholar Mullins [1]. Since then, many scholars at home and abroad have focused on the characteristics, types, dynamic mechanism and realization path of tourism urbanization, and have reached a consensus: they believe that urbanization and the development of tourism are highly related [2]. Liu Jinwei, Ma Xuefeng, Zhang Ying, Zhan Xinhui, Gao Weiquan, Liang Kun [3-8] and others introduced the coupling coordination degree evaluation model through mathematical statistics to study the coordination relationship between tourism and urbanization. In the study of the coordination relationship between tourism and ecological environment, foreign scholar Joseph [9] discussed the possible negative impact of the rapid development of tourism on the ecological environment from the perspective of sustainable development theory. Chinese scholar Cui Fengjun[10] put forward the theory and expression method of tourism environmental carrying capacity. Bao Jie, Fang Yelin, Weng Gangmin, Gao Weiquan [11-14] and others also used mathematical

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or spatial statistical methods to analyze the coordination relationship between tourism and the ecological environment from the city-level, regional and even national scales using the coupling coordination model. In the study of the coordination relationship between urbanization and ecological environment, foreign scholars Grossman [15] and Kruger [15] proposed the environmental Kuznets curve, which more intuitively demonstrated the relationship between urbanization and ecological environment. Chinese scholar Liu Haimeng [16] proposed a "Coupling Rubik's Cube" analysis framework to explain the coupling mechanism of urbanization and ecological environment. Sun Huangping [17] used spatial autocorrelation, geographic detectors and other methods to analyze the driving factors of the coupling coordination degree of the Pan-Yangtze River Delta urban agglomeration.

In summary, there have been a lot of studies on the coupling and coordination degree of tourism, urbanization and ecological environment, and some achievements have been made in theory and practice. However, the current research based on the coordination relationship between the three systems Still less. In view of this, the article introduces the coupling coordination degree model to conduct empirical research on the coupling coordination degree relationship among the three systems in Chongqing from 2000 to 2017, and explores the temporal evolution characteristics of the three systems. The possible contributions of this article are: It is expected to provide a reference for Chongqing's coordinated development of tourism, urbanization and the ecological environment, to promote the high-quality development of Chongqing, and to provide a certain reference for research in similar areas.

## 2 Research design

### 2.1 Data source and processing

The data used in the article are from the 2000-2017 Chongqing Statistical Yearbook, the official website of the National Bureau of Statistics of the People's Republic of China, and the Chongqing National Economic and Social Development Statistical Bulletin and other related websites. The individual missing data is complemented by the difference method to strive for the completeness and accuracy of the data.

### 2.2 Construction of Index Evaluation System

We comprehensively considered the principles of scientificity, typicality, availability, and comparability of indicator selection, combined with the existing statistical system and indicators[18-21], and selected a total of 55 specific indicators at 12 levels. An evaluation index system for the coordinated development of Chongqing's tourism industry-urbanization-ecological environment has been constructed.

## 2.3 Research method

First, we standardize the data. Second, the coordinated development model is introduced to measure the data, and calculate the development index of Chongqing's tourism, urbanization, and ecological environment, as well as the coordinated development of the three. The research method is the same as Liao [18], so I won't repeat it here.

## 3 Results and analysis

### 3.1 Comprehensive evaluation index of each subsystem

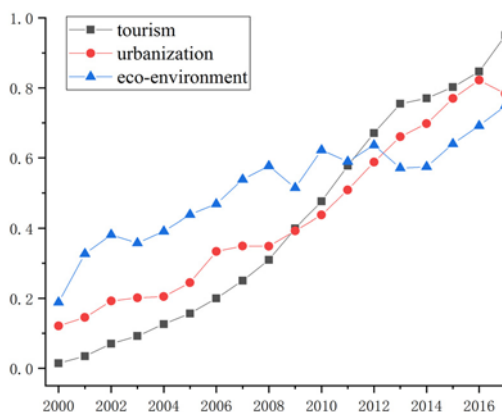
The comprehensive evaluation indexes of Chongqing's tourism industry, urbanization, and ecological environment are shown in Figure 1. It can be seen from Figure 1 that tourism is closely related to the development of urbanization, and its fluctuation trends are relatively consistent. The ecological environment tends to rise first and then fluctuate. Compared with the other two subsystems, the ecological environment of Chongqing City fluctuated in the opposite direction in 2013. It can be speculated that the rapid development of tourism and urbanization was achieved at the expense of the ecological environment.

The development trend of Chongqing's tourism industry can be roughly divided into three stages: 2000-2008 is a low-level and steady growth stage, and its comprehensive index is always lower than urbanization and ecological environment. The period from 2009 to 2013 is a rapid rise, and its value has exceeded the comprehensive urbanization index, and in 2012 it exceeded the comprehensive ecological environment index. From 2013 to 2017, the comprehensive index of tourism has been significantly higher than the comprehensive evaluation index of urbanization and ecological environment, but its growth trend has slowed down significantly. The lagging development of tourism in Chongqing in the early stage was mainly restricted by the people's disposable income. The increase in the people's disposable income, the increase in free time, and the development of transportation have stimulated the rapid development of Chongqing's tourism industry. The tourism industry is defined as a pillar industry. Expanding tourism promotion and increasing tourism development efforts have further stimulated the rapid development of Chongqing's tourism industry.

The urbanization development of Chongqing is also roughly divided into three stages: From 2000 to 2008, the comprehensive urbanization index was in a fluctuating growth stage with a relatively slow increase. From 2009 to 2015, the comprehensive urbanization index was in a stage of steady and rapid growth. From 2016 to 2017, the comprehensive urbanization index showed a significant downward trend, from 0.822 in 2016 to 0.783 in 2017. The large-scale migration of migrant workers to work in the city has injected a strong impetus into the economic development of Chongqing's urbanization and accelerated the urbanization of

Chongqing's population. Subsequently, the rapid development of real estate and the acceleration of the construction of new types of urbanization accelerated the urbanization of Chongqing's land. The downward trend is mainly related to the Chongqing Municipal Government's land control and macro-control of real estate, and its emphasis on the quality of urbanization.

The development trend of Chongqing's ecological environment is also roughly divided into three stages: From 2000 to 2008, the comprehensive ecological environment index showed a fluctuating upward trend. From 2008 to 2013, the comprehensive index of ecological environment fluctuates greatly, and there is no obvious upward trend. From 2014 to 2017, there was a clear upward trend. The main reason is that the development of tourism and urbanization in Chongqing before 2008 has not exceeded the carrying capacity of the ecological environment. After 2008, the economy has developed faster and faster, and there are more and more high-polluting companies. People have not yet reached a consensus on the importance of the ecological environment. They are vigorously developing the economy at the cost of destroying the ecological environment.

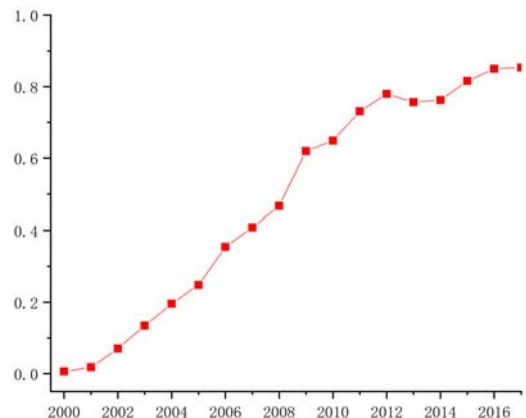


**Figure 1.** The comprehensive Index of Chongqing's tourism, urbanization and ecological environment from 2000 to 2017

### 3.2 Coordinated development analysis

The coordinated development trend of Chongqing's three subsystems can be roughly divided into two stages (Figure 2): (1) From 2000 to 2012, the coordinated development of the three showed a steady upward trend. (2) From 2012 to 2017, the degree of coordinated development of the three fluctuates slightly, but an upward trend can still be seen. The three are in the coordinated development stage and belong to the coordinated improvement type. Compared with the comprehensive evaluation index of Chongqing's ecological environment and the degree of coupling and coordination between the three systems, there was a small trough in 2013-2014, indicating that the overall coordinated development degree is consistent with the degree of coordination within the subsystems and the degree of coupling between systems.

Before 2006, the coordinated development of the three systems was in a period of out-of-adjustment, belonging to an out-of-adjustment recession type, with D values between 0.006 and 0.3541. This is mainly due to the lagging development level of tourism and urbanization, and the coupling level of the three is in the low-level coupling stage. The coordinated development of the three from 2007 to 2008 is of intermediate transition type. The main reason is that although the tourism industry in Chongqing has developed rapidly during this period, the development of urbanization has stagnated due to the subprime mortgage crisis, and the ecological environment has been destroyed, resulting in large fluctuations. From 2009 to 2017, the coordinated development of the three is in the coordinated stage, which is a coordinated improvement type. Because of the rapid development of tourism, urbanization and ecological environment in Chongqing, the degree of coupling between the three systems has increased to a high level. The good development of any of the three systems will have the same promotion effect on each other. Among them, the development of tourism and urbanization has exceeded the carrying capacity of the ecological environment, and the coordinated development trend was the slowest from 2013 to 2014. Since then, Chongqing has gradually attached importance to ecological environmental protection. With the increase in the comprehensive indicators of the ecological environment, the coordinated development degree of the three couplings has risen steadily.



**Figure 2.** The coordinated development degree of Chongqing's tourism industry-urbanization-ecological environment

### 4 Conclusion and policy discussion

Judging from the comprehensive evaluation indexes of the three subsystems, the tourism industry index shows a steady upward trend; the urbanization index rises with small fluctuations; the ecological environment index fluctuates greatly with the construction of tourism and urbanization, and the upward trend after 2008 is not obvious enough. From the point of view of coordinated development, the overall trend is the transformation of imbalanced decline-intermediate transition-coordinated improvement. At the stage of imbalance, the low level of urbanization and the lagging development of tourism are

the main factors affecting the coordinated relationship between the three. In the intermediate transitional stage, environmental pollution is the main factor affecting the coordinated relationship between the three. With the improvement of the ecological environment, the three have entered a stage of coordinated development.

Chongqing has successfully built a number of boutique tourist attractions such as Nanchuan Golden Buddha Mountain, Youyang Peach Blossom Spring, Wansheng Black Valley, Jiangjin Simian Mountain, Yunyang Dragon Tank, Fairy Mountain Resort, etc., and successfully promoted the impression of Wulong's large-scale live tourism performance to the country. Chongqing has successively launched more than 100 rural tourism boutique routes, which greatly promoted rural tourism consumption, and promoted economic development through the development of rural tourism to achieve poverty alleviation. The above all stems from the importance attached by the Chongqing Municipal Party Committee to the tourism industry, and a series of tourism implementation plans and special plans have been issued, which have strongly promoted the implementation of various tasks in tourism development and provided a strong guarantee for the development of tourism in the whole region. People have formed an ideological consensus that the whole city attaches importance to tourism, participates in tourism, and develops tourism. In the future, on the one hand, Chongqing should strengthen the reform of tourism regulations and systems to escort the development of tourism. On the other hand, Chongqing should continue to make new attempts, open up new markets, and continuously adjust and innovate in the promotion of tourism image. Nowadays, research tourism has become a hot topic. Chongqing can target the student market, not only primary and middle school students, but also college students, tell them the Chongqing story and highlight the unique cultural connotation of Chongqing.

In terms of urbanization development, Chongqing should continue to leverage its advantages as a transportation hub in the future to build an important logistics hub in the western region. In addition, Chongqing should also resolve the "last mile problem" of rural roads. Another important reason for the rapid development of urbanization is the construction of talents. Chongqing should further expand its talent team, implement the talent introduction policy, and give preferential policies to industry experts, scholars, and returned overseas students.

In terms of ecological environment, Chongqing should continue to deepen the reform of the environmental protection system in the future, on the other hand, strengthen the construction of environmental protection talents and capital investment. Chongqing should continue to speed up the elimination of high-energy-consuming and high-polluting enterprises, vigorously develop ecological industries, and integrate ecological priority and green development concepts.

Finally, the research on tourism-urbanization-ecological environment coupling and coordination involves a complex and open multi-level system. This article only selects Chongqing's representative and

easily accessible indicators, but the indicator selection is not comprehensive enough and there are deficiencies. At the same time, this article only studies the evolutionary trend of the coordinated development of tourism, urbanization and ecological environment in Chongqing from 2000 to 2017, and does not conduct an in-depth study of spatial distribution. Therefore, in future research, we should collect as much data as possible and conduct a spatial comparative study on Chongqing, so as to conduct more objective measurement and evaluation, and provide more targeted opinions and suggestions.

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