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## Research and analysis of interest relationship between urbanization and ecological environment

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### ABSTRACT

Due to increasingly accelerated process of urbanization development, it creates serious impact and pressure on ecological environment. Therefore, how to make positive conversion of their relationship constitutes the main research subject of current social urbanization development. From the perspective of development, fundamental goal is the effective development of eco-economic urban industry, turning ecological environment into the driving force of urban industry development through its positive impact on social development, and adjust regional industrial structure with ecological development as objective, so as to bring social economy onto the track of healthy development. Study and dissertation process of this paper are made according to the sample of Fusong County, and in addition to effective dissertation on the general process of model construction, it conducted effective research on the basic goal and model of eco-economic city construction. It is on the basis of above facts, effective prediction then was made on expected effect in terms of Fusong County's eco-economic city development, in order to make corresponding construction more scientific, at the same time, feasibility of making effective application of this economic development situation in the process of urbanization development was enhanced as well.

### KEYWORDS

Urbanization development; Ecological environment; Interest relationship; Model study.



INTRODUCTION

City development and ecology in unity has become the subject of current social environment construction, and ecological environment has had certain impact on the layout of urban industrialization as the process of urban development continues to accelerate. While what's generated by development situation in the past are generally negative impacts, it is of necessity to make further exploration for turning these into positive ones. And this paper makes corresponding exploration and research in combination of model design of eco-economic city, guidelines and objectives of eco-economic city construction and industrial model construction of eco-economic city, in order to continuously improve the interest between ecological environment and development of urban industry, and provide effective basis for the fast development of eco-economic city. Taking Fusong County as the sample, this paper makes specific research on its layout of ecological industry, which will make the theory and model of eco-economic city more widely used.

MODEL DESIGN OF ECO-ECONOMIC CITY

The definition and mode of eco-economic city: the principal guideline of eco-economic city in Fusong County is the principle of ecological system, and ecological system is a functional whole formed by biotic component(biological community) and obiotic component(physical environment) with certain space through material cycle, energy flow and information transfer<sup>[1]</sup>.

At present, the primitiveness of ecological system in Fusong County is comparatively good, and ecological function area constructed in Changbai Mountain forest not only serves as a historical opportunity for protecting primitive ecological environment, but also defines the development direction of Fusong County. Therefore, the issue of planning and constructing a new mode which can guarantee the construction of ecological function and develop local economy, namely, eco-economic city, confronts us both necessarily and objectively. The eco-economical City and Diagram of Environmental Material Exchange and Energy Transfer is shown as Figure 1.

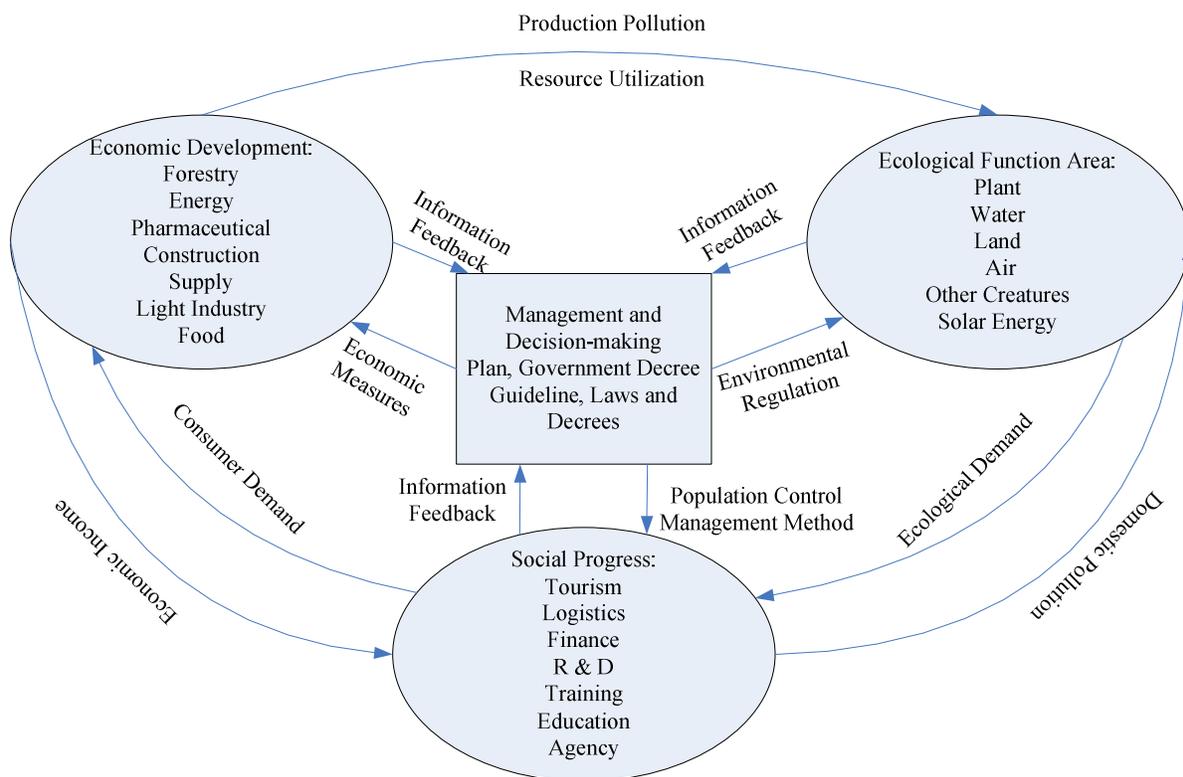


Figure 1 : Eco-economical city and diagram of environmental material exchange and energy transfer

The so-called eco-economic city mainly refers to process of forming interaction and produce corresponding effect with the domain of ecology and economy, so as to realize effective conversion of energy and energy transfer between them. This is an important embodiment of harmonious development of man and nature, which also means that, benign development cycle of economic and ecological structure can be gradually constructed for increasing interest of urban development, with economic value of ecological system and ecological environment of economic development guaranteed as well.

In the process of designing model of economic city, this paper has mainly focused on Fusong County and made further study of its model construction. In respect of Fusong county, principle of constructing this model is based on the imbalance between economic and ecological development, fully exploring the idea of development. Then, effective research is made on existing resources and corresponding characteristics, together with investigation on population distribution and full understanding of industrial development and infrastructure & equipment status, of Fusong County. From the fundamental objective of future development direction and development perspective, we have chosen point-type development mode for constructing the model and made corresponding process of construction with relatively higher scientific and ideal level, so as to improve the pertinence of model construction of eco-economic city; specific construction approach is shown in Figure 2.

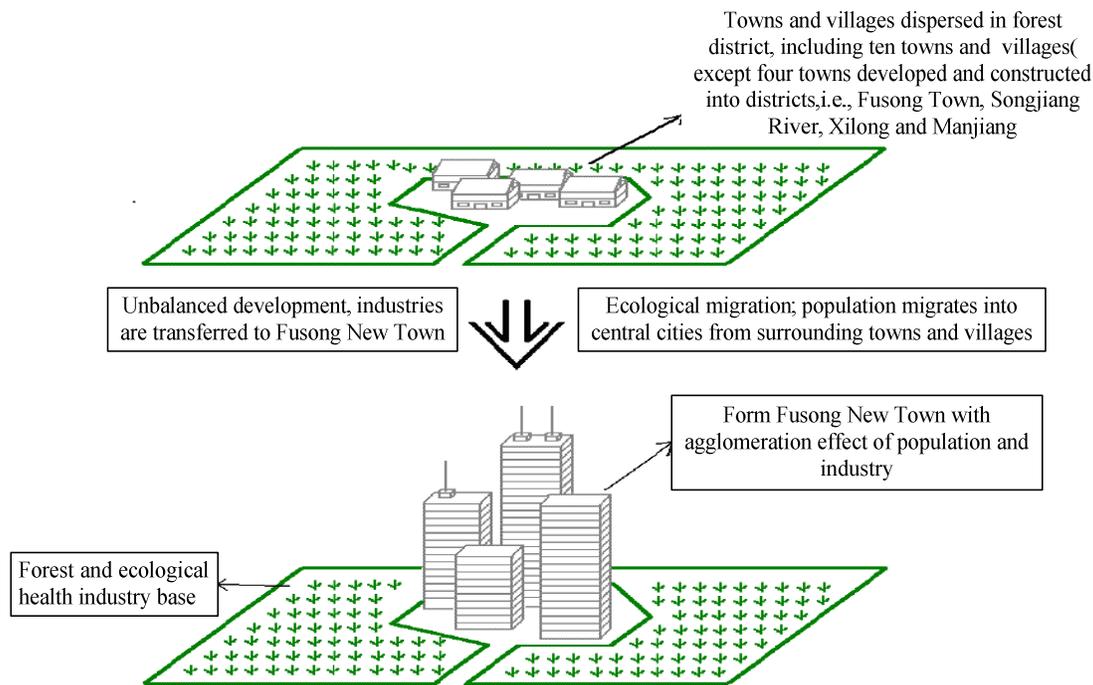


Figure 2 : Diagram of development trend of eco-economic city

## GUIDELINE AND OBJECTIVE OF ECO-ECONOMIC CITY CONSTRUCTION

### Guideline

In constructing eco-economic city model for Fusong County, we have focused on scientific exploration of corresponding exploration, so as to lay a solid ideological foundation for the construction of eco-economic city. During this process, scientific concept of development was established as the general idea: strengthen the effective protection of natural resource of intact ecosystem, so as to make people gradually form the concept of green production and consumption, and make ecological production become powerful force of promotion for preserving natural resources<sup>[2]</sup>. Thus, growth rate of tourism economy of Fusong County can realize considerable development, becoming an important component of eco-economic city construction.

### Objective

During the process of constructing eco-economic city model for Fusong County, we determined relevant aspects of the main thoughts for model construction before making effective planning of long-term development goals, then, we designed overall development route of ecological city construction for Fusong County: firstly, effectively implement integrated development of urban development; secondly, further explore the integration of industrial development, forming intimate connection between idea for constructing ecological city and urban industrial development, and making it one of the main economic development regions in this district(within 15 to 20 years). These development goals reflect the constitutive property of model construction; taking ecological development as the fundamental objective and gradually defining the interest relationship between them for realizing goals of overall planning, and specific data statistics are shown in TABLE 1 and TABLE 2.

TABLE 1 : Construction index and target value list of 2025 fusong county eco-economic city construction

No.	Name	Unit	Target Value
<b>Economic Development</b>			
1.	GDP per capita	Yuan per capita	≥103800
	Annual income per capita	Yuan per capita	≥20750
3.	Annual income per capital of farmers	Yuan per capita	≥35000
4.	Average annual disposable income of urban residents	Yuan per capita	≥70000
5.	Proportion of tertiary industry in GDP	%	≥60
6.	Energy consumption per capita of GDP	t standard coal per ten thousand yuan	≤1.0
7.	Material consumption per capita of GDP	m <sup>3</sup> per ten thousand yuan	≤70
8.	Proportion of enterprise which should adopt clean production	%	100
<b>Environmental Protection</b>			
9.	Forest coverage rate	%	≥90
10.	Proportion of protected land in national territorial area	%	≥95
11.	Recovery rate of degenerated land	%	≥99
12.	Urban air quality	Days that are better or conform secondary standard	≥360
13.	Qualified rate of urban water function area	%	100
14.	Emission intensity of main pollutants	Kg per ten thousand yuan (GDP) SO <sub>2</sub> ≤1.0	COD<1.0
15.	Water qualification rate of centralized drinking water source	%	100
	Centralized treatment rate of urban sewage	%	100
	Recycling rate of industrial water	%	≥90
16.	Coverage rate of noise compliance area	%	100
17.	Harmless treatment rate of urban household garbage	%	100
	Treatment and utilization rate of industrial solid waste	%	≥99
18.	Urban per capita public green area	m <sup>2</sup> per capita	≥25
19.	Qualified rate of tourism environment	%	100
<b>Social Improvement</b>			
20.	Intact rate of city lifeline system	%	≥90
21.	Urbanization level	%	≥90
22.	Penetration rate of city gas	%	≥95
23.	Central heating penetration rate in regions with heating provision	%	≥90
24.	Engel coefficient	%	<25
25.	Gini coefficient		>0.6
26.	Enrollment rate of higher education	%	≥90
27.	Publicity and education rate of environmental protection	%	100
28.	Satisfaction rate of the public on environment	%	>98

### INDUSTRIAL LAYOUT DESIGN OF ECO-ECONOMIC CITY

At present, there are lots of specific methods and principles of industry classification throughout the world, while, corresponding standards differ from each other to a certain extent, among which three divisions of industry is generally accepted by the world. The division of agriculture, light industry and heavy industry adopted by our country are gradually fading out people's memory as the speed of development accelerates. And our country also established three divisions of industry as the main principle in 2003, which was followed by reinforcing of system construction and perfection<sup>[3]</sup>. It is under this kind of domestic situation of development when construction of eco-economic city was done by making use of existing resources in Fusong County, and main frame is initially constructed, with department division reflecting corresponding

comprehensive and constitutive property. Departments are mainly divided into two categories, and they are characteristic tourism service industry of Changbai Mountain and ecological health industry.

**TABLE 2 : Construction index and target value list of general ecological city(2010) construction**

No.	Name	Unit	Target Value
<b>Economic Development</b>			
1.	GDP per capita	Yuan per capita	≥25000
	Annual income per capita	Yuan per capita	≥3800
3.	Annual income per capital of farmers	Yuan per capita	≥8000
4.	Average annual disposable income of urban residents	Yuan per capita	≥18000
5.	Proportion of tertiary industry in GDP	%	≥45
6.	Energy consumption per capita of GDP	t standard coal per ten thousand yuan	≤1.4
7.	Material consumption per capita of GDP	m <sup>3</sup> per ten thousand yuan	≤150
8.	Proportion of enterprise which should adopt clean production	%	100
<b>Environmental Protection</b>			
9.	Forest coverage rate	%	≥15
10.	Proportion of protected land in national territorial area	%	≥17
11.	Recovery rate of degenerated land	%	≥90
12.	Urban air quality	Days that are better or conform secondary standard	≥280
13.	Qualified rate of urban water function area	%	100
14.	Emission intensity of main pollutants	Kg per ten thousand yuan (GDP) SO <sub>2</sub> ≤5.0	COD<5.0
15.	Water qualification rate of centralized drinking water source	%	100
	Centralized treatment rate of urban sewage	%	≥70
	Recycling rate of industrial water	%	≥50
16.	Coverage rate of noise compliance area	%	≥95
17.	Harmless treatment rate of urban household garbage	%	100
	Treatment and utilization rate of industrial solid waste	%	≥80
18.	Urban per capita public green area	m <sup>2</sup> per capita	≥11
19.	Qualified rate of tourism environment	%	100
<b>Social Improvement</b>			
20.	Intact rate of city lifeline system	%	≥80
21.	Urbanization level	%	≥55
22.	Penetration rate of city gas	%	≥92
23.	Central heating penetration rate in regions with heating provision	%	≥65
24.	Engel coefficient	%	<40
25.	Gini coefficient		0.3-0.4
26.	Enrollment rate of higher education	%	≥30
27.	Publicity and education rate of environmental protection	%	≥85
28.	Satisfaction rate of the public on environment	%	>90

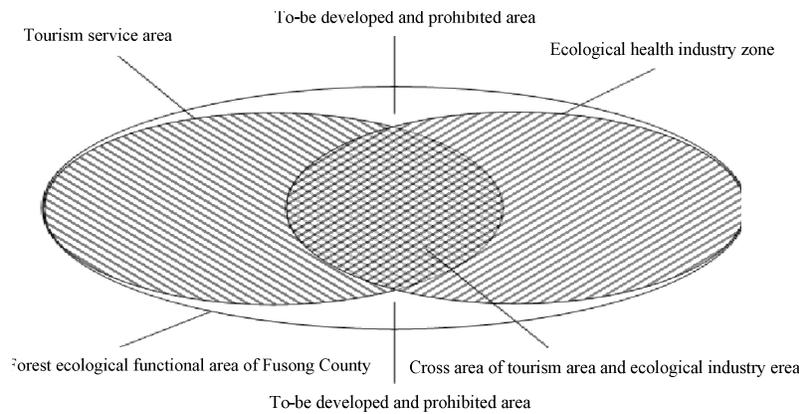
**(From Introduction to Urban Economy and Tourism Economy)**

### Industry model and main contents

#### Industry model of eco-economic city

Eco-economic city of Fusong County is constructed on the basis of existing industrial layout, which is combined with original ecological function area, furthermore, location advantage of ecological economy of Fusong County is integrated

together as well, making model construction of eco-economic city gradually tend to be more reasonable. With theory of industrial sector as the basis and taking macro-economy development and scientific application as practical idea, conducting innovative development towards industrial sectors for meeting fundamental requirements of reasonable industrial layout<sup>[5]</sup>. Systematic division of departments is mainly as follows: tourism service industry of Changbai Mountain and ecological health industry; model of specific development trend is shown in Figure 3.



**Figure 3 : Industrial layout diagram(2010-2015) of changbai mountain(fusong county) forest ecological function area**

According to relevant deployment of national development strategy, Fusong is development area restricted in part and whole during the “11<sup>th</sup> Five-year”, therefore, what’s shown in above Table is forest functional area, area of which has amounted to 65,300,000 square kilometers.

While area to be developed means main areas within allowed development area that haven’t developed yet, mainly including: large areas of forest, water, nature reserve and so on.

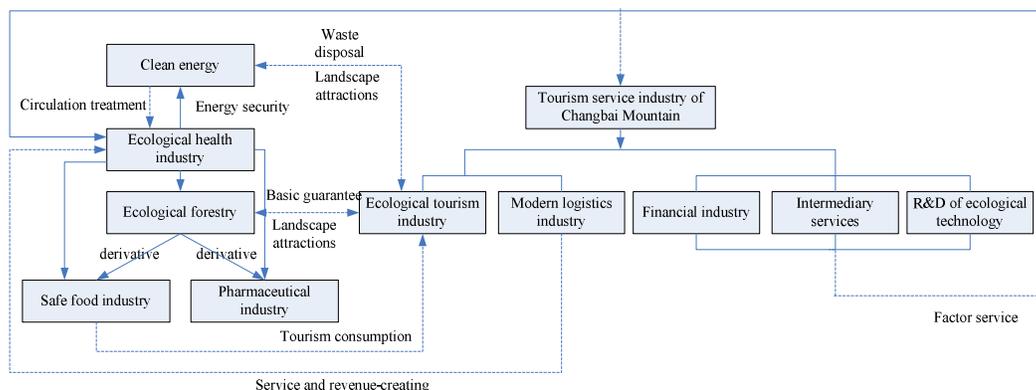
In Figure 3, main industries within the cross area of tourism service and ecological industry constitute the main part of eco-economic industry construction, which mainly includes production industry of health care products, hot spring tourist and vocation, industry of urban leisure and green tourism.

And what’s indicated the Table is ecological health industry is mainly about production chain of organic food, which includes production, sale, service and other relevant supporting industries, forming a specific chain of industrial development.

Tourism service area is mainly about characteristic travel development of Changbai Mountain, and main industries providing supporting service for corresponding characteristic tourism, which constitutes the main body of industry chain of tertiary industry of Fusong County.

**Main contents of industrial layout**

The modern development of Changbai Mountain tourism service industry is mainly represented in following aspects: continuous improvement of transportation system and postal savings industry, effective broadening of information propagation approach, effective perfection of accommodation and catering industry etc. Continuous improvement of these aspects signifies that, tourism service industry of Changbai Mountain is gradually becoming systematic and comprehensive, and it also serves as positive driving force for relevant industry of education, culture, science & education and so on, making industrial layout gradually develop into strategic development structure, and whose positive effect<sup>[6]</sup> on construction of eco-economic city is shown in Figure 4.



**Figure 4 : Diagram of urban industrial chain of fusong county eco-economic city**

This paper attributes industrial development layout with first priority in consideration of the importance of characteristic ecological tourism. And it is not only made out according to development trend of tourism industry in our county, but the fact that characteristic ecological tourism can satisfy needs of current people, becoming the main force that drives the development of urban economy.

Main object of development: firstly, it is ecological tourism industry of Changbai Mountain, upon which lies the advantage of industrial development better than no other, gradually forming brand effect on the basis of characteristic development, so as to further promote the brand of green tourism, green food and primitive eco-tourism, which includes ecological ski, ecological hunting and other recreation projects, making development of tourism industry elevate to a high degree of integration.

Secondly, modern development path of logistics industry is continuously broadened. As an important civil airport, Changbai Mountain Airport has provided effective guarantee for corresponding air transportation, while transportation network of highway and railway in Fusong County, which is quite developed, has provided effective guarantee for the fast development of logistics industry. With the realization of deep processing for unique green species of Changbai Mountain, brand effect can be more widely promoted once again, which in turn will have positive impact on the fast development of logistics industry, providing necessary support for the realization of largest distribution center within this district.

**TABLE 3 : Analysis table of classification of factors influence industrial layout of fusong county**

Influence factor of layout	Tangible property	Intangible property	Existing situation of Fusong County	Evaluation
Transportation infrastructure	Freight	Reliability, frequency,damage rate and accessibility	An airport, two highways and railways: high reliability, low frequency and damage rate, good accessibility.	Good
Raw material	Production cost and transportation cost	Safety and quality	Changbai Mountain, Ginseng, mineral water,blueberry and other organic products : low cost, good quality and safety.	Excellent
Market	Transportation cost and service cost	Personal contacts, taste and competitor	Large market, high transportation cost and service cost, lack marketing personnel	Good
Labor force	Wage, welfare and employment cost	Working attitude, degree of industrialization, skill, skill category, liquidity and accessibility	Low labor cost, good working attitude, need extensive training of skill, good accessibility	Excellent
External economic nature urbanization level localization		Externality(positive and negative) Skill, information sharing, public service, prestige of labor worker	Urbanization level: 67%, lots of professional workers, good growth of export-oriented economy such as tourism	Good
Energy	cost	Reliability, diversified or not	High reliability of hydraulic energy and wind energy etc	Excellent
Infrastructure	Cost of capital, tax	Quality, diversified or not	Deficit of infrastructure, with only few types	Good
Capital Fixed assets Financing	Construction cost,rent and borrowing cost	Accessibility Durable years accessibility	Relatively high construction cost, lots of fixed-asset investment deficits, difficult financing, poor accessibility	Low
Land/building	cost	Size, shape, distance, service and internal settings	Low land cost,common architectural style, reception level to be improved	Good
Environment Policy Recreational facilities	Cost and tax	Workers' preference and attitude of local population	Lack of recreational facilities, preferential tax policy; positive attitude of Fusong County towards tourism	Excellent
Government policy	Incentive, punishment and tax	Attitude, reliability and business environment	Good investment environment and soft environment	Excellent

Thirdly, R&D project of ecological technology industry is strengthened. Science of ecology plays an important role in the current social development, and rapid development of its science and technology has contributed to the development of ecological technology to a certain extent. Based on the free climate and diversified species resources of Changbai Mountain, conducting deep processing of its resources and upgrading products by research methods, in order to promote the gradual formation of industrial chain. This is the core element of industrial layout of Fusong County and an important embodiment where ecological environment promoted the development of urban economy, finally, it provides a powerful guarantee for the fast development of urban green economy. And here lies the interest directly generated out of urban development and ecological environment, also, industrial R&D project of this ecological technology whose important role in the industrial layout is given the fullest expression.

### **Prospective analysis of industrial development of eco-economical city**

#### **Analysis of industrial layout rules**

We can mainly judge whether layout of industry in certain place or an industry is reasonable or not according to following two rules:

In the first place, general process of urban economy's industrial layout is rightly the fundamental process of objective economic development, which reflects changes produced between enterprise and production within spatial domain, and it also indicates that, reasonable industrial layout should be made on the basis of objective law of economic development. Certain differences always exist with respect to all kinds of resources between different regions, besides, uncertain factors in the process of development are difficult to identify, which then leads to radically different circumstances in terms of economic development between different regions. However, in respect of scientific and reasonable industrial layout of corporation, it is of necessity for relevant departments of government to make effective planning according to basic objective laws of economic development, so as to bring the positive effect of economic development between city and ecological environment of Fusong County and gradually realize the maximization of interest<sup>[7]</sup>.

We can find out from TABLE 3, there are many factors that have influence on the economic development of Fusong County ecological city, making relevant predictions of uncertain factors about its development in the future after relevant comprehensive analysis; it is mainly embodied in the effective adjustment and combination of ecological construction and industrial structure, continuously improving effectiveness by making use of superior resources, in order to enjoy complimentary advantages in development of market economy and green ecological industry and realize healthy development of the industry. And in this, application of science and technology shall be the fundamental way for gradually achieving great-leap-forward development of ecological health industry, which is consistent with fundamental dynamics of social development in the future and provides a way of better comply with objective laws of economic development.

Secondly, conducting effective research and exploration on general regularity of industrial layout and continuously improving corresponding basic understanding, so as to provide overwhelming basis for adjustment of industrial layout. In respect of regional industry, personnel from relevant government departments should make related variance analysis and effective research in combination with basic laws of national economic development, in order to achieve continuous optimization during the general process of regional economic development: optimization is about making further exploration of development characteristics of regional industrial economy, so as to make further expansion of its location advantages and finally provide adequate power for the balanced development of regional economy. Relevant government departments have great influence on this: correctly guide and provide positive guidelines for ecological economy and urban development process, so as to make standpoint of urban economic development be highly accurate.

#### **Analysis of development vision**

From the perspective of eco-economic city construction in Fusong County, positive effects of effective adjustment and planning are gradually playing out. It is expected that fiscal revenue of the whole country will be more than RMB 3.5 billion in 2020, and total output value of this district will further be improved, with the amount of RMB 17.5 billion, continuously deepen the interest relationship between urban construction and ecological economy of Fusong County in the final and achieving the ultimate objective of maximizing corresponding interest.

### **CONCLUSION**

The above is process of relevant research and exploration on interest relationship between urban development and ecological environment, and effective analysis is made industrial layout of Fusong County. Effective application of model theory and theory of eco-economic city, together with effective evaluation of expected effect of development, make the research process of this paper more concrete. And it is with the expectation that, research in this paper can have a positive effect on the relationship between urban development and ecological environment, thus achieving the ultimate objective of continuously improving their interest relationship in the final.

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