

---

# Fuzhou Green Economy - Social - Environment Complex System

---

Huiyun Shen <sup>1\*</sup>, Xiangqian Zhang <sup>1</sup>, Jie Yu <sup>1</sup>

<sup>1</sup> Department of Human Resources Management, Huaqiao University, Quanzhou 362021, CHINA

\* Corresponding author: 643717217@qq.com

---

## Abstract

The phase of transformation and upgrading of economic and social development in Fuzhou faces enormous environmental and resource pressures. The green economy has become the best choice for the coordinated development of the Fuzhou GSE system. By analyzing the status quo of the development of the three subsystems of the GSE system in Fuzhou and the economic, social, and environmental problems, it is pointed out that the GSE system in Fuzhou faces opportunities and challenges, and several suggestions are given to help realize the sustainable development of the GSE system in Fuzhou.

**Keywords:** Fuzhou, green economy, environment, GSE complex system

Shen H, Zhang X, Yu J (2019) Fuzhou Green Economy - Social - Environment Complex System. Ekoloji 28(107): 533-536.

---

## INTRODUCTION

The Green Economy-Social-Environment System (GSE system) consists of three subsystems, an economic subsystem, a social subsystem, and an environmental subsystem. These subsystems work together to form a complex system of economy, society and environment. Among them, the economic subsystem is the driver of the development of modern society. It is mainly based on per capita GDP, total industrial output value and total turnover of social consumer goods. The social subsystem is the stabilizers of human life. It is mainly based on population, per capita disposable income, urban and rural residents' living disparities, education and social employment. The environmental subsystem is the basic element for the survival and development of human society. It is mainly based on regional resources and energy, per capita green area as an indicator. The three parties are independent and interrelated, which will promote the development of human civilization. In this context, the study of Fuzhou's GSE system is of great significance.

## REVIEW OF RESEARCH AT HOME AND ABROAD

Foreign scholars Grossman and Krueger have found that there is an inverted "U" relationship between environmental pollution and economic growth through the study of countries in the North American Free Trade Area (Grossman and Krueger 1991); Norgaard believes that economic development is a process of

constant adaptation to environmental changes (Norgaard 1990). Domestic scholars Xiong et al. constructed an evaluation model of system coordination and comprehensive level, and used this method to quantitatively evaluate the coordination of economic, social, and environmental systems in 88 counties in Hunan Province (Xiong et al. 2013); Mei et al. based on a series of economic and environmental indicators in 2000, 2005 and 2010, using the coordination degree model and the coordinated development model and GIS technology, analyzed the spatio-temporal evolution of the coordinated development of urban economy and environment in the Pearl River Delta from 2000 to 2010 (Mei et al. 2016); Li and Liu used model to calculate the economic benefit index, comprehensive environmental benefit index, coordination index and coupling coordination degree of Guizhou Province from 2007 to 2012, which can evaluate the economic and environmental coordination in Guizhou Province (Li and Liu 2016). The experiences above provide reference for the development of the GSE system in Fuzhou.

## THE DEVELOPMENT OF GSE SYSTEM IN FUZHOU

### The status quo of Economic Development

In 2015, the output value of agriculture, forestry, animal husbandry and fishery in Fuzhou was 76.487 billion yuan, an average annual increase of 4.4% during the 12th Five-Year Plan period, which was higher than the provincial average of 0.1%. In the industrial sector,

the industrial economy above designated size has been operating stably, the economic efficiency index has risen steadily, the debt pressure of industrial enterprises has been reduced, the operating risks have been reduced and growth capacity have steadily increased. What's more, the modern service industry is developing rapidly. The investment scale of the people's livelihood related industries such as transportation, water conservancy, ecological environment, education, culture, and health is expanding. The investment in the tertiary industry is characterized by large scale and high contribution.

### **The Status Quo of Social Development**

In 2015, the total number of registered households in Fuzhou was 6,783,656, and the urbanization rate was 67.7%. In terms of education, there are 32 colleges and universities, 12432 postgraduate education full-time teachers, 20,974 postgraduate students; 53 secondary vocational and technical schools, 92 high schools, 263 junior high schools, 893 primary schools and 1196 kindergartens. By the end of 2015, the number of people participating in social pension insurance in the city was 4,241,100, an increase of 3% year-on-year, and the participation rate of social pension insurance for urban and rural residents was 98.66%.

### **The Status Quo of Environment Development**

In 2015, the total industrial energy consumption of the above-scale industries was 12.4853 million tons of standard coal. Throughout the year there are 8 counties (cities) area through the national ecological county to create the technology assessment, 8 counties (cities) have been named provincial ecological counties (cities), accumulated created 118 national-level, 130 provincial-level eco-towns (streets) and 1,919 eco-villages above municipal level.

## **PROBLEMS IN THE CONSTRUCTION OF GSE SYSTEM IN FUZHOU**

### **Economic Development Issues**

First of all, the industrial structure of Fuzhou is not reasonable. Industrial production is dominated by extensive growth, and the tertiary industry is relatively low. The three industrial structures of Fuzhou in 2015 were 7.7:42.2:48.1. Compared with the proportion of the tertiary industry in other provincial capitals that accounted for more than 60%, the proportion of Fuzhou was still low. Second, the total economic output of Fuzhou needs further improvement. Although the economic development of Fuzhou has a good momentum of development, there are still gaps compared with some cities in the province such as

Quanzhou. Finally, Fuzhou's dependence on foreign trade is low, and the level of opening to the outside world needs further improvement. As a coastal capital city, Fuzhou has a unique advantage in foreign trade development. It has established foreign trade relations with 217 countries, but compared with other coastal cities in China, there is still a big gap in foreign trade dependence.

### **Social Development Issues**

The training of highly-qualified personnel in Fuzhou is insufficient which is difficult to attract talents. Second, the level of regional development is low and uneven. such as the total economic output and the income of the people in Fuqing is higher than Yongtai. Finally, the management level of urban and rural planning and construction needs to be further improved. The scientific and elaborate urban planning is not enough, the urban infrastructure is not perfect, the urban congestion, parking difficulties and other issues are still serious. The phenomenon of urban flooding still occurs frequently, and the urban management is disorder.

### **Environmental Development Issues**

Fuzhou is located in the coastal area and is frequently affected by typhoon, floods and other natural disasters. In addition, the construction of ecological civilization in Fuzhou faces difficulties: the rapid development of urbanization has accelerated the growth of urban construction land, and the issue of land supply and demand has become more serious; The layout of urban functions is not reasonable, and the quality of the ecological environment needs further improvement; The form of air quality compliance is severe, and the uncontrolled emissions of "wastewater", "exhaust gas", and "waste slag" in the process of industrialization have created tremendous environmental pressure on the Gulf ecosystem; The environmental pollution in rural areas began to be serious, the construction of environmental protection infrastructures lags behind, and the pressure of environmental protection is greater.

## **OPPORTUNITIES AND CHALLENGES FACING THE CONSTRUCTION OF GSE SYSTEM IN FUZHOU**

### **Opportunities Faced by the Construction of GSE System in Fuzhou**

In 2011, the United Nations Environment Program released "Towards a Green Economy - Achieving Sustainable Development and Eliminating Poverty." The report points out that from 2011 to 2050, investing 2% of global GDP in 10 major economic sectors each

year, it can accelerate the transition to a low-carbon, resource-efficient green economy. Besides, the “One Belt and One Road” strategy promulgated by the national government has raised the level of opening up in Fuzhou, which helped the realization of the GSE system. Finally, in foreign countries, the US government actively promotes green technology, ecological agriculture and ecological industry. In China, Zhejiang Province has created a “global green city” development. These green practices all provide lessons for the green development of Fuzhou.

### **Challenges to the Construction of GSE System in Fuzhou**

The GSE system of Fuzhou mainly faces the following challenges. First, the economic development mode needs to be changed, and the capacity of scientific and technological innovation needs to be improved. Second, the government’s support is not enough, and there are few polices to punish companies or the public who obstruct the development of green economic. Finally, the concept of social green morality is not deeply rooted in people’s minds.

### **THE SUGGESTIONS OF COORDINATED DEVELOPMENT OF GSE SYSTEM IN FUZHOU**

#### **Government’s Support for the Development of GSE System**

The government should give support to the development of the Fuzhou GSE system in three aspects: economy, society, and the environment. In terms of economic issues, the government should optimize allocation on finance, increase the cost of green construction, truly achieve green benefits, and allow the public to enjoy the benefits of green development. In social issues, the government should increase investment in Fuzhou education and cultivate more “green talents”. The government must implement various policies and take effective measures to increase the level of social security for citizens, and increase support for underdeveloped areas such as rural villages and towns. In terms of environmental issues, the green product standards and regulations are formulated to guide the green production of enterprises, and a code of conduct should be developed to guide the green behavior of public.

#### **Using the “One Belt and One Road” Development Strategy to Improve the Level of Opening-up**

Fuzhou has the unique conditions and comparative advantages of participating in the “One Belt and One

Road” strategy. Fuzhou should make effort to use the strength of Strait International Convention and Exhibition Center, and focus on strengthening the interconnection and communication with ASEAN countries, which in order to build Fuzhou into the core of the 21st Century Maritime Silk Road. Moreover, Fuzhou should use the resources of overseas Chinese businessmen, and promote friendly communication among the media, cultural industries and informal organizations, which can help Fuzhou to become the core of Maritime Silk Road.

#### **Enterprises must Improve Independent Innovation Capability, Adjust Industrial Structure, and Optimize Industrial Upgrading**

Enterprises must carry out “green transformation” of traditional industries, adjust industrial institutions, and pay attention to the development of high-tech industries. In the traditional advantageous industries, enterprises should make full use of the relevant preferential policies for the development of advanced manufacturing industries in the country and build Fuzhou’s advanced manufacturing base.

#### **Increase Publicity and Education to Guide Green Production of Corporate and Green Consumption of Public**

Enterprises must always adhere to the principles in the production process. First, from the overall optimization of economic and ecological environment coordination, enterprises should use green energy and raw materials. Second, enterprises should increase the utilization of materials and energy, and eliminate waste generation and emissions. Government, enterprises and public should make effort together to guide the green consumption. The government must establish a mechanism to punish violations of green production and consumption behaviors. Enterprises should establish green production, sales and service systems which are based on the production of green products. The public must establish a sense of green consumption, use renewable energy, and use public transport.

### **RESEARCH SUMMARY**

The three subsystems are independent, interrelated, which will promote the development of the GSE system. The construction of GSE system in Fuzhou has the following problems: extensive growth which bring pressure on the ecosystem; the lack of independent innovation capability of enterprises. However, the construction of the Fuzhou GSE system also faces unprecedented opportunities: the development of the

global economy; the Chinese government's support to the green economy; the "One Belt and One Road" strategy; the green practices at home and abroad.

Therefore, Fuzhou should seize the opportunity of green development, make full use of its advantages to develop the Fuzhou's GSE system.

#### REFERENCES

- Grossman G, Krueger A (1991) Environmental Impacts of the North American Free Trade Agreement. NBER Working Paper, 3914.
- Li ML, Liu CL (2016) The Coordinated Development of Economy and Environment in the Western Poverty-Stricken Areas -- Taking Guizhou Province as an Example. *Journal of Southwestern Normal University (Natural Science Edition)*, 41(1): 72-75.
- Mei ZX, Selena L, Zhao SF, Lu JH (2016) The Spatial and Temporal Evolution of the Coordination Relationship between Economy and Environment in Pearl River Delta. *Journal of South China Normal University (Natural Science Edition)*, 48(5): 74-81.
- Norgaard RR (1990) *Economic Indicators of Resources Scarcity: A Critical Essay*. New York: Journal of Environment Economics and Management.
- Xiong Y, Tang XL, Shi YQ (2013) Hunan Province, County Economy Society Environment System Coordination Appraisal. *Bulletin of soil and water conservation*, 33(5): 233-238.