

Comparison of Ecological Economics Policy between Developed Countries and China

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ABSTRACT

In recent years, more and more countries aware that the black economic development is unsustainable. Different countries and organizations have taken measures to promote the development of an ecological economics society. China has already constructed a worldwide economic powerhouse. In the twenty-first century, China faces a new challenge: i.e., creating an adaptive state in the face of limited resources in order to address rising social disparity and climatic unpredictability. China has disadvantages in building an ecological economics society as compared to other developed countries. China is still in the midst of fast industrialization and urbanization, which necessitates the construction of large-scale infrastructure. China's manufacturing sector has a relatively low overall technological level. Industries that use a lot of resources are still prevalent. Chinese financial institutions have begun to acknowledge the necessity for special policies to foster long-term growth and have redirected their development financing accordingly. Providing sufficient financial support for green development on both the supply and demand sides is difficult. Therefore, small-scale projects may have a better chance of achieving both poverty alleviation and environmental protection.

Keywords: *Ecological economics, Social sustainability, Sustainable development, Ecological economics policy.*

1. INTRODUCTION

Since the industrial revolution and the information revolution, the "green revolution" has become a catalyst for a new round of global economic transformation. With the rapid economic growth and the increasing consumption level, green economics is becoming one of the important motivations and manifestations of Chinese economics. The concept of ecological economics was first proposed by British environmental economist David William Pearce in his book *Blueprint for a Green Economy* in 1989 [1]. In recent years, especially after the 2008 global economic crisis, more and more people have become aware that the black economic development is unsustainable. Therefore, ecological economics plays a significant role in China's economic growth.

As one of the emerging economy, China's green economic development will have a profound impact on its future economic prosperity. Since the Chinese economic reform, China has made remarkable achievements in economic and social development. From 1978 to 2010, China's GDP grew at an average annual rate of 9.8%, the total economic volume rose from tenth

to second in the world [2]. The overall national strength was significantly enhanced, and the people's living standards were significantly improved. At the same time, rapid economic growth also had a huge impact on China's social development. In addition, environmental pollution and destruction not only bring huge economic losses, but also have a more serious impact on the health and livelihood of vulnerable groups. Therefore, construction of a resource-saving society and a circular economy and a low-carbon economy is becoming one of the most important driving factors for the ecological economics development in China.

Developed countries have taken many implementations for ecological economics. For example, the Organization for Economic Co-operation and Development (OECD) issued the "Declaration on Green Growth" in 2009. In 2010, the European Union issued "EU 2020", which regards innovation and green economy as the core strategy. Developed and developing countries have different challenges. Developed countries emphasize to combat climate change and promote the development of a green and low-carbon economy. Green investment institutions in developed countries mainly

focus on supporting the development of projects such as new and renewable energy, energy conservation and energy efficiency improvement. Developing countries not only need to deal with climate change, but also need to deal with environmental pollution.

Ecological economics is expected to benefit both developing and developed countries. With the development of ecological economics, the traditional economics development model has further aggravated the problems such as high operating costs and low efficiency. China could successfully achieve breakthroughs by taking innovation and other initiatives thereby exploring a unique China's development model in practice. However, there is limited literature on comparison of ecological economics policy between developed countries and China. This paper discussed the characteristics of China's ecological economics policy and implementations. In addition, this paper takes the ecological economics policies of developed countries and China as an example to compare their similarities and differences thereby providing a fundamental solution to achieve ecological economics society in China. Therefore, the objectives of this paper are to: 1) the characteristics of China's ecological economics policy and implementations; 2) discuss the characteristics of developed countries' ecological economics policy; 3) compare the ecological economics policy between developed countries and China.

2. CHINA'S ECOLOGICAL ECONOMICS POLICY

2.1. The History of Modern Ecological Economics

Since 2008, many countries have promoted the development of ecological economics. Ecological economics is an important way to enhance national economic competitiveness and make it occupy the commanding heights and leading positions in the world. The United Nations Environment Programme (UNEP) launched the Green Economy Initiative in 2008 [3]. It aims to promote the world's industrial revolution, economic development, and poverty reduction through green investment. Figure 1 shows the concept of ecological economics [4]. At the G20 London summit in 2009, global leaders agreed on an "inclusive, green and sustainable economic recovery". The Organization for Economic Co-operation and Development (OECD) also released its "Green Development Strategy" report in 2010, which aims not only to develop a conceptual framework for a green economy, but also to provide policymakers with a practical policy tool [5]. The common theme of these international initiatives is to integrate global environmental challenges into comprehensive economic decision-making, including policies in macroeconomics, investment and trade, and

technological innovation, with a focus on promoting green investment, green consumption, and green innovation in a sustainable economic recovery.



Figure 1 The concept scheme of ecological economics .

2.2. China's Ecological Economics Policy

In 2007, China issued the National Climate Change Program related to greenhouse gas emission reduction. The plan clarifies the specific goals and policies to address climate change by 2010 [6]. In August of the following year, the Standing Committee of the National People's Congress passed the Resolution on Actively Addressing Climate Change, emphasizing the need to develop a green economy and a low-carbon economy based on national conditions, and to incorporate active response to climate change as a long-term task of realizing sustainable development strategies into the national economy and national economy [7]. In November 2009, the State Council meeting proposed that the CO₂ emission per unit of GDP in 2020 should be reduced by 40% to 45% compared with 2005, and it should be included in the medium and long-term planning of national economic and social development as a binding indicator [8]. The meeting also proposed that by 2020, the proportion of non-fossil fuels in primary energy consumption will reach about 15%. In 2014, the Chinese government proposed a plan to reduce the carbon dioxide emissions around 2030 and to increase the proportion of non-fossil energy in primary energy consumption to about 20% by 2030. In October 2016, the Work Plan for Controlling Greenhouse Gas Emission During the 13th Five-Year Plan Period was issued by the State Council to ensure the completion of the low-carbon development goals and to reduce China's carbon dioxide emissions around 2030. By 2020, carbon dioxide emissions per unit of GDP will be reduced by 18% as compared to 2015. Table 1 shows the main industrial indicators during the 13th Five-Year Plan period [9].

Table 1. Main industrial indicators during the 13th Five-Year Plan period

Industrial Indicators	2015	2020	Cumulative decreases
Energy consumption per unit of enterprises above designated size (%)	-	-	18
Decrease in CO ₂ emissions per unit of value added of an industry (%)	-	-	22
Decrease in water consumption per unit of value added of an industry (%)	-	-	23
The emission decrease of major pollutants in key industries (%)	-	-	20
Comprehensive utilization rate of industrial solid waste (%)	65	73	-
Recycling and utilization of main renewable resources (100 million tons)	2.2	3.5	-
Green and low-carbon energy accounts for the proportion of industrial energy consumption (%)	12	15	-
The proportion of industrial added value in high energy-consuming industries (%)	27.8	25	-
Output value of green manufacturing industry (trillion yuan)	5.3	10	-

3. DEVELOPED COUNTRIES' ECOLOGICAL ECONOMICS POLICY

In the 1970s, developed countries gradually entered the post-industrialization stage. The large amount of waste generated from industrial process have become one of the major problems for the sustainable development. Some developed countries such as Germany and Japan implemented ecological economics policy regarding the construction of a sustainable society. First, they started with solving the problem of waste by recycling domestic and industrial waste. Then they promoted the establishment of a sustainable production and consumption model. Ecological economics strategy can

make different enterprises sharing resources and exchange their by-products. It can achieve the comprehensive utilization of waste and the optimal allocation of resources between industries thereby ensuring the regional materials and energy to be continuously utilized in the economic cycle. In addition, developed countries' ecological economics policy uses the 3R principle (Reduce, Reuse, and Recycle) as the core of circular economy implementation [10]. Third, it can divide the circular economy into three levels: 1) the enterprise level with cleaner production as the major content; 2) the regional level with industrial symbiosis network construction as the main content; 3) the social level with the promotion of green consumption and the construction of the recycling and recycling network of waste materials as the main content.

4. COMPARISON OF ECOLOGICAL ECONOMICS POLICY BETWEEN DEVELOPED COUNTRIES AND CHINA

Ecological economics needs the government to meet the requirements of the present without compromising the foundation for meeting future needs. This means it needs to meet a growing population without increasing resource demands and generating more pollution than the ecosystem can support. For the developed countries, this means a moderate consumption growth and adoption of more environmentally friendly technologies. For the developing countries, consumption growth is necessary to avoid production technologies that are resource-intensive and have the greatest negative environmental consequences. Developed and developing countries must cooperate to achieve these goals, but it is very difficult. Low-input and organic agriculture, energy efficient, and forest management are all important components of a national ecological economics. Compared with the developed countries, developing countries have at least three unfavorable factors: 1) developing countries are in the stage of rapid industrialization and urbanization, and large-scale infrastructure construction is unavoidable; 2) the overall technical level is relatively low; 3) it is difficult to provide strong financial support to green development for both the supply and demand sides. There is an inherent tension between sustainability and economic growth. Although they are usually not irreconcilable, we cannot achieve unlimited economic growth with limited resources. As a result, future economic growth will focus on services, communication, arts, and education that require less resources to increase human welfare.

5. CONCLUSION

With the development of ecological economics, the traditional economics development model has further aggravated the problems such as high operating costs and low efficiency. China has already implemented its

ecological economics policy to establish a global economic powerhouse. A new challenge for China is to create an adaptive state in the face of diminishing resources to address rising social inequality and climate uncertainty in the twenty-first century. Policymakers aware the contribution of environmental investment to economic growth and job creation. They incorporate this awareness into their day-to-day decision-making. Compared with the other developed countries, China has its unfavorable factors to construct an ecological economics society. China is still in the stage of rapid industrialization and urbanization, and large-scale infrastructure construction is unavoidable. The overall technical level of industrial sector in China is relatively low. Resource-intensive industries are still very common. The Chinese financial institutions have begun to recognize the need for specific policies to promote sustainable development and to realign their development lending accordingly. However, it is difficult to provide strong financial support to green development for both the supply and demand sides. Small-scale projects could be more successful in achieving the dual goals of poverty reduction and environmental protection. Moderate economic growth targets are necessary for sustainable development in the 21st century.

In the context of the ecological economics, many large and medium-sized industrial enterprise is facing changes. Some large and medium-sized industrial enterprise in China have also made significant changes. They have carried out a series of organizational structure adjustments regarding to overcome institutional breakthroughs. China could successfully achieve breakthroughs by taking innovation and other initiatives thereby exploring a unique China's development model in practice. Compared with the developed countries, the fundamental solution of China's environmental pollution problem depends on the speed of economic growth mode transformation which is the speed of economic structure adjustment and efficiency improvement. The faster China implement green agriculture and develops the service industry and the faster China's environmental problems are solved. The potential of structural emission reduction is far greater than that of engineering emission reduction. Therefore, the author believes that the structural adjustment is the fundamental way to achieve ecological economics society in our country.

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