# Research on the Transformation of Economic Development Mode and the Internal Driving Force of Energy Saving and Emission Reduction

**Pingbo Qu**

[1] Shandong Transport Vocational College, Weifang, Shandong, 261206, China

**Keywords:** Transformation, Economic development mode, Internal driving force, Energy saving and emission reduction

**Abstract:** my country is in a critical period of economic transformation and development, and the requirements for environmental quality are constantly improving. We should actively explore the internal driving force for the transformation of economic development mode and energy conservation and emission reduction. The article first briefly analyzes the current development requirements for energy conservation and emission reduction, and discusses the law of transformation of China's economic development mode. On this basis, the environmental Kuznets curve is used to describe the transformation of economic development mode and the internal driving force of energy conservation and emission reduction, and several effective policy recommendations are put forward.

## 1. Introduction

Introduction (Heading 1)

Evidence regarding the severe consequences of global warming and the relationship with human activities has grown at a rapid pace in recent years, and it is becoming more and more in doubt (Stern, 2007). The achievements of the Kyoto Protocol and Bali have put forward mandatory and moral emission reduction requirements for all countries respectively. As the most populous country in the world, China is the second largest economic country calculated by PPP, and the country with the fastest economic growth, which is the focus of international emission reduction. For example, some studies predict that assuming that the ratio of carbon dioxide emissions per unit of GDP remains at the level of 2001, by 2018, the total world emissions will increase by 69% to 25 billion tons, and China will increase by 218% by 218%, and the total will exceed 90%. Billion tons, much higher than any other country. On the surface, China's energy conservation and emission reduction are under pressure from the international community; local governments are subject to mandatory requirements from the central government. However, if this demand and pressure really come from outside, China will encounter huge difficulties in the process of accomplishing this task. Specifically, if China's economic development itself has no inherent requirements, energy conservation and emission reduction will encounter serious incentive problems: Does the central government have sufficient determination and ability (administrative and financial) to adhere to this policy? Does local government have enough Incentives, at the expense of short-term growth in exchange for long-term sustainable development? In particular, the rapid economic growth since China’s reforms has been largely driven by local governments’ pursuit of GDP and the fiscal revenue it brings, energy conservation and emission reduction.

The development of social economy cannot be separated from the support of energy, and the exploitation and utilization of energy will damage the ecological environment. After decades of development, my country has become the second largest economy in the world, but the ecological environment has been deteriorating, especially in some heavy industrial cities and energy cities. Under the drag of the environment, the urban economic development has been very slow, and even appears to be in recession. Momentum, in this context, it is of great significance to analyze the transformation of economic development mode and the internal driving force of energy conservation and emission reduction.

  DOI: 10.25236/iceesr.2021.040

## 2. Analysis of the Importance of Transforming Economic Development Mode and Energy Saving and Emission Reduction

The root cause of the ecological environment problem is that human beings endlessly extract and use energy. Since the industrial revolution, resources such as coal and oil have been used in processing and production. With the development of science and technology, energy use has gradually increased. At the same time, more pollutant gases are emitted, and the pollution to the atmospheric environment should not be underestimated. And transforming the economic development mode and reducing dependence on resources such as coal and oil are important measures to alleviate the contradictions between economic development and the ecological environment. Therefore, my country and the whole world need to take the transformation of economic development mode as the main task. Only in this way can we increase the utilization rate of resources and reduce the use of resources. At the same time, we must also pay attention to the development and utilization of new energy sources, such as replacing traditional resources with clean and renewable resources such as solar energy, tidal energy and geothermal energy, so as to achieve the goal of energy saving and emission reduction. It can be seen that the transformation of economic development and energy saving and emission reduction is very critical.

## 3. Economic Development Stage and Growth Mode

China's current environmental problems are the result of the current economic development mode, and this economic development mode is the product of a specific development stage. At the same time, the driving force of economic development with Chinese characteristics has produced a unique government behavior, the so-called developmental state. Therefore, the transformation of the economic development mode is the result of the internal restraint changes in the enterprise development mode, but it is not a natural result that can be achieved by relying solely on the behavior of individual enterprises, but relying on government regulations and actions. However, the arrival of a specific stage of development is also a necessary condition for changing the direction and method of government incentives and corporate behavior.

For the central government, in accordance with the requirements of changes in the economic development stage, identifying the importance of energy conservation and emission reduction, changing the incentive orientation and formulating and supervising the implementation of corresponding regulations is a political economy process related to determination. For local governments, in response to the changed stage of economic development, changing the government's economic functions, from pursuing GDP and the resulting fiscal revenue, to focusing more on the sustainability of growth. For any external pressures and requirements, in the final analysis, it can only play a role through the internal motivation mechanism, that is, responsibility, obligation, capacity and incentive must be unified.

In order to judge whether China has the internal motivation, change the economic development mode, and consciously implement the requirements of energy saving and emission reduction, we need to use the Kuznets environmental inverted U-curve, an economic analysis framework. Although it has caused many controversies, it is of reference significance for us to investigate whether the Chinese economy has the necessary political and economic conditions to solve environmental problems from the changes in the development stage. When describing the relationship between the development stage and income distribution, Kuznets once revealed from experience a trajectory in which income inequality first rises with the increase of per capita income and then declines after reaching a turning point. Znets curve. Environmental economists rely on this relationship logic to assume that there is a similar empirical relationship between per capita income and environmental quality. Specifically, changes in the stage of economic development affect China's environmental policy choices from two aspects.

First of all, changes in the stage of economic development require corresponding changes in the growth pattern. Due to the early realization of the demographic transition, during the entire period of reform and opening up, China was in the period when the proportion of the working-age

population was the highest.The more productive population structure not only provided a sufficient labor supply, but also created a high savings rate to support capital. Conditions for accumulation. Due to the demographic dividend formed successfully by the demographic structure, it was released through the reform of the resource allocation mechanism and realized as a comparative advantage through China's participation in the process of economic globalization, so that the time of diminishing returns on capital was delayed. This demographic factor provides a window of opportunity and an additional source for economic growth. At the same time, China's economic growth has also formed the inertia of over-reliance on the input of production factors, instead of forming a growth mode driven by productivity improvement. China's total factor productivity and its contribution to economic growth, after experiencing a period of improvement from negative to positive after the reform, have not performed satisfactorily since the 1990s, becoming an objective subject of high pollution, high consumption, and low efficiency.

This is very similar to the situation of the Asian Four Little Dragons during the controversial East Asian miracle period. At that time, Krugman (1994) stood up and criticized some countries and regions in East Asia that rely solely on capital and labor input, but did not increase total factor productivity. The reason for doubting the existence of the East Asian miracle is that he evaluated the East Asian economy from the neoclassical growth theory, and he did not notice the characteristic of unlimited labor supply in a certain period of time. The later facts show that when the dual economic characteristics disappear, these economies can finally change the growth mode of relying solely on input, and turn to relying on the increase of total factor productivity, thus maintaining sustained economic growth. In China, due to the existence of the demographic dividend, the quantity, quality, and price of labor have obvious advantages, which can form and maintain a high level of savings and capital accumulation rate, and there is no trend of diminishing returns on capital, making this kind of mainly dependent on input. The growth mode is sufficient to support the rapid growth of the Chinese economy. However, once the demographic structure, labor supply and demand relations, and labor costs change, and thus the Lewis turning point, the conditions under which the traditional growth mode depends, and the economic growth mode mainly depends on the increase in productivity. Transformation will be imminent.

Secondly, the increase in per capita income reflects people's higher requirements for safety and quality of life, and thus puts forward a higher need for the environment. The World Bank estimates that China’s losses due to air and water pollution in 1995 were 54 billion U.S. dollars, accounting for about 8% of GDP. During 1995-2006, the per capita income of Chinese urban residents increased by 131% in real terms, and the income of rural residents increased by 748% in real terms. In particular, the income growth rate and income level of the middle and high income groups are higher. For example, in 2006, the per capita income of the highest 20% urban group was 56 times that of the lowest 20% group. Since environmental damage is evaluated in accordance with the Human Capital Law (HC) and Willingness to Pay Method (WTP) that affect health, the key lies in the income level of Chinese residents, or to a greater extent, the income growth of middle and high-income groups with strong negotiating power. Therefore, this income change will undoubtedly greatly increase China’s requirements for environmental quality. From the environmental incidents that have frequently occurred in recent years, we can observe that the timeliness and attention of public opinion and public opinion to the incident have been greatly improved (Hayward, 2005). The wishes of the Chinese people, scholars, policy makers, and (to a lesser extent) companies regarding the environment are more clearly reflected in the documents of the Party Central Committee and the 11th Five-Year Plan of the State Council, especially the transformation of economic growth patterns Great attention has been given to not only requiring a shift from input-driven economic growth to productivity-driven economic growth, but also imposing rigid constraints on energy conservation and emission reduction. A study showed that Chinese manufacturing companies responded positively to the increase in raw materials and wages, and the technical efficiency of intermediate input use and labor productivity were greatly improved.

## 4. The Specific Content of the Transformation of the Economic Development Mode

Transition from quantitative change to qualitative change. As far as my country's economic development is concerned, after the founding of the People's Republic of China, China has vigorously developed its economy. From the reform and opening up to the 1990s, my country's economic strength has grown by leaps and bounds. Great progress has been made in the development of the industry. However, at that time, China's economic development mainly relied on the investment of a large amount of manpower, material resources and energy into economic construction and development with economic factors to achieve quantitative progress. However, in fact, such an economic development method is beneficial in the short term. Long-term development has a great negative impact. Therefore, the current economic development mode of our country is mainly a transformation process from a quantitative change to a qualitative change. The quality of economic development has been effectively improved. On the one hand, through quantitative changes to qualitative changes, China's overall economic strength can be effectively improved, and a solid foundation for China's modernization can be laid. On the other hand, through such a transformation method, while ensuring the rational use of the environment and resources, it is possible to improve economic efficiency with a "fast and good" development strategy, thereby enhancing the international competitiveness of my country's economy.

Realizing sustainable economic development Economic growth refers to the improvement of various combinations and functions of input production factors. Two development routes can evolve: The first is an extensive economic growth mode formed by increasing investment and expanding the scale. The second is to improve work efficiency and strengthen the intensive economic growth mode of quality standards. As far as the economic development model is concerned, there have been four stages since ancient times. The first stage is the resource economy stage. This stage mainly uses various production factors to carry out economic construction work to promote economic development; The first stage is the capital economy stage that relies on investment and a large amount of productivity for mass production; the third stage is the technological development stage. The most important economic development model in this stage is the technological innovation-based economy based on science, technology and knowledge. In the development stage, the fourth stage is the differentiation stage of the tertiary industry, which is also the current stage of my country's economic development. This stage is mainly the pursuit of the all-round development of humanity and the enjoyment of life, and the formation of a new economic development mode.

Reducing energy use, improving energy utilization, reducing energy use, and improving energy utilization are currently the most important part of the transformation of my country's economic development mode and energy conservation and emission reduction work. It is also the relationship between economic development and energy conservation and emission reduction. Integrated economic development model. Regarding the use of energy, the development of the tertiary industry is currently ongoing to reduce energy consumption. However, the use of energy for economic construction is an unavoidable problem. It is not enough to rely solely on the development of the tertiary industry. It still needs to be developed in conjunction with other industries. Therefore, in the current economic development, technicians and scientific researchers from all walks of life are constantly paying attention to energy conservation issues and are committed to the study of energy-saving economic measures. At the same time, Chinese scientists are committed to studying energy conservation. It replaces my country's current research work on alternative energy sources for non-renewable energy, with a view to completing the transformation of economic development mode as soon as possible, and promoting the development of my country's economic construction and the process of energy conservation and emission reduction.

## 5. Conclusion

All in all, the transformation of economic development mode and energy conservation and emission reduction work are the primary tasks in the current development and construction process of our country. Only through the transformation of economic development mode, the implementation and supervision of energy conservation and emission reduction can be improved. In

order to effectively improve my country’s economic strength, it can also ensure that my country’s environmental and energy issues are best resolved, which will positively promote my country’s overall development.

## References

[1] Xie Caixia, Gao Yibo. Research on the innovative development path of energy saving and emission reduction from the perspective of low-carbon economy. Comprehensive Utilization of Resources in China, vol. 6, no. 20, pp.121-122, 2018.

[2] Rongsheng Luo. Research on Rural Energy Conservation and Emission Reduction in a Low-Carbon Economic Environment. Jiangxi Agriculture, vol. 2, no. 7, pp. 56, 2019.

[3] Guo Qiuhong. Energy saving and emission reduction, environmental protection, and promotion of the conversion of new and old kinetic energy. Comprehensive Utilization of Resources in China, vol. 156, no. 40, pp. 120-121, 2018.

[4] Li Meng, Lou Wei. A comparative study on the environmental benefits of energy conservation, emission reduction, energy replacement emission reduction, and de-energy emission reduction. Urban and Environmental Research, no. 8, pp. 11, 2019

[5] Li Li. Problems and countermeasures in my country's energy conservation, emission reduction and environmental protection work. Industrial Innovation Research, no. 1, pp. 6-7, 2015.