Research on the Development Model of Green Economy-Ecological

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Abstract. By analyzing China's green economic-ecological development measures, this paper aims to explore a new green development strategy that is more suitable for the characteristics of China's economic structure, and its significance is to further enhance the value of the natural environment. In order to better plan the economy of development, reduce unnecessary resource consumption, improve capital utilization and the negative impact on the environment,the conclusion of this paper is suggested that, Government governance departments and policymakers should adjust the direction of the business economy structure.

Keywords: Green economy; Ecology; Low carbon T+N.

1. Introduction

In the context of improvement of the development level of modern science and technology, excessive commercial development and resource consumption have exceeded the capacity of the environment, aggravated and seriously affected the coordinated development of population, resources and environment. In order to achieve sustainable development in terms of population, resources, environment, etc., it is necessary to change the development model of business and economy. Thus, the ecological-green economic development model is a strategy for addressing climate change and sustainable development continuously.

By analyzing China's ecological-green economic development measures, the purpose is to explore new green development strategies that are most suitable for the characteristics of China's economic structure, and the significance is to further improve the natural environment value through the green economy.

2. Literature review and research methods

The method of this paper is literature research, consults relevant materials through libraries, networks and other platforms. Considering Commercial activity with ecological-green adaptation is an adaptation concept that combines environmental adaptation with human control, a variety of academic studies are emerging in recent years.

Research on the concept of the green economy, Hu Jianghong (2013) points out that the development of green economy must first respect nature, based on the sustainability of natural resources, take the renewable rate of natural resources as the premise of economic development, and take green technology innovation as the means of development. Yao Weibing (2015) believes that green economy is a new development concept and goal, and with an important development method to change the traditional economic structure . Yin Ana (2021) concluded that economic organizations need to consider the impact of negative of the economic activities on the environmental pressure capacity when conducting activities . Furthermore, Li Qingshui (2021) pointed out that, green economic indicators are too complicated and data collection is difficult as well as the heterogeneous information lacks a better normative processing method for collection .

Many scholars have analyzed the development model of green economy. Fan Qiufang (2022) analyzed from two aspects and pointed out that, from the perspective of time, the level of new urbanization has a significant positive impact on green economic efficiency, which is sustained while the introduction of inter-regional is found the impact of new urbanization on green economic efficiency in the region. Zhu Guangyin (2022) pointed out that the national green economic efficiency exhibits an N-shaped fluctuation trend, mainly from the growth effect of technological progress. Xu

Hao (2022) believed that the China's digital economy is conducive to promoting the development of a green economy, and the effect has obvious positive spatial spillover, which can effectively compensate for the negative impact of resource dependence. Zhang Dan (2022) considered that many subtle conditions and small changes will have an impact on the efficiency of green economy. Jiang Jinhe (2022) concluded that, the measurement of green growth should include at least four dimensions: efficient and sustainable resource use, green economic opportunities, natural capital protection and social inclusion.

3. Green economic-ecological development model

3.1 Definitions

Historically, the traditional industrial economic model, which as an economic model characterized by cost of loss of ecological environment that not only caused environmental damage and pollution, but also threatened people's health, had wasted resources and energy utilization seriously. However, while maintaining sustained economic growth, the green economic-ecological development model, as a new sustainable development model with recyclable and balanced characteristics of which refers to reducing and improving the condition of the natural environment and resources, is based on green and low-carbon cycles. Hence, in terms of the three major themes of environmental protection, economic growth, and social equity, the definition of the green economy, of which is the most representative by the United Nations Environment Program (UNEP), is depicted as "a green innovation, which can promote the efficiency of social resources and protect the sustainability of natural systems".

3.2 The development trend of global green economy-ecological

When reviewing the development process of global modernization, human beings have mainly relied on fossil energy from the industrial revolution to the information revolution and the rapid economic growth is also accompanied by a sharp increase in carbon dioxide emissions, which has triggered such as global climate change problems and brought huge challenges to the survival of human society.

Many countries take green industries as an important measure to promote economic restructuring into account and the global economies are accelerating the deployment of green infrastructure. For instance, the United States vigorously promotes a $555 billion clean energy plan, increase investment in key areas such as infrastructure and clean energy, and focuses on subsidies for their city dwellers, of who buy an electric vehicles and install a rooftop solar energy in their households. Meanwhile, the EU plans to invest 350 billion euros a year to promote electric vehicles and public transportation to achieve emission reduction targets between 2021 and 2030, while Germany brings forward target to ditch fossil fuels to 2035 and accelerate renewable energy infrastructure such as wind and solar in order to achieve to 100% supplying. Moreover, Japan has put forward development goals and specific emission reduction tasks in 14 key areas, including offshore wind power, electric vehicles, and hydrogen energy,. Etc.

3.3 China's green economy-ecological

Aiming to constructing a high-quality green development led by the "dual-carbon" goal, China proposed to peak carbon dioxide emissions by 2030 and achieve the "3060" dual-carbon goal of carbon neutrality by 2060 in September 2020. In addition, China released "the Action Plan for Carbon Peaking by 2030" and implemented a series of policies not only in key areas such as energy, industry, construction, transportation, as well as key industries such as coal, electricity, steel, and cement,.Etc, but also like remittance, taxation, finance and other safeguard measures have formed a carbon peak and carbon neutral named "T+N".

From a high-speed to medium-high-speed economic growth rate and an extended scale-speed-type to a quality-efficiency-type intensive growth way, China's development is entering a new normal. In

this regard, as a significant participation in global climate governance, China has the leadership today and gradually moved towards to the center to change a priority on its domestic social and economic agenda, while deeply participating in international climate negotiations and enhancing its Nationally Determined Contributions (NDC) ambitions. At 2021, China's per capital GDP reached 12,359 U.S. dollars, exceeding the average level of middle-income countries. With rapid economic development, greenhouse gas emissions have grown significantly. According to "the International Energy Agency" report displayed, China's energy-related CO2 emissions rose above 11.9 billion tonnes. Consequently, in these changes respects, such as economic growth factors, increasingly prominent environmental issues, and influence of extreme weather, China plays a role in addressing climate and considers new internal driving forces.

Although has proposed a carbon neutrality target in 2060, the realization of the target in China is still a required supports of more specific policy measures. In the latest report "China's Energy System Carbon Neutrality Road-map" released by the International Energy Agency (IEA) was mentioned that, while considering the specific policies, the carbon dioxide emissions of energy system will start to decline gradually after peaking before 2030, and there will be 6 billion tons of emissions by 2060, which is more than 35% and better than that in 2020 (IEA, 2021). However, under the Commitment Target Scenario, where all regions declares national net-zero emissions are fully achieved, China's CO2 emissions will reach net-zero by 2060, while the remaining 610 million tonnes are fully offset by negative emissions (IEA, 2021).

Further, an analysis model from "China's Long-term Low-Carbon Development Strategy and Transformation Path Research" also shows that, China's energy-related carbon dioxide emissions by 2050 will be 9.08 and 6.18 billion tons respectively, when the policy implementation is met such conditions like strengthening the intensity and magnitude of the reduction of carbon,energy, increasing the proportion of non-fossil energy, controlling the total amount of carbon dioxide emissions, and updating the NDC (Project Synthesis Report Writing Team, 2021).

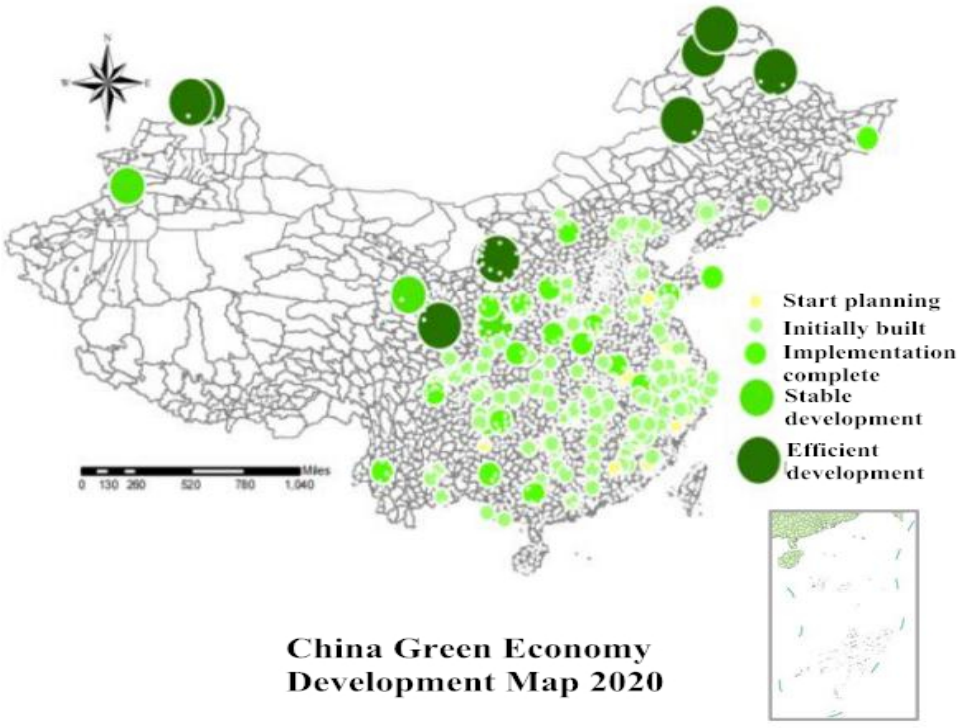


Fig. 1 Schematic diagram of China's Green Economy in 2020

According to the development status of China's ecological-green industry and the implementation of policies, the dimensions of policy tools and factors affecting industrial development are analyzed as shown in the figure below [Figure 1]. The data in Table 1 comes from the 2020 edition of China's Economic Development Plan.

Table 1. Policy Statistics

Industrial policy	Supply type				Environmental type					
	Capital investment	Talent development	Infrastructure	Scientific and technological information support	Public service	Goal planning	Financial support	Tax incentives	Regulatory control	Strategic measures
Technology	2	0	3	7	1	3	0	0	0	0
Industry	2	1	1	1	7	19	8	4	19	2
Industrial innovation	1	3	3	4	7	6	1	0	0	1
Industrial chain stability	4	0	0	1	0	5	3	0	0	1

Table 1 shows that the proportion of environmental policy tools is the highest, reached 55% and the supply oriented policy tools is moderate as well as the demand-oriented policy tools is the lowest, at 11%, thus in order to strengthening government procurement and service outsourcing policy tools, government should pay more attention to the equilibrium proportion of demand-based policy tools, which is conducive to the stable e green ecological industry market and can promote the formation of an ecological industry chain. Meanwhile, as basis infrastructure construction, the effectiveness of capital investment policy tools is not high, which implies China's relevant scientific research institutions and production enterprises have not been a major participant in the scale and growth rate of the green ecological industry. Further, in terms of factors that affecting industrial development, the Chinese government pays more attention to policies supporting and industrial innovation, however, lacks sufficient attention to the stability of technology and industrial chains.

4. Suggestions

By analysis of the resources, environment and other conditions which impact on China's social economy growth, there are some effective suggestions shown below.

Due to the economic benefits of Chinese enterprises and industrial growth rate have a clear downward trend at present, it is necessary to improve the efficiency of energy conservation, emission reduction and environmental protection measures, strength the green upgrading and transformation, adopt effective elimination systems, and effectively control a series of high carbon emissions such as high water, energy consumption, flat glass, steel, coal, cement and other inefficient industries. Moreover, by accelerating product technology and producing process, it can be more effective to connect the industrial ecology link, ensure the reasonable extension of the industrial chain, and further improve the added value of products .

Further, in terms of the situation that, technical support and material guarantee for the effective development of a circular green economy and protect the ecological environment should be considered as well. Hence, it can not only provide necessary services, products and equipment for other industries, but also industrial chains of energy conservation and environmental protection policies, so that the stronger the industry related, the stronger and greater impact on absorbing China's employment and economic growth. On the one hand, green development standards of enterprises saving must be improved from mining, material, land,water,.etc. On the other hand, based on "resources-products-waste"of the traditional linear growth model, it is transformed into a sustainable development system instead of "material closed-loop flow"model, which formed a new joint development manner of industrial cycle as well as strengthen the all-round development of non-fossil energy, smart grid construction and the industrialization of electric vehicles and full utilization of fossil energy. By improving the quality certification standards of green technology and products, the harm to the green ecological environment can be minimized.

For green research results, it is not only necessary to strengthen the green industry-university-research cooperation systems which included in professional reserves, promote the innovation technology, absorption and integration, and set up special funds on this basis, but also increase public

R&D investment in green technology, effectively integrate production enterprises, universities, and scientific research institutions, which formed a cooperative ecological cooperation model with three main bodies, and continuously carry out scientific technological research.

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