Exploring China's Green Development Path: From Economic Transformation to Sustainable Development

Yixuan Li *

International Business School, Hainan University, Haikou, China

* Corresponding author: 20233001992@hainanu.edu.cn

Abstract. Global industrialization has exacerbated environmental challenges, and China's practice of green development and its promotion of sustainable economic, social, and ecological development offers valuable lessons for developing economies. Through green and low-carbon transformation, industrial optimization, and environmental governance, China is leading the world towards a sustainable future and demonstrating its role as a great power. Using a combination of literature review and theoretical analysis, this study examines China's development strategies and paths in the face of global environmental challenges. Starting from the three theoretical foundations of green development, economic restructuring and upgrading, and sustainable development, the paper analyses the evolution of China's green development concepts and practices. In addition, the paper discusses the mechanism of green growth and economic transformation and upgrading, i.e., economic transformation and upgrading promotes green growth, and green growth promotes sustainable economic development. China has gradually constructed a set of green development models that align with national conditions and have a global perspective. It has also put forward Chinese programs and contributed Chinese wisdom to the international community in achieving sustainable development.

Keywords: Green development, economic transformation, sustainable development, ecological environment, Chinese experience.

1. Introduction

As global industrialization accelerates, the problems of climate change, resource depletion, and environmental pollution are becoming increasingly serious, posing a major challenge to all countries' economic and social development. The Stern Review: The Economics of Climate Change report led by Nicholas Stern delves into the possible far-reaching impacts of global climate change on the economy, and it points out that if effective measures are not implemented in time in the coming decades, the severity of the economic and social crises triggered by global warming may be compared with that of the two world wars and the period of the Great Depression in history [1]. As a result, green growth has become the consensus of the international community.

In terms of ecological assets, China's per capita level is on the low side, and resource and environmental issues have become the biggest challenge to China's development. Currently, China has surpassed the United States in terms of energy consumption and carbon dioxide emissions, leaping to the top of the world. This phenomenon has far-reaching adverse impacts on the world and is extremely inconsistent with China's national conditions of tight per capita resources and vulnerable ecological conditions [2]. Therefore, China should unswervingly take the green development path, focus on the sustainable development of the Chinese nation, adhere to the systematic concept of integrated promotion, and conspire for global sustainable development.

In the existing literature exploring China's green development path, scholars have analyzed the relationship between economic transformation and sustainable development from multiple perspectives. Hu Angang and Zhou Shaojie [2] and Qingzhi [3] have deeply discussed the concept of green development and emphasized the importance and inevitability of green development in China. Gan Chunhui, Zheng Ruogu, and Yu Dianfan, on the other hand, studied the two major factors driving the transformation of industrial structure and pointed out that the optimization of industrial structure is the key to achieving economic transformation and upgrading [4]. Fu Linghui argued the regular change in industrial structure through empirical research [5]. Using models, Cai Fang, Du Yang, and

Wang Meiyan analyzed the direction of the transformation of the economic development mode [6]. Niu Wenyuan explored the connotation of sustainable development theory in depth, providing a theoretical basis for understanding sustainable development [7]. Liu Huajun and Wu Qianmin focus on China's green development path in the new era decade and summarise China's green development practices and achievements in the context of the new era [8]. By systematically combing the existing literature, this study will explore the theoretical foundation, exploration history, and the role mechanism of green growth and economic transformation and upgrading of China's green development, based on which it will summarise the practical experience and put forward strategies and suggestions to further promote China's green development.

In summary, this study explores the theoretical and practical process of green development in China under the theme of 'Exploring the path of green development in China: from economic transformation to sustainable development'. As the world's largest emerging economy, China's implementation of the green development strategy not only creates a new type of leapfrog development path for China but also provides a model and inspiration for the development of the vast number of developing countries, which is of global significance [2].

2. Rationale and Conceptual Definition

2.1. Green Development Theory

Green development represents an advanced sustainability perspective that focuses on holistic linkages and mutual coordination within the three domains of the economy, society, and the natural environment [2]. The concept of green development was widely recognized by the international community at the World Conference on Environment and Development held in Rio de Janeiro in 1992. Green development has gradually become a common term for the concept of 'sustainable development' and its strategies, which focus on exploring how to fundamentally address the ecological and resource challenges encountered by human beings by updating the concepts and modes of development, to achieve the long-term goal of sustainable development [3]. Theoretically, green development can be understood and defined at least at three levels: ecologically sustainable, environmentally friendly, and environmentally/resource sustainable [3]. Ecologically sustainable green development focuses on ecological protection and the long-term health of the environment, but can sometimes be overly idealistic or in conflict with current economic systems and political forces. Environmentally friendly green development is understood and defined more widely accepted and implemented in industrialized and post-industrialised countries, such as Europe and the United States, which seek a balance between economic development and environmental protection after a certain level of economic development. The process of environmentally/resource-sustainable green development, on the other hand, has been politicized by many developing countries, including China, which focuses more on economic growth and exploitation of resources, especially GDP growth. While there is also a focus on the development of green issues and the promotion of environmentally beneficial actions, it is still overall classified as a development concept centered on human production and economic growth.

2.2. Theory of Economic Transformation and Upgrading

2.2.1. Theory of Industrial Structure Transformation and Upgrading

The level of economic development of different countries can be reflected by differences in their industrial structures. Adjusting and optimizing industrial structure is a key strategy for developing countries to achieve economic growth. The transformation of industrial structure is mainly driven by factors such as technological progress and dominant industries. The unevenness of technological progress in different industries leads to differences in the growth rate of industries, thus driving changes in industrial structure. At the same time, as the country's development stage changes, the leading industry will also change, which will directly affect the country's production and consumption

patterns, and then have a profound impact on the industrial structure [4]. Since the reform and opening, China's economy has maintained rapid growth, and its industrial structure is also following certain regular changes, gradually advanced, mainly reflected in the proportion of primary industry, secondary industry, and tertiary industry in increasing order [5]. The position and role of the tertiary industry in the national economy are becoming increasingly important.

2.2.2. Theory of the transformation of the mode of economic development

With the rise in per capita income levels, the public's expectations for quality of life are growing, with the demand for a quality environment being particularly prominent. According to Cai Fang et al, there is an inverted U-shaped relationship between economic development and environmental quality as described by the environmental Kuznets curve, which suggests that the problem of environmental pollution is expected to be alleviated as economic development enters a new phase. China's total factor productivity contribution to economic growth has not continued to increase since the 1990s but has instead led to high levels of pollution. This indicates the need to shift from a growth mode that relies on factor inputs to one that relies on improving production efficiency [6]. The low-carbon economic model, with energy saving and emission reduction, efficient use of resources, reduction of waste emissions, and control of pollution levels as its core features, represents a new trend and direction for future economic development [9].

2.2.3. Sustainable development theory

Sustainable development is a comprehensive and multidimensional process whose philosophy focuses on comprehensiveness, spontaneity, and multiple integration. It is viewed as a vector of behaviors in a complex natural-social-economic system that will lead to the evolution of the development of a country or region in an increasingly rational and more harmonious direction [7]. Achieving sustainable development requires a balance in three key areas. Firstly, human behavior in taking resources from nature must be matched by our return and conservation of nature. Second, the development efforts of current societies should be consistent with their responsibilities and contributions to future generations. Finally, regional development strategies should be formulated not only to meet local needs but also to take into account the interests and sustainability of other regions and at the global level [7]. This requires that while economic growth and social progress are taken into account, attention should also be paid to environmental protection and sustainable use of resources to achieve long-term, balanced, and harmonious development.

3. Exploring China's Green Development Path

3.1. Evolution of the Concept of Green Development

Since the reform and opening up of China, the country's rapid development has brought about great progress in industrialization and urbanization and an improvement in people's living standards, but at the same time, it has also encountered challenges such as resource constraints and environmental pollution. In 1994, China responded positively to the global Agenda 21 put forward by the Rio Conference on Environment and Development and issued China's Agenda 21, which formally incorporated the concept of sustainable development into the national development strategy. At the Third Plenary Session of the 16th CPC Central Committee, the scientific concept of development was established as a human-centered approach to promoting comprehensive, harmonious, and sustainable development, aiming to achieve comprehensive economic, social, and human progress. In 2007, the 17th CPC National Congress incorporated the construction of an ecological civilization into the goal of overall well-being, emphasizing the development of resource-saving and environmentally friendly industries and consumption patterns. The 18th CPC National Congress elevated the importance of ecological civilization, combining it with economic, political, cultural, and social construction to create a ‘beautiful China’ and promote the ‘five-in-one’ overall layout of socialist undertakings. 2015 saw the 18th CPC Central Committee's Fifth Plenary Session

put forward the ‘five-in-one’ concept of ecological civilization. In 2015, the Fifth Plenary Session of the 18th CPC Central Committee put forward the development concept of ‘innovation, coordination, green, openness and sharing’, which guided China's economic and social development in the new era. The 19th CPC National Congress set the goal of building a modern socialist country that is ‘rich, strong, democratic, civilized, harmonious and beautiful’ by mid-century, highlighting the central position of ecological civilization in the new era of socialism with Chinese characteristics [10]. The concept of green development in China has gradually evolved from an initial measure of environmental protection to a core strategy of national development and eventually became an important part of socialism with Chinese characteristics in the new era.

3.2. Practical History of Green Development

In the decade of China's green development practices in the new era, China has taken multifaceted measures to improve its governance system. First, by establishing a system of strict prevention at the source, strict control in the process, and strict punishment in the aftermath, China has strengthened the property rights system for natural resource assets and the regulatory system, implemented the strategy of main functional zones, and established a unified system of spatial planning for the national territory as well as a system of national parks, thus ensuring that ecological and environmental protection laws and policies are effectively enforced. Second, the Chinese government, enterprises, and the public have formed a pattern of ecological co-management. The government plays a leading role, enterprises take the main responsibility, and the public participates in environmental protection, creating a favorable situation for the whole society to jointly promote green development. In terms of the means of governance, China has adopted a combination of the rule of law, the market, and science and technology. The rule of law is reflected in the formulation and revision of laws and administrative regulations related to the ecological environment; the market is stimulated by the development of green finance and the promotion of the trading market of sewage and carbon emission rights; and the scientific and technological means are used to build a green technological innovation system, improve the level of energy science and technology, and promote the energy revolution and green low-carbon transformation. Finally, China has improved the effectiveness of governance through a multi-pronged approach, including strengthening environmental pollution control, promoting the formation of green production methods, and improving the effectiveness of ecological and environmental supervision and enforcement [8]. Through these measures, China has achieved remarkable results in green development institutional mechanisms, ecological and environmental quality, economic green transformation, green low-carbon life, etc., contributing to the global sustainable development of China's strength, and green development has become a distinctive feature of Chinese-style modernization.

4. Mechanisms of Green Growth and Economic Transformation and Upgrading

4.1. Green Growth Can Be Achieved Through Economic Transformation and Upgrading

To achieve truly green development, the BRICS countries must make a simultaneous shift in both the theoretical framework and the practical paradigm, namely, the transformation and upgrading of their economies [3]. One of the effective directions of economic transformation and upgrading is to promote green welfare through the accumulation of green wealth to achieve sustainable green growth. Optimizing industrial structure and efficient use of resources are both key strategies for accumulating green wealth (including abundant natural resources, advanced environmental technologies, and healthy ecosystems), the growth of which directly contributes to green welfare, i.e., enhancing the public's quality of life and ecological health. Ultimately, this transformation guides the economy towards a more sustainable model, ensuring a win-win situation for both economic growth and environmental protection, and realizing green growth in the true sense of the word [2]. As an

important part of the circular economy and energy-saving economy, the development of the low-carbon economy is also regarded as an effective way of economic transformation and upgrading. It marks one of the most far-reaching changes for mankind in the 21st century in the economic, social, and environmental fields [1]. The development of a low-carbon economy requires a fundamental reduction of CO2 emissions and promotes energy saving and emission reduction, which is a key aspect of green development. The concept of a low-carbon economy will also give rise to a new round of scientific and technological revolution, promote the development of various new energy sources and technologies, and provide new impetus for green growth. New industries and market opportunities will be created in the development process, which will help enterprises achieve a shift to a low-carbon, high-growth model, enhance their competitiveness in the green market, and assist in green growth.

4.2. Green Growth is Also an Important Means of Promoting Sustainable Economic Development.

At the center of green growth is an economy that operates with a trend towards reduced energy consumption, material use, and pollution emissions, while at the same time, its growth is no longer dependent on the heavy consumption of traditional resources and energy sources. To achieve this, a multifaceted approach is needed. From the producer's point of view, it is necessary to gradually develop a ‘resource-product-waste-renewable resource’ The green production model of circular flow [10], from the traditional linear model to the circular economy model, to improve the efficiency of resource use. By raising the green awareness of the whole society, the market growth of green products and services will be promoted from the perspective of consumers' demand, so that their behaviors will tend to reduce the use of energy, the demand for resources, and the burden on the environment. Numerous researchers have explored the link between carbon emissions and green financial growth in depth, confirming that financial instruments such as green loans and green investments play an important role in reducing carbon emissions [11]. China has taken advantage of its institutional strengths to establish a new pattern of high-quality green development with a planning-oriented approach [10], which effectively promotes the transition of the economy to a green and sustainable direction. Thus, green growth is not only the pursuit of an environmentally friendly economy but also an important means of promoting sustainable economic development, which ensures a harmonious symbiosis between economic growth and environmental protection.

5. Conclusion

This paper analyses in detail China's green development strategy in the face of global environmental challenges, discusses the trajectory and practical application of China's green development concept based on the three core theories of green development, economic transformation, and sustainability, and explains how green growth and economic transformation can mutually reinforce each other to achieve the coordinated development of economic growth and environmental protection. Through the combination of theory and practice, China has developed a unique green development model that adapts to the country's specific economic conditions, social needs, and environmental characteristics, while at the same time demonstrating far-reaching international perspectives and providing innovative ideas and practical cases for global sustainable development. This study provides an in-depth analysis of China's green development path, which provides policymakers with a theoretical basis and practical guidance for the implementation of green development strategies and helps to promote the optimization of economic structure and the green transformation of industries. This paper is also conducive to the popularisation of the concept of green development and promotes the transformation of society's green consumption and production modes by enhancing the public's environmental awareness. In addition, the international sharing of research results will help promote global ecological governance cooperation and jointly address global challenges such as climate change.

To further promote China's green development economic transformation and upgrading, and to continuously meet the people's needs for a better life, the following suggestions are made. First, strengthen green international cooperation. Through participation in multilateral environmental agreements and the promotion of international green technology exchanges and cooperation programs, people should jointly address global climate change and promote the improvement and development of the global environmental governance system. Second, expand the carbon trading market. Covering more industries and fields will incentivize enterprises to reduce emissions, improve energy efficiency, and promote the development of clean energy and low-carbon technologies through market-based mechanisms, to achieve a win-win situation in terms of economic and environmental benefits. Third, popularize ecological education. Integrate the concept of sustainable development into the education system at all levels, cultivate the public's awareness of environmental protection and green lifestyles, raise social attention to ecological and environmental protection, and reserve talents and innovative forces for green development.

Future research directions can be combined with the development strategy of a strong science and technology country, focusing on the role of green technology innovation in promoting industrial upgrading, the transformation and upgrading of green supply chain management, and other areas; at the same time pay attention to the integration of climate change adaptive measures and green development strategies, to provide sustained impetus for China's green development.

References

[1] Feng Zhijun, Zhou Rong. Low-carbon economy: A fundamental way to achieve green development in China. China Population-Resources and Environment, 2010, 20 (04): 1 - 7.

[2] Hu Angang, Zhou Shaojie. Green development: function definition, mechanism analysis, and development strategy. China Population-Resources and Environment, 2014, 24 (01): 14 - 20.

[3] Huan Qingzhi. Green development in international comparative perspective. Jiangxi Social Science, 2012, 32 (08): 5 - 11.

[4] Gan Chunhui, Zheng Ruogu, Yu Dianfan. The impact of industrial structure change on economic growth and volatility in China. Economic Research, 2011, 46 (05): 4 - 16+31.

[5] Fu Linghui. An empirical study on the relationship between the advanced industrial structure and economic growth in China. Statistical Research, 2010, 27 (08): 79 - 81.

[6] Cai Fang, Du Yang, Wang Meiyan. Transformation of economic development mode and the intrinsic power of energy conservation and emission reduction. Economic Research, 2008, (06): 4 - 11+36.

[7] Niu Wenyuan. Connotation cognition of the theory of sustainable development - commemorating the 20th anniversary of the United Nations rio conference on environment and development. China Population-Resources and Environment, 2012, 22 (05): 9 - 14.

[8] Liu Huajun, Wu Qianmin. The road to green development in China in the new era decade. China Population-Resources and Environment, 2024, 34 (03): 102 - 111.

[9] Bao Jianqiang, Miao Yang, Chen Feng. Low-carbon economy: A new change in the way of human economic development. China Industrial Economy, 2008, (04): 153 - 160.

[10] Jin Leqin. The new concept and realization path of high-quality green development--Another discussion on the green development course in the 40 years of reform and opening up. Journal of Hebei University of Economics and Trade, 2018, 39 (06): 22 - 30.

[11] Zhang Zhenhua, Chen Xi, Wang Jing, et al. The effect of green finance reform and innovation pilot zone policy on carbon emission--a quasi-experimental study based on panel data of 282 cities. China Population-Resources and Environment, 2024, 34 (02): 32 - 45.