

Assessment of China's "Green" Economy Development Level

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China's rapid economic development led to environmental problems throughout the country. Understanding the seriousness of the problem, China developed a number of documents related to the implementation and development of the "green" economy. This article assesses the level of the development of China's "green" economy by examining its problems, achievements in certain areas and development trends. The analysis shows significant progress in the use of renewable energy, the development of policies aimed at reducing emissions into the atmosphere, and also identifies current problems such as dependence on fossil fuels and regional differences in China's provinces.

The purpose of the study is to analyze the current state of China's "green" economy and develop guidelines for its improvement.

Material and methods. *The author of the article used general scientific and special research methods: statistical, system analysis, systematization and generalization. The study is based on statistical data from the National Bureau of Statistics of China, the China Development Bank, studies by domestic and foreign authors dealing with economic development and economic growth in foreign countries.*

Findings and their discussion. *The article considers various points of view on the concept of "green" economy, its essence and significance. The level of development of China's green economy is assessed.*

The importance of finding key areas for the way out in the current situation related to the deterioration of the environmental situation in the world community, changes in the regulatory framework and a number of other external economic factors is identified. The inflow of investments into the "green" economy, as well as the issue of securities, are analyzed. As a result of assessing the level of development of the "green" economy, the main priority areas for its improvement are developed.

Conclusion. *Based on the conducted study, the main problems faced by the Chinese government in implementing and developing the "green" economy are identified. The main components of China's green development, taking into account carbon neutrality, are identified, namely: environmental, economic and social. The new forms and models of interaction and cooperation reflect modern trends and prospects for the development of the "green" economy.*

Key words: "green" economy, sustainable development, "green" investments, innovations, regional economy, development of China.

Оценка уровня развития «зеленой» экономики в Китае

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Быстрое экономическое развитие Китая привело к появлению экологических проблем на всей территории страны. Понимая серьезность всей проблемы, государство разработало ряд документов, касающихся внедрения и развития «зеленой» экономики. В данной статье проводится оценка уровня развития «зеленой» экономики Китая путем изучения ее проблем, достижений в определенных областях и трендов развития. Анализ показывает значительный прогресс в использовании возобновляемых источников энергии, разработке политики, направленной на снижение выбросов в атмосферу, а также выявляет текущие проблемы, такие как зависимость от ископаемого топлива и региональные различия провинций страны.

Цель исследования – проанализировать современное состояние «зеленой» экономики Китая и разработать рекомендации по ее улучшению.

Материал и методы. *Автором статьи использовались общенаучные и специальные методы: статистический, системный анализ, систематизация и обобщение. Исследование основано на статистических данных Национального бюро статистики Китая, Китайского банка развития, научных трудах отечественных и зарубежных авторов, занимающихся вопросами экономического и развития, и экономического роста зарубежных стран.*

Результаты и их обсуждение. *В статье рассмотрены различные точки зрения понятия «зеленая» экономика, ее сущность и значение. Оценен уровень развития «зеленой» экономики Китая.*

Определена важность нахождения ключевых направлений для выхода из сложившейся ситуации, связанной с ухудшением экологической обстановки в мировом сообществе, изменением нормативно-правовой базы и ряда других внешнеэкономических факторов. Проанализированы приток инвестиций в «зеленую» экономику, а также эмиссия ценных бумаг. В результате оценки уровня развития «зеленой» экономики были разработаны основные приоритетные направления для ее улучшения.

Заключение. *На основании проведенного исследования выявлены основные проблемы, с которыми сталкивается правительство Китая, внедряя и развивая «зеленую» экономику. Раскрыты основные составляющие «зеленого» развития Китая с учетом углеродной нейтральности, а именно: экологическая, экономическая и социальная. В новых формах и моделях взаимодействия и сотрудничества отражаются современные тенденции и перспективы развития «зеленой» экономики.*

Ключевые слова: «зеленая» экономика, устойчивое развитие, «зеленые» инвестиции, инновации, региональная экономика, развитие Китая.

Green economy is a model of economic development that assumes a responsible attitude of people to resources. It is aimed at finding the optimal balance between economic growth and the preservation of natural resources. Green economy remains the most important long-term goal of many countries in the world, including the People's Republic of China. For a long time, China's development was focused on achieving economic growth, mainly due to the intensive and irrational use of natural resources. In recent years, it has become obvious that further movement along the path of economic growth, without due consideration of environmental and social factors, will lead to catastrophic results for both current and future generations.

The transition to a green economy has significant environmental benefits, especially through reduced carbon emissions and pollution. This transformation leads to cleaner air and water, helping to preserve biodiversity and ecosystems.

The purpose of the study is to assess the current state of development of the green economy in China and develop recommendations for its improvement. To achieve the chosen goal, the article considers the following tasks for its solution: to reveal the essence of the concept of green economy; to assess the level of development of the green economy; to develop proposals for the development of the green economy in China.

Material and methods. The study is based on statistical data from the National Bureau of Statistics of China, the China Development Bank. The study is also based on the desk research, requests for information and stakeholder information analysis. To carry out the analysis and obtain conclusions and generalizations, the following methods were used: statistical, comparison, analysis and synthesis.

Findings and their discussion. Based on the conducted research, it can be concluded that Green Development can be regarded as an innovative development model. This model is different from the traditional one and takes into account many factors that need to be minimized so that they do not negatively affect the development of modern society.

The concept of a green economy has gained global prominence as nations grapple with environmental degradation and climate change. A green economy aims for sustainable development without degrading the environment, integrating economic growth with environmental stewardship and social inclusivity. China's transition towards a green economy is particularly significant due to its status as the world's most populous nation and largest greenhouse gas emitter.

The main elements of green economy. According to scientists engaged in research in the field of sustainable economic development, the concept of green economy first appeared in 1989 in the "Blue Book on Green Economy" [1]. In this work, the concept of green economy is considered only from the perspective of environmental protection and social development. At present, a comprehensive model of green development has been developed in China. The new concept takes into account such components as: inequality, waste and negative impact on human health.

The concept of green economy is becoming increasingly relevant in addressing global issues such as climate change, resource scarcity and environmental degradation [2].

The green economy can also be considered as a model of economic organization aimed at achieving the goals of socio-economic development while significantly reducing environmental risks.

According to the European Environment Agency: "A green economy is one that generates increased well-being while preserving the natural systems that sustain us" [3].

A green economy is one that results in improved well-being and social equity, while significantly reducing environmental risks and ecological scarcities [4].

The theoretical framework of green development in the context of carbon neutrality is composed of three major systems, namely, nature, economy and society, which interact positively around the target layer, connotation layer and benchmark layer. Specifically:

Firstly, it is the baseline layer. This layer is composed of natural system, economic system and social system.

Secondly, it is the inner layer. This layer is based on green wealth, green growth as a means and green welfare as a goal, and promotes the positive interaction among the three systems of nature, economy and society, forming the inner layer of green development. To expand:

– Green wealth is based on various natural elements, involving not only the survival and protection of natural resources, but also supply services, regulation services, ecotourism services and other ecosystem service functions, especially CO₂ absorption function [5].

– Green growth mainly includes three parts: economic growth, ecological economy and green industry. Among them, ecological economy is mainly to reduce energy consumption and undesired output in economic activities, such as reducing

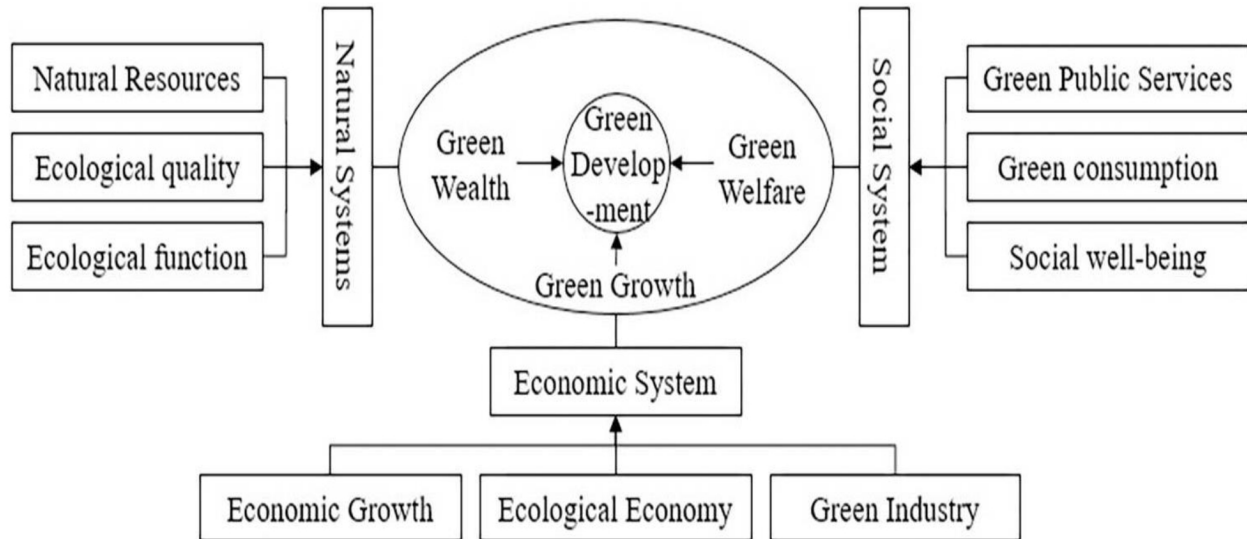


Figure 1 – The theoretical framework of green development theory

The author’s own development.

pollutants that directly damage the ecological environment and greenhouse gases that affect global climate change; green industry is mainly based on renewable energy, green innovative technologies and other green elements to form new green and low-carbon industries. For example, Rongcheng City in Shandong Province in eastern China has installed wind turbines, promoted the development of green and clean energy and optimized the energy structure in an effort to achieve environmental protection and sustainable development.

– Green welfare includes both the configuration of green and low-carbon facilities, equipment, environment, and services in the public space and daily life space of society, as well as green and low-carbon consumption in social life, while emphasizing the increase of people’s well-being.

Thirdly, it is the target layer. In terms of sub-goals, the natural system achieves surplus ecological assets and sustainable ecological functions, the economic system achieves green growth, and the social system achieves green living, comprehensive human development, social harmony, and other well-being. From the overall goal, the whole nature-economy-society complex system achieves green development with the positive effect of each element in the baseline layer and the continuous accumulation of each dimension in the inner layer. This paper constructs the corresponding indicator system based on the above theoretical framework (figure 1).

Characteristics of China’s regional green development level and its composition index.

In recent years, due to China’s rapid economic growth, negative impacts on the ecological environment have occurred. Therefore, the Chinese government has considered a comprehensive transition to a green economy. The main target indicators of the green economy are energy efficiency, the level of GHG emissions into the atmosphere and the level of innovative development. The author supplemented the list of indicators with such indicators as: responsible use of natural resources, increasing the level of energy efficiency.

China’s investment in the green economy has shown robust growth over the past decade, making it one of the leaders in fostering sustainable economic practices globally. As of 2023, China’s total investment in green sectors, including renewable energy, energy efficiency technologies, and green buildings, has surpassed USD 500 billion. This represents a significant increase, demonstrating the country’s strategic pivot towards sustainable growth. The government plans to maintain or increase this investment level annually to meet its 2060 carbon neutrality goal [6].

The figure shows that green bond issuance in China has increased from 2018 to 2023. The China Development Bank issued three-year green financial bonds in 2023 with an issue rate of 1,63 percent. The bonds were issued with a maturity of 3 years [7].

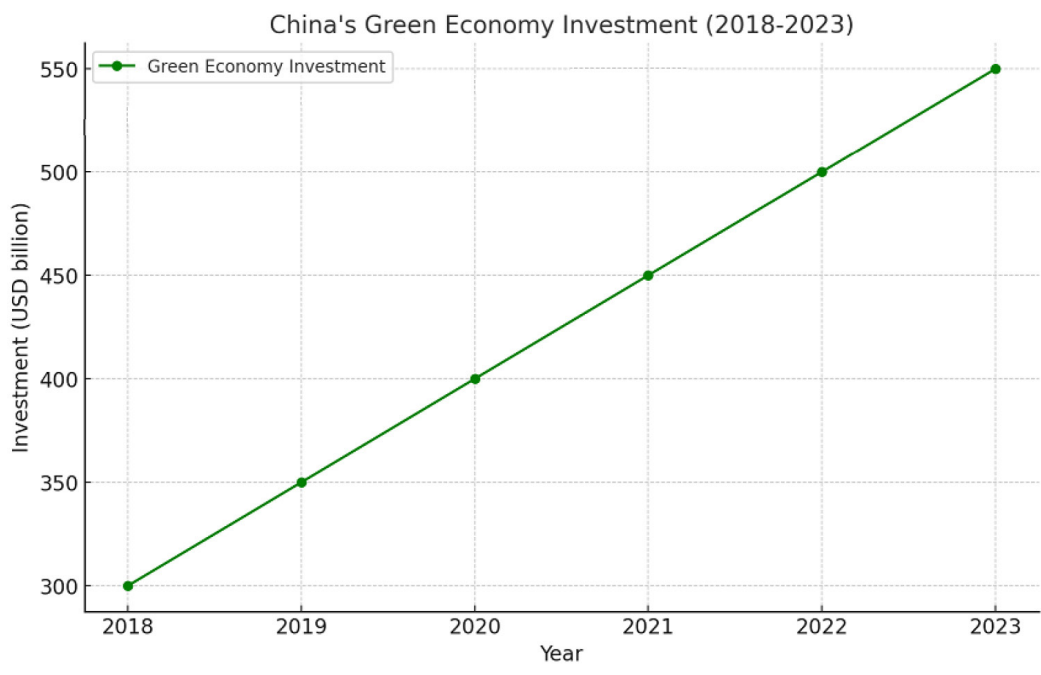


Figure 2 – China’s investment in the green economy

The author’s own development.

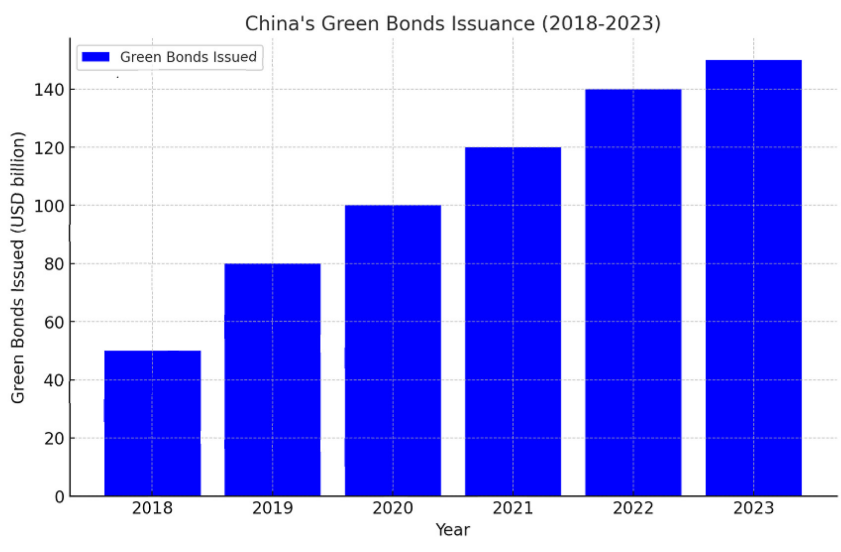


Figure 3 – China’s Green Bonds Issuance

The author’s own development.

The proceeds from the bond issue are allocated to important, strategic projects in the fields of energy conservation, environmental protection, clean energy and greening of infrastructure.

The China Development Bank is confident that such investment projects will make a significant contribution to achieving environmental goals – reducing carbon dioxide emissions by about 697,200 tons and saving 308,900 tons of equivalent coal per year [8].

Labeled green bonds have become widespread in China in the last year. Labeled green bonds are bonds that direct funds to climate or environmental projects and have been labeled as “green” by the issuer.

It is also worth noting that China has taken steps to improve energy efficiency in industrial sectors. For example, the Top 1000 Enterprise Energy Saving Program targets large energy-intensive enterprises to reduce energy intensity. The country has updated

regulations and standards to promote energy-saving technologies and practices [9].

Another positive development in China's green economy is that the country has become a world leader in renewable energy, especially solar and wind power. By the end of 2022, China's installed solar power capacity exceeded 300 gigawatts (GW), about a third of the global total. It would be appropriate for the Chinese government to increase transparency and disclosure requirements for high-carbon enterprises. This would in turn attract investors and other stakeholders and reduce environmental risk.

In the process of developing a green economy, China faces challenges and obstacles. The main ones are:

1. **Coal Dependency.** Despite progress in renewable energy, coal remains a dominant energy source, accounting for about 57% of China's energy consumption in 2022 [10]. Phasing out coal is challenging due to its role in energy security and employment.

2. **Regional Disparities.** Economic and environmental development varies across regions. Coastal provinces have advanced in green technologies, while inland regions lag due to economic constraints and reliance on traditional industries.

3. **Institutional and Regulatory Barriers.** Coordination between government agencies and enforcement of environmental regulations can be inconsistent. Local governments may prioritize economic growth over environmental protection, leading to enforcement gaps.

By 2035, the Chinese government plans to create a green, low-carbon economy, and the country's socio-economic development will take a green and sustainable path.

Conclusion. China has made significant strides in developing its green economy, with notable achievements in renewable energy expansion, policy formulation, and international engagement. However, challenges such as coal dependency, regional disparities, and regulatory enforcement need to be addressed. The success of China's green economy has profound implications for global sustainability

efforts. Continued commitment and innovation are essential for China to meet its environmental goals and contribute to a sustainable future. The concept of a green economy has gained global prominence as countries grapple with environmental degradation and climate change. A green economy aims to achieve sustainable development without environmental degradation by integrating economic growth with environmental protection and social inclusion. China's transition to a green economy is particularly important given its status as the world's most populous country and largest emitter of greenhouse gases.

An analysis of China's green economy development level shows significant progress in renewable energy deployment, policy development and international cooperation, and highlights ongoing challenges such as fossil fuel dependence and regional differences.

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