

Research on the Optimization of China's Industrial Structure under the Green Development Strategy

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Abstract. The new economic structure known as the green economy controls and fosters the relationship and interdependence between the environment and the economy. It is a crucial strategy for modern industrial structure optimization and significantly advances the growth of the national economy. Green economy development has been a major focus of Chinese economic development since the 19th National Congress of the Communist Party of China. As a result, green development and industrial structure are closely related, and both green and economic development are attained simultaneously. In a green context, the consuming mode encompasses not just green products but also green topics such as resource recycling, environmental protection, and efficient energy use, all of which need the construction of a green production mode. This study will examine how well industrial structure optimization performs in various settings, with a particular emphasis on the analysis of the green strategy and industrial structure development process, the factors that influence industrial structure, the effects of green development on industrial structure optimization, and the relevant policy opinions that are put forth regarding the promotion of the green economy to the optimization and upgrading of industrial structure.

Keywords: Green economy, industrial structure, development strategy.

1. Introduction

China's economic development has advanced significantly since reform and opening up more than 40 years ago, effectively transforming the nation from a low-income to an upper middle-income one. Although China's rapid economic development has been largely fueled by the industrial structure's ongoing improvement, there is still opportunity for further upgrading and improvement. Numerous companies heedlessly prioritize maximum output while utterly disregarding the natural environment, leading to ecological issues like air pollution and global warming, among others. It is essential to keep pushing for the manufacturing modes' transition. Green growth aims to advance economic expansion and development while maintaining the ability of natural resource assets to supply sufficient resources and environmental services for human use. As one of the visions for achieving the second Centenary Goal, the green economy strategy is helpful in creating a beautiful China and a stable economic system of low-carbon, circular development.

2. The Process of Green Development Strategy in China

2.1. The Connotation of Green Economy

The phrase "green economy" was coined by British environmental economist Pearce, who published the first version of it in the "Green Economy Blue Book" in 1989. Regarding the meaning of "green economy," there is currently no agreement. According to Peirce, the father of the green economy, it is the creation of a "affordable economy" that begins with the social and ecological environment [1]. In other words, it is economic growth that both the environment and people can support and that won't negatively impact society by focusing solely on increasing production. A "green economy" is one that reduces environmental dangers to a higher degree while enhancing human satisfaction and social equality, according to the United Nations Environment Program. Low resource use, favorable conditions for human physical and mental health, and preservation of the natural environment are the three traits that unite these concepts.

2.2. The History of Green Development Strategy

As human ingenuity and productivity continue to grow, several "high carbon" and "high pollution" enterprises have evolved. These sectors disregard the natural ecological environment and are based on the conventional industrial paradigm. China started to give ecological and environmental issues more weight after taking part in the first United Nations Conference on Human and Environment in 1972. Between the 1980s and the first ten years of the twenty-first century, environmental protection and resource conservation were included in the fundamental policies of the state; the national strategy also included the theory of sustainable development, and an industrial structure for the preservation of the ecological environment was first suggested. According to the 18th National Congress of the Communist Party of China, the "five-in-one" framework includes ecological civilization construction as a means of promoting green growth. Carbon intensity will be increased when the issue of carbon emissions becomes more pressing, as evidenced by the 12th Five-Year Plan as well as the binding indicators of economic progress. Furthermore, China included "dual carbon" into the general framework for the creation of an ecological civilization during the National Conference on Ecological and Environmental Protection [2].

3. The Significance of Green Economy

3.1. The Driving Force for Sustainable Development

The creation of environment and ecosystem infrastructure, clean technology, renewable energy, waste management, biodiversity, green buildings, and sustainable transportation are the eight primary sectors that comprise the green economy, according to the United Nations Environment Program. As a result, advancing the green economy's development and raising the level of green investment will help to optimize and transform established industries, hasten the emergence of associated new industries, create more jobs, and encourage sustainable economic growth [3].

3.2. The Relationship Between Economic Development and Environmental Protection

The old industrial development model that China adheres to "high energy consumption, high material consumption, high emissions, and high pollution" has seriously harmed the environment and resulted in significant costs for economic growth. The low-carbon, circular, and ecological economies are combined to form the green economy. In addition to significantly lowering energy and product consumption, pollution risks, and carbon emissions associated with economic growth, this can also enhance ecological environment repair and improvement, so facilitating the shared development of the environment and the economy [4].

4. The Mechanism of Optimizing China's Industrial Structure

4.1. The Connotation of Industrial Structure Optimization

The social division of labor and economic advancement are the sources of the idea of industry in industrial structure. Economics Walter proposed the theory of economic growth stages, which examines the division of stages in the world economy's history and is centered on the optimization of industrial structure. As human society progresses, Walter identifies six stages of economic growth. There will be a dominant enterprise position in each of these six stages, which will spur the growth of additional new industry sectors. The industrial structure optimization theory is based on this [5]. The process of encouraging industrial structure rationalization and superior development is what is fundamental to industrial structure optimization. Improving economic advantages requires modifying the initially irrational industrial structure to meet the state of science and technology, the structure of consumption and demand, the fundamental standard of living of the populace, and the resource conditions in a particular stage of economic development. This will support the coordinated development of several industries and the sensible distribution of production factors. The process of

creating and implementing the high-benefit industrial structure is known as upgrading the industrial structure. In order to maximize the economic benefits, this procedure aims to arrange the current production factors as reasonably as feasible by adjusting the industrial structure within the parameters of industrial productivity. The goal is to get the most out of the few resources available. Due to variations in production efficiency and consumer demand, different regions have different industrial structures. For instance, central and western China are dominated by secondary industry, whereas eastern and northeastern China have a high percentage of tertiary industry [6].

4.2. The Way of Green Development Affecting Industrial Structure

4.2.1 Adjusting production mode

In order to achieve the "slimming" transformation of domestic industries and the expansion of international production layout, China's current industrial structure has gradually shifted from labor-intensive to capital-intensive to technology-intensive industries. Labor-intensive and capital-intensive industries have also been transferred to countries in need. China's structural development has been approaching green development over the last few years [7]. Petrochemicals are no longer the main source of energy consumption; instead, low-carbon sources like solar and wind power are. Encourage the use of bicycles and buses as a means of transportation; encourage a shift in the mode of production; optimize the industrial structure; and enhance recycling and resource conservation.

Figure 1 shows the change of China's current industrial structure, it can be seen that the capital-intensive and labor-intensive trend is declining, and the technology-intensive trend is rising. Therefore, China will transfer some of its backward domestic production capacity, labor-intensive industries and capital-intensive industries to countries in need, which is conducive to the "slimming" transformation of China's domestic industries and the expansion of international production layout, and promote economic progress.

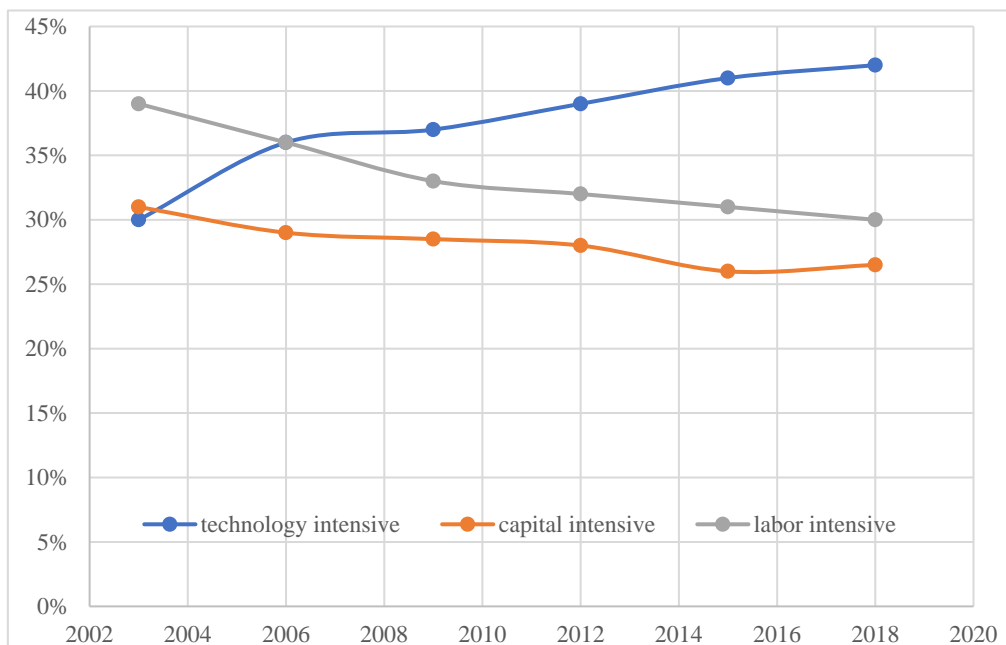


Figure 1. Industrial structure change (Picture credit: Original)

As shown in Figure 2, the overall green development index during the "Thirteenth No" period shows an upward trend, which indicates that China's development is constantly moving toward green development, attaches great importance to green development, presents a new development path with green development as the goal, provides a new system and road for economic development, and gradually makes the concept of green development a basic consensus. It is conducive to the progress of government management, the optimization of enterprise industrial structure, and the understanding and practice of residents on green development.

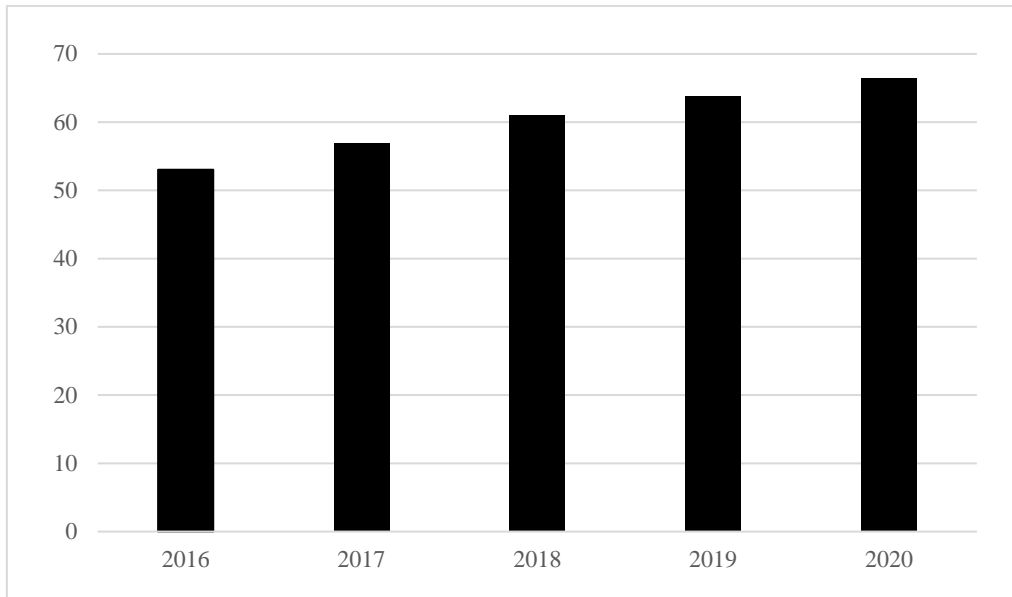


Figure 2. Overall green development indicators (Picture credit: Original)

4.2.2 The adjustment of energy structure

The goal of green development is to implement a development model that places technological innovation at the center and encourages industrial aggregation and vertical cooperation as well as the construction of energy deep processing systems within industries. The path to green development is paved with clean and sustainable energy structures, and according to relevant institutions, clean energy will account for 32.2% of the energy mix by 2025. From renewable energy sources, 7.3 billion tons of conventional coal can be produced annually. As a result, the same energy source benefits various businesses at various phases of use, which can cut down on energy waste and enhance the development of the energy sector [8, 9].

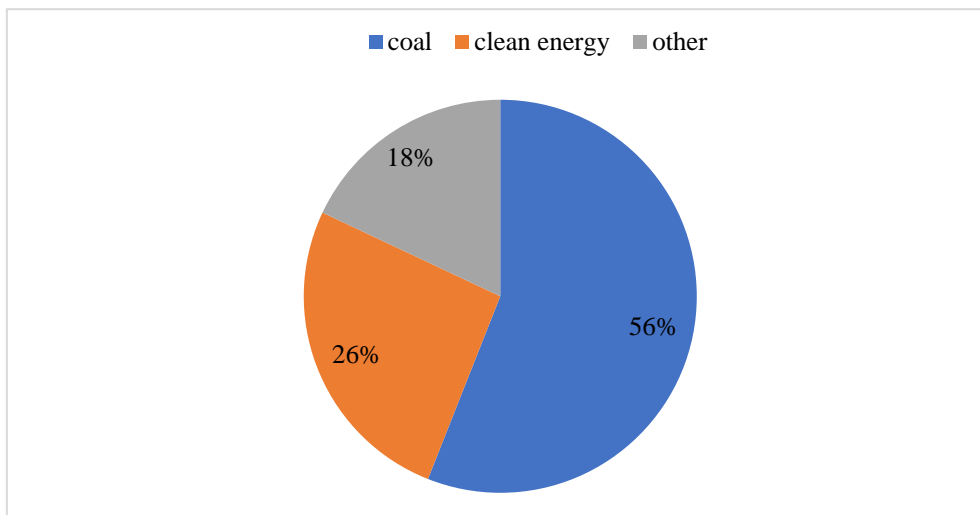


Figure 3. China's energy consumption structure in 2022 (Picture credit: Original)

In China's energy consumption structure in 2022, clean energy accounted for 26% of the total energy consumption, an increase of 6.8% compared with 19.1% in 2016 (shown in Figure 3 and Figure 4). In the past five years, clean energy has been on the rise. As the trend continues to rise, China has become the world's largest clean power generation system. The development of clean energy industry is conducive to the optimization of industrial structure and the path of green development.

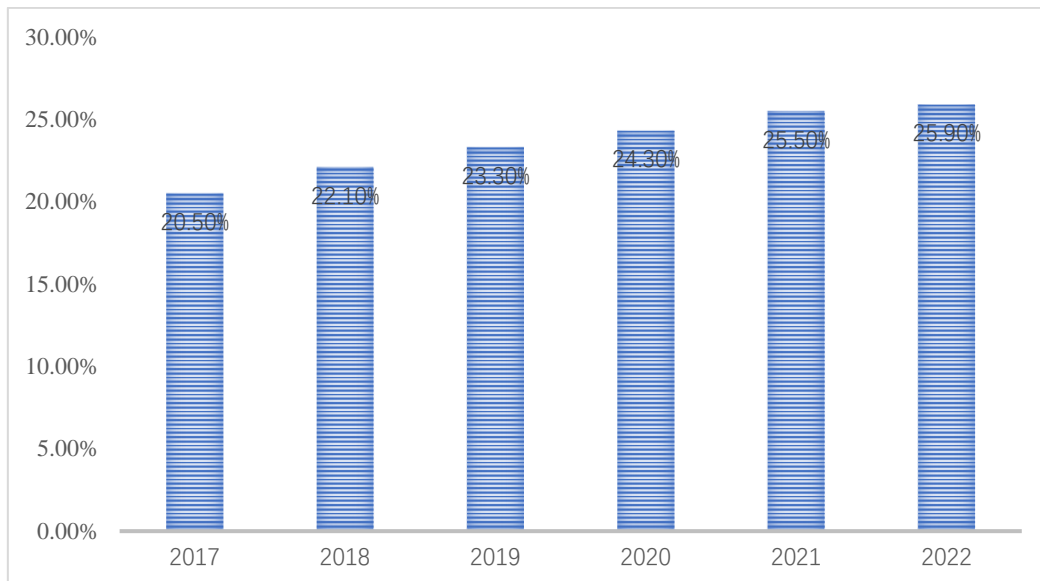


Figure 4. The share of clean energy consumption in China (Picture credit: Original)

4.2.3 Upgrading consumption structure

To achieve harmony with the improved lives of people, green development must be supplemented by an upgrade in the consumption structure. A sustainable development plan to address the current domestic demand growth in China involves guiding consumption with green development, improving the consumption structure, and rising overall consumption levels. These measures are also crucial in supporting the green development of industries [10]. As environmental problems worsen, more and more people are starting to understand how important it is to consume sustainably. As a result, the following patterns of green consumption have emerged: (1) Raising awareness of consumption. Many customers are concerned about whether the products and services they use are detrimental or beneficial to the environment, in addition to the quality of the goods and attitudes of the providers. (2) A varied range of consumption. Green consumption encompasses a wide range of activities, including sales, trade-ins, and other activities, and is not just restricted to green items. This is advantageous for both the optimization of the industrial structure and for green development. (3) The green box. Using the practice of reusing packaging boxes for other purposes, many businesses follow the green packaging guidelines.

Figure 5 shows the rising trend of the number of green consumers from 2011 to 2015, which indicates that more and more people improve their consumption structure and realize the importance of green consumption, which is conducive to improving consumption level, environmental protection and ecological balance.

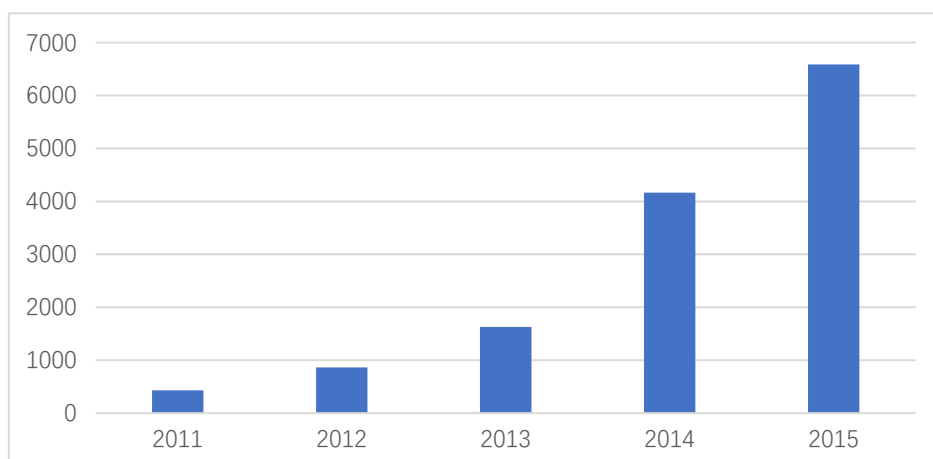


Figure 5. Number of green consumers from 2011 to 2015 (Picture credit: Original)

5. Policy Recommendation

5.1. Environmental Management

It is essential to improve the treatment of areas and industries that create environmental pollution, promote regional water pollution, and strengthen comprehensive treatment as well as the prevention and control of air, water, and soil pollution. The government should encourage the building of treatment facilities for hazardous waste, trash sorting, and other waste management needs. Additionally, it is vital important to raise the bar for pollution discharge fees and boost the market environment's optimization, the service system's enhancement, and the development of innovative, environmentally friendly industrial mechanisms. Publicize emerging green sectors more widely and highlight their accomplishments and advantages. Establish pertinent teams or departments to educate the public about the benefits of green industries, encourage low-carbon living, and protect the environment. In addition to working to address issues regarding green and sustainable development, the government should step up efforts to enhance, find, and research weak points and shortcomings in green development.

5.2. Technological Innovation

The main engine of progress and the tactical backbone of the construction of a contemporary economic structure is innovation. It is critical to bolster technological innovation and enhance the tools, infrastructure, and systems of the emerging green industries. The government should pay attention to the green sectors' potential to breathe fresh life into the market, and enhance technical innovation can also help draw in more talent. It is important to focus on absorbing and developing relevant talent because it is only through talent absorption and training that innovative technology can be raised to a higher degree. When choosing industrial raw materials, it can also enhance the optimization of the industrial structure under green development. It is advised to employ plant extracts, biological matrix materials, and chemical raw materials free of contamination in daily life. Bio-based materials can also take the place of petrochemical raw materials in the production of paper and fiber goods, without causing any harm to the environment. In addition to preserving the environment and public health, the use of pollution-free industrial raw materials can spur technical advancement.

5.3. New Green Industries

Modify the conventional mode of production; actively employ the industrial structure system under green development; increase the effectiveness of industrial optimization; and establish the green industry as a significant player in the market. In order to achieve coordinated optimization of economic, ecological, and social benefits, it is necessary to work together to reduce carbon emissions, reduce environmental pollution, and broaden the scope of green industries. It should also build a modern manufacturing model that features low consumption, low emissions, high efficiency, and high benefits. In addition to promoting important common technologies with high maturity, strong economies, and notable environmental results, the government should regularly update and publish guidelines on green and low-carbon manufacturing technologies. The government need to encourage businesses, parks, and important industries to fully implement a new round of green and low-carbon technology upgrading, including constructing green industrial zones, implementing green upgrading and transformation, and utilizing the output of green new industries should all be done actively.

6. Conclusion

China's efforts to promote green industrial development have yielded beneficial outcomes, including the optimization and upgrading of the country's industrial structure, a decrease in industrial energy consumption, and ongoing improvements to the efficiency of energy and resource utilization. Generally speaking, the green economy is a new economic structure that, in contrast to earlier times,

aims to control and strengthen the relationship and interdependence between the environment and the economy.

The path to green development lies in a clean and sustainable energy structure. to accomplish the cogent growth of the ecological, circular, and low-carbon economies. By modifying the mode of production, the energy structure, and the consumption structure, green development encourages the optimization of the industrial structure. China's structural development has been approaching green development during the last few years. The percentage of clean energy consumed has been rising, green development indicators have been rising, and there has been a lot greener customer. Adopting a green development strategy is crucial because it aims to support economic expansion while guaranteeing that natural resources will continue to provide humans with sufficient resources and environmental services. This will help to achieve shared economic and environmental development by lowering energy and goods consumption, lowering the risk of pollution and carbon emissions associated with economic growth, and enhancing ecological environment restoration and improvement. The findings demonstrate how green development can enhance the natural environment and encourage industrial structure optimization.

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