

# *Strategy and Route for China's Green, Low-Carbon Transformation under the "Double Carbon" Target*

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**Abstract:** The constantly changing climate challenges the survival of human beings in today's world. The "double carbon" target signifies a profound reform in the economic society, which is an inevitable choice in China's role to assume its responsibilities as a major power. To implement the "double carbon" target means a double-edged sword, which brings certain opportunities for China's green high-quality development, but also imposes more grim challenges. This paper studies the strategy and vision of green, low-carbon transformation under the "double carbon" target, analyzes the necessity and premise for the implementation of the "double carbon" target. It suggests that the main route to achieve the goal is to accelerate the upgrading of industrial structure, optimize the energy system, break through key technologies, improve the policy system, and give play to the role of market mechanism.

## 1. Introduction

In September 2020, the target of carbon peaking and carbon neutrality (hereinafter referred to as the "double carbon" target) was first proposed. The "double carbon" target mainly means that China aims to peak carbon emissions before 2030 and wishes to achieve the ultimate target of carbon neutrality before 2060 [1]. Since the introduction of carbon peaking and carbon neutrality, the research on "double carbon" target maintains as a hot issue in China. Hence, it is necessary to grasp the principal distribution and current research hotspot of "double carbon" research as a whole, which carries certain theoretical and practical significance for guiding the future research direction and contributing to the ultimate materialization of "double carbon" target.

It is not long after the introduction of the "double carbon" target, but there are many relevant literatures because of its important strategic nature. More than 6,000 papers are retrievable on CNKI, mainly about in-depth exploration into the implementation route of the target from specific micro perspectives of water cycle, manufacturing industry and green innovation. Taking basis on the strategy and vision of the "double carbon" target, this paper analyzes the realistic logic for China's economic society to help achieve the target, and recommends the implementation route of the "double carbon" target from the macro perspectives of industrial structure, energy system, policy system and so on.

## **2. Realistic Logic Behind the Proposal of "Double Carbon" Target**

As an important contributor of China's ecological civilization construction and development of a beautiful China, the "double carbon" target is not only vital for advancing the high-quality development of China's economy, but also indispensable in gradual adaptation to the changes of the social principal contradictions in China. It is also a key link in harmonious coexistence between man and nature as well as economic and social modernization drive.

### **2.1. The "Double Carbon" Target is an Important Propeller in High-quality Economic Development**

The report of the 20th CPC National Congress puts forward that, "We should speed up the transformation of green development mode and facilitate the formation of green and low-carbon production mode and lifestyle". This specifies the direction for further high-quality economic development, and also provides theoretical support for high-quality economic development [2]. Since the proposal of high quality economic development target, high quality development becomes the main research subject of the whole economic society. Under the premise of focusing production effectiveness, high-quality development target also stresses fairness in the development process, which takes into account issues such as ecological environment construction and all-round development of human beings. As an important component of overall high-quality development, environmental development should not only meet the immediate interests, but also pay attention to the impact of sustainability by emphasizing the development of green industries and economy while advocating ecological environmental protection.

### **2.2. In order to adapt to the Shift of the Social Principal Contradiction in China, the "Double Carbon" Target is an Inevitable Choice**

The social principal contradiction of China has undergone thorough and great changes at present. First, the public's needs are no longer restricted to the traditional material and cultural needs, but new needs for a better life are proposed at a higher level. The main reason is that, with the gradual improvement of domestic productive forces and people's living standards at the present stage, the material and cultural needs are no longer the sole pursuit of the public. Instead, above these pursuits, there are all-round and all-directional needs for medical care, education, ecological environment [3]. At the ecological level, the general public has pressing need for a beautiful environment, which includes not only the aspiration for a better living environment, but also the urgent need for a good working environment. In order to meet the public needs for a better living and working environment, the "double carbon" target came into being as a solution to this contradiction. In addition, "unbalanced and inadequate development" is not only manifested in economic and cultural aspects, but also in democracy, the rule of law, ecological civilization construction and other areas. Where, the insufficient ecological civilization construction and the frequent environmental pollution require more attention [4]. At present, our ecological environmental protection measures have yielded good results, but long-term carbon emissions accumulated in industrial development are still quite severe. Meanwhile, ecosystems are difficult to repair and regenerate after resource and energy consumption, making forests, grasslands, oceans, etc., unable to properly play the role of carbon sequestration when neutralizing carbon dioxide.

Hence, according to the general principle of benefiting, benefiting and serving the people in terms of ecological environment, we should further improve environmental quality, provide health-benefiting ecological products, and solve the environmental issues that plague people's health, thus finally satisfying people's strong demand for good environment. In terms of sustainable

development, we should consider the needs of future generations as well as our own growing needs.

### **2.3. The "Double Carbon" Target Serves as a Key Link in the Modernization Drive Featuring Harmonious Coexistence between Man and Nature**

In the Fifth Plenary Session of the 19th CPC Central Committee, it was pointed out that in the current new stage of social development, it is inevitable to choose "modernization drive featuring harmonious coexistence between man and nature". This requires equal attention to industrial development and ecological and low-carbon path [5]. The excessive use of fossil fuels and chemical raw materials leads to the excessive emission of carbon dioxide, causing grim air pollution and then endangering the whole ecological environment. It also reveals the reasons for the increasingly severe ecological environmental problems in China from the side. The high-carbon energy structure and the industrial structure with high energy consumption and high pollution require urgent adjustment to adapt to our "double carbon development target" [6]. At the same time, global warming also imposes a series of crises and challenges, with the general rise of global temperature, the gradual rise of sea level and other issues threatening the normal survival and development of people in varying degrees. Therefore, in order to achieve the "double carbon" target as scheduled, the current total carbon emission and emission source should be controlled, which can not only reduce the probability of extreme severe weather, but also maximally protect people from property damage caused by natural disasters, thereby ultimately strengthening the stability of the entire ecosystem, providing a strong support for the harmonious coexistence of man and nature.

## **3. Strategy and Vision for Green, Low-carbon Transformation under the "Double Carbon" Target**

It is an inevitable choice to incorporate the "double carbon" development target into the overall strategy of economic and social development. The first is the green, low-carbon transformation of economic society under the carbon peaking target. The target of carbon peaking before 2030 involves two five-year planning periods. The first stage is the "14th Five-Year Plan" period, which requires major reform in industrial structure and energy structure to achieve good staged results. On this basis, energy utilization efficiency should be greatly improved in key industries [7]. Secondly, in the second stage, namely, the "15th Five-Year Plan" period, the establishment of clean and low-carbon energy system is the primary task. At this time, low-carbon development mode should be formed in some key areas [8]. Then comes the green, low-carbon transformation under the target of carbon neutrality. The final target is to achieve carbon neutrality before 2060. In this stage, the expected economic system with green, low-carbon and circular development should be comprehensively established. Also, the safe and efficient use of clean and low-carbon energy is required to steadily improve energy utilization efficiency, so that our country's energy utilization efficiency reaches and even exceeds international advanced level. At present, our country's fossil energy consumption accounts for a relatively high proportion in the total energy consumption, so it is quite important to reduce non-fossil energy consumption.

## **4. The Main Route to Promote Green, Low-carbon Transformation under the "Double Carbon" Target**

### **4.1. The "Double Carbon" Development Target Requires Accelerating the Optimization and Upgrading of Industrial Structure**

First of all, it is necessary to speed up the green, low-carbon transformation in the original

traditional industries, and formulate the overall policy for carbon emission reduction of "double-high" industries including energy, steel, non-ferrous metal industries, etc. At the same time, we should positively use green manufacturing technology to upgrade all industries from top to bottom, let green manufacturing technology penetrate into related industries, and further accelerate the low-carbon development as well as the digital transformation of modern industries.

#### **4.2. It Is Necessary to Build a Clean, Efficient, Low-carbon and Environmentally Friendly Energy System to Ultimately Achieve the "Double Carbon" Development Target**

Carbon reduction and decarbonization should focus on the energy sector. First of all, we should reasonably control the consumption of fossil energy, and then reduce the consumption of coal. In the "14th Five-Year Plan" period, the growth rate of coal consumption was curbed to a certain extent. In the "15th Five-Year Plan" period, reduction of coal consumption is still a major topic requiring sufficient attention. On this basis, it is necessary to properly coordinate the relationship between the upgrading and adjustment of the relevant industrial structure and the control of energy consumption. In order to achieve the target of green, low-carbon development, the blind development of "double high" projects should be firmly curbed. During the implementation of green, low-carbon transformation, attention should also be paid to avoid "double-control" index gap. On its basis, efforts should be made to improve the resources and energy utilization efficiency, thus finally achieving the target of building a green and low-carbon social economic system [9].

#### **4.3. It Is Necessary to Break through the Bottleneck of Green and Low-carbon Technology to Achieve the Target of "Double Carbon" Development**

To achieve the "double carbon" target, scientific and technological innovation is an important starting point. In addition, science and technology development strategy and planning are equally crucial. Meanwhile, we should accelerate the R&D of green and low-carbon cutting-edge technology at all levels, actively organize relevant major science and technology R&D projects to finally establish and improve the green evaluation and service system. It is necessary to increase the investment in the R&D of energy saving and emission reduction technologies and gradually industrialize the technologies, actively carry out research and development of low carbon and zero carbon projects, and finally gradually popularize the R&D project in practical application, thus laying a solid foundation for fulfillment of the "double carbon" target.

#### **4.4. It Is Necessary to Improve the Relevant Policy System, Advance Green and Low-carbon Development to Materialize the "Double Carbon" Target**

The first is to improve relevant fiscal and tax policies, actively encourage governments at all levels to support green and low-carbon development by introducing relevant fiscal and tax policies of income tax deduction and tax credit for the purchase of low-carbon equipment, so as to ultimately promote the high-quality development of related low-carbon industries. The second is to actively develop green finance to support green and low-carbon industries, establish and improve a standard system for green finance, and guarantee adequate supply of green financial products to help achieve green development targets. We should actively innovate low-carbon emission reduction policy tools to ensure the rapid development of clean energy and carbon emission reduction technologies. Meanwhile, it is recommended to positively use green bonds to promote the green and low-carbon transformation of enterprises, and great support should be given to qualified enterprises with inadequate funds in listing financing. In addition, low-carbon fund projects should be set up so that green credit, green bonds, green funds and other green financial products are

combined to promote the green, low-carbon transformation.

#### 4.5. It Is Necessary to Give Full Play to the Positive Role of Market Mechanism in Carbon Emission Reduction to Achieve the "Double Carbon" Development Target

Efforts should be made to establish and improve the carbon emission rights trading market, maintain the transparency of the carbon sink market, and safeguard the fairness of the entire market. In the meantime, we should maintain strong binding force of carbon price mechanism to promote the steady development of carbon sink market, gradually link Chinese carbon sink market with international carbon emission trading line under the premise of ensuring rapid development of the domestic carbon sink market, so that domestic carbon sink trading market enjoys more standardized development. Diversified development is required in the trading process of related carbon products, and relevant regulatory rules should be compulsory and effective, so as to give full play to its own role and facilitate the achievement of the "double carbon" target.

### 5. Conclusion

Based on the "double carbon" target, this paper examines relevant policies and research reports, analyzes the current status and development trend of China's social economy, and explores the strategy and route for China's green, low-carbon transformation from the perspectives of industrial structure, energy system, policy system and market mechanism. The step-by-step achievement of the "double carbon" target will help promote high-quality economic development, resolve the contradiction between the people's needs for a better living, working environment and unbalanced, inadequate development, thus promoting the modernization drive featuring harmonious coexistence between man and nature. Under the "double carbon" target, to gradually promote green and low-carbon transformation and finally achieve high-quality development, we need to optimize and upgrade industrial structure, make breakthrough in green and low-carbon key technologies, perfect the policy system related to green, low-carbon development, and give full play to the important role of market mechanism.

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