

Analysis of the current situation and problems of low carbon consumption under the "double carbon" target

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Abstract: In order to achieve the goal of carbon peaking and carbon neutrality, it is necessary to make efforts not only in the field of production but also in the field of consumption, and the promotion of low-carbon consumption is of great significance for sustainable development and the construction of ecological civilization. This paper analyses the current situation of low-carbon consumption and its problems from the perspective of the "double carbon" target, using climate change as an entry point, and puts forward rational suggestions for promoting low-carbon consumption.

Keywords: low carbon consumption, carbon peaking, carbon neutral, residential consumption

1. Introduction

The 20th Congress report clearly points out that achieving carbon neutrality is an extensive and profound economic and social systemic change, and that China should actively and steadily promote carbon neutrality and actively participate in global governance to address climate change. Responding to climate change is an inherent requirement for China to promote green development and the harmonious coexistence of man and nature, and it is also a responsible and responsible mission of a great nation. Over the past 40 years of reform and opening up, with the advancement of urbanisation and industrialisation in China, the consumption structure and patterns of Chinese residents have undergone significant changes, with total consumption increasing significantly and becoming an important part of economic growth. Carbon emissions from consumption have been increasing year by year, so promoting low-carbon consumption for sustainable economic development has become an urgent issue to be addressed.

At the 75th session of the United Nations General Assembly, China clearly stated that it would strive to peak its carbon emissions by 2030 and achieve carbon neutrality by 2060, in order to address the threats and problems posed by climate change and take the initiative to assume the responsibility and responsibility of a major country. To achieve the "double carbon" target, we should not only make efforts in the production sector to achieve energy-saving and low-carbon production processes and green materials, but also in the consumption sector to achieve low carbon and green consumption. Once the concept of low carbon economy was introduced, it received support from all sides. On the one hand, the production process determines the object of consumption and sales volume; on the other hand, the consumption process is reflected in the production phase, mainly in the impact of sales volume on production, which in turn has an impact on production costs and profits. At present, the study of "double carbon" in the field of consumption is still in a state of "warming up", and there are certain problems worth exploring at the level of low carbon consumption.

At the same time, as residents' living standards and income levels gradually rise, consumption in daily life is gradually being upgraded, making consumption one of the important carriages driving economic growth. In 2017, China's carbon emissions accounted for 27.6% of the world's total carbon emissions, 1.8 times more than the total carbon emissions of the United States in that year^[1]. In recent years, a growing number of studies have shown that residential consumption has become a key driver of national energy consumption, and that around 72% of global greenhouse gas emissions are caused by residential energy consumption^[2], which in turn has made residential consumption carbon emissions the focus of much scholarly research. All consumption activities have a direct or indirect impact on carbon emissions, and the carbon footprint is one of the methods used to study the carbon emissions of residents at the consumption level. The direct carbon footprint refers to the carbon emissions generated by the direct use of energy by residents, while the indirect carbon footprint refers to the carbon emissions generated by

the energy consumed in the production, transportation and sale of products and services consumed in the eight consumption categories of clothing, food, housing and transport. The study of low carbon consumption should focus on the level of indirect carbon footprint. From the perspective of consumption agents, consumption can be divided into three categories: government consumption, corporate consumption and residential consumption. This paper focuses on the current situation and problems of low-carbon consumption from the perspective of residents' consumption.

2. The current situation and problems of low carbon consumption under the "double carbon" target

2.1. Current status of development of low carbon consumption

In recent years, China's consumption level has been growing steadily and rapidly, and consumption plays an important role in the growth of the economy. However, there has been a major shift in the characteristics and forms of consumption: from blind obedience to individuality, from subsistence to quality, and from offline consumption to a combination of online and offline consumption. At the same time, with the introduction of the concept of low-carbon living and related policies, residents are paying more attention to low-carbon consumption and have achieved certain results in energy saving and emission reduction.

The concept of low-carbon consumption among China's residents is currently increasing, especially in the purchase of energy-saving and water-saving products. The 2017 China Resident Consumption Development Report released by the National Development and Reform Commission points out that China's home appliance industry reached a retail sales volume of 1.7 trillion yuan in 2017, up 9.0% year-on-year. Among them, sales of energy-efficient water heaters amounted to approximately 40 million units, up 6.5% year-on-year; sales of energy-efficient flat-panel TVs amounted to approximately 16 million units, up 18.1% year-on-year; sales of energy-efficient washing machines amounted to approximately 36 million units, up 19.8% year-on-year; sales of energy-efficient refrigerators amounted to approximately 34 million units, down 28.0% year-on-year (mainly due to the overall sales of refrigerators in the country being on a downward (mainly due to the declining trend of overall domestic sales of refrigerators and the upgrading of energy efficiency standards, which in turn raised the energy efficiency threshold for energy-saving refrigerators); sales of energy-saving air conditioners amounted to approximately 23 million units, representing a year-on-year increase of 82.2%.

On the other hand, in the field of household lighting appliances, LED lighting products have the advantages of longer service life, higher luminous efficiency and more energy saving compared to traditional lighting appliances, and are favored by consumers as new lighting products. According to statistics, the production of LED lighting products in China in 2017 exceeded 10.6 billion units, an increase of 34% year-on-year; the domestic sales volume exceeded 4.7 billion units, an increase of 39% year-on-year; in the field of home lighting, the use of LED products exceeded 2.2 billion units, an increase of 37% year-on-year.

In the field of sanitary ware, the total production of spouts in China in 2017 was about 200 million pieces, of which the production of water-saving spouts was about 45 million pieces; the total production of toilets was about 70 million pieces, of which water-saving toilets were sold in the country up to 18 million pieces.

In terms of travel consumption, more and more consumers are choosing low-carbon travel options, with the shared travel boom sweeping the country, with shared travel models including bicycle sharing and car sharing. Bicycle sharing has been in the public eye since 2016, and by 2017, more than 200 cities across the country had bicycle sharing, with a total of more than 25 million bicycles of various brands placed.

In terms of new energy vehicles, consumer enthusiasm is high and the market size is growing rapidly. According to data released by the China Association of Automobile Manufacturers (CAAM), the production of new energy vehicles in 2017 was approximately 794,000 units, up 53.8% year-on-year, and sales were 777,000 units, up 53.3% year-on-year, a 45 and 44-fold increase compared to the production and sales in 2013, respectively, with new energy vehicles accounting for 2.7% of the vehicle sales market, a full 0.9 percentage point increase from 2016. Under the impetus of the market and policies, new energy supporting facilities such as charging piles are gradually being improved, positively contributing to the development and popularity of new energy vehicles.

2.2. Problems in the development of low carbon consumption

Although China has achieved some success in the development of low-carbon consumption, it is a long-term development process, and there are still some differences in residents' perceptions and actions at the level of low-carbon consumption^[3-4], there are also problems in the development such as insufficient supply of low-carbon products, residents' awareness of low-carbon consumption needs to be improved, and the green consumption system has not yet been perfected.

2.2.1. Low carbon commodity supply and supply categories are low

At present, the supply of low-carbon products in China's consumer market is mainly concentrated in the field of electrical appliances, and low-carbon and low-energy products are rarely seen in other consumer categories, which in turn leads to a weak awareness of low-carbon consumption in consumer areas other than household appliances. Furthermore, due to the difficulty of developing low-carbon products, enterprises have to bear high costs for the transformation of green industries, and the production process and technology requirements are high, resulting in a corresponding increase in product prices. However, for consumers, price is a key factor in measuring whether a product is worth buying, and when demand decreases, it will inevitably limit the development of low-carbon consumption. At the same time, as the green industry is a new sector, there is uncertainty about market demand and consumer preferences, and companies need to risk the failure of their investments in research, development and production.

2.2.2. Weak consumer awareness of low carbon consumption

The awareness of low-carbon consumption still needs to be raised as China's residents have long been in a rough and tumble consumption mode. With the gradual rise in income levels, excessive consumption, blind consumption and retaliatory consumption are commonplace, and most consumers have yet to develop a healthy consumption habit. The majority of citizens in China are characterised by "high recognition, low action; high popularity, low understanding" in terms of green consumption, i.e. there is a deviation in green consumption behaviour. The vast majority of citizens agree with the concept of green consumption, but do not practise it as much as they should. Another point is that although the popularity of green consumption in China is high and most citizens say they have heard of the concept, the definition and analysis of the concept is not as effective as it could be. At present, education campaigns on low-carbon consumption are mostly conducted among young people and middle-aged people, and the coverage is relatively small, leaving the task of raising awareness of low-carbon consumption among the whole population to be addressed. Consumers' awareness of low-carbon consumption is relatively weak in the consumption categories of clothing, food and housing, and there should be different approaches to education and publicity for different consumption categories.

2.2.3. Low carbon consumption system not yet in place

At present, there are loopholes in the regulation of the low-carbon product consumption market, and the market management is not standardised enough. Some enterprises take advantage of consumers' environmental awareness to trumpet the low energy consumption and low-carbon advantages of their products, stealing the concept of low-carbon, and even misrepresenting the energy consumption table of their products to deceive consumers with the second best. This is mainly reflected in the following three aspects: First, the green consumption standards are not perfect. At present, China's certification standards and certificates for green products are fragmented, and the standard system is not complete and unified enough, making it difficult to distinguish between green products and ordinary products in the market. Secondly, the support of green consumption policies is limited. The development and promotion of green consumption policies are still lagging behind. Although there are some measures that are more positive at the policy level, the implementation and promotion of policies on a national scale is still relatively slow. Thirdly, the regulation of green consumption testing is lagging behind. Some businesses engage in green consumption promotion with exaggerated propaganda, false propaganda and other malpractices.

Over time, consumers' enthusiasm for low-carbon products will be greatly reduced, and conscientious enterprises will lose confidence in the production of low-carbon products, making the path of low-carbon consumption seriously impeded. Therefore, it is particularly important to rectify the market and regulate the management in the development of low-carbon consumption[5].

3. Suggestions for measures to promote low-carbon consumption in China under the "double carbon" target

3.1. Increase fiscal spending to provide price support for low carbon consumption

A comprehensive use of tax and fiscal mechanisms to control the price of low and high carbon products respectively. On the one hand, low-carbon products should be subject to low taxation and financial subsidies, thereby reducing the price of low-carbon products and promoting the use of high-standard, low-energy household appliances. On the other hand, prices of high carbon products should be controlled at source, i.e. by increasing the price of using and purchasing resources, introducing a tiered rate for coal and other resources, and increasing the taxation of high carbon products, so as to raise the cost price of high carbon products and high carbon consumption, thus guiding residents to low carbon consumption from a price perspective.

3.2. Strengthen publicity and education to raise residents' awareness of low-carbon consumption

On the one hand, in order to comprehensively raise residents' awareness of low-carbon consumption, it is necessary to do a good job of publicising and educating the whole society about low-carbon consumption, which is a fundamental task in the process of developing low-carbon consumption. Low-carbon education classes should be added to the local education system, and low-carbon education should be introduced to schools, while promoting publicity and education activities at all levels of government, associations and communities. The public's knowledge and understanding of low carbon should be strengthened, and the public's willingness to consume low carbon and awareness of environmental protection should be comprehensively stimulated. On the other hand, enterprises can provide consumers with more information and strategies on low-carbon consumption, so as to guide them in their low-carbon consumption and change their buying behaviour, so that they can truly internalise the concept of low-carbon consumption in their hearts and minds.

3.3. Regulating the market and accelerating the promotion of carbon labelling

On the one hand, low-carbon certification and low-carbon labelling is an important basis for consumers to identify whether a product meets the requirements of low-carbon consumption, and is also an important means to raise consumers' awareness of environmental protection during the consumption process. The promotion and recognition of carbon labelling should be accelerated so that consumers can purchase low-carbon products more easily and conveniently, while reducing the cost of identification for consumers and increasing the purchase rate of low-carbon products in the market. On the other hand, the promotion and application of low-carbon labelling can help regulate the market, combat the phenomenon of false labelling of low-carbon products, and eliminate the phenomenon of using substandard products as genuine ones, thus gradually enhancing the recognition and credibility of carbon labelling and winning the trust of consumers. At the same time, businesses need to strengthen their self-regulation, launch and sell green products in an honest, fair and transparent manner, establish a good market image, promote the in-depth development of green consumption, and achieve a positive interaction between environmental protection and economic development.

4. Conclusions

Low-carbon consumption is a healthy and sustainable consumption model, which is a reflection of contemporary consumers' responsibility towards the ecological environment and future development. At present, the construction of ecological civilisation in China has entered a critical period, and the popularisation and promotion of low-carbon consumption has been slightly effective, but there are still problems such as low supply of low-carbon goods, weak consumer awareness of low-carbon consumption, and an inadequate low-carbon consumption system. The establishment of a low-carbon consumption model is a long way off and will not be achieved overnight, but as long as consumers, the government and society work together with confidence, the low-carbon consumption model will definitely contribute to the achievement of the carbon peak and carbon neutrality goals.

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