

# Research on Carbon Cap-and-trade Policies and Corporate Low-carbon Value Creation

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**Abstract:** With global warming, governments have introduced carbon emission reduction policies, among which carbon cap-and-trade policies have been implemented with remarkable effects. As the main carrier of carbon emissions, cap-and-trade policies greatly affect their operational objectives and decision-making environment. Through literature review, it can be determined that carbon information disclosure and increasing carbon assets can enhance the value of enterprises, and thus improve their competitiveness in the market. Finally, the limitations in the existing research are described and future research directions are provided.

**Keywords:** Cap-and-trade policy, Corporate value, Creation.

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## 1. Background of the Study

As the main cause of global warming, carbon emissions have posed a serious danger to the global ecosystem and the survival and development of human beings themselves, which has forced people to pay more and more attention to environmental issues. For this reason, governments have issued a series of corresponding carbon regulations, among which cap-and-trade policy is regarded as an effective market mechanism to solve the problem of carbon dioxide as the representative greenhouse gas emission reduction. From the Kyoto Protocol reached in 1997 to introduce the market mechanism to solve the problem of carbon emission reduction, to the EU taking the lead in establishing the emission trading mechanism (EU-ETS). As the number one emitter of greenhouse gases, the Chinese government also launched seven carbon trading pilots in Beijing, Shanghai, Tianjin, Chongqing, Guangdong, Shenzhen and Hubei in 2013, and formally launched the national carbon market trading in 2021 to initially establish a carbon trading system. This greatly responds to the new concept of global climate governance and low-carbon development, and also has a wide and far-reaching impact on the social and economic operation, reshaping the macro-economic operation and micro-enterprise production and operation patterns.

As the main responsibility of carbon emission reduction, enterprises will play a pivotal role in low-carbon transition development, and their ability to create low-carbon value and its realization strategy is the key to low-carbon development. The establishment of the government carbon market mechanism is not only to "buy more emissions" or "sell emissions", but also to form a push-back and incentive mechanism to promote energy saving and emission reduction in the whole society, so as to achieve both economic and environmental goals. Therefore, an effective system should be designed to enable enterprises to profit from the transaction, so that they have the incentive to take the initiative to reduce emissions and upgrade their technology. So, what are the new considerations for enterprise valuation when considering the carbon trading market?

## 2. The Formation and Development of Corporate Low-carbon Values

With the development of low-carbon economy, enterprises should follow the development model of low-carbon economy and change their corporate values. The external forces that promote the change of corporate values are summarized into four categories: government policy guidance, low-carbon technology of industry, public opinion pressure, and low-carbon demand of consumers. Internal forces on the creation of corporate value, expressed in the formation of corporate low-carbon values, can effectively help enterprises to establish a low-carbon image, enhance core competitiveness, reduce energy consumption, reduce carbon emissions and environmental pollution while achieving the unity of economic, social and environmental interests of enterprises.

Song et al. (2015) argue that low-carbon management behavior of enterprises can improve the relationship between enterprise stakeholders, achieve sustainable development, and enhance enterprise value. The so-called corporate low-carbon management refers to a new management model in which enterprises aim to unify benefits and responsibilities based on low-carbon concepts, and take low-carbon technologies as the core to reduce enterprise energy consumption and achieve efficient resource utilization and win-win economic and environmental benefits. Aquilani et al. (2017) consider the value co-creation approach from a strategic perspective and incorporate the "corporate sustainability orientation theory" into which four dimensions of inclusiveness, generation, linkage and evolutionary sustainability are incorporated to build corporate sustainability strategies to achieve corporate low-carbon economic transformation. Under this situation, enterprises have started to transform to low carbon, and gradually formed corporate low carbon values by integrating low carbon development into their corporate values while actively fulfilling their social responsibilities. The so-called corporate low-carbon value refers to the measure of the enterprise's contribution to the win-win situation of the whole industry ecosystem, which is directly reflected in the ultimate value created for the natural environment, various stakeholder

groups and the enterprise itself.

### 3. Factors Influencing the Low Carbon Value of Enterprises

In the process of low carbon economy development, corporate low carbon value has started to become a measure of the contribution of enterprises to the win-win situation of the whole industry ecosystem, which is a direct manifestation of creating ultimate value for the natural environment, stakeholder groups and the enterprise itself (Shen, 2021). The factors that affect the low carbon value of enterprises are mainly focused on two aspects: carbon information disclosure and carbon assets.

#### 3.1. Impact of carbon information disclosure on corporate low carbon value

With the increasingly stringent regulatory regime for carbon emission reduction, the carbon emissions of enterprises will gradually become the environmental information that stakeholders are most concerned about. One of the main effects of carbon information disclosure on enterprise value is shown by the fact that the market response of enterprises with the same carbon performance will be different depending on the degree of carbon information disclosure, which includes the pricing of information risk by investors; the more carbon information is disclosed, the lower the rate of return required by investors. Carbon disclosure not only has an enhancing effect on corporate value in the current period, but this effect will extend to the next period.

Krger (2015) used a natural experiment approach to analyze the impact of carbon information disclosure on corporate value and found that mandatory carbon information disclosure has a significant positive impact on the market value of enterprises. Matsumura et al. (2014) and Jiang et al. (2021) concluded that the voluntary carbon disclosure behavior of enterprises helps investors' decision making and enhances corporate value, and the Li et al. (2015) show that carbon disclosure has a significant positive impact on firm value creation, specifically in terms of the relationship between the amount and depth of carbon disclosure and firm value creation, in which market liquidity and cost of equity capital play a mediating role. Plumlee et al. (2009) showed that for environmentally sensitive firms, the more carbon information disclosed, the lower the rate of return required by investors, and therefore the higher the enterprise value.

#### 3.2. Impact of carbon assets on corporate low carbon value

The factors affecting carbon assets on firm value can be decomposed into carbon value increasing factors, which include the value of carbon allowances issued by the government for free and the amount of carbon emission reduction from technological transformation; the latter includes the value of carbon emissions and the current amortization of non-reimbursable carbon allowances. Griffin et al. (2017) analyzed the impact of GHG emissions on firm value and found that the higher the firm's carbon emissions, the lower the investor react less to the market value of the firm. Developing and owning more carbon intangible assets is the main way to improve the low-carbon value of enterprises, while enterprises need to continuously improve their low-carbon management and technology in order to obtain more carbon assets for emission reduction and improve their low-

carbon competitiveness (Jiang et al. 2019). Therefore, in order to create value enterprises should improve low carbon management and enhance carbon efficiency to achieve low carbon development.

As carbon cap-and-trade policies continue to evolve, firms that fail to effectively implement carbon reduction measures are required to purchase carbon emission allowances and are subject to regulatory penalties, but can also gain from selling excess carbon allowances. Li et al. (2021) argue that emission reduction technology innovation can positively affect firm value, with green core competencies mediating the positive impact of low-carbon technology innovation on firm value. This leads to a significant increase in firm value in the short term, and the government should moreover strengthen the construction of carbon markets and improve carbon market liquidity. Scholars have also started to pay attention to the relationship between carbon trading price and enterprise value. Most scholars have drawn conclusions by means of empirical studies, which are divided into two main types: some results show that carbon trading price has a negative impact on firm value creation, and some conclusions show that carbon trading price positively affects firm value creation

### 4. Conclusion

After more than 40 years of rapid development, China's economic volume has ranked second in the world, but at the same time, the crude economic growth mode with high energy consumption per unit of GDP and serious environmental pollution has generated many unanticipated environmental problems. Domestic and international studies have proved that the construction of carbon cap-and-trade market and related policies can effectively promote energy saving, emission reduction and value enhancement of enterprises. However, during the construction of the carbon cap-and-trade market, the relevant laws and regulations on carbon emissions trading should be improved as much as possible, the carbon quota accounting and allocation system should be unified, and the impact of factors such as price fluctuations in the carbon cap-and-trade market should be fully considered, so that the carbon market can continuously and effectively promote the low-carbon development of enterprises.

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