Research on Carbon Budget Implementation in Electric Power Enterprises

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Abstract. At present, energy saving and emission reduction have become the background of enterprise development. Electric power enterprises are also an important source of carbon emissions in the world. Carbon budget is of great significance for carbon emission reduction task. Therefore, this paper studies the implementation of carbon budget in electric power enterprises. This paper mainly studies this topic through questionnaire survey, network survey, individual analysis and other research methods, puts forward relevant problems and gives solutions.

Introduction

Under the new normal economic situation, Chinese enterprises need to actively and efficiently deal with the task of carbon emission reduction at the national and regional levels, invest in the construction of ecological civilization, and take the road of low-carbon management and green development. In recent years, the state has promulgated a series of policies for energy conservation and emission reduction, such as the comprehensive work plan for energy conservation and emission reduction in 13th Five-Year, and the guidance of the State Administration of Taxation on energy conservation and emission reduction for 2018-2019 years. On this basis, this paper studies the implementation status of carbon budget in power enterprises, and puts forward relevant suggestions for the implementation of carbon budget.

The “carbon budget” was first proposed by the planners of the Kyoto Protocol. Its initial goal is to determine the number of carbon allowed to be emitted into the atmosphere by a country or even the whole world for a certain period of time. In order to achieve the long-term goal of protecting global climate. Make contributions. Current carbon budget is mainly based on the design of national or interregional mechanism, which is at the macro level. From the micro level, as a social and economic cell, enterprises should also consider their own sustainable development and build a more perfect carbon budget system.

The extreme importance of carbon budgets needs to be addressed here. As the largest developing country and the second largest energy consuming country, China has been faced with severe pressure to reduce emissions. Although China has made a series of achievements since vigorously promoting energy conservation and emission reduction, we must see that this task is still arduous. For example, while energy consumption per unit GDP declines, the energy-saving situation is still grim; while total sulfur dioxide emissions are decreasing, total chemical oxygen demand emissions are still rising; water pollution deterioration trend is still developing and serious environmental pollution accidents occur frequently; marine pollution situation is aggravating and the trend of marine ecological deterioration has no signs of improvement. In this regard, China has taken a lot of measures in energy saving and emission reduction, but it lacks the necessary recognition for the new national function of "carbon budget". "Carbon budget" basically stays in academic research and policy discussion, and mainly focuses on its tool attributes of energy saving and emission reduction. In fact, the concept of low-carbon development and the goal of low-carbon society have put forward new requirements for national functions: compared with the traditional economic and social development model, promoting low-carbon economic development and low-carbon social construction will inevitably become a new function of modern countries. China is in a critical period of modernization and industrialization. How to deal with the problems of resources and
environment in the process is still an unavoidable issue of the times. The "new industrialization", "ecological civilization" and "beautiful China" put forward by the party's sixteen, seventeenth and eighteen reports respectively can be regarded as the best footnote. The traditional mode of economic and social development in China is characterized by "high energy consumption, high pollution and low benefit", which is incompatible with the sustainable development strategy established in China and the above goals. Promoting the development of low-carbon economy and the construction of low-carbon society will inevitably become a new function of modern countries.

Therefore, we conducted a survey on the national awareness of carbon budget, studied the implementation of carbon budget in power enterprises, put forward some problems about carbon budget in power enterprises, and put forward corresponding countermeasures, as well as measures to implement carbon budget system in power enterprises.

**Research on National Cognition of Carbon Budget**

In order to better understand the national awareness of carbon budget, we have made a questionnaire here. Through this questionnaire, we can get some information about profit, but also reflect some problems. From the results, most of the participants in the questionnaire are students, only a small part are workers in the power industry. Because of the imbalance of the distribution of the identity of the participants, the survey may have some limitations, but because all the surveys are randomly distributed, it is still scientific.

![Figure 1. Carbon budget information.](image1)

![Figure 2. Do you want to know about carbon budget through questionnaires?](image2)
Overall, we are surprised that although nearly 90% of people do not know much about carbon budgets, they have heard that carbon emissions account for the same proportion, and more than 90% of people think that it is very meaningful for power companies to adopt carbon budgets. From this we can conclude that although the carbon budget has not been generally understood and accepted, but want to understand and expect him, I believe that through our questionnaire, there will be more people want to know about carbon emissions and carbon budget.

Through data analysis, we find that everyone's attention to environmental problems is only at the general level, but people who do not care at all are very few. It proves that environmental protection consciousness has basically been popular among the people. With the development of the times, everyone's consciousness of ecological environment has also been developed. Environmental problems have increasingly become a problem of universal concern. It can also be explained that carbon budget should be put on the agenda of national governance enterprises.

Investigation and Study on the Implementation of Carbon Budget in Electric Power Enterprises at Present

(I) Enterprises that gradually implement carbon budget

At present, some Chinese power companies have consciously control carbon emissions, gradually to implement carbon budget close. For example, China huadian corporation has put forward some new ideas and methods in promoting carbon emission reduction. In 2015, the installed capacity of clean energy ranked first among the five largest power generation groups, reaching 50 million kilowatts. During the 12th five-year plan period, structural adjustment and emission reduction reached 150 million tons of carbon dioxide, making a huge contribution to emission reduction. From 2010 to 2015, the average growth of installed capacity, power supply and heat supply in China was 8.90%, 6.25% and 11.18% respectively, while the average growth of total carbon emissions was only 3.09%, significantly lower than that of energy supply. During the 12th five-year plan period, China has made remarkable achievements in carbon emission reduction. In 2015, carbon emission intensity per unit of power supply decreased by 16.8% compared with 2010.

(2) Enterprises with poor implementation status

But most power companies, especially small ones, have yet to realize the importance of implementing carbon budgets. Statistics show that two-thirds of China's carbon emissions come from power companies, and over 1,700 power companies have a total carbon emission of more than 3 billion tons. These data tell us that although a few large state-owned enterprises are aware of the importance of carbon budget and can make plans to implement them, the vast majority of small and
medium-sized enterprises still lack in-depth understanding of the historical significance of energy conservation and emission reduction, and the implementation of carbon budget is urgent. Through inductive research, we find some problems in the implementation process of carbon budget of electric power enterprises:

1. Managers' awareness of carbon emission reduction and carbon budget is not strong
2. Carbon budget-related organizations are not in place
3. It is difficult and incomplete to obtain carbon information in power enterprises.

**Enterprises to Implement Carbon Budget System Measures**

1. Strengthen the understanding of carbon budget management and establish a scientific concept of carbon budget.
   
   At present, corporate carbon budget management in China's enterprise budget management system is in a state of absence, its management function remains to be explored. Therefore, to play the role of management and emission reduction, power enterprises should first recognize the role of carbon budget management and emission reduction, and understand the realization principle of carbon budget management and emission reduction function, and abandon the idea of single application of structural emission reduction and technological emission reduction. In the enterprise's carbon emission, carbon emission reduction and carbon emission trading management, it is necessary to improve the traditional extensive low-carbon management model and establish a scientific budget management concept. To establish the idea of carbon budget management in the budget management, we need to deeply understand the data, fine and value management of carbon budget management, as well as the systematic management of carbon budget. Under the background of green and low-carbon development, enterprises need to break away from the traditional comprehensive budget management and embed carbon budget management into the comprehensive budget system, so as to establish a new comprehensive budget system embedded in carbon budget management.

2. Build management organization and play the role of management in emission reduction.
   
   This paper argues that the carbon budget management organization system should include four parts: carbon budget management committee, compilation organization, supervision and coordination organization, and feedback organization. Electric power enterprises to emphasize the functional organizations in building awareness of low carbon from the relevant personnel in charge, for carbon budget implementation, supervision and decision making, the functions such as evaluation, related, in addition to consider the necessary economic costs, head of carbon emission reduction task and should also pay attention to enterprise economic activities on the environment factors such as the influence of the atmospheric environment. Compared with traditional comprehensive budget management system, carbon budget management organization should introduce professional environmental personnel to conduct more professional guidance on carbon emission source detection and carbon emission uncertainty, so as to better serve the carbon budget of enterprises.

3. Make rational use of big data and keep up with the trend of information technology.
   
   In the era of informationization and big data, most enterprises' organizational management systems need the support of informationized data. Big data has the characteristics of large amount of data and data association. A lot of calculation and analysis make big data ultimately produce value, serve enterprises and bring visible benefits to enterprises. Therefore, when building a carbon budget system, enterprises need to consider whether to introduce an information-based supervision and management system to provide an efficient operating environment and reliable index prediction data for the carbon budget of enterprises, and conduct real-time monitoring to correct the deviation between the carbon budget and carbon emission reduction targets in time, so that management can make timely adjustments and reduce the risks brought by the uncertainty of carbon budget. At the same time, we need to build a carbon budget management and control platform, establish the relationship between sub-budgets, between sub-budgets and traditional budget management system.
and do a good job of data interface with internal and external systems. Through the system to refine and decompose the budget management objectives into each budget responsibility subject, establish a sound budget management data monitoring, comprehensively grasp the implementation of carbon budget, to ensure the implementation efficiency of the overall carbon budget management.

4. Consider emission reduction measures.

To ensure the smooth completion of carbon budget targets, emission reduction measures should be considered. Taking thermal power enterprises as an example, first of all, rational planning should be carried out to achieve energy saving and emission reduction. Change energy structure, use renewable energy and clean energy. In general, thermal power occupies a very important position in the process of power generation. Compared with nuclear power, the proportion of thermal power installed is very large. Therefore, in order to reduce coal combustion and environmental pollution, clean energy and renewable energy need to be developed. Reducing the proportion of thermal power generation in the total power generation directly reduces the emission of pollutants. Secondly, the key links of thermal power production should be controlled. Ensure the quality of coal combustion, improve the combustion rate, make coal fully burned, reduce waste. Coal-fired boilers are mainly used in thermal power generation. The cost of fuel is more than 50% of the cost of power generation. Therefore, the quality of coal and other fuels plays a very important role in economic benefits. If the quality of coal combustion is not good, the energy consumption of power generation enterprises will increase, and the service life of related equipment will be shortened, resulting in economic losses. Therefore, in order to achieve energy saving and emission reduction of thermal power enterprises, it is necessary to ensure the quality of coal combustion. Finally, we should innovate constantly, adopt new technology, apply frequency conversion speed regulation system, improve the indicators, save the power consumption of power plants, save resources and achieve energy saving and emission reduction. New technology is adopted to improve the operation efficiency of the unit and realize the recovery of residual speed energy, so as to save energy and reduce emissions, and realize the recovery of available resources.

References


