

Research on Cost Control and Risk of Power Enterprises from the Perspective of Green Finance

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Abstract—Developing circular economy and promoting green development is a major strategic decision of China. It is a major measure to implement the strategic deployment of the 18th National Congress of the Communist Party of China, and the power industry is the pillar and the leading industry of the national economy, which is always related to the national economy and people's livelihood. In the work of reform and development, we have always been at the forefront of the development of the national economy. However, there are still some environmental problems in the development of power companies. At the same time, China's green finance is booming, and power companies should learn from green finance. The development experience of green finance makes it more adaptable to the trend of market-oriented reform in the power industry.

Keywords—green finance, environmental issues, power companies, cost control

I. INTRODUCTION

The widely used fossil fuel reserves are currently limited, and a large amount of CO₂ is emitted during use, causing environmental problems. In order to cope with global climate change, reduce dependence on fossil energy, and ensure energy security, China has introduced a series of energy policies to vigorously develop clean energy such as wind power and solar power. With the smoggy weather in some cities in China, the country has begun to pay more attention to China's energy structure, energy conservation and emission reduction and low-carbon economy [1]. At the same time, China's green finance plays an important role in China's economic development under the impetus of policies and the current situation. Promoting the development of green finance in power companies can make power companies more stable in market-oriented reform.

II. THE DEVELOPMENT STATUS OF GREEN FINANCE

A. Development status of China's green finance

China is the first country in the world with a relatively complete green financial policy system. On August 31, 2016, the "Development Opinions on Building a Green Financial System", which was approved by the Central Deep Reform Group and approved by the State Council and jointly issued by seven ministries and commissions including the People's Bank of China, constitutes the "top design" of China's development and programmatic document of green finance. Different from

the Western "bottom-up" approach to spontaneously forming green finance industry and market standards, China's process of building a green financial system is dominated by government-led and regulatory authorities, and the financial sector is dedicated to the green sector. Industry, academia, self-regulatory organizations, NGOs, media, etc. have formed the mainly body of the country to build a green financial system. Under the policy guidance represented by the Guiding Opinions, the various entities actively interacted closely and promoted the green financial system from scratch, in the exploration and practice, and gradually enriched and improved the relevant laws and regulations covering green finance. Green financial organic system includes a series of institutional arrangements, such as policy system, organizational system, product service system, green standard system, international cooperation system, capacity building system and risk prevention system.

In recent years, China's green finance development has accelerated significantly, and the scale of green credit has exceeded 9 trillion Yuan, and it has become the world's largest green bond market. Green bonds have grown steadily. According to statistics from China Bond Ratings, as of the end of October, the balance of green bonds in China's domestic market has reached 535.234 billion Yuan. During the year, the domestic green bond market has issued 87 green bonds, totaling 132.889 billion Yuan, including 12 single green asset-backed securities (ABS). In the two years from 2016 to 2018, the domestic green bond market issued a total of 255 green bonds, amounting to 544.9 billion Yuan, including 26 single green ABS.

B. The development status of international green finance

On February 22, 2018, the Group of 20 (G20) Sustainable Finance Research Group held its first meeting in Argentina during the G20 chairmanship in London, England. The meeting was co-chaired by the People's Bank of China and the Bank of England. More than 80 representatives from G20 members, guest countries and international organizations attended the meeting. The conference discussed and adopted three major research topics of the research team in 2018, namely, sustainable asset securitization, development of sustainable private equity (PE) and venture capital (VC), and the use of financial technology to develop sustainable finance. Boston Real Estate raised \$1 billion to finance US green buildings; Japanese companies plan to issue \$7.8 billion in green bonds to develop solar power, India has allocated more than \$200 million to strengthen atmospheric and climate

research; the UN report shows that the greenhouse gas content in the atmosphere is record-breaking. In addition, research shows that wind energy will become the largest source of energy in Europe in 2027; natural carbon sinks will soon become carbon sources. ING (Dutch International Group) issued 2.96 billion US dollars of green bonds; West African Development Bank (BAAD) strengthened its focus on low-carbon energy projects; CDB cooperated with Korea Green Climate Fund to carry out climate projects, and international green finance is constantly developing.

III. PROBLEMS IN THE DEVELOPMENT OF POWER COMPANIES

A. *The power industry faces the dilemma of adjusting structure and reducing leverage*

The State-owned Assets Supervision and Administration Commission set the definition of high-debt central enterprises to 75%. Central enterprises with high asset-liability ratios are classified into key enterprises (75% to 85%), key monitoring enterprises (85% to 90%), and special supervision enterprises (more than 90%). At present, the power companies managed by the State-owned Assets Supervision and Administration Commission are apart from the State Grid. The asset-liability ratio of China Southern Power Grid and Three Gorges Group is relatively low. The overall asset-liability ratio of the other five power generation groups and the two auxiliary units is basically higher than that of the SASAC. [5] Due to the industry characteristics of power companies and the particularity of power, power companies have long been in a monopoly state, and because power is related to national economy and people's livelihood, the power industry has always been valued and supported by the state, resulting in a general asset-liability ratio of power companies. In the higher situation, some power companies even have asset-liability ratios higher than 80%, financial risks are extremely high, and liquidity is extremely fragile, which seriously affects the healthy development of power state-owned enterprises and the power industry. The task of reducing leverage in the power sector is arduous.

B. *Renewable energy consumption has generally improved, but the difficulty of solving power cuts has increased, and there is a risk of expanding the power limit and increasing the power.*

Behind the rapid growth of China's wind power installed capacity is the serious waste of wind power resources. The installed capacity of unconnected wind power continues to grow, and the wind abandonment phenomenon is serious and difficult to solve in a short period of time. The National Energy Administration pointed out that with the rapid growth of wind power installed capacity in China, in 2012, wind power and wind curtailment were severe in some areas, and the national abandoned wind power was about 20 billion kWh [2]. With the advancement of power system reform and the power trading market mechanism Perfect, power transactions between the eastern and western provinces are increasing. More and more trading varieties and higher and higher transaction frequency attract many market participants. The "provincial barriers" are gradually breaking down. The problem of "abandoning wind and abandoning light" has been improved, but the cumulative installed capacity in the country reached in 2017. 177.73 million kilowatts, an increase of 7.6%, of which: hydropower, thermal power, nuclear power installed capacity reached 34119, 110604, 35.82 million kilowatts, the cumulative growth rate of 2.7%, 4.3%, 6.5%. In 2017, although thermal power installed capacity still holds an absolute leading position (62.25%, of which coal power accounts for 55.17%, other thermal power accounts for 7.08%), the installed capacity is still very large, and the power companies produce more electricity each year, and because the products of power companies have The characteristics that cannot be stored, that is, must be sold when produced, and the power limit is difficult.

C. *The environmental protection cost of the coal power industry is difficult to make up*

TABLE I. 13th Five-Year Plan for Power Development

Category	Indicators	2015	2020	Annual growth rate
	Non-fossil energy consumption	12%	15%	(3%)
	Non-fossil energy power generation installed capacity	35%	30%	(-4%)
	Conventional hydropower(100 million kW)	2.97	3.4	2.8%
	Pumping machine (10,000 kW)	2303	4000	11.7%
	Nuclear power (100 million kilowatts)	0.27	0.58	16.5%
	Wind power (100 million kilowatts)	1.31	2.1	9.9%
	Solar power generation (100 million kW)	0.42	1.1	21.2%
	Fossil energy power generation installed capacity	65%	61%	(-4%)
	Coal-fired installed capacity	59%	55%	(-4%)
	Coal power (100 million kilowatts)	9	<11	4.1%
	Gas (100 million kW)	0.66	1.1	10.8%

On November 7, 2016, the National Development and Reform Commission and the National Energy Administration officially issued the "13th Five-Year Plan for Power Development", which was proposed to accelerate the

development and utilization of clean energy. During the "Thirteenth Five-Year Plan" period, the installed capacity of coal-fired power plants will be gradually reduced, and the installed capacity of clean energy will be increased. By 2020,

the proportion of non-fossil energy consumption will reach 15%, the proportion of non-fossil energy power generation capacity will reach 39%; the conventional hydropower installed capacity will reach 340 million kilowatts, the pumping capacity will reach 40 million kilowatts; the nuclear power installed capacity will reach 58 million kilowatts; and the installed capacity of wind power will be 210 million Yuan. Kilowatt; solar power installed capacity of 110 million kilowatts; coal-fired installed capacity fell from 59% in 2015 to 59%. China's coal-fired power generation accounts for 65% of the country's power generation. It has long played an important role in the power system and plays a pivotal role in China's green economy development and sustainable development. On the basis of clean development, It will continue to play its role and remains the main form of energy for power and electricity supply in the future. However, due to the impact of the initial reform of the power industry market, China's coal-fired power utilization hours have been declining year after year. The loss of coal and electricity industry has continued to increase, and profits have fallen sharply compared with previous years. Environmental protection costs and inputs are difficult to make up for through the profits obtained. The ability to ensure the clean and sustainable development of the coal-fired power industry has weakened.

IV. MEASURES TAKEN BY POWER COMPANIES TO LEARN FROM GREEN FINANCE

A. *Improve energy conversion efficiency*

Strengthen the energy-saving operation management of the unit. Seriously carry out the whole process of production indicators benchmarking, and actively carry out energy-saving diagnostic analysis and operation optimization. Strive to increase the unit load factor. Strengthen the comprehensive transformation and maintenance management of the unit, increase the energy-saving transformation of boilers, fans, pumps and other equipment, promote energy-saving technologies such as plasma oil-free ignition, and reduce the power consumption rate of the plant. Encourage the development of cogeneration and cogeneration of heat and power. Strictly implement "heat-fixing electricity" [3]. In terms of research and development, power companies should increase investment in research, actively introduce scientific research personnel, attach importance to enterprise personnel training, increase the research and development of intangible assets of enterprises, and increase the cost of intangible assets. At the same time, it pays attention to the maintenance inspection of fixed assets. Extend the working life of fixed assets, reduce the loss of production process to achieve maximum value of fixed assets and maximize profits when the depreciation period determined according to the company's conditions is fixed to a certain extent.

B. *Strengthen financial management control and improve financial management system*

First, establish a sense of financial management control and strictly control the expenditures incurred in the production process of power companies. At the same time, power enterprise management personnel should adhere to the concept

of refined budget management. In the production process of enterprises, under the premise of ensuring product quality and quantity, enterprises should minimize costs as much as possible. At the same time, improve the internal audit system of the enterprise, strictly understand the movements and use of funds, clarify the use of funds, and refrain from changing the use of funds. For example, the government allocates funds for the purchase of energy-saving and environmental protection equipment, and the power companies should collect The deferred income will be recognized in the future, and the current profit and loss will be offset against the management expenses in the subsequent accounting period. At the same time, power companies should strengthen internal supervision, severely punish corporate personnel for power and corruption, and link employee performance with compensation to strengthen internal incentives. Power companies should decompose financial targets into value-control and non-value indicators that can be controlled, and re-integrate these indicators into the management information system to further optimize and upgrade the system and continuously improve the comprehensive index evaluation capability of the management information system [4].

C. *Improve profitability and control asset-liability ratio*

The average asset-liability ratio of the world's top 500 power companies was calculated to be 73%, 71%, 72%, 70%, 71%, 75%, and 74%, respectively, and the total is between 70% and 75%. From an industry perspective, China's power companies can use 70% to 75% as a reference range for controlling the asset-liability ratio, and strive to control the asset-liability ratio within 75% [6], although debt capital can be taxed before tax, but if the asset-liability ratio is too high, the existing funds of the power companies cannot repay the debts, and there may be liquidity to repay the long-term capital. The quality of the enterprise's asset capital is too low. Therefore, the enterprise should combine its own solvency and profitability. , development capabilities and other aspects of the consideration, the debt capital and equity capital are optimized to reduce the company's cost of capital.

V. CONCLUSION

Green finance is the product of the development of the times and the driving force for the advancement of the times. Under the impact of the de-leverage and structural adjustment policies of China's power industry, the market demand of power companies has not changed much, but the cost of power companies is rising, especially due to waste emission limits and production processes. The investment in waste treatment has increased, and the environmental cost of power companies has risen sharply compared with the past. At the same time, power companies have always had high balance sheet rates and high financial risks. Power companies urgently need to carry out reforms and learn from the experience of green finance development. Control the cost of the enterprise, handle the relationship between business risk and management risk, and minimize the risk of the enterprise while ensuring the liquidity of the fund.

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