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# Low-carbon Economy and Research on the Strategy Transformation of China's Small and Medium Enterprises

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**Abstract:** At present, low-carbon economy has become the great trend in the development of global economy under the serious climate environment gradually. China's small and medium enterprises (SME) have taken the large proportions in national economy, which face large amount of opportunities and challenges in the wave of reform. This article analyses the current situation and the problems on development strategy, technology innovation and the path of reform of China's SME, which takes examples by the SME in some regions to improve the operating environments. It expects to change the extensive production mode, strengthen the management capability and technology innovation in China's SME. Under the basis of this research, the article concludes the relevant strategy transformation modes, which provides the references and evidences for China's SME.

Key words: low-carbon economy; small and medium enterprise; strategy transformation

## 1. LOW-CARBON ECONOMY AND THE DEVELOPMENT OF CHINA'S SMALL AND MEDIUM ENTERPRISES

### 1.1 The Concept of Low-carbon Economy

At present, the survival and development of humanity are facing great challenges with the warmer global climates. Under this background, the concept of "low carbon" was firstly proposed by the British and accepted by the public afterwards. But for the concept of "low-carbon economy", people have different understandings in the academic areas.

Firstly, the expression of low-carbon economy is based on the characteristics of high-carbon economy. The changes of ways on the carbon intensive energy production and energy consumption are the needs to meet the development of low-carbon economy. The low-carbon economy is trying to realize low energy consumption, low pollution and low emissions through the innovation on technology and management to reduce carbon emissions and the growth rate of emissions. Secondly, the low-carbon economy breaks situation of the high growth rate between the economic growth and high-pollution energy consumption by the development and utilization of new energy. It is trying to reach the requirements of the concept of sustainable development and the control of greenhouse gas emissions by the high efficiency and clean utilization of energy, the replace of new energy, the development of low-carbon energy and the control of non-carbon energy. Finally, low-carbon economy is also expressed by comparing to the artificial carbon flux, which is a kind of survival behavior of human beings implemented in the new economic and social system to solve the carbon imbalance in earth's

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ecosystem caused by personal factors. Under the fair social system and clear rules of policies, it aims to change people's high carbon consumption tendency and carbon preference. By establishing the development model of high efficiency, low energy consumption, high utilization and low emissions, it is also trying to realize to help human beings surviving and developing in the low-carbon economy. <sup>[1]</sup>

To conclude, low-carbon economy is a new scientific economy development theory guided by the concept of sustainable development, with low-carbon energy, low-carbon technology, low-carbon consumption as the core, in order to realize the harmony of the economic development and ecosystem protection.

### 1.2 The role position of China's Small and Medium Enterprises in low- carbon economy

After the financial crisis, developing low-carbon economy begins to become the motivation of a new round of economic growth which agreed by each country of the world. In August 2009, the China's National People's Committee adopted the resolution on climate change, which put forward clearly: to develop green economy, low-carbon economy based on national conditions, to actively respond to climate change as a strategy to achieve sustainable development of long-term task, which is incorporated into the planning of national economic and social development and points out clear objectives, tasks and requirements on it. The resolution shows the determination of the Chinese government to develop low-carbon economy. With it, China's target of cutting CO<sub>2</sub> emissions by 40–45% per unit of GDP by 2020 is crucial for taking countermeasures against climate change and identifying low carbon energy development strategies. <sup>[2]</sup>

But the SME play an important role in the process of development on low-carbon economy based on the China's special national condition. According to statistics show, China's SME creates 60% in final products and services value of GDP, up to 70% in national exporting commodities, 53% accounted for the total taxes, 65% in the national patents and 80% for the development of new products. First of all, China's SME play the role of transferring labor forces. While it conducts its reform, China's state-owned enterprises met the problem of unemployment of large amount of labor forces. The growing China's SME provided numbers of new jobs for society, change the distribution of population, and make more opportunities for people to participate in the development of low carbon-economy. Moreover, the development of China's SME affects the development of low-carbon economy in China. China's SME develop at different level in different regions in the east, in the middle and in the west. In the developed region of economy, the amounts and production values are high, which reduced the pressure of employment and promoted the growth of the regional economy. Conversely, the development of SME falls behind in the poor regions. Finally, the development of SME takes the main responsibility in low-carbon economy. Because it has large numbers of enterprises, complicated structures and extensive development patterns, China's SME should take more social responsibilities by law as the main body of carbon emissions. <sup>[3]</sup>

**Table 1. The Number and Production Value of SME in Eastern Developed Regions of China In 2010**

Province/City	Number	% of the production value
Shanghai	Approximately to 500,000	59.8%
Zhejiang	Approximately to 1,180,000	84.6%
Jiangsu	Approximately to 1,230,000	71.5%

~Data originated from the website of SME in China~

## **2. THE PROBLEMS EXISTING IN THE DEVELOPMENT OF CHINA'S SMALL AND MEDIUM ENTERPRISES IN THE PERSPECTIVE OF LOW-CARBON ECONOMY**

### **2.1 China's Small and Medium Enterprises are influenced by serious external environments**

Firstly 'the standards on all items are strictly controlled. On the national congress of 5th March, 2011, premier Wen Jiabao announced formally in the government report: according to the 12th five-year-plan 'total national production energy consumption per unit and the amount of carbon dioxide discharge reduce to 16% and 17% separately; the amount of non-chemical energy consumption per time increased to 11.4%; total amount of ,main pollution decreased 8% to 10%; the area of forest increased to 600 million cubic meters and the coverage of forest reached to 21.66%. Non-fossil fuel generation should account for 11.4% of total primary energy consumption by 2015, and renewable energy resources should be 20% by 2020. In order to reach emission reduction targets, the proportion of new and renewable energy in china's overall energy mix will continually increase. [4]

The settings of those targets bring big challenges to China's SME which rely on high energy consumption, large input of personnel and great pollution discharge. Furthermore, most of China's SME accept the manufacturing or production process (such as coal, automobile and disposable chopsticks etc.) by transferring from foreign countries with high energy consumption with high pollution and high discharge amounts for the survival and short-term benefits, while ignore regional zoological environment and the protection of non-revival resources. At last, as a developing country, China is lack of the right of speaking at the setting of carbon rules by the developed countries, for it knows less of the relevant patents of carbon technology, that lead to the restriction to the development of economy. [5]

### **2.2 The limitation of self-development of China's Small and Medium Enterprises**

Besides of the restriction of external environment 'China's SME exist the following problems in its self-development firstly the unreasonable industry structure. Among the China's industry structure, manufacturing industry takes in quite large amount of the proportions, while the low energy consumption industry such as agriculture and services are taking small proportions. In the manufacturing structure, the heavy chemical industry takes up approximately 70% which has large demand of carbon. Large amount of the SME choose the manufacturing industry with fast benefits and high resources input without unified planning and management, which brought repeating manufacturing construction, environment damage and zoology pollution. The total structures of manufacturing of SME develop unreasonably, the order of the market was destroyed and the possibility of sustainable development becomes low.

Secondly 'the imperfect of management system. Most of China's SME have small scale. Its management systems on financial management, property management, safety production, salary management and human resources management are imperfect and even not existing. Moreover 'most of the enterprises are facing the difficulty in financing. The fund is mainly from self-accumulation internally, small proportion of the fund are from bank loan, non-governmental loan and other illegal channels, which put the chains to the development of China's SME. [6]

Finally 'the lack of core competitiveness. China's SME cover different industries, which have complicated internal structure. Most of them are engaged in labor concentrated industry 'are forced to transfer to foreign industry and even to do the simple production with brand-sticking product. The general technology level in the enterprises falls behind greatly, which face the problems of lacking of personnel and poor quality of the product. Many small and medium enterprises are in a mess and disorder in production and management, so those enterprises are lack of core competitiveness, which waste resources and pollute environment. If economic crisis and turmoil occur, they will have no ability to survive. But the development of low-carbon economy mainly relies on advanced technology (such as the return utilization of methane, collection and deposit of carbon

dioxide etc.); this brings great challenge to China's SME. <sup>[7]</sup>

### **3. LOW-CARBON ECONOMY AND THE POLICY ADVICES ON THE TRANSFORMATION OF SMALL AND MEDIUM ENTERPRISES**

#### **3.1 Chinese Government should strength supporting to Small and Medium Enterprises**

Firstly 'the guide on thoughts. The orientation from government is quite important for China's SME to establish the sense on developing low-carbon economy, which includes mandatory law and voluntary measures. (I) Chinese government should put up a series of law and principles, which provide policy basis and law ensure for the development of low-carbon in SME. (II) Chinese government should enhance the publicity work to raise the sense on the development of low-carbon economy in SME, set measurements on rewards and punishment and keep strictly the rules for reward and punishment. Those enterprises which have high production value, good environment and good achievements on pollution discharge will be rewarded; Conversely 'severe punishment will be done to warn them.

Secondly 'the help on fund. Large amount of fund from the government are needed to support to China's SME to realize the change from "high-carbon economy" to "low-carbon economy" in order to accelerate the adjustment on production mode and industrial structure, which help the solve on financing difficulties and the utilization on new-technology and new-energy. In the "Temporary Administrative Method on Growth Reward Fund to SME in Hainan Province", it provides certain amount of reward support to new-technology and new energy. From 1 July 2009, SME in Hainan Province can apply growth reward fund, and the top 10 enterprises for annual tax payments in 3 years can win the reward fund. The highest reward fund can reach to 350,000 Yuan (RMB) in mechanical and electronic engineering. <sup>[8]</sup>

Moreover 'the support on technology. Chinese government should also give support on technology, for low technology and limitation in research and innovation exists in SME. Particularly, in public technology area, government should add input to develop low-carbon technology and quicken up the step of technology progress. Besides of these, the relevant department of government should give training to SME, put together excellent resources in manpower and materials to solve the key technology. From the experiences in Shanghai low-carbon experiment zone, government supports enterprises to run the step on research and development combining production, learning, research and utilization together to promote them pull low-carbon industry and low-carbon technology developed.

Finally 'the direction on policy. Government should set up reasonable tax policy to charge the amount of tax according to the carbon emission, which can fully play the market function to ensure resources allocated and used rationally. In addition, sound social evaluation system on carbon emission in SME should be included in government evaluation target to promote the work of energy save and emission reduction. Some SME will be rewarded and got preferences from all sorts of ways. <sup>[9]</sup>

#### **3.2 Chinese Government should promote Small and Medium Enterprises' Self-adjustment**

First of all 'publicize the spirit of low-carbon, develop the culture of low-carbon. Corporate culture is the core spirit and internal dynamics in the corporate development. SME should propose and establish corporate low-carbon culture. On the one side, it can bring save spirit to daily operation in enterprise through low-carbon management mode to encourage employees to save water, paper and electricity to reduce daily expenditure. On the other side 'it can help enterprise to establish good social image in order to complete expected target.

Secondly 'adjust industrial structure, use new energy. China's SME runs an extensive economic road with high input, high energy consumption, high pollution and low benefit. This production mode wastes natural resources and danger the survival environment of human beings. So energy structure adjustment must be implemented to explore and use clean, non-polluted and even cheaper new type energy, such as wind energy,

solar energy and tidal energy etc.<sup>[10]</sup> in addition 'China's SME can develop low-carbon industry of services, intensive technology to conduct unique local features by fully using regional resources advantages. Hainan province uses its unique natural resources to construct its international tourism island, which provides a good sample with harmony of man and nature.

Furthermore 'boost science and technology innovation, increase competency ability. Science and technology is the first productivity, while low-carbon economy is on this basis. China's SME should promote technology innovation (e.g.: energy substitution energy, fossil energy removal technology and energy conservation technology). Besides this 'China's SME should obey actively to international environmental management standard ISO14000 to gain self-development. Ultimately, China's SME should forge its core competitiveness to encourage green consumption guided by scientific outlook on development.<sup>[11]</sup>

At last, enhance team development, establish strong basis. Most of China's SME are private enterprises. Patriarch based management mode exists the circumstances of short-term benefits and family personnel in operation. The training and use of high quality personnel are the requirements of developing low-carbon economy in SME. China's SME should train a group of professional and modern team who are good at the management of low-carbon economy guided by the departments of the government to help low-carbon economy develop healthily.

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