Relationship between Fujian Economic Growth and Energy Consumption

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Abstract. China's economy adopts an extensive growth method. This economic growth method relies on resource input, which consumes huge energy and causes excessive pressure on resources and the environment. The economic growth rate of Fujian Province ranks among the highest in the country in recent years, and its energy consumption is still on the high side. Industrial enterprises, especially the manufacturing industry, account for the majority of energy consumption. In order to ensure the sustainable development of enterprises and society, the government needs to make plans for energy conservation and consumption reduction, policy support and enterprise energy conservation and consumption reduction measures to promote energy conservation and consumption reduction in the whole society, and strive to achieve coordinated development of economic growth and environmental protection.

Keywords: Economic Growth, Energy Saving and Consumption Reduction, Fujian, Manufacturing Industry.

1. Introduction

China's economy has achieved remarkable results. However, the Chinese economy adopts an extensive growth method, which is to increase capital and resource input to promote economic growth. Over the years, this extensive economic growth method has caused too much damage to resources and the environment, and is not conducive to sustainable, stable and coordinated development, and it is also not conducive to the improvement of input and output efficiency, as well as the optimization of economic structure and environmental protection. In recent years, the use of clean energy in China has increased, but the overall energy structure has not changed. Highly polluting coal consumption accounts for a large proportion. In 2017, China put forward quality first and efficiency first, and promoted high-quality economic development, marking the transition from rapid economic growth to high-quality development in China. The essence of high-quality economic development is a high-quality, high-efficiency and high-stability supply system. Energy resource input is highly green, energy input and output efficiency is maximized, and the resource environment can carry long-term sustainable economic growth. Sustainable economic development and stable, safe and efficient energy supply are closely related.

Fujian's GDP ranks 8th in the country in 2019. With the continuous development of economic globalization, the environment continues to deteriorate, and phenomena such as air pollution, water pollution, and resource depletion have been plagued by people. The economy needs to grow, and the
pressure to protect the environment is heavy. How to save energy and reduce consumption is also attracting more and more attention.

2. Energy consumption in Fujian Province under the background of globalization

2.1. The impact of the global economy on the environment
Economic globalization has caused certain damage to the environment. In order to avoid the relatively mature environmental protection laws of their own countries, individual multinational companies have transferred some high-polluting and high-energy-consuming production links to China or other developing countries. In 2017, Fujian Province ranked among the top in the country in terms of opening to the outside world. Opening to the outside world has an impact on the local environment or resource consumption and hinders the sustainable development of society.

2.2. Energy consumption in Fujian Province
Affected by the new crown pneumonia epidemic in 2020, China proposes that economic growth is stable, and stable high-quality economic development is the main task of economic construction. Coal is the main energy source for China's economic development. At the same time, the Chinese government has proposed a "tackling pollution prevention and control" to form green development. Higher requirements are put forward on how society can use energy more efficiently, and the clean and efficient use of coal resources is an effective way to use resources.

According to data released by the Fujian Provincial Bureau of Statistics, Fujian Province's GDP in 2019 reached 4239.95 billion yuan, an increase of 7.6% over 2018. After Fujian's economy has entered the top ten in the country, it will develop steadily, rapidly and with high quality. At the same time, the transformation and upgrading of energy consumption is accelerating, and it is proposed that the energy consumption per unit of GDP is decreasing year by year, and the goal of controlling the annual increase in energy consumption within 10 million tons of standard coal, supporting the medium and high-speed economic development with lower energy consumption; electric power substitution The pace has accelerated, and the proportion of electric energy in terminal energy consumption has increased by about 11 percentage points; a new round of product oil quality upgrading has started, and natural gas consumption has grown rapidly.

Table 1. Comprehensive energy consumption of industries above designated size in Fujian Province in 2018

| Serial number | project                                      | comprehensive energy consumption | proportion |
|---------------|----------------------------------------------|----------------------------------|------------|
| 1             | mining industry                              | 239 561                         | 0.3%       |
| 2             | Manufacturing Industry                       | 53 654 278                      | 68.6%      |
| 3             | Electricity, heat, gas and water production  | 24 339 993                      | 31.1%      |
|               | and supply                                  |                                  |            |
| 4             | total                                        | 78 233 832                      |            |

It can be seen from the above table that the comprehensive energy consumption of manufacturing in the industries above designated size in Fujian Province accounts for 68.6%, which is the main energy consumption. How to promote energy saving and consumption reduction in the manufacturing industry needs attention and research, and the government needs to guide it.

2.3. The overall plan for energy consumption reduction in Fujian Province
Fujian Province faces pressure on energy conservation and environmental protection. Fujian's GDP energy consumption and air pollutant emissions are lower than the national average, but with the completion of a number of energy projects, it is very difficult to save energy and reduce consumption.
In 2016, Fujian Province issued a special plan for energy development during the 13th Five-Year Plan, proposing to optimize the energy structure and power supply layout, and control the total energy consumption. Fujian steadily develops nuclear power, controls coal power, builds pumped storage power stations, promotes the construction of smart grids, accelerates the development of renewable energy, and builds offshore wind power above 2 million kilowatts during the 13th Five-Year Plan, and strengthens natural gas infrastructure construction to eliminate backward production capacity.

In 2019, Fujian Province issued the “Notice on Seven Measures to Further Promote the “Double Control” of Energy Consumption in the Province’s Total and Intensity”, further proposing seven aspects including deepening energy conservation in the industrial sector to accelerate the optimization of stocks, strictly control increments, and continue to optimize Fujian Province energy structure.

3. Energy-saving and consumption-reducing measures for Fujian's manufacturing industry

Fujian's "13th Five-Year Plan" focuses on supply-side structural reforms to promote industrial transformation and upgrading and innovation drive, focusing on improving the quality and efficiency of the supply system, reducing costs, saving energy and reducing consumption, protecting the environment, and promoting industrial transformation and upgrading. According to statistics, from January to May of 2018, the cost of each hundred yuan of main business income of industrial enterprises above designated size was 92.59 yuan, of which the cost of each hundred yuan of main business income was 84.49 yuan. The potential for cost reduction is still great.

The energy consumption of Fujian's large-scale industrial economy is mainly the manufacturing industry, which requires the manufacturing industry to save energy and reduce consumption, and enterprises will also reduce costs and improve competitiveness. The power, heat, gas and water production and supply industries themselves use energy to create output. The best way to save energy and reduce consumption is to use new energy instead, such as wind, solar, nuclear power, natural gas and other new energy sources. At present, the proportion of new energy in energy consumption is not too high because of the high cost; in addition, the initial investment cost is high, and government and enterprise funds are limited, and most of them are invested in instalments. New energy is generally a renewable resource, which has become one of the sustainable development strategies of various countries. The development of new energy can bring huge economic benefits to countries, regions and enterprises, and bring more employment opportunities to residents.

Fujian's manufacturing industry accounts for 60% of energy consumption, and the profitability of the manufacturing industry is not high. Energy saving and consumption reduction have a great effect on improving the profitability of enterprises, and it also contributes a lot to environmental protection. Companies insist on saving and reducing energy consumption, enhancing their competitiveness, and making profits for companies to maintain lasting competitiveness, and companies have the motivation for sustainable development, so that companies can take the initiative to save energy and reduce consumption. Enterprises are the main body of supply, and reducing costs and energy consumption is a key point of supply-side reform. The innovation capability of Chinese enterprises is constantly improving, but it is not enough to make up for the weakening of competitive advantage caused by rapidly rising costs and environmental damage. To maintain and extend the competitive advantage as much as possible, companies must reduce costs and energy consumption. There are the following measures from the perspective of industry management.

3.1. Consciousness of energy saving and consumption reduction of all employees

The top management or decision-maker of the enterprise should instill a sense of responsibility in all employees and ensure that the sense and ability of all employees are responsible for the environment. Enterprises should abandon the "development of the economy first, then transform the environment" and replace it with the strategic policy of "prioritize the environment, then development". Enterprises implement pollution control on the production and business environment, and implement the principles of pollutant discharge and total pollutant control.
The company strengthens the training of employees, raises the awareness of energy saving and consumption reduction, and establishes the awareness of all employees participating in energy saving and consumption reduction. If everyone can spend corporate money as distressed as their own money, and the operation and maintenance of machinery and equipment is like caring for their own cars, corporate costs will surely be controlled.

The enterprise establishes the awareness of energy saving and consumption reduction of every employee. Only when employees have a good energy awareness can they establish the initiative to save energy and reduce consumption, and can implement various specific measures, methods and requirements for energy saving and consumption reduction. Good awareness of employees is a necessary condition for energy conservation and consumption reduction management.

3.2. Implement circular economy and fulfill social responsibilities
The implementation of circular economy by enterprises is part of fulfilling social responsibility. Enhancing the management of energy consumption during the production process can not only increase the economic benefits of the enterprise, but also change the protection of the environment and fulfill social responsibilities, which is a win-win situation.

Enterprises should improve energy consumption management to the level of corporate strategy. In the process of energy saving and consumption reduction, the awareness of all employees runs through the whole process, and corporate strategy guides corporate systems, processes and collaborative management. Only under the premise that the company improves the energy consumption management at the strategic level and all employees consciously implement environmental protection and resource recycling, can the company's energy consumption management be truly implemented.

![Figure 1. Enterprise energy saving management level](image)

3.3. Establish a systematic standard process for energy saving and consumption reduction management
The company conducts coordination between departments, cost analysis, assessment and reward system, cost standards, cost accounting system, management tools, cost process, cost system, environmental protection supervision system, various forms, cost forecasts, organizational structure, energy-saving measures, etc. The management of energy saving and consumption reduction shall be reviewed and improved in all aspects, and a systematic standard process for energy saving and consumption reduction management shall be established. Otherwise, all the efforts of the enterprise will be useless.

3.4. Do a good job in improving the proposal
The company encourages employees to actively propose energy-saving and consumption-reducing proposals, which can create a positive corporate culture and cultivate employees' awareness of reducing costs, protecting the environment, and improving efficiency. Japan's Matsushita Electric advocates the participation of all employees in the company, thereby promoting the proposal system and implementing proposal rewards. Companies must give full play to the enthusiasm of front-line employees, because only employees know best what the problem is, and improvement proposals must be a basic task of the company and be carried out persistently.
4. Conclusions
To achieve sustainable economic and social development, human society must protect non-renewable resources and the environment. Environmental protection and economic development are mutually interrelated. They cannot destroy the environment for economic development; nor can they restrict economic development for environmental protection. The two need to be transformed, promoted and coordinated. High-quality economic development requires green development. Energy conservation, consumption reduction, and environmental protection have continuously improved environmental quality, thereby providing greater space for high-quality economic and green development.

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