

Development Status and Recommendations of the Energy Service Industry

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Abstract: The essay examines the energy-saving industry's current state of development in China, identifies its issues, and suggests appropriate solutions. To achieve optimal energy use, energy saving refers to preserving energy while minimizing energy consumption. Contractual energy management was brought to China in the 1970s and developed there with the support of pertinent state policies. The growth of the market for energy-saving services and the quick industrial scale expansion have, however, also presented this industry with new hurdles as a result of the global concern for energy security. It primarily shows itself as uneven technological standards, questionable incentive programs, and funding challenges. On this foundation, solutions to the existing issues are suggested as countermeasures. Therefore, it should advance science and technology, advance the development of product quality standards, advance the implementation of stricter market access requirements, and advance the establishment of an ideal industry management system. On this foundation, pertinent policy suggestions are made in an effort to support the steady and orderly growth of the energy-saving services sector. The growth of China's energy services business has been aided by the adoption of the aforementioned programs.

Keywords: Energy saving service industry, Development status, Development issues, Contractual energy management.

1. Industry Introduction

Energy Performance Contracting was first implemented in China in the late 1970s, and as the country's population became more conscious of the need to conserve energy and protect the environment and as business demand for energy efficiency and consumption reduction increased, energy-saving service providers slowly started to appear. Energy service companies, or ESCOs for short, enter into agreements with energy-consuming businesses, diagnose the customer's energy situation, offer funds, technology, services, etc., and remodel the customer's energy-consuming equipment to help reduce energy consumption. The agreement also mandates that the ESCO be in charge of the energy-saving equipment before the project is complete, including equipment safety testing, operation and management, and maintenance of the issue. The equipment will be given to the customer for free at the conclusion of the contract, and the ESCO will get the corresponding payment from the reduced energy costs[1].

2. Development Status

The global energy service industry has generally maintained stable development in recent years, driven by the growth of the global economy, the promotion of energy conservation and environmental protection awareness, and the industry's technological innovation. The total output value of global energy saving services has also continued to rise, showing an upward trend year after year. When compared to 2017, the market size of the energy services sector grew by 28.78% in 2021, reaching USD 365.1 billion.

Energy service companies have started to appear in all nations of the world, but their growth has been unequal globally. The United States, Sweden, and the United Kingdom are countries with a history spanning more than thirty years, while Lithuania, Nepal, and South Africa were developed before the idea of the energy service industry was

even conceived in 2000, and the first energy service company in China was founded in 1995.

The global market for energy services is currently primarily concentrated in North America, which accounts for 36.92% of the market; the European region's market size is around 27.58%; and the Asian region's market size is approximately 22.32%.

Second, early adopters in this sector have built relatively strong energy-saving service sectors in their countries, particularly in the United States. The number of professional energy service businesses has increased to over 2,100, some of which have joined forces to form a worldwide firm, and the range of target clients has widened from industries and businesses to groups, schools, hospitals, governmental organizations, and individual houses[2].

China's energy service sector started later and evolved more slowly than the overseas energy service sector, which grew quickly. The demand for energy-saving services from energy-using units has been rising recently, along with the national economy's rapid expansion and the expansion of the energy supply. The energy service business has developed into an industry that is heavily supported by Chinese regulations as a result of enterprises actively working on energy savings, pushed by the national industrial policy of energy saving and consumption reduction[3]. The energy services sector has a large potential growth area since it is driven by the internal force of the market. The energy-saving service industry has been steadily acknowledged and recognized by the market as a professional and effective market-oriented approach to energy services. This has allowed the industry to grow quickly, and the market size has been sustaining stable development.

The energy service sector has grown quickly and has promising market prospects thanks to national laws that encourage energy conservation and environmental preservation. Due to the expanding market size in recent years,

private money has also started to enter the energy services sector, raising the number of businesses in China's energy-saving service sector. As of the end of 2021, there were 8,725 national energy service companies, with 841,000 employees, a total output value of 606.9 billion yuan, and 134.8 billion yuan in 2021 invested in contract energy management projects, resulting in an annual energy-saving capacity of 43.69 million tons of standard coal, according to China Energy Conservation Association Energy Conservation Service Industry Committee (EMCA) incomplete statistics.

According to the date of establishment, there were 767 energy service companies established in 2005 or earlier, making up 9% of the total; 1,325 companies were founded between 2006 and 2010, making up 15% of the total; 2,588 companies were founded between 2011 and 2015, making up 30% of the total; and 2,326 companies were founded between 2016 and 2021, making up 46% of the total.

In terms of geographical distribution, Beijing, Shandong, Jiangsu, Guangdong, and Shanghai are the five provinces/municipalities with the most energy service companies, with 890, 840, 832, 636, and 574 companies, respectively. In Ningxia, Qinghai, and Tibet, there are less energy service businesses. The region with the most energy service companies is East China, which has 3,570 companies and accounts for 41% of the total, followed by North China, which has 1,844 companies and accounts for 21% of the total, and Northwest China, which has fewer. This is due to the combined effect of China's policy, economic, natural, and social factors.

In terms of distribution sectors, EMCA sampled 1,419 new Energy Performance Contracting projects for 2020–2021, of which 142 (ten percent) were in the utility sector, 554 (39 percent) were in the industrial sector, 723 (51 percent) were in the building sector, and 554 (39 percent) were in the industrial sector. Construction projects increased even more, reaching over 50% for the first time.

3. Bottlenecks and Barriers to The Development of The Energy Service Industry

3.1. Technical obstacles: The lack of a set of scientific and objective standards for evaluating energy-saving effects

The fundamental issue now facing the energy service sector is the difficulty in coming to an agreement with energy-consuming firms about the calculation of the final energy-saving effect and the distribution of the benefits, and occasionally there is a power struggle over the energy-saving effect. The reason for this is that, on the one hand, it is challenging to quantify the benefits of saving energy, and there aren't any criteria for systematically evaluating those benefits once the project is implemented, which limits the growth of Energy Performance Contracting. On the other hand, China's energy service providers have struggled with a lack of early-stage expertise[4]. Energy-using businesses may have doubts about the viability of energy-saving initiatives since certain energy service providers lack the necessary technical sophistication or depth of understanding of energy-saving solutions. Along with raising concerns about how it would affect an organization's regular operations, China is

also implementing the Energy Performance Contracting method at this time due to the problem's pervasiveness and the pressing need to find a solution.

3.2. Policy barriers: The lack of strong incentive policies is not conducive to mobilizing the enthusiasm of enterprises

China's incentive program for energy conservation in industry is currently ineffective, primarily because energy waste or low energy utilization by businesses and behaviors are not sufficiently penalized. This is because the actual effect of energy conservation is not combined with benefits for environmental protection and energy conservation. The majority of other enterprises, or because energy is not accounted for in the cost of the product in a very high way, lack the enthusiasm for energy saving. Only a small number of high energy-consuming enterprises can realize that from the cost savings to reduce the consumption of energy, energy saving, and consumption reduction has a certain understanding.

3.3. Financial obstacles: Single means of financing and weak credit guarantee mechanism

3.3.1. Long project development cycle and single financing channel

The energy service sector is a capital-intensive one, and in Energy Performance Contracting projects, the energy service companies typically cover all of the early costs. However, the energy service sector currently consists primarily of small and medium-sized enterprises, which are scaled down, have a poor credit rating, and have very limited access to financial support. The following are the key financing options for SMEs: First, endogenous funding, where the owner's funds, loans from friends and family, venture capital, and other sources are the key methods. Small and medium-sized businesses in China currently have a relatively straightforward organizational structure, and the majority of their funding comes from borrowing rather than from outside sources. Second, two types of exogenous finance, include direct and indirect financing. Bond financing and equity financing, which refer to the public collecting of funds from society in the form of stocks and bonds as well as the financing of funds through financial leasing to leasing firms, are two aspects of direct financing. Since the majority of private firms in China are tiny and the capital market there began relatively late, it is challenging to meet the country's financial needs. As a result, it is also challenging for the majority of SMEs to secure direct debt funding. The primary source of funding for SMEs is indirect financing, which is characterized by reversibility, short duration, and indirectness. It is challenging to find a basic answer to the issue of challenging loans and financing for businesses in the energy-saving service industry, despite the fact that banking institutions offer lending policies for SMEs.

4. Suggestions and Countermeasures for The Development of The Energy Service Industry

4.1. Improve the government incentive mechanism to effectively promote energy-saving market competition

4.1.1. Improve the financial subsidy policy

The government should expand the assistance and incentive subsidies it provides to energy service providers in order to encourage the growth of the sector. With auxiliary subsidies, the government can assess the project as a whole prior to the commencement of the Energy Performance Contracting project and provide the energy service provider with a set level of financial support, often between 15% and 30% of the project's total cost. This demonstrates the government's strong support and encouragement for the energy service sector, creating a favorable environment for energy conservation, encouraging more businesses to implement energy-saving reforms, and increasing demand for the sector. On the other hand, it can effectively address the issue of China's energy-saving service companies' financial difficulties and, to a certain extent, resolve the issue of difficult financing of energy service companies. Successful large-scale Energy Performance Contracting projects are the main beneficiaries of incentive subsidies, which can be paid out based on the project's overall energy savings.

4.1.2. Increase tax incentives

The government should keep expanding the preferential policies for energy service providers and businesses that make energy-saving equipment, such as providing a certain amount of indirect preferential policies for corporate income tax to help businesses lower the production costs of energy-saving products, in order to promote energy-saving services and products on a larger scale.

4.2. Expand financing channels and improve the comprehensive energy-saving financing service system

4.2.1. Encourage financial institutions to energy-saving service enterprise loans

China's central bank should, on the one hand, step up its "window guidance" initiatives and, through the development of regional lending credit opinions, direct financial institutions to increase credit support for energy saving and environmental protection; on the other hand, it should introduce financial incentives as soon as possible to the energy-saving service industry in order to encourage financing. On the other hand, it is important to implement incentive policies for the energy-saving service sector as soon as possible to encourage financial institutions to give energy-saving service providers the funding they require for their expansion and to assist various financial institutions in their ongoing efforts to create novel, specialized financial products that support contract energy management[5].

4.2.2. Establishment of a special development fund for the energy service industry

We will begin with the bond financing of Energy Performance Contracting projects and the equity financing of Energy Performance Contracting projects in order to accelerate the development of the energy service industry and promote the promotion of energy-saving equipment, with the

goal of sustainable development, and with the operation mode of combining the government and market-oriented investment institutions, while concurrently giving full play to the role of industry associations as aggregators, guides, and platforms. the special fund for industry.

4.2.3. Establishment of a specialized energy project guarantee fund

Setting up a specialized guarantee institution for energy-saving projects and creating and improving the intermediary mechanism for energy-saving financing with a guarantee fund to launch bank loans are more direct and effective for the growth of the energy service industry than the government giving direct financial subsidies to energy service companies. Guarantee payments are split into national and local levels for energy-saving projects. Local guarantee funds are supported by regional finances, whereas national guarantee funds are sponsored by the State Ministry of Finance and are primarily in charge of large-scale Energy Performance Contracting projects.

4.3. Establishment of energy-saving industry standards and evaluation system

To clarify the operational standards of Energy Performance Contracting, create authoritative certification organizations, a certification index system, qualification levels, and assessment and rating procedures. To establish national standards and industry standards for energy-saving services in specific fields, such as access standards, mandatory energy-efficiency standards, energy-saving technology standards, and energy audit standards. The use of third-party service firms to do independent, objective, and authoritative evaluations is advocated in the absence of industry norms.

4.4. Government-led establishment of an information platform to realize the resource-sharing mechanism

The establishment of a public information platform that benefits energy-consuming units, energy service providers, banks, the general public, and other key players is advised to be led by the government. The main goal of the information platform is to create participant-specific databases, facilitate information sharing, lower participant search costs, do away with asymmetric information's effect on transaction costs, and all the while spread relevant information about energy conservation among the general public and raise awareness of the energy service sector.

4.5. Improve relevant laws and regulations to protect the interests of participants

Clear legal rules are a crucial tool for facilitating the industry's development in an orderly and healthy manner. In order to ensure that laws and regulations can be developed for the many project participants to protect the main body, the Energy Performance Contracting program will be identified in the form of legislation as one of the primary ways of energy saving and consumption reduction. Two aspects of legal improvement should be considered: first, the use of legal tools to guarantee that the energy service company's contribution may be properly recovered; and second, the creation of clear laws and regulations on the incentives offered by the Energy Performance Contracting program.

4.6. Encourage business model innovation, cultivate leading energy-saving service enterprises

The overall strength of China's energy service companies is weak because they are still in the growing phase. The government should support legislation that focuses on the formation of several significant energy service corporations in order to stimulate the energy service industry to growth as soon as possible. Large energy service companies are given priority when it comes to receiving government funding in order for them to develop into leading businesses with comprehensive and cutting-edge energy technology and solid financial standing, taking the lead in the energy-saving services sector and promoting the growth of small and medium-sized businesses. Additionally, it can speed up the survival of the fittest, integrate resource advantages, and encourage mergers and acquisitions in the energy-saving sector. It can also put more of an emphasis on cultivating and assisting enterprises that are more powerful and have the potential to grow within the current energy-saving service companies.

5. Conclusions

This study contends that China's energy-saving service business is now experiencing a number of issues, including technological challenges, financial issues, and a lack of adequate policy support, by assessing the current growth status of the sector. However, by developing pertinent rules and enacting a number of measures, the healthy growth of the energy-saving service industry can be further encouraged. The government can take the lead in creating an information platform and a resource-sharing mechanism to encourage information exchange and sharing within the industry to further improve the industry's efficiency and competitiveness. The government can also take the lead in improving the pertinent laws and regulations to protect the rights and interests of the participants and to improve the incentive mechanism in order to promote competition in the energy

market. Second, it is essential to expand the financing options for the energy-saving service sector, create a reliable system for integrated financial and energy-saving services, and create an evaluation index system. These steps will help to guarantee the high quality of energy-saving goods and services and raise the sector's overall standing. Last but not least, it is important to actively cultivate and develop leading energy-saving service enterprises, encourage businesses to increase their R&D spending, nurture professional talent, support the development of innovative business models, and establish a number of influential energy-saving service enterprises to guide the industry's growth.

In conclusion, improving government incentives, expanding financing options, developing standards and evaluation systems, creating a government-led information platform, enhancing laws and regulations, encouraging business model innovation, and creating leading enterprises are just a few suggestions and actions that can help advance the growth of the energy-saving service industry, increase resource utilization efficiency, and improve public policy.

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