

# Discussion on Motivation Mechanism of Energy Saving and Emission Reduction in Petroleum Enterprises

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**Abstract:** Petroleum industry will swift from extensive production to the resource-saving and environment-friendly production. It is necessary for oil enterprises to pay more attention on energy saving and emission reduction strategy, as well as the development of low-carbon economy, especially to follow sustainable development. This article explores the construction of motivation mechanism in petroleum companies, after which analyzed driving force and motive factors. According to the actual operation of energy saving and emission reduction in oil companies, some countermeasures are put forward.

**Keywords:** Petroleum enterprise; Energy saving and emission reduction; Motivation mechanism

## 1. Introduction

Reducing energy consumption per unit of GDP and carbon emission, is advocated to assist petroleum and chemical industry to swift from extensive production to the resource-saving and environment-friendly production. Petroleum enterprises are not only the main energy producers, but also the important consumers, seriously they are severe pollution. Petroleum enterprises on one hand pursue production and the economic efficiency, on the other hand is also facing the pressure to contribute to energy saving and emission reduction. However, it is not an actual internal demand for oil enterprises to obey the strategy of energy saving and emission reduction. Insufficient enthusiasm, inefficient implement of the energy saving policy, lack of motivation of energy saving management are common to see.

A number of scholars have concentrated on linkage between management theories of energy saving and emission reduction and practical implement, especially in the aspect of energy saving technologies, approves, policy and operating mechanism. In addition, typical researches on motivation mechanism, such as low-carbon economy, recycling economy, green technical innovation and ecology responsibilities have been done. Nonetheless, we explore to combine energy saving and emission reduction and theory on motive mechanism.

It is a tough obligation for petroleum enterprises to implement energy saving and emission reduction strategy, it involves in resources exploration and development, gathering and transportation, refining and so on. System theory principle points out that any system, whose operation and development evolution are good, must get enough dynamic and scientific motive mechanism.

Therefore, we must take a closer look at dynamic factors and motive mechanism.

## 2. Driving Force of Energy Saving and Emission Reduction in Petroleum Enterprises

### 2.1. The drive of economic interest

Aimed at profit, a company chooses the best in energy saving and pollution controlling to generate the most economic benefit. It is the pursuit of benefit maximization that urges a corporation neither to be greedy nor to save energy and reduce emission. The key to adhere to energy saving and emission reduction lies in the drive of economic interest. Only it benefits a company under marketing pressure does the internal dynamic of energy saving and emission reduction come into being.

### 2.2. Social approval

Petroleum enterprises produce and consume quantity of energy, so they have a great effect on society, in turns, social approval plays a significant role in the development of an oil company. Excellent social reputation and approval contribute to establish good social image among the public, then strengthen the company itself. With the rapid development of Chinese economy and the living standards sharply improved recently, the requirements of the quality of living environment increases year by year. However, Worsening ecological environment has been hard to stand. In this circumstance, the promotion by the Petroleum Association and Energy saving Associations, as well as the expectation from the public, have been the external power for petroleum enterprises to practice energy saving and emission reduction strategy.

### 2.3. The policy of the government incentives

It is necessary for oil companies to be guided and inspired by the government, so our government has established a series of incentive policies, such as petroleum resources accounting policy, Green tax policy, petroleum tax policy and so on privileges, in order to drive the implement of energy saving and emission reduction,. What have been done is to arouse both the enthusiasm and proactivity of the development of low consumption and low pollution.

## 3. Motivation Mechanism Factors of Energy Saving and Emission Reduction in Petroleum Enterprises

Motivation mechanism refers to the function principle and conduction process of the whole powers during the development, and the essence is the internal relationship of things development.

Discussion on motivation mechanism of petroleum enterprise based on energy saving and emission reduction focus on the internal linkage and interrelationship of related factors. Low carbon industry clusters consist of essential power, external power and internal power. This article supports the viewpoint that dynamic factors of energy saving and emission reduction in oil companies comprise essential element, external element and internal element.

### 3.1. Fundamental element: sustainable development

With the contradiction between resources shortage and economic growth, as well as the contradiction between environmental protection and the enterprise profitability requirements, sustainable development emerges as the time requires. It is the principle of sustainable development that the effective utilization of resources and long-term use of energy, as well as the long-term carrying capacity of the environment, should be seriously considered even in the economic development period. It means the harmony between human development and environment protection, so does between contemporary and future generations. Energy saving and emission reduction is based on sustainable development.

### 3.2. External factors

National policy: One of the most significant external dynamic factors is the policies, which guide energy saving and emission reduction and are established by government. The government allocates the task and responsibility on energy saving and emission reduction in petroleum enterprises, by means of administrative and legal approaches. It turns out that petroleum companies regard energy saving and emission reduction as an own duty. Moreover, companies promote and supervise the related works by other administrative rewards and punishment.

For example, the regulation sets the more pollution, the higher tax. As we all know that the higher tax increases the cost, in turns, urging companies to decrease pollution. Relevant petroleum industry associations: In China, relevant petroleum associations also play important roles in the work of energy saving and emission reduction. China petroleum associations, whose foundation is to assist modernization of management during reforming and opening, put forward "Three Election", which refers to election of innovation achievements, excellent paper and works. "Three election" will motivate the management of energy saving and emission reduction.

Technical advance: Technical progress is the base allowing human beings from the industrial civilization to the green civilization, and is also the strong driving force for recycling economy. Because of advanced technology, then processes are improved and reconstructed, then company and industry layout are distributed to improve efficiency of resource utilization, reduce emissions and its pollution to the environment. If a company's technical standard of energy saving and emission reduction is low, its cost is higher. In order to maintain the investment returns, the company will keep the model of energy production. In addition, low technology means low recovery rate and possible secondary pollution. So the technical progress is an important factor.

The market demand and competition: As we china's socialist marketing economy is taking a giant leap, the market demand has been the essential element of promoting the work of energy saving and emission reduction in petroleum enterprises. The price, which is also called "the invisible hand in marketing economy", has become the core index for all entities, including petroleum enterprises, when making decisions of a project. Generally speaking, the market price of the consumed energy influences a company's choice of saving or consuming energy development model.

Moreover, the competition is also the driver of marketing economy. During the globalization of economy, there are domestic competitors and oversea competitors. Outstanding company should consider taking advantage of management skills and technology innovation in long terms. The practice of energy saving and emission reduction will contribute to sustainable development. So we conclude that market competition is one of the significant elements of low energy consuming.

### 3.3. Internal factors

Entrepreneurship: Entrepreneurship refers to the pioneering spirit of the enterprise managers which is aroused and driven by inner psychological motivation of desiring for new things, aspiration for change and the pursuit of achievement. The reason that entrepreneurship becomes one of the most important internal factors of the energy conservation and emission reduction in petroleum corpo-

rations is enterprise managers are the highest corporate decision-makers in every major work of the companies, and they are the strong promoters of the corporate management and technological innovation in the companies. Therefore their attitude towards the energy conservation and emission reduction in petroleum corporations is extremely important. Only those entrepreneurs who have a strategic insight of sustainable development and consider their business development from a long-term perspective are able to be truly and positively engaged in energy conservation and emission reduction in their corporations. Thus the economic model of the petroleum corporations can be changed into the low-energy, low-pollution ones by business management and technological innovation.

**Internal driving force:** In inner part of the petroleum enterprises, a systematic and scientific internal motivation mechanism will be guarantee to a system that make petroleum enterprises carry out the work of energy conservation and emission reduction, conscientiously implement the sustainable development strategy and be bigger and stronger. The internal motivation mechanism of energy conservation and emission reduction in petroleum enterprises is divided into incentive system and punishment system. The managers and staff who make a positive contribution to the work of energy conservation and emission reduction should be given by an appropriate reward. And also the managers and staff who make a negative impact on the work of energy conservation and emission reduction should be given a certain degree of punishment. The combinational system of rewards and punishments will better be able to arouse the internal staff's enthusiasm and stimulate their ongoing passion for work innovation in order to make a good mass base for the energy conservation and emission reduction in petroleum enterprises.

**The quality of staff:** Employees in the enterprise are the basic individual units, and they also constitute the main force of the entire enterprise, the basic quality of staff determines the overall quality and ability of enterprises. Staff quality includes knowledge and skills quality, ideological and moral quality. Both qualities are interrelated and restricted with each other, but the ideological and moral quality holds a more important position in development of enterprise business. It is Employees' fundamental quality of the values, moral values, sense of belonging to the enterprise, the identity of the corporate culture and thinking and understanding of management and technical innovation, etc. that have a crucial role in the success of the enterprise carrying out energy conservation and emission reduction work and going to the path of sustainable development. Consequently, the quality of staff becomes an important internal factor of promoting enterprise energy conservation and emission reduction in enterprises.

#### **4. Building of the Motivation Mechanism of Energy Conservation and Emission Reduction in Petroleum Enterprises**

It is a systematic, complicated and long-term project to build a motivation mechanism of energy conservation and emission reduction in petroleum enterprises. The motivation mechanism is constituted with the synergistic effect of the fundamental driving force, internal power and external power. The development of energy conservation and emission reduction in petroleum enterprises is greatly promoted by the nonlinear and dynamic nature of motivation mechanism system. The general idea of building the mechanism is to let the fundamental driving force be the oriental force, the internal driving force be the leading force, the external driving force be the assistant force, and lay greater stress on incentive policies, the innovation of institutions and energy conservation and emission reduction technology in order to regulate and optimize the dynamic system of energy conservation and emission reduction in petroleum enterprises. According to this idea, the building of energy conservation and emission reduction in petroleum enterprises in this paper is shown in Figure 1.

In this figure, we can see the fundamental driving force, external driving force and internal driving force in the three factors of motivation mechanism in the enterprises are interrelated with each other and jointly promote the continuous development of the whole Motivation mechanism. On the one hand, sustainable development is a fundamental driving force in implementing the Motivation mechanism of energy conservation and emission reduction. It plays a central role in the development of motivation mechanism in the enterprises. On the other hand, as two important factors based on the fundamental driving force, external driving factors and internal driving factors is restricted by the promotion function of the fundamental driving force. At the same time both factors complement each other and stimulate the Motivation mechanism of enterprises to progress under the coordination of the fundamental driving force. In this process, the internal driving factor plays a leading role, while the external driving factor plays a assistant role.

Sustainable development for the oil companies to carry out energy conservation ideas provided on the power, and provides the direction and scope of its development, and energy conservation is important for sustainable development theory and implementation of carrier forms.

Sustainable development provides ideological power in the implement of energy conservation and emission reduction in petroleum enterprises, and regulates the direction and scope of its development. Also energy conservation and emission reduction is the carrier form of sustainable development theory.

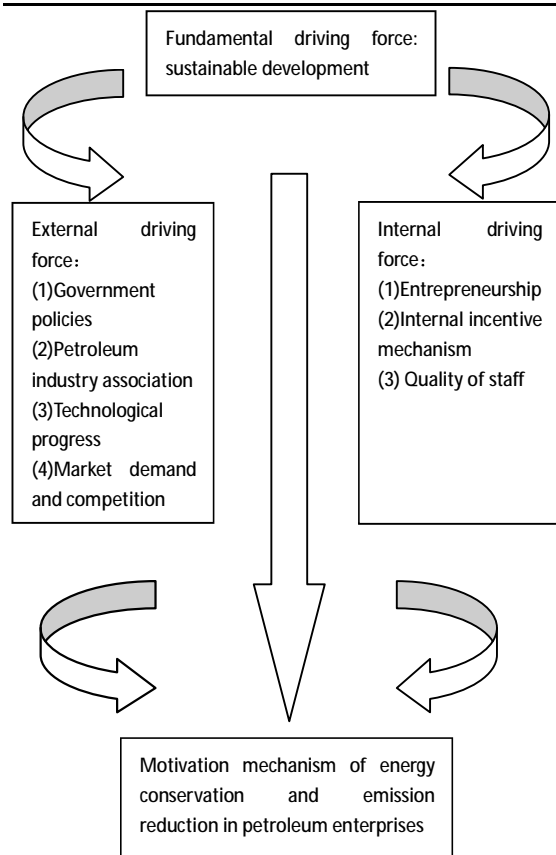


Figure 1. Diagram of motivation mechanism of energy conservation in petroleum enterprises

### 5. Strategy of the Motivation Mechanism of Energy Conservation and Emission Reduction in Petroleum Enterprises

Multi-institutional support should be focused on to make joint forces of government policies. Government incentives for petroleum enterprises should focus on assessing the effects of policies. And it should change from individual policies supporting to multi-institutional supporting. In the same time the guidance function of government policies, financial and taxation policies, etc. which can promote energy conservation and emission reduction in petroleum enterprises should also be considered. Only paying much attention to multi-faceted institutional support and make joint forces of government policies can we regulate and direct the petroleum enterprises more efficiently.

The positive role of industry associations and other social organizations should be fully played in the petroleum enterprises. Based upon the consideration towards the specific circumstances of energy consumption and emissions in oil companies, we should fully mobilize the in-

itiative of the industry associations and other social organizations in energy conservation and emission reduction field. Also guide them to play supervisory role and service role in the petroleum industry use of resources and energy saving activities, to collect the latest information within the petroleum industry and developed countries, to make clear of the optimized technology and standards of material and energy consumption in the industry in order to provide necessary information support and training.

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More efforts should be made to improve the enterprises' management and technical competence, to strengthen the innovation of works, to build the corporate culture which pays much attention to management and technological innovation. Only by strengthening the management and technological innovation can petroleum enterprises be truly taken to the road of development of energy conservation and emission reduction. At present, Chinese petroleum enterprises should attach much importance to management and technological innovation, increase capital investment on the management and technological innovation, and build the corporate culture which pays much attention to management and technological innovation, consistently guide and train employees for management and technological innovation, establish the corporate values of "regard innovation as our life" in order to build solid material and ideological base for energy conservation and emission reduction in petroleum enterprises.

The enterprise managers should keep pursuing of innovative entrepreneurship, leading the company's staff continues to improve the work of energy conservation and emission reduction in the petroleum enterprises. In respect of energy conservation and emission reduction, the managers and leaders of petroleum enterprises should all have and maintain the entrepreneurship that has a desire to making innovation and pursuing innovation. At the same time, they can direct subordinate managers make relevant strategies and keep making innovations of management and technology, promoting the sustainable development of petroleum enterprises based on the change

of policies and markets to exactly adjust its strategies of energy conservation and emission reduction.

Establish a systematic and scientific Motivation mechanism of internal energy conservation and emission reduction in the enterprises which regards reward as leading role and punishment as supplement. For existing internal Motivation mechanism, they should revise and improve it according to the actual situation of the enterprises themselves. Motivation mechanism should be improved in the perspective of mainly arousing the internal staff's enthusiasm of taking effort on energy conservation and emission reduction, supplemented by internal staff supervision. Thus it will considerably enhance the overall initiative of creation in the enterprises and promoting the business continued to be carried out.

In the long run, China accelerate the change speed of the development and the traditional mode of economic growth confronts new challenges. The trend of resource and environmental constraints will still exist, and it is a long way to achieve the goal of sustainable economic development mode in China. As the backbone in the trend of energy conservation and sustainable development, petroleum enterprises have to further understand development trend of the times, strengthen a sense of urgency and responsibility, have a clear viewpoint in

direction, objectives, priorities and measures of sustainable development in the enterprises according to their own conditions and make it well-organized and implemented.

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### **References**

- [1] Sun Zhongying. Research on Establishing a long-term mechanism of energy conservation[J]. *Frontier*.2010(3): 103-104.
- [2] Yang Daixin. The Study on the Path of Developing Circular Economy and Dynamical Mechanism[J]. *Economic Review*, 2008(05):36-37.
- [3] Wu Xiaobo, Zhao Guanghua. Discussion on the Motivation mechanism of Low-Carbon Industrial Clusters[J]. *Economic Theory and Economic Management*.2010(8):15-17.
- [4] Yuan Biao, Chen Xuemei. Discussion on the Motivation mechanism of the Industrial Ecology[J]. *Changbai Journal*.2009(5):99-100.
- [5] Qiao Yanqing. Discussion on the Motivation mechanism of Cycle Economic Development [J]. *Theory discussion*.2007(5):82.