Comparative Analysis on Sustainable Development between Chinese and Foreign Petroleum Corporations

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Abstract Implementation of Sustainable Development Strategy is the scientific method to resolve the increasing contradictions of resource, environment and society. Sustainable development of enterprise is the harmonization and unification among economy, society and environment. This paper analyzes the characteristics of sustainable development and finds out the existed gap based on CNPC and Shell, reference to the sustainable development of china petroleum companies.

Key words Sustainable development, Petroleum Corporation, Economy, Society, Environment

1 Introduction

Sustainable development is the times theme of world petroleum company in 21centary. Sustainable development of oil giants not only consider the present profit and market share but also consider the increase of the long-term profit and market share. And present development can't be at the cost of long-term development and should consider the nature, source environment and society which enterprise’s development must be depended on. Handling all kinds of complicated contradictions and relationships are the base of accomplishing comprehensive, harmonious and sustainable development.

The comparative deficiency of China's Oil & Gas Resources and the difficulty of the increase of Oil & Gas reserves; main force oilfields entered into dependable crop later stage, the heavy of new area's production task; Petroleum Gap of Supply and Demand increased and the dependence degree of import enhanced. This is the serious challenge of china’s oil giant’s sustainable development. However, China's position becomes more important in international community and china's foreign policy of peace becomes more popular around the world, which offer an opportunity for china’s oil giant's transnational operation; otherwise, china’s petroleum sci-tech staff are not only acquainted with the advanced oil geological theory but also grasped the technology of high difficult oil exploration and development, and accomplished many scientific researches. CNPC, SINOPEC and CNOOC are provided with international competitive ability, and laid the foundation of china petroleum enterprise's sustainable development.

Under the background of opportunities and challenges, accomplishing comprehensive and harmonious sustainable development is the inevitable choice of china’s oil giants which will set up first-class socialism modernization enterprise and will build up international competitiveness of enterprises; And which is the inevitable need of china’s oil giants improve company value; And which is the necessary choice of china’s oil giants which fulfill responsibilities of economy, society and environment.

2 Successful experience of transnational petroleum corporations

International companies have some common features in the aspect of sustainable development besides reinforcing company sustainable strategy management, implementing company's upstream-downstream integration, cultivating the core business, core ability and core competitive advantages.

2.1 Having a common understanding of sustainable development

International corporate believes sustainable development not only includes company's economy sustainable development but also includes society and environment development. Under the pursuit of economy grown, International corporate also takes the responsibilities of society and environment.
2.2 Establishing a evaluation index system of sustainable development

Although foreign companies can't establish a standard sustainable development indicator system, most of them have own evaluation index system, and make a description from the view of economy, society and environment. The main indexes include environment fee, social invention, quantity of CO\textsubscript{2} and other poisonous gas, solids waste and so on.

2.3 From the view of global market, to optimize the core business, to produce clean products and to improve environment

From the view of global market, all foreign petroleum companies integrate the world resources, try their best to develop their core business, improve their core ability and competitive force. Otherwise, all petroleum companies pay attention to develop new business. For example, Shell and BP input much capital on the exploitation of solar energy and gas generation power plants, and obtaining a good performance.

2.4 Emphasis on clean production and energy conservation, production of clean products and continuous improvement of the environment

Foreign Petroleum Companies pay much attention to the clean, safety and environmental protection of whole-process; striving to realize zero-discharge of harmful waste gas, waste water and waste material. Meanwhile, depending on sci & tech advancement to finish energy saving & consumption cut-down. For example, Shell has a zero heavy accident in the past years, and has an obvious decrease of crude oil leakage, emission of CO\textsubscript{2} and nitrogen oxides.

2.5 concerns over social affairs to set up the images of “green company” and “responsible company”

World petroleum companies pay attention to the imagine construction and input certain capital to support community construction and act of charity. And world Petroleum Company pay much attention to respect culture customs of local country and abide by “human right joint declaration” and “resource principle of safety and human right”. Otherwise, World Petroleum Company not only publicizes their operation results but also publicizes their examples of pay attention to environment and social progression to set up the images of “green company” and “responsible company”.

3 Comparison of sustainable development status between china and foreign petroleum corporation

3.1 economy index of sustainable development ability
Oil-gas reserve is an important factor of implementing sustainable development of all petroleum companies. Obviously, China's three oil giants have a competitive advantage in oil-gas reserves. Recent years, China's three oil giants gradually extrude the important status of oil exploration and deepen the
cognition of resources potential, and achieving a series of breakthroughs. CNPC got the top and exceeded the Exxon fist time in 2004, and the remaining recoverable reserve of nature gas ranks No 3 just not further than Exxon and BP.

Resource potential of China's three oil giants increases gradually and keeps a good trend, and has an absolute advantage in the reserve-production ratio and reserve replacement ratio. Take CNPC for example, both reserve-production ratio and reserve replacement ratio ranked among the first. Perhaps two reasons can explain the reserves decrease of five foreign petroleum companies, firstly, new oil-gas reserve drop greatly; secondly, the change of reserve measure criteria. China's three oil giants have certain advantage in reserve-production ratio and reserve replacement ratio.

### 3.2 environment and society index of sustainable development ability

This part takes the criteria of environment and society of CNPC and Shell from 2002 to 2006 for example, making a comparison of sustainable development status of environment and society of china and foreign oil company.

CNPC implements sustainable development policies and strongly promotes the concept of “clean production” to be its long-term policy. In the process of maximizing economic returns and expanding its scope of business, CNPC has gradually formulated its mission as “Conscientious of environment and society to create a harmonic relationship between energy and environment”. Although CNPC has not formed a set of criteria system of sustainable development, CNPC fully implemented a Health, Safety, and Environment (HSE) management system in 2003 through strict footing in line with “Clean Production Promotion Law of the People's Republic of China”. In order to do so, CNPC invested a large mount of capital to improve its environment related problems to enforce the implementation of “Green Operation Crews Demonstration”.

### Table 2  Comparison of Environment and Society of Sustainable Development Between CNPC and Shell

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy use per GDP (tons of standard coal /ten thousand GDP)</td>
<td>2.50</td>
<td>2.15</td>
<td>1.72</td>
<td>1.52</td>
<td>1.40</td>
</tr>
<tr>
<td>Fresh water use per GDP (ton/ ten thousand GDP)</td>
<td>60</td>
<td>47</td>
<td>35</td>
<td>28</td>
<td>25</td>
</tr>
<tr>
<td>Emission of petroleum in wastewater (ton)</td>
<td>3062</td>
<td>2033</td>
<td>1924</td>
<td>1467</td>
<td>1399</td>
</tr>
<tr>
<td>Chemical oxygen demand of wastewater (ton)</td>
<td>34420</td>
<td>33085</td>
<td>32513</td>
<td>30230</td>
<td>28600</td>
</tr>
<tr>
<td>Energy-saving(tons of standard coal)</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>150</td>
</tr>
</tbody>
</table>
We can see from the table 2 that CNPC got a great achievement in the aspect of environment and society. There has been an improvement in energy use per GDP, fresh water use per GDP, emission of petroleum in wastewater, COD and energy-saving and so on. Otherwise, has made a progress in accident quantity and major casualty accidents rate, and added up the public interest investment in 2006.

All sustainable development targets include financial indicate of Shell are showed on the table. With the improvement of financial indicates, the social development indicates and environmental development indicates developed have a good sustainability. Otherwise, along with the enterprise scale gradual expansion, although some total indicators fluctuate, the unit indicator of corresponding indicators has an obvious improvement.

### 3.3 conclusions

Chinese major petroleum companies have some comparative advantages on oil-gas reserves, reserve-production ratio and substitution ratio, CNPC comes out top in many indexes as an example. From the environmental angle of sustainable development, Chinese petroleum companies improve gradually on resources utilization ratio and water reuse efficiency, but their resources utilization and environment protection technology are behind the advanced world level, total amount of waste and pollution emission is still high.

Compared with Chinese petroleum companies lacking of a index system of sustainable development, the international petroleum companies generally emphasize clean manufacture and energy consumption; develop the business of clean, recycling and alternative energy; encourage public participation on the basis of human; and positively pay attention to social affairs and to internal and external uniform. Therefore, Chinese petroleum companies put forward the enterprise ideas of energy creation and environment harmony, and emphasize coordinative development about society, environment and economic, but have a big gap with the international petroleum companies.

Environmental protection legislation in western developed countries is rather perfect and their environment protection organizations are powerful, both make western petroleum companies emphasize environment protection, recover the environment in and near abandoned oil and gas fields, purify the three industrial wastes and reduce greenhouse gas emission according to Kyoto Protocol taken by them. It is a tendency to input much money for Chinese petroleum companies as the demands about environment protection increase which is ignored all the way in china.
4 Recommendations on sustainable development of Chinese petroleum companies

4.1 setting up the innovation consciousness

Competition power lie basically on advancement of scientific technology, and innovation is source and motive force of improvement of modern companies. Position in the international competition of the companies is decided by technologic advantage. Science and technology innovation capability construction is of great importance in sustainable development of Chinese petroleum companies. At present, Chinese petroleum companies start assets reorganization, implement the strategy of large-sized company, and build modern industrial system. The companies will enhance productive capacity, motivate the innovation enthusiasm of the staff, reduce operation cost, develop the potentiality, and increase competitive ability through the innovation of system.

4.2 setting up the global consciousness

The prominent problems about Chinese petroleum companies are that the strength of “going out”, the power of exploiting international market, and the ability of using international resource are too weak. Therefore, Chinese petroleum companies who have the global consciousness must adapt the condition of economy globalization, adjust the management strategy, innovate enterprise management concept, and enhance international management strategy about organization and operation mode in order to achieving sustainable development.

Chinese petroleum companies should get oil and gas resources or investment and development shares of oil fields in oil resource countries consciously as a cooperation condition about importing oil and gas. The global production activities widen production and operation space, open international market, and internationalize production, organization and technology, furthermore, deepen social division of labor, reduce production cost, enhance efficiency of resource allocation and international competitiveness of production. Utilization of intelligence resources and R&D force in the world, Chinese petroleum companies can cooperate with other multinational companies and research institutions, and share intellectual properties.

4.3 setting up the environmental consciousness

Implementing sustainable development strategy not only provides safeguards for existence and development of ourselves and our descendents but also develops economy maximally on the base of full utilization of natural resources. As the idea of “green consumption” lifting, non pollution and low pollution products have been attracted attention; furthermore, competitive ability of companies has been influenced by environment protection in the international market.

Chinese companies whose environment protection consciousness is entirely worse ignore building environment protection system; therefore their products have no competitive ability in the countries with strong environment protection consciousness and building normative environmental labeling system. It is the responsibility for environment and society that core competition force of sustainable development. Chinese petroleum companies must change from “rough type” into “intensified type”, attention environment protection, strengthen environment and ecologic consciousness of petroleum companies, improve environment protection quality, and reinforce competitive ability in the international market in order to their sustainable development.

4.4 setting up the social responsibility consciousness

There is emerging an increasing worldwide recognition of corporate social responsibility. Besides their big part in employment, profitability and tax revenue contribution, businesses are expected to play a bigger role in and to take greater responsibilities for social progress, environmental and ecological protection, market order maintenance, more help to the disadvantaged, greater involvement in community development and better protection of employees' rights and interests. The multinational corporations have taken decisive steps and gone a long way in fulfilling their corporate social responsibility, an example the domestic businesses are expected much by the government and the public to follow.

As the backbone of the entire national economy, Chinese petroleum companies should fix their eyes upon the big picture, playing a bigger role in fulfilling their social responsibilities as “well qualified corporate citizens” while continuing delivering their economic and political ones.
References


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