Research on Environmental Performance Responsibility and Governance Countermeasures of Chinese Enterprises

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Abstract. In recent years, corporate environmental protection issues have become increasingly prominent. In order to study the performance of environmental protection responsibilities of Chinese enterprises, and analyze the existing problems, the author collected a large amount of corporate environmental protection data from the Ministry of Ecology and Environment of the People's Republic of China and the National Bureau of Statistics, and downloaded the 2018 annual social responsibility reports published by 200 enterprises for empirical research. The analysis shows that the overall development trend of environmental protection in Chinese enterprises is good, but there are still many problems, especially the urgent need to improve the ability of environmental governance, the unwillingness of enterprises to invest in environmental protection, the lack of transparency of environmental information, and the imperfection of internal environmental protection and Governance system. The author gives relevant suggestions from three aspects: strengthening the construction of laws and systems related to environmental protection of enterprises, improving the internal environmental protection governance system, and strengthening supervision of corporate environmental responsibility.

1. Introduction
Over the years in China, unreasonable development methods have lead to huge environmental costs. Problems such as air, water, solid waste, radiation pollution, resource depletion, and ecological destruction have arisen endlessly. To this end, the Chinese government has vigorously strengthened corporate environmental protection governance. On June 2, 2015, the General Administration of Quality Supervision, Inspection and Quarantine and the National Standards Commission jointly issued a series of national standards for social responsibility. The "Social Responsibility Guide" in the series of standards lists several major social responsibilities of enterprises and their requirements, lists "environment" as one of the seven major themes, and gives specific requirements.

Pollution is a by-product that enterprises generally produce in the course of production and operation. With the introduction of a series of environmental protection policies and measures by the party and the state, corporate environmental responsibility has become an increasingly hot topic. Studying corporate environmental protection issues, taking measures to promote corporate governance, better solving corporate pollution problems, is conducive to promoting the balance between economy and ecology and sustainable development of society, creating a more harmonious and beautiful living environment for human beings.
2. Development trends and problems of environmental protection in Chinese enterprises

Table 1. Chinese industrial enterprises and "three wastes" emissions table, 1999-2010.

| Years | Industrial enterprises (a) | Industrial wastewater (100 million tons) | Industrial waste gas pollutants (10,000 tons) | Industrial solid waste (10,000 tons) |
|-------|---------------------------|------------------------------------------|----------------------------------------------|-------------------------------------|
| 1999  | 162000                    | 197.30                                   | 3588.80                                      | 3881.00                             |
| 2000  | 162885                    | 194.20                                   | 3542.40                                      | 3186.00                             |
| 2001  | 171000                    | 200.70                                   | 3398.40                                      | 2893.80                             |
| 2002  | 182000                    | 207.20                                   | 3307.20                                      | 2635.20                             |
| 2003  | 196000                    | 212.40                                   | 3658.60                                      | 1941.00                             |
| 2004  | 276474                    | 221.10                                   | 3682.70                                      | 1792.00                             |
| 2005  | 271835                    | 243.10                                   | 4028.50                                      | 1654.70                             |
| 2006  | 301961                    | 239.50                                   | 3910.50                                      | 1303.00                             |
| 2007  | 336768                    | 246.50                                   | 3609.80                                      | 782.00                              |
| 2008  | 426113                    | 241.90                                   | 3246.90                                      | 782.00                              |
| 2009  | 434364                    | 234.50                                   | 2993.60                                      | 710.70                              |
| 2010  | 452872                    | 237.50                                   | 2916.30                                      | 498.20                              |

(Source: according to the data of the year of the National Bureau of Statistics and the Ministry of Ecology and Environment's environmental report)

Table 2. Chinese industrial enterprises and "three wastes" emission table, 2011-2014.

| Years | Industrial enterprises (a) | Industrial wastewater pollutants (10,000 tons) | Industrial waste gas pollutants (10,000 tons) | Industrial solid waste (100 million tons) |
|-------|---------------------------|-----------------------------------------------|----------------------------------------------|------------------------------------------|
| 2011  | 325609                    | 383.70                                        | 3746.00                                      | 32.51                                    |
| 2012  | 343769                    | 364.90                                        | 3569.80                                      | 32.90                                    |
| 2013  | 369813                    | 344.10                                        | 3380.90                                      | 32.77                                    |
| 2014  | 377888                    | 334.50                                        | 3145.10                                      | 32.56                                    |

(Source: according to the data of the year of the National Bureau of Statistics and the Ministry of Ecology and Environment's environmental report)

Table 3. Chinese industrial enterprises and wastewater emissions table, 2015-2017.

| Years | Industrial enterprises (a) | Wastewater pollutants (10,000 tons) | Exhaust gas pollutants (100 million tons) |
|-------|---------------------------|------------------------------------|------------------------------------------|
| 2015  | 383148                    | 2453.41                            | 3582.22                                   |
| 2016  | 378599                    | 1188.31                            | 3507.84                                   |
| 2017  | 372729                    | 1161.48                            | 2930.49                                   |

(Source: National Bureau of Statistics of the People's Republic of China)

Because the statistical caliber of the Ministry of Ecology and Environment's Chinese Environmental Status Bulletin has changed in different periods, the data of the Ministry of Ecology and Environment has been integrated into three industrial enterprise and related pollutant tables. And the industrial enterprises (registered) with the most environmental protection relevance are selected as representatives. It should be noted that before 2010, the total industrial waste water emissions were counted, and the industrial waste gas was counted as sulfur dioxide, soot, and dust emissions; the industrial waste water pollutants from 2011 to 2014 were total chemical oxygen demand and total ammonia nitrogen emissions, and the industrial waste gas pollutants were Emissions of sulfur dioxide and nitrogen oxides, solid waste is the amount of production; 2015-2017, wastewater pollutants are the national chemical oxygen demand and the total amount of ammonia nitrogen emissions, and exhaust pollutants are the national sulfur...
dioxide, nitrogen oxides, and dust emissions. From these 19 years of data, we can roughly glimpse the characteristics and development trends of environmental protection in Chinese enterprises.

2.1 The overall development trend of corporate environmental governance is good
The overall environmental protection governance of Chinese enterprises has shown a good development momentum. From 1999 to 2010, the amount of Chinese industrial enterprises increased by average 10.49% per year, the amount of wastewater discharged by industry increased by average 1.76% per year, the total amount of exhaust pollutants decreased by average 1.67% per year, and solid waste decreased by average 16.18% per year; from 2011 to 2014 The average annual increase in the amount of Chinese industrial enterprises is 5.11%, the total amount of wastewater pollutants discharged by industry is reduced by an average of 4.46% per year, the total amount of exhaust pollutants is reduced by an average of 5.65% per year, and the amount of solid waste is increased by an average of 0.05% per year; From 2015 to 2017, the amount of Chinese industrial enterprises decreased by an average of 1.37% per year, the total amount of wastewater pollutants discharged nationwide decreased by 26.91% per year, the total amount of exhaust gas pollutants decreased by 9.27%per year. In 19 years, the amount of enterprises has increased most of the time, while the emissions of various types of pollutants have decreased rapidly. Pollutants have increased in certain periods, but the rate of growth has not been as fast as the increase of enterprises, which indicating that the pollutant emissions of enterprises have been effectively controlled.

2.2 Enterprises urgently need to improve environmental governance capabilities
At present, the pollution of Chinese enterprises is still very serious, which is beyond doubt. From the three tables mentioned above, we can see very intuitively: At present, the amount of Chinese enterprises and the total amount of pollutants are enormous, and the emissions of various pollutants are tens of millions of tons. Therefore, Chinese enterprises still need to improve their environmental governance capabilities. Other scholars have also made similar points: In the 70 years since the founding of New China, industrial enterprises have consumed large amounts of energy such as fossil energy, natural resources, and mineral resources, which has further worsened environmental pollution, damaged the ecological environment, and greatly restricted China. The sustainable development of industry is currently in the important transition from extensive growth to intensive growth [1].

2.3 Some enterprises have low awareness and investment in fulfilling environmental responsibility
In recent years, some studies have pointed out that the environmental protection awareness of Chinese enterprises has been improved, but it must be pointed out that there is a difference between environmental protection awareness and responsibility awareness. The improvement of environmental protection awareness does not mean that the environmental protection responsibility awareness will necessarily increase. At present, some Chinese enterprises' awareness of environmental responsibility is still relatively low. For example, some scholars have pointed out that in recent years, the government has frequently emphasized the importance of environmental protection, but most small and medium-sized enterprises have not integrated environmental protection awareness into their production and operation activities [2].

Some enterprises are unwilling to invest in environmental protection and low environmental protection investment. In order to save costs, a large number of enterprises are unwilling to invest in environmental protection governance. In order to capture more profits, even enterprises with sufficient funds to reduce pollution may not be willing to spend too much on this. For those SMEs with insufficient funds, the possibility of investing in environmental governance is lower [3]. This can also be reflected in the social responsibility report. The analysis found that most enterprises are unwilling to publish the total amount of environmental protection funds, and only 27.50% of the enterprises are willing to publish a clear annual total amount of environmental protection funds in the social responsibility report, as shown in Table 4.

Table 4. Enterprise environmental investment table.
Data on environmental protection inputs

|                | Amount of enterprises | Ratio   |
|----------------|-----------------------|---------|
| Exist          | 55                    | 27.5%   |
| Nix            | 145                   | 72.50%  |

(Source: according to the contents of 200 corporate social responsibility reports)

2.4 Enterprises have insufficient disclosure of environmental protection information

Table 5. Corporate social responsibility report publication statistics table.

| Amount of reports | 5 or less | 5–10 | 10 or more |
|-------------------|-----------|------|------------|
| Amount of enterprises | 85        | 82   | 33         |
| Ratio             | 42.50%    | 41.00% | 16.50%   |

(Source: according to the contents of 200 corporate social responsibility reports)

Table 5 shows the number of CSR reports published by 200 enterprises online. Among them, there are 85 enterprises with a total times of 5 or less, accounting for 42.50%; 82 enterprises with a total times of 5-10, accounting for 41.00%; 33 enterprises with a total times of 10 or more, accounting for 16.50%. It is not difficult to see that the greater the amount of published reports, the fewer such enterprises. For the time being, ignore the impact of the establishment time of the enterprise on the amount of reports issued, the performance of publishing corporate social responsibility reports is not positive enough.

Table 6. Enterprise energy saving/pollution data information statistics table.

| Energy saving/pollution data | Amount of enterprises | Ratio   |
|------------------------------|-----------------------|---------|
| Exist                        | 147                   | 73.50%  |
| Nix                          | 53                    | 26.50%  |

(Source: according to the contents of 200 corporate social responsibility reports)

The statistics of energy-saving data include the economical use of various energy sources and raw materials, such as water, electricity, and minerals. The statistics of sewage discharge data include the three industrial wastes (wastewater, waste gas, and waste residue), as well as quantitative treatment of dust, noise, and greenhouse gases. It was found that although 73.50% of enterprises would publish specific indicators and data on pollutant emissions, 26.50% of enterprises chose not to publish it.

In general, there are still problems in some Chinese enterprises in publishing social responsibility reports and inadequate disclosure of environmental protection information. In response to this phenomenon, on December 28, 2018, the "China Corporate Social Responsibility Report White Paper (2018)" issued by the Corporate Social Responsibility Research Center of the Chinese Academy of Social Sciences stated: "(Chinese Corporate Social Responsibility Report) Two shortcomings are manifested in the fact that many reports do not disclose comparable data in the horizontal and vertical directions, and many other reports are less than 30 pages in length and incomplete."

2.5 Some enterprises lack of independent environmental protection management systems

Some Chinese enterprises lack of independent management mechanism for environmental protection, and only passively accept the management from the government, abide by relevant environmental protection laws and regulations, which reduce environmental protection efficiency. "Because of the problems in the management mechanism of enterprises, the policies and management systems of enterprises on social responsibility issues are still not perfect, which directly leads to blind spots and ignorance of enterprises on environmental responsibility. [4]"

Table 7. Statistics on whether the enterprise has environmental protection departments.

The statistics of environmental protection inputs include the amount of enterprises that exist and do not exist. The ratio of enterprises that exist is 27.5%, and the ratio of enterprises that do not exist is 72.50%.

Table 7 shows the statistics on whether the enterprise has environmental protection departments. The statistics show that 27.5% of enterprises exist, and 72.50% of enterprises do not exist.
### Environmental protection department

| Exist | 89 | 40.50% |
|---|---|---|
| Nix | 119 | 59.50% |

(Source: according to the contents of 200 corporate social responsibility reports)

An analysis of the social responsibility report also found this. During statistics, the environmental protection department refers to the environmental protection management department and environmental protection team specially established by the enterprise. The situation of Personnel from other departments of the enterprise but in charge of environmental protection affairs is not counted. Statistics found that most enterprises did not set up special environmental protection departments, accounting for 59.50% of the total number of enterprises.

3. **Countermeasures for promoting Chinese enterprises to fulfill environmental responsibility**

3.1 **Strengthen the construction of laws and systems related to corporate environmental protection**

First, improve laws and regulations related to environmental protection of enterprises. In September 1979, Chinese government passed the first environmental protection law, the Environmental Protection Law of the People's Republic of China (Trial) [5]. Since then, China has gradually formed a legal system for environmental protection. However, the large amount of environmental laws does not mean that they are adequate. Whether there are special laws for new forms of pollution, whether the legal provisions are suitable for practical needs, and whether environmental protection measures can lead to the expected results. These issues need to be carefully considered by legislative departments and constantly revised to make environmental protection laws become more effective.

Second, establish a mandatory disclosure and review system for corporate environmental protection information. Environmental protection departments should establish a mandatory disclosure system for environmental protection information, make it mandatory for enterprises to publish social responsibility reports, and encourage enterprises to publish more professional environmental reports. The environmental protection department should also establish an environmental protection review system to inspect and review the corporate social responsibility report and environmental report published by the enterprise to determine whether it can meet environmental protection requirements.

3.2 **Improve internal environmental protection governance system**

First, shape the corporate values of environmental operation. The values of an enterprise play a guiding role in its production and operation. It is not only necessary to raise the awareness of environmental protection of enterprises, but also to raise the awareness of responsibility fulfillment of enterprises, and to create a culture of environmental protection management.

Second, improve the internal environmental governance departments. The internal environmental protection governance department of an enterprise includes the establishment of the environmental protection organization of the enterprise, the allocation of powers and responsibilities, and the supervision system. The significance of environmental protection department for corporate environmental protection is like the behavior of body to human. Enterprises with a certain scale should set up a special environmental protection governance department, which is fully responsible for the environmental protection of the enterprise. Only when a enterprise has a sound environmental protection department can it formulate a scientific environmental protection strategy and achieve ideal environmental protection effects.

3.3 **Strengthen supervision of corporate environmental responsibility**

Build up a government-led, socially co-governance system for enterprises in environmental protection. First of all, the government should handle the authority between various functional departments and subordinate departments, allocate management functions well, and fully mobilize the coordination and
cooperation of various departments to play the active role of local, especially law enforcement department. Secondly, the government should guide environmental protection organizations, communities, and the media to participate in the environmental protection governance of enterprises. These environmental protection entities have the characteristics of wide distribution and flexible operation. They are particularly easy to contact with enterprises and have unparalleled advantages in corporate environmental governance.

Improve the incentive and restraint mechanisms under the environmental protection supervision of enterprises. In the social co-governance system, the environmental protection supervision and audit of enterprises should be accompanied by incentive and restraint mechanisms. First of all, the formation of an incentive mechanism under supervision: commendation or various forms of rewards for companies that perform well; punishment for enterprises that perform poorly. Secondly, a restriction mechanism should be formed under supervision. Enterprises that fail to pass environmental protection audits should be ordered to suspend business for rectification, and those that refuse to correct them should be banned to maintain normal corporate environmental protection market order in the form of market access.

4. Conclusion
Generally speaking, there are still many problems for Chinese enterprises to fulfill their environmental social responsibilities, but many enterprises have made great efforts in fulfilling their environmental social responsibilities, so that the environmental protection of Chinese enterprises has continued to develop in a good direction.

Aiming at the problems existing in the implementation of Chinese corporate environmental protection social responsibility, the article gives countermeasures and suggestions in terms of strengthening the construction of laws and systems, improving the internal environmental protection governance system, and strengthening supervision of corporate environmental responsibility. It is believed that through the participation of various parties and the combined effects of various measures, Chinese enterprises will definitely raise their responsibilities to a higher level.

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