Research Article

The Implementation Measures of Environmental Accounting in Heavy Pollution Industry in the Context of Sustainable Development

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Since the 21st century, China’s science and technology and economy have been developing rapidly, but many enterprises are pursuing their economic interests at the expense of the environment. Therefore, research on the implementation of environmental accounting is not only of academic value but also of a practical significance to the implementation of the scientific concept of development and ecological environment. In this paper, we used literature analysis, case study, and fuzzy comprehensive evaluation to analyze the implementation of environmental accounting of “A” joint-stock company as an example and concluded that the problems of environmental information implementation in China are caused by imperfection of national macropolicies and laws and regulations, lack of concrete measures, and low management level, and lack of management concept of enterprises. Therefore, under China’s current policy, further improving the implementation of the internal environmental accounting of enterprises is of constructive significance to promoting ecological civilization and sustainable development.

1. Introduction

In recent decades, China’s economy has been in a stage of rapid development, and the ecological deterioration caused by industrial development has also followed, such as the persistent fog angle phenomenon, serious heavy metal pollution of land, industrial waste water pollution of rivers, and soil desertification. However, as China’s economy has reached a new stage, people are more and more concerned about the ecological development, and the country has begun to implement environmental policies such as sustainable economic development and ecological civilization [1]. Environmental pollution mainly comes from production-based pollution, that is, manufacturing enterprises or agricultural production process of harmful substances emitted into environment: living pollution, transportation pollution, and other sources of pollution. According to the environmental protection department statistics, production-oriented pollutants accounted for 80% [2]. This requires enterprises to pay attention to the environmental protection issues and increase the environmental protection investment. Environmental protection departments should develop more stringent environmental protection policies. At the same time, enterprises are also obliged to implement environmental accounting to public in a timely and adequate manner, which serves as a bridge between internal information and external information of enterprises [3–5]. It plays a very important role for decision makers who use information to judge potential risks and competitive advantages of company based on environmental accounting [6].

The environmental accounting in China happened in recent years, and it is in the initial stage of influence of traditional financial accounting, whether in accounting theory system or mandatory laws and regulations [7]. Environmental accounting is an important part of accounting system, and many accounting scholars have made preliminary exploration on it in these years [8]. However, at present, there is still no mandatory regulation and system for implementation of environmental accounting, and enterprises usually consider
their own favorable factors when implementing information. There are selective behaviors. Implementation of environmental accounting is still very confusing in terms of content and form, and there is a lack of unified regulations, which leads to comparability of accounting information that cannot be fully reflected [9–12]. This is not conducive to users of accounting information to make reasonable guesses and evaluations of potential risks and future development of enterprises [13]. Therefore, it is necessary and essential to discuss current situation of information implementation in heavy pollution industry and analyze problems, to further improve implementation of environmental accounting.

This paper focuses on issues related to implementation of information in heavily polluting enterprises, that is, specific contents and methods of information implementation, as well as the status of contents and methods of information implementation and areas that should be improved. This paper further elaborates the concept of environmental accounting implementation in heavy polluting industries and characteristics of environmental accounting implementation in heavy polluting industries with case study of A JSC. This paper adopts a classification method to explain problems in implementation of environmental accounting of A JSC from perspective of internal and external causes and introduces experience of implementation of environmental accounting in heavily polluted industry in developed countries, such as US and Japan.

In this paper, we used literature analysis, case study, and fuzzy comprehensive evaluation to analyze implementation of environmental accounting of a joint-stock company as an example and concluded that the problems of environmental information implementation in China are caused by imperfection of national macro policies and laws and regulations, lack of concrete measures, and low management level and lack of management concept of enterprises. Therefore, under China’s current policy, further improving the implementation of internal environmental accounting of enterprises is of constructive significance to promoting ecological civilization and sustainable development.

2. Related Studies

The study of environmental accounting began in the 1970s. Represented by two articles published by F. A. Beams in 1971, “The Transformation of the Social Cost of Controlling Pollution” and “The Accounting Problems of Pollution” published by J. T. Marlin in 1973,” the prelude to environmental accounting research was unveiled. Due to prominent environmental problems, accounting theories generally pay attention to research on implementation of information, and a series of related laws and regulations by government agencies of various countries were also introduced. Private organizations also began to issue self-regulatory industry norms, and laws and regulations on implementation of information gradually became perfect [14]. We concluded that to improve the information implementation system and quality of information implementation, it is necessary to increase participation of public, widely publicize environmental protection laws and regulations among public, and report on pollution of environment by enterprises. The composition of the company’s executives and information implemented by the company to the public will affect its own business situation to a greater or lesser extent and even affect survival and development of company. Reference [15] shows that the annual report is an effective way to implement environmental accounting, but the implementation of environmental accounting only in the annual financial report leads to a single implementation vehicle, and the implementation of separate environmental reports is a necessary development of theory and practice. It is considered that there are a series of problems in implementation of environmental accounting in enterprises, including incomplete implementation content, single mode of implementation, and low efficiency of implementation. Reference [16] analyzed social responsibility accounting information in annual reports of listed companies in heavy pollution industry and proposed a view that social responsibility information includes information, and financial reports should contain important information, such as introduction of laws and regulations closely related to environmental protection, introduction of environmental pollution control adopted by enterprises, and countermeasures against environmental risks, and they can be further subdivided [17]. After investigation and research, we believe that companies should mainly report the following information when implementing information: resource compensation fee, resource tax, greening fee, sewage fee, and environmental related certification related to environmental performance information, which is mainly in a monetary form when implementing, and also be annotated in notes to accounting statements [18, 19]. Analyzing a sample of 111 companies in A-share listed companies in heavy pollution industry and analyzing the external factors that affect implementation of environmental accounting, we concluded that the environmental protection department’s financial investment in environmental management, national, and regional economic level can have a positive effect on implementation level of information, but the degree of public awareness of environmental protection has a little effect on implementation level of information. However, the level of public awareness of environmental protection has a little effect on the level of information implementation [20].

3. Environmental Accounting Framework

The environmental accounting standards should be established under auspices of Ministry of Finance, Securities and Futures Commission, and other relevant departments. Experts and scholars should be organized, successful experience of foreign countries should be considered, universal experience should be combined with special ones, principles of operability, foresight, and development should be followed, an environmental accounting standards system should be established (see Figure 1), and an environmental accounting guide should be added.

The governmental platform of environmental accounting (Figure 2) is built, and the information system of environmental performance evaluation of heavy polluting enterprises is established. The environmental performance of enterprises is publicly released and ranked on a regular
basis to accept supervision of public and various stakeholders. We will issue violation reports for all violations and accept supervision of supervisory and law enforcement departments and at same time set high fines and expose their violations through formal channels to increase cost of violations and pressure of public opinion.

“A” was incorporated in 1994 and was successfully listed on “XX” stock exchange in September 2001. It is a large paper company in “XX” province and has performed well in recent years in production of chemical products. The details are shown in Figure 3.

The main nonfinancial information currently involved in the implementation of environmental accounting in company A is environmental. The advantages of technology and implementation of policy and emission of pollutants are shown in Figure 4.

This paper is different from previous studies on implementation index of environmental accounting. In this paper, environmental accounting is divided into financial information and nonfinancial information, and different scores are assigned to government subsidies and construction in progress depending on the number of projects, and it is worth noting that, in Figure 5, the environmental protection and greening costs include environmental protection costs and environmental maintenance costs.

4. Fuzzy Integrated Evaluation Method

The main steps are as follows.

In the first step, the evaluation index system is established, and the weight of each index is calculated using hierarchical analysis to obtain the weight set.
In the second step, the evaluation set of comprehensive evaluation is established, and the evaluation level and corresponding score are clarified.

For example, if \( y \) valid questionnaires are returned, and \( x \) of them evaluate index \( D1 \) as "good," then the affiliation of index \( D1 \) corresponding to the evaluation level "good" is the degree of affiliation as follows:

\[
 r_{ij} = \frac{x}{y} \tag{1}
\]

Step 4: set weights through fuzzy operator "\( O \)\( \omega \) combined with membership matrix \( R \); the evaluation result \( s \) is calculated.

\[
s = \omega o R, \tag{2}
\]

where "\( O \)" refers to the fuzzy operators. At present, there are four commonly used fuzzy operators.

(1) \( M (\wedge, \vee) \)

\[
s_k = \bigvee_{j=1}^{m} \left( \mu_j \wedge r_{jk} \right)
    = \max_{1 \leq j \leq m} \left\{ \min \left( \mu_j, r_{jk} \right) \right\}, \quad k = 1, \ldots, n. \tag{3}
\]

The evaluation result of this operator is determined by factors that play a major role in the evaluation process.

(2) \( M (\cdot, \vee) \)

\[
s_k = \bigvee_{j=1}^{m} \left( \mu_j \cdot r_{jk} \right)
    = \max_{1 \leq j \leq m} \left\{ \min \left( \mu_j, r_{jk} \right) \right\}, \quad k = 1, \ldots, n. \tag{4}
\]

And \( M (\wedge, \vee) \). There are certain similarities, but the calculation process is more comprehensive, and the results are more accurate. It not only highlights the
Figure 4: Current situation of environmental accounting nonfinancial information disclosure of a joint stock company.

Figure 5: Scoring standards for environmental accounting information disclosure.
main factors but also considers the impact of other factors. This operator is applicable to $M(\wedge, \vee)$ situations that cannot be identified and require more accurate and comprehensive results.

(3) $M (\cdot, +)$

$$s_k = \min \left\{ 1, \sum_{j=1}^{m} \mu_j r_{jk} \right\}, \quad k = 1, \ldots, n.$$  

The operator considers all the indicators and their weights comprehensively and can well meet the calculation needs of the maximum sum.

(4) $M (\cdot, \oplus)$

$$s_k = \min \left\{ 1, \sum_{j=1}^{m} \min \left\{ \mu_j, r_{jk} \right\} \right\}, \quad k = 1, \ldots, n.$$  

This operator has strict restrictions on the value of each factor. It can take neither a large nor a small value. Otherwise, it is easy to make some factor evaluation information missing. To improve calculation accuracy, evaluation results are calculated with four decimal places.

① Calculation of the evaluation results of the financial status (C1): membership of D1, D2, and D3:

$$R_{D1-3} = \begin{bmatrix} 0.0000 & 0.0000 & 0.0460 & 0.0766 & 0.0000 \\ 0.0000 & 0.1601 & 0.1601 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.3482 & 0.2089 & 0.0000 \\ 0.0000 & 0.1601 & 0.5543 & 0.2855 & 0.0000 \end{bmatrix}. \quad (7)$$

DL, D2, and D3 index weights $\omega_{D1-3} = [0.1226, 0.32020.5571]^T$ perform a fuzzy operation according to a selected operator.

The fuzzy operation based on the selected operator is as follows:

$$R_{D1-3} \cdot \omega_{D1-3} = \begin{bmatrix} 0.0000 & 0.0000 & 0.0460 & 0.0766 & 0.0000 \\ 0.0000 & 0.1601 & 0.1601 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.3482 & 0.2089 & 0.0000 \\ 0.0000 & 0.1601 & 0.5543 & 0.2855 & 0.0000 \end{bmatrix}.$$  

According to the principle of maximum membership, the evaluation result of financial condition (C1) is general.

② Calculation of the evaluation results of the business results (C2): membership of D4, D5, D6, and D7:

$$R_{D4-7} = \begin{bmatrix} 0.0000 & 0.6250 & 0.3750 & 0.0000 & 0.0000 \\ 0.0000 & 0.2500 & 0.7500 & 0.0000 & 0.0000 \\ 0.0000 & 0.5000 & 0.5000 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.0000 & 0.2500 & 0.7500 \end{bmatrix}. \quad (9)$$

$D4$, $D5$, $D6$, and $D7$ indicator weights $\omega_{D4-7} = [0.0998, 0.3451, 0.3701, 0.1850]^T$ perform a fuzzy operation according to a selected operator:

$$R_{D4-7} \cdot \omega_{D4-7} = \begin{bmatrix} 0.0000 & 0.0624 & 0.0374 & 0.0000 & 0.0000 \\ 0.0000 & 0.0863 & 0.2588 & 0.0000 & 0.0000 \\ 0.0000 & 0.1851 & 0.1851 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.0463 & 0.1388 \end{bmatrix},$$

$$R_{D4-7}^{\oplus} \omega_{D4-7} = \begin{bmatrix} 0.0000 & 0.3338 & 0.4813 & 0.0463 & 0.1388 \end{bmatrix}^T. \quad (10)$$

According to the principle of maximum subordination, the evaluation result of business results (C2) is general.

③ The evaluation result of the environmental protection attitude (C3): subordination degree of $D8$, $D9$, and $D10$:

$$R_{D8-10} = \begin{bmatrix} 0.0000 & 0.2500 & 0.7500 & 0.0000 & 0.0000 \\ 0.0000 & 0.1250 & 0.8750 & 0.0000 & 0.0000 \\ 0.0000 & 0.3750 & 0.6250 & 0.0000 & 0.0000 \end{bmatrix}. \quad (11)$$

$D8$, $D9$, and $D10$ indicator weight $\omega_{D8-10} = [0.1199, 0.27210.6080]^T$.

The fuzzy operation based on the selected operator is as follows:

$$R_{D8-10} \cdot \omega_{D8-10} = \begin{bmatrix} 0.0000 & 0.0300 & 0.0899 & 0.0000 & 0.0000 \\ 0.0000 & 0.0340 & 0.2381 & 0.0000 & 0.0000 \\ 0.0000 & 0.2280 & 0.3800 & 0.0000 & 0.0000 \end{bmatrix},$$

$$R_{D8-10}^{\oplus} \omega_{D8-10} = \begin{bmatrix} 0.0000 & 0.2920 & 0.7080 & 0.0000 & 0.0000 \end{bmatrix}. \quad (12)$$

The assessment result of the environmental protection attitude (C3) is general.
Calculation of the evaluation results of the environmental performance (C4): membership of DLL, D12, D13, D4, D15, and DL6:

$$R_{D11-16} = \begin{bmatrix} 0.2500 & 0.6250 & 0.1250 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.7500 & 0.2500 & 0.0000 \\ 0.0000 & 0.0000 & 0.1250 & 0.8750 & 0.0000 \\ 0.0000 & 0.0000 & 0.2500 & 0.7500 & 0.0000 \\ 0.0000 & 0.6250 & 0.3750 & 0.0000 & 0.0000 \\ 0.0000 & 0.5000 & 0.5000 & 0.0000 & 0.0000 \end{bmatrix}. \quad (13)$$

The weights of DLL, DL3, D13, D14, D15, and D16 indicators are as follows:

$$\omega_{D11-16} = [0.2426, 0.1726, 0.2426, 0.2426, 0.0591, 0.0405]^T. \quad (14)$$

The fuzzy operation based on the selected operator is as follows:

$$R_{D11-16} \cdot \omega_{D11-16} = \begin{bmatrix} 0.0607 & 0.1516 & 0.0303 & 0.0000 & 0.0000 \\ 0.0000 & 0.0000 & 0.1295 & 0.0432 & 0.0000 \\ 0.0000 & 0.0000 & 0.0303 & 0.2123 & 0.0000 \\ 0.0000 & 0.0000 & 0.0607 & 0.1820 & 0.0000 \\ 0.0000 & 0.0369 & 0.2222 & 0.0000 & 0.0000 \\ 0.0000 & 0.0203 & 0.0203 & 0.0000 & 0.0000 \end{bmatrix},$$

$$R_{D11-16} \cdot \omega_{D11-16} = \begin{bmatrix} 0.0607 & 0.2088 & 0.2932 & 0.4374 & 0.0000 \end{bmatrix}. \quad (15)$$

The evaluation result of the environmental performance (C4) is poor.

The membership degree of D17, D18, and D19 is calculated based on the evaluation result of information disclosure reliability (C5):

$$R_{D17-19} = \begin{bmatrix} 0.0000 & 0.0000 & 0.6250 & 0.3750 & 0.0000 \\ 0.0000 & 0.0000 & 0.5000 & 0.5000 & 0.0000 \\ 0.0000 & 0.2500 & 0.6250 & 0.1250 & 0.0000 \end{bmatrix}. \quad (16)$$

The weights of D17, D18, and D19 indicators are as follows:

$$\omega_{D17-19} = [0.6480, 0.1222, 0.2299]^T. \quad (17)$$

The fuzzy operation based on the selected operator is as follows:

$$R_{D17-19} \cdot \omega_{D17-19} = \begin{bmatrix} 0.0000 & 0.0000 & 0.4050 & 0.2543 & 0.0000 \\ 0.0000 & 0.0000 & 0.0611 & 0.0611 & 0.0000 \\ 0.0000 & 0.0574 & 0.1437 & 0.0287 & 0.0000 \\ 0.0000 & 0.0574 & 0.6098 & 0.3441 & 0.0000 \end{bmatrix},$$

$$R_{D17-19} \cdot \omega_{D17-19} = \begin{bmatrix} 0.0000 & 0.0000 \end{bmatrix}. \quad (18)$$

The evaluation result of information disclosure reliability (C5) is general.

Evaluation result calculation of information disclosure timeliness (C6): membership degree of D20 and D21:

$$R_{D20-21} = \begin{bmatrix} 0.0000 & 0.0000 & 0.0000 & 0.1250 & 0.8750 \\ 0.0000 & 0.6250 & 0.3750 & 0.0000 & 0.0000 \end{bmatrix}. \quad (19)$$

Perform the fuzzy operation according to the selected operator:

$$R_{D20-21} \cdot \omega_{D20-21} = \begin{bmatrix} 0.0000 & 0.0000 & 0.0000 & 0.0000 & 0.2080 & 0.1459 \end{bmatrix},$$

$$R_{D20-21} \cdot \omega_{D20-21} = \begin{bmatrix} 0.0000 & 0.4167 & 0.2500 & 0.0000 & 0.0000 \end{bmatrix}. \quad (20)$$

Evaluation result of information disclosure timeliness (C6) is good.

5. Results

Take 2014–2018 as an example to see the basic situation of the main operating business of A JSC, as shown in Table 1. The trend of gross margin is shown in Figure 7.

As shown in Table 1, from 2014 to 2018, A AG’s revenue is mainly based on sales of paper products, supplemented by sales of chemical products. Although the sales revenue of A AG’s paper products is higher than that of chemical products, its production cost is also higher than that of chemical products. From the gross margin trend graph, we can conclude that the profit from the sales of chemical products of A JSC is better than the profit from the sales of paper products during 2014–2018. The paper industry is a heavily polluting industry, and chemical industry is resource-intensive and polluting to environment. Since the main industries of A are polluting to the environment and have a high demand for resources, implementation of environmental accounting should be more detailed and standardized than that of other companies. The environmental costs and potential benefits from environmental inputs and specific emissions should be reflected in annual report.

In Table 2, it can be seen that A JSC has been paying environmental protection fees and environmental maintenance fees for five years from 2014 to 2018, and since only data on these fees are mentioned in annual report, we conducted a field research on why these two fees were paid but did not receive a valid answer. We were informed that the resource tax was only listed in 2018 annual report, but that in previous years, resource tax was included in water fee, and water and salt are the main raw materials for the chemical production of A JSC. Meanwhile, we were informed that A JSC was in the transitional stage of fee to tax conversion in 2018, and fee to tax conversion would be completed in 2019; from then on, no more emission fees would be paid, and the environmental protection tax would be paid directly according to emission standard.

Table 3 shows that government subsidizes more environmental protection projects, which reflects importance of green production and high pollution level of production activities of “A.” The field research and staff of finance
department of “A” company were informed that key environmental management projects and environmental monitoring projects required by national and provincial authorities are usually subsidized with special funds for specified project expenses, which are based on financial expenditures, relevant construction contracts, and acceptance materials. After asking the staff of ultra-low emission project team, we learned that ultra-low emission project is based on original desulfurization, denitrification, and dust removal by adding equipment and transforming process to further treat sulfur dioxide, ammonia oxides, and soot in flue gas, so that index is reduced. The fourth phase of company’s deep water treatment project was put into operation, which adopts world standard deep treatment process, and COD of drainage water was reduced to below 40 mg/l, and the color was less than 20 times, which became an advanced water treatment model project. However, after field research, it is found that this project will still produce waste gas,

Table 1: Main business by industry (unit: 10000 yuan).

| Category                | Theme/year | 2014      | 2015      | 2016      | 2017      | 2018      |
|-------------------------|------------|-----------|-----------|-----------|-----------|-----------|
| Business income         | Paper products | 7337547.87 | 702547.14 | 803571.41 | 1024851.23 | 1125728.39 |
|                         | Chemical products | 102587.58  | 136147.58 | 160748.74 | 212584.01  | 260024.23 |
| Operating costs         | Paper products | 653571.2   | 524781.8  | 702873.19 | 874124.23  | 9584476.35 |
|                         | Chemical products | 809578.56  | 1047005.14| 139287.88 | 163574.87  | 2856471.35 |
| Gross profit margin     | Paper products | 10.97%     | 11.25%    | 12.87%    | 15.56%     | 13.28%    |
|                         | Chemical products | 21.25%     | 23.02%    | 18.36%    | 25.34%     | 19.25%    |

Figure 7: Trend of gross margin.

Table 2: A joint stock company’s 2014–2018 expense income environmental accounting (unit: yuan).

| Date                  | 2018          | 2017          | 2016          | 2015          | 2014          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| Environmental protection fee | 150547824.18  | 23547528.58   | 18324742.25   | 13258712.008  | 1874253254.41 |
| Subsidy for environmental treatment | 125942000     | 8524000       | 257420        |               |               |
| Sewage charge         | 3542145.15    | 174585435.12  | 12547562.74   | 8541225.62    | 9871248.12    |
| Environmental maintenance fee | 125483258.85  | 165147526.71  | 165871288.45  | 132557856.09  | 18475245.48   |
| Resource tax          | 23365871.24   |               |               |               |               |
| Environmental protection tax | 8258712.85    |               |               |               |               |

Table 3: A” amortization items of government subsidies related to assets of joint stock company from 2014 to 2018 (unit: yuan).

| Date                  | 2018          | 2017          | 2016          | 2015          | 2014          |
|-----------------------|---------------|---------------|---------------|---------------|---------------|
| Pollution control project | 2351000.21    | 2350000       | 2350000       | 2395701       | 2350000       |
| Ultra-low emission project | 65827.12     |               |               |               |               |
| Special funds for recycling transformation | 30000         |               |               |               |               |
| Advanced sewage treatment project | 341254.5      | 4125873.6     | 4125684.5     | 4156552.8     | 4166687.2     |
| Advanced wastewater treatment phase IV project | 26030.25      | 402543.58     | 4032146.57    | 4932483.6     | 491666.65     |
| Advanced wastewater treatment phase IV project | 10165473.2    | —              | —             | —             | —             |
| Dust control works    | 1000000       | —             | —             | —             | —             |
| White water treatment technology transformation project | 552000        | 552000        | 552000        | 552000        | 552000        |
| Provincial environmental protection special treatment project | 180000        | 180000        | 180000        | 180000        | 180000        |
| Special water subsidy fund (phase II) | 2708741.9     | 4166447.5     | 412655.85     | 222222.22     | 222222.22     |
wastewater, solid waste, and noise in the treatment of wastewater, so reasonable and effective measures should be taken during operation of project to ensure that pollutants meet discharge standards, such as chemical scrubbing and photocatalytic oxidation equipment for treatment of waste gas, nitrobenzene, and aniline. For boiler flue gas denitrification transformation project, mainly to deal with exhaust gas, so as not to cause air pollution, the project in 2018 just amortized to nonoperating income. The wastewater treatment project and alkali recovery renovation project have not yet been put into operation. The dust control project was completed in 2017 and was fully amortized in 2017 and included in the nonoperating income. The white-water treatment project is to treat white water of papermaking, improve reuse rate of white water, reduce discharge of white water, and treat pollutants contained in white water. The special subsidies for water are aimed at improving and reusing wastewater standards, increasing water availability, saving resources, and helping environmental protection.

Table 4 shows that there are several environmental projects under construction, and four new environmental projects are under construction in 2018, which shows that A JSC is making progress in environmental protection and constantly upgrading environmental projects. Among them, wastewater treatment project was completed and transferred to fixed assets in 2015. The boiler emission super low project was completed and transferred to fixed assets in 2017.

Table 5 shows that the implementation of environmental accounting of A JSC is not centralized. Although it has implemented some of the environmental accounting in its annual report, its data is included in the balance sheet, income statement, and cash flow statement of financial statements but not implemented directly. The information on construction in progress, government grants, and so on is obtained in notes to financial statements and is scattered, while social responsibility report of A JSC only briefly mentions environmental policy and energy consumption. However, the production of A JSC is both polluting and resource-intensive and should be implemented in social responsibility report. The implementation of environmental accounting in internal control report may be appropriate according to the company’s actual situation and management’s wishes [21, 22].

As can be seen from Table 6, in 2018, there are eight extra government grants amortized in the current period, and an additional three points are assigned. The government grants for assets are not only quantitative but also have detailed descriptions in notes for each of government grants related to environment, so three points should be assigned for government grants, and additional points should be assigned for a total of six points.

The Environmental are described in detail in statements. However, it is generally believed that the more the EDI is close to 1, the higher the quality of implementation of environmental accounting. Therefore, A AG still needs to further strengthen the implementation of environmental accounting.
Table 6: Current amortization amount of government subsidies (unit: yuan).

| Project                                                        | Amount of money |
|----------------------------------------------------------------|-----------------|
| Pollution control project                                      | 23500214.54     |
| Ultra-low emission project                                    | 602547.25       |
| Special funds for recycling transformation                    | 30000           |
| Advanced sewage treatment project                              | 3245.07         |
| Advanced wastewater treatment phase IV project                 | 2623343.1       |
| Used for boiler flue gas desulfurization transformation project | 102543.35       |
| 60000 Nm³/d biogas recovery resources comprehensive utilization project | 492587.62     |
| White water treatment technology transformation project         | 55254.04        |
| Provincial environmental protection special treatment project   | 180000.0        |
| Special water subsidy fund (phase II)                          | 2785214.02      |

Meng Feng Environmental Technology is an environmentally friendly company, which is mainly engaged in environmental management, so it implements environmental accounting in more detail to highlight the nature of its business. The comparison line graph in Figure 9 shows that the quality of environmental accounting implementation of Meng Feng Environmental Technology is better than that of “A.” The implementation of information of “A” should be improved step by step, first to extent of Meng Feng’s information implementation and then to further improve. In recent years, environmental accounting index of both companies has been on the rise, which should be related to the implementation of the strictest new Environmental Protection Law in history on January 1, 2015, and the subsequent introduction and release of programmatic documents such as “Water Ten” and “Notice on Construction Program of Ecological and Environmental Monitoring Network.” The new law and regulations are closely related to the state’s attention to environment, which has caused a high degree of concern among enterprises.

6. Conclusions

In this paper, we used A JSC as a case study of a heavily polluting company and found that its implementation level of environmental accounting from 2014 to 2018 is on an increasing trend, and the implementation level has improved significantly in recent years. However, there are still problems such as incomplete implementation, low value of implementation contents, and irregular implementation forms, which conceal some negative information. At present, the state is not strong enough to supervise the implementation of environmental information of enterprises, and relevant laws and regulations should be formulated to regulate it. To improve the level of implementation of environmental accounting, joint efforts of the “A” joint-stock company, third-party monitoring agencies, social groups, and government are needed.

Data Availability

The experimental data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest regarding this work.
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