

Research on the Disclosure of Environmental Accounting Information in Listed Steel Companies

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Abstract: Amid escalating global environmental challenges, the transparency in environmental accounting is now central to upholding corporate social responsibility and fostering sustainable growth. In China, where the steel industry significantly contributes to carbon emissions, the transparency of its environmental accounting is pivotal to meeting the nation's "dual carbon" objectives. This study analyzed environmental accounting data from 28 publicly listed steel companies, drawing from their annual corporate and social responsibility reports between 2018 and 2022. The findings reveal advancements in the steel industry's environmental accounting practices; however, notable inconsistencies persist in disclosure content, format, frequency, and accuracy. To rectify these inconsistencies, this paper suggests targeted measures to standardize and improve the environmental accounting disclosures of China's listed steel companies, supporting the industry's and nation's progression towards sustainability.

Keywords: Environment accounting; information disclosure, Steel industry listed companies, Disclosure countermeasure.

1. Introduction

In the context of 21st-century globalization, environmental issues have progressively become a focal point on the international stage, with both governments and corporations recognizing their paramount significance. This is especially evident in China with its "dual carbon" goals: peaking carbon emissions by 2030 and achieving carbon neutrality by 2050. These goals serve as milestones for industries, particularly those with high carbon emissions like the steel sector. The steel industry, a cornerstone of China's economy, is also a major carbon emitter. Recently, while numerous steel companies have embraced green technologies and strategies for low-carbon goals, the industry remains in an initial phase of its green transition. Thus, clear environmental accounting disclosure is now vital for steel enterprises. Such disclosure gives stakeholders insight into a firm's environmental commitment and also propels the business towards sustainable practices. However, current research indicates that China's listed steel companies exhibit notable gaps in environmental accounting disclosure. Given this, our study examined 28 publicly traded steel companies, analyzing their environmental accounting from 2018 to 2022. This research seeks to offer robust strategies for the steel industry's green transition.

2. The Essence of Environmental Accounting Disclosure

2.1. Definition of Environmental Accounting

Environmental accounting, an emerging field in accounting, centers on documenting, measuring, and disclosing a firm's environmental engagements during its business operations. As global attention to environmental issues and sustainability grows, corporations face increased pressure to clearly demonstrate their environmental commitments and sustainable actions. This emphasizes the growing importance of environmental accounting in modern corporate management. Its central objective is to depict the relationship

between enterprises and the environment, clarifying how companies address and mitigate environmental impacts. This primarily involves detailed documentation and analysis of environmental costs, benefits, risk strategies, and performance[1]. Through this information, stakeholders can not only gain profound insights into a firm's environmental responsibility and sustainability but also make more informed decisions. For instance, a manufacturing company might meticulously record its energy consumption, wastewater discharge, and waste management costs during the production process. Such data not only provides the firm with a foundation for identifying potential savings opportunities but also offers investors and other stakeholders a clear window into the company's environmental management practices.

2.2. Content of Environmental Accounting Information Disclosure

Environmental accounting disclosure provides stakeholders insight into an organization's environmental engagements during its business operations. This disclosure highlights key areas of interest. Firstly, environmental costs show stakeholders the specific investments a company undertakes for environmental protection and sustainability [2]. For instance, mining companies may outline expenses related to tailings management and land reclamation. Secondly, environmental benefits illuminate the economic gains from a company's eco-friendly actions. For example, by improving energy efficiency or using renewable sources, companies can cut down on energy costs. Regarding environmental risk management, corporations should illustrate their methods of assessing and mitigating environmental risks. Given the mounting challenges of climate change, many firms are developing sturdier products or modifying their supply chains to counter potential risks. Moreover, environmental performance disclosures focus on measurable outcomes, like greenhouse gas reductions or enhanced water-use efficiency. These metrics offer stakeholders a clearer insight into a company's environmental performance[3]. Lastly, environmental accounting disclosures detail the firm's

environmental strategies, objectives, and their synergy with the broader corporate strategy, demonstrating the company's integration of environmental principles.

2.3. Significance of Environmental Accounting Information Disclosure

Environmental accounting information disclosure occupies a pivotal position against the backdrop of an increasing emphasis on sustainability in today's world. For external stakeholders, such as investors, customers, and governmental agencies, this information provides a transparent window, allowing them to delve deep into a corporation's performance in critical environmental domains, including resource utilization, emission control, and green innovation. This not only bolsters the firm's credibility but might also have an impact on its market valuation and reputation. Concurrently, from an internal corporate perspective, explicit environmental accounting disclosure serves as a feedback mechanism, spurring management to prioritize environmental responsibility. It furnishes the managerial cadre with direct feedback regarding the efficacy of the company's environmental strategies, thereby motivating them to continually refine their strategies, aspiring towards more environmentally-friendly and sustainable business models [4].

3. An Exploration of Environmental Accounting Information Disclosure in Listed Steel Companies

As environmental protection gains prominence, global focus intensifies on environmental matters. Within this context, the synergistic development of the economy and ecology has emerged as a pressing topic of discussion. Notably, China's steel industry, serving as a core pillar of the nation's infrastructure, finds itself at the vanguard of this transformative shift. To glean a deeper understanding of the environmental accounting information disclosure status of listed steel companies in China, this study... has selected ferrous metal smelting and rolling processing industries as its focal point. The aim is to assess environmental accounting disclosures within these listed firms. According to the latest CSRC's industry classification, 31 companies are listed in this sector. However, given the potential delisting risks of ST Xining and *ST Antai, and Erdos's diversified business, these companies were excluded. The study then focuses on the 28 firms chiefly involved in ferrous metal smelting and rolling. Analyzing 240 datasets from 2018 to 2022 annual reports and social responsibility statements (sourced from East Money and company websites), this study examined disclosure trends in China's listed steel companies.

Table 1. Environmental accounting information disclosure methods of listed companies in iron and steel industry

Sock code	Cmpany name	Social responsibility report	Annual report	Sock code	Cmpany name	Social responsibility report	Annual report
000717	GZIS	×	√	600126	HZIS	×	√
603995	YTG	×	√	600019	BIS	√	√
603878	JWSSPG	×	√	600010	IMBTSU	√	√
000825	STSS	√	√	002075	JS	×	√
601005	CIS	√	√	000959	BS	√	√
600569	AIS	√	√	000898	AS	√	√
600581	XBYIS	×	√	000709	HBIS	√	√
600022	SIAS	√	√	600507	FSST	√	√
000932	HVS	√	√	600399	FSS	×	√
601003	LIS	√	√	000708	CPS	√	√
600808	MIS	√	√	600307	GJSGHIS	√	√
600782	XIS	√	√	002756	YSMT	√	√
600282	NIS	√	√	002110	SM	√	√
600231	LIS	×	√	000761	BSP	×	√

Table 2. Environmental Disclosure of listed companies in the steel industry (Financial)

Disclosure Content	2018		2019		2020		2021		2022	
	Qty.	PERC(%)	Qty.	PERC(%)	Qty.	PERC(%)	Qty.	PERC(%)	Qty.	PERC(%)
EPI	13	48.15	8	28.57	9	32.14	16	57.14	26	92.86
Penalty	3	11.11	3	10.71	8	28.57	13	46.43	18	64.29
GF	2	7.41	3	10.71	0	0.00	3	10.71	4	14.29
GS	11	40.74	10	35.71	13	46.43%	15	53.57%	16	57.14
RT&F	3	11.11	2	7.14%	3	10.71%	3	10.71%	16	57.14

As indicated in Table 1, the 28 listed steel companies in China have diverse methods of disclosing environmental accounting information. Most companies disclose environmental accounting in both annual and social responsibility reports, while a few limit it to just annual reports. Analysis of these reports reveals a rise in environmental accounting disclosures in 2021 and 2022,

compared to 2018-2020. This includes a wider range of content, enriched with diverse texts and charts. The uptrend largely stems from the recent implementation of regulations issued by the Ministry of Ecology and Environment on February 8, 2022. Notably, most information in the annual reports is non-financial. The limited financial data mainly pertains to penalties from environmental breaches. Few

companies, such as LIS, reveal investments in environmental protection infrastructure. As environmental awareness grows, more companies annually release social responsibility reports. However, there's redundancy in disclosures across various channels. For companies like AIS and STSS, their annual report's environmental accounting content mirrors that in their social responsibility reports. Some companies' social responsibility reports rely only on narratives, without data backing.

Referring to Table 2, our comprehensive analysis of environmental accounting disclosures from 2018 to 2022 for the 28 steel companies indicates an increasing trend. However, the completeness of these disclosures is still lacking. Most financial data are found in the annual reports. Disclosures about environmental project investments (EPI) and related taxes and fees (RT&F) notably increased in 2022. While penalty disclosures have grown, fewer companies face administrative penalties each year, with many reporting no fines. Greenery fee (GF) disclosures, mostly in social

responsibility reports, are not up to standard. On the other hand, many companies only provide general data like greenery coverage. While government subsidy (GS) details are mostly in annual report notes, some companies neglect to specify which eco-projects these subsidies support.

According to Table 3, Non-financial disclosures primarily cover blowdown information (BI) and the functionality of environmental facilities (FEF), both featured in annual and responsibility reports. In the last five years, over half of the disclosures have focused on emissions, indicating a shift towards green factory initiatives. Disclosures about the functionality of environmental facilities notably rose in 2021 and 2022. This increase can be linked to new environmental disclosure standards and stricter emission requirements. However, disclosures on environmental management system (EMS), environmental technology R&D (ETR&D), and environmental accolades (EA) remain limited. Particularly, the rate of environmental R&D disclosures lags behind other non-financial categories.

Table 3. Environmental Disclosure of listed companies in the steel industry (Non-financial)

Disclosure Content	2018		2019		2020		2021		2022	
	Qty.	PERC(%)	Qty.	PERC(%)	Qty.	PERC(%)	Qty.	PERC(%)	Qty.	PERC(%)
EMS	11	40.74	10	35.71%	9	32.14%	16	57.14%	18	64.29
ETR&D	4	14.81	3	10.71	5	17.86	8	28.57	10	35.71
BI	24	88.89	24	85.71	24	85.71	25	89.29	25	89.29
FEF	10	37.04	12	42.86	11	39.29	17	60.71	21	75.00
EA	7	25.93	6	21.43	4	14.29	10	35.71	14	50.00

4. Issues in the Disclosure of Environmental Accounting Information by Listed Steel Industry Companies

In the current global climate and sustainability discourse, there's a heightened emphasis on corporate environmental responsibility and transparency. Particularly in high-emission sectors like steel, disclosing environmental information becomes crucial for investors, regulators, and the wider public. However, our detailed analysis of the sector highlights several urgent issues that need addressing.

4.1. Inconsistencies in Environmental Accounting Disclosure Formats and Content

A clear issue is the inconsistency in disclosure formats. Environmental details in annual reports are generally standardized, but those in social responsibility reports differ widely among companies. Some companies merely replicate content from their annual reports into their social responsibility ones. Some firms only meet minimal disclosure criteria, offering general data like total emissions, but omitting specifics on emission sources or environmental measures. Companies often selectively highlight positive data, downplaying or omitting information that might reflect negatively. Vital environmental aspects, like soil contamination or biodiversity loss, are sometimes absent in disclosures, limiting stakeholders' insight into the company's environmental impact.

4.2. Environmental Accounting Disclosures: Heavy on Text, Light on Data

Environmental accounting disclosures are often dominated

by textual descriptions, with noticeable data insufficiencies. In reports, many companies primarily use prose to explain their environmental policies, achievements, and other information related to ecological conservation. Examining the reasons, some companies use complex jargon to reduce clarity, potentially masking unfavorable aspects. By providing specific environmental data, stakeholders could more clearly understand a company's progress. However, detailed environmental data disclosure can result in extra costs for companies due to required measurements, increasing the financial impact.

4.3. Inadequate Regulations Hinder Comprehensive Environmental Disclosure

Present regulations for environmental accounting disclosure have notable gaps, curbing corporate motivation[5] for transparent reporting. Although financial statement provisions are clear, China lacks standardized disclosure requirements for social responsibility reports. This results in a varied landscape with inconsistent disclosure standards. Without a consistent disclosure framework, firms may use different criteria, compromising data comparability. Some companies, in a bid to highlight their environmental performance, create custom metrics. These bespoke indicators, however, often lack broad applicability and comparative merit.

4.4. The Need for External Verification in Environmental Reporting

External verification ensures the credibility and authenticity of environmental accounting data. Most steel companies rely mainly on self-reporting. While self-reporting provides preliminary insights, companies may emphasize their successes and minimize setbacks due to biases. Faced with major environmental risks, companies might withhold

crucial information to protect their brand or avoid legal issues. Some firms view third-party assessments, which aim to validate the accuracy of disclosures, as an added cost or risk, despite their objective nature. As society prioritizes sustainability, external verification will be crucial for companies to earn trust and recognition.

5. Strategies to Enhance Environmental Accounting Disclosure in Listed Steel Companies

Given the outlined challenges, to bolster the disclosure quality and meet information needs, we suggest the following:

5.1. Develop Consistent Standards and Enhance Data Transparency in Disclosure

The lack of uniformity in current disclosure practices leads to confusion and potential misinformation. It's imperative that regulatory bodies establish consistent standards detailing specific content like emissions and energy consumption, and define formats to ensure information accuracy and comparability. Relying solely on textual narratives doesn't provide a full picture. Companies should include specific environmental data, like carbon emissions and pollution control success, allowing stakeholders to better assess their environmental efforts and make informed decisions.

5.2. Enhance the Regulatory Framework for Environmental Accounting Disclosure

A robust legal and regulatory structure is essential for standardized environmental accounting disclosures. Current regulations provide a foundation, but there are notable gaps and ambiguities. Regulating bodies should enhance the standards for corporate environmental data disclosure. Clear policies addressing environmental pollution need to be developed. Clear guidelines about the content, frequency, and method of disclosures should be set. Employing visual aids like charts can help elucidate the information. The data disclosed must be consistent, both across industry peers and year-to-year for individual companies. This consistency aids both companies in reporting and stakeholders in understanding.

5.3. Elevate Environmental Accounting Awareness in Listed Companies

Listed companies should prioritize fostering a proactive attitude towards environmental accounting disclosure. Management should embrace environmental disclosure, weaving the ethos of environmental stewardship into the corporate culture. This approach can initiate a top-down cultural shift in the organization. Companies should intensify employee training on environmental awareness and routinely conduct educational sessions on the topic. Cultivating environmental consciousness across the workforce can drive the momentum for sustainable production. Companies need to enhance their skills in gathering and disclosing environmental data and in implementing green practices, all of which uplift the credibility of their disclosures. Proactive engagement with stakeholders and producing comprehensive environmental accounting reports can help companies earn trust from investors, consumers, and regulators.

5.4. Strengthening the Oversight of Environmental Accounting Information Disclosure

Clear delineation of governmental roles is crucial to ensure regulatory outcomes are effectively realized. Comprehensive oversight promotes transparent and reasonable disclosure of environmental accounting data. Engaging third-party audits ensures neutral and independent evaluations of environmental disclosures. Companies should invite external auditors to examine their environmental data and then share these findings with the public. Embracing media oversight, the primary channel for public information, is essential. Creating an open platform for disclosure can significantly boost transparency in environmental accounting data.

6. Conclusion and Recommendations

This research has embarked on an in-depth exploration and analysis of the environmental accounting information disclosure practices of listed steel companies in China. In a contemporary context where environmental protection is increasingly accentuated, the transparent and accurate disclosure of environmental accounting information holds paramount value for investors, government agencies, and the broader public. Our findings suggest that even though a growing number of steel companies listed in the stock market have turned their attention towards environmental accounting information, inconsistencies persist in the content, quality, and depth of the information disclosed. Notably, concerning non-financial information, certain companies merely provide foundational details, lacking specific data and in-depth insights. Moreover, there exists redundant information in the annual reports and social responsibility statements of some firms, potentially leading to stakeholders harboring misconceptions about the companies' environmental undertakings. The promulgation of the "Enterprise Environmental Information Legal Disclosure Management Measures" and the "Enterprise Environmental Information Legal Disclosure Format Standards" by the Ministry of Ecology and Environment undeniably offers firms clearer guidance. Nevertheless, its practical application still necessitates reinforcement. There is a clear demand for further refinement in both financial and non-financial disclosures to cater to the needs of all stakeholders.

In summation, while listed steel companies in China have made certain advancements in environmental accounting information disclosure, there remains considerable room for growth. To truly embrace a green and sustainable developmental trajectory, companies should look beyond mere production efficiencies and place a profound emphasis on environmental accountability. The transparent and accurate presentation of environmental accounting information is a pivotal step towards this aspiration. It is our hope that this research serves as a valuable reference for listed steel companies, propelling them to achieve greater strides in the realm of environmental accounting information disclosure.

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