

# Environmental Accounting Information Disclosure and Financing Constraints: A Systematic Literature Review

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## Abstract

The main purpose of this review is to provide an overview of the current understanding of the relationship between environmental information disclosure and financing constraints. This systematic review compiles and examines scientific research on the topic and aims to address the research questions posed through a rigorous and transparent approach. To investigate the subject could provide valuable insights for future research aimed at improving the quality of disclosure and alleviating financing constraints. It also identifies research gaps and points out research directions for future studies. A systematic literature review was conducted to reveal research findings from April 2014 to March 2024. The selected articles were thoroughly assessed, and duplicates were removed. An updated systematic review was used for the literature review. The implications of systematic literature review were critically analyzed, finalized, and considered by the research team. And bibliometric analysis was used to descriptively analyze the screened literature. Of the 225 articles initially considered, 24 met the specific criteria for adjustment and inclusion/exclusion.

**Keywords:** Environmental Accounting Information Disclosure, Financing Constraints, Debt Costs, Systematic Literature Review

## Introduction

Environmental accounting information disclosure (EAID) is the process of disclosing information about a company's environmental impacts, practices and policies. EAID is critical because it promotes transparency, builds trust among stakeholders and contributes to sustainable development. In addition, ESG inclusion has become a significant driver of environmental disclosure (Ali et al., 2022), as investors and stakeholders increasingly consider a company's environmental information and governance practices when making decisions.

Financing constraints are the limitations that companies face in obtaining external capital to finance their operations and investments. These constraints can hinder a company's growth potential and affect its overall performance. Financing constraints can lead to changes in firm

behaviour, such as investment decisions, capital structure, and dividend policy. Financing constraints may also affect a company's innovative ability and competitive advantage. EAID can play a crucial role in alleviating financing constraints (Yao et al., 2019; Meng et al., 2022). Companies that have better environmental disclosure practices are often perceived as less risky by investors, leading to lower cost of capital and improved access to external financing.

Environmental accounting information disclosure (EAID) and financing constraints (FC) are two crucial aspects that affect the behaviour and performance of companies. This review aims to explore the relationship between these two concepts and to understand their implications in the current business and financial context.

Given the growing importance of EAID and FC, a comprehensive review of the existing literature is essential to identify research gaps and trends. A systematic literature review will provide a structured approach to synthesize the large body of existing research.

The research questions were formulated based on the following stages of the Systematic Literature Review (SLR):

1. Which journals, countries, and authors hold the most significant influence in the research field?
2. What links between EAID and FC have been revealed by previous studies?
3. What are the potential future directions for the relationship between EAID and FC?

Understanding the relationship between environmental accounting information disclosure and financing constraints is particularly important in today's business environment. As companies face increasing pressure to be environmentally responsible and financial markets become more deliberate, the insights from this study can inform management practices and policy decisions to promote sustainable development and financial stability.

The above statement was constructed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) model, addressing all of the questions asked during the survey process. Therefore, the sequence and writing framework of the review is explained below.

### **Research Methodology**

Literature review remains an important method for systematic research and structuring questions in the field; moreover, it is the best way to answer research questions or to summarize a specific issue. Therefore, this study used a systematic literature review to collect data on important articles about EAID and FC. The aim of this review was to understand how FC is understood in various studies and to analyse whether EAID can have a alleviating effect on it. This study developed a targeted search strategy using terms such as "environmental information", "environmental disclosure", "environmental accounting information disclosure", "financing constraints", or "cost of debt" to find relevant articles. Searches were conducted in three major databases: Web of Science, ScienceDirect, and Scopus, which can be accessed through their respective URLs: <https://www.webofscience.com/>, <https://www.sciencedirect.com/>, and <https://www.scopus.com/>.

Figure 1 summarizes the selection criteria for choosing the most appropriate studies for this review based on Snyder's literature review process and the preferred reporting items for

systematic reviews and meta-analyses (Snyder, 2019; Page et al., 2021). The selection criteria started by removing all duplicates, papers published before April 2014 and papers not relevant to this review from 6296 papers collected from three different databases. Then, this study filtered the titles and abstracts of papers discussing issues related to EID and FC, leaving 225 papers. This study then screened papers published between April 2014 to March 2024, most of which were published in the last five years; a total of 72 papers were screened at this stage. Finally, this study collected 24 papers for the final sample using studies and analyses that focused on the inclusion of environmental disclosure, ESG disclosure, financing constraints, or cost of debt.

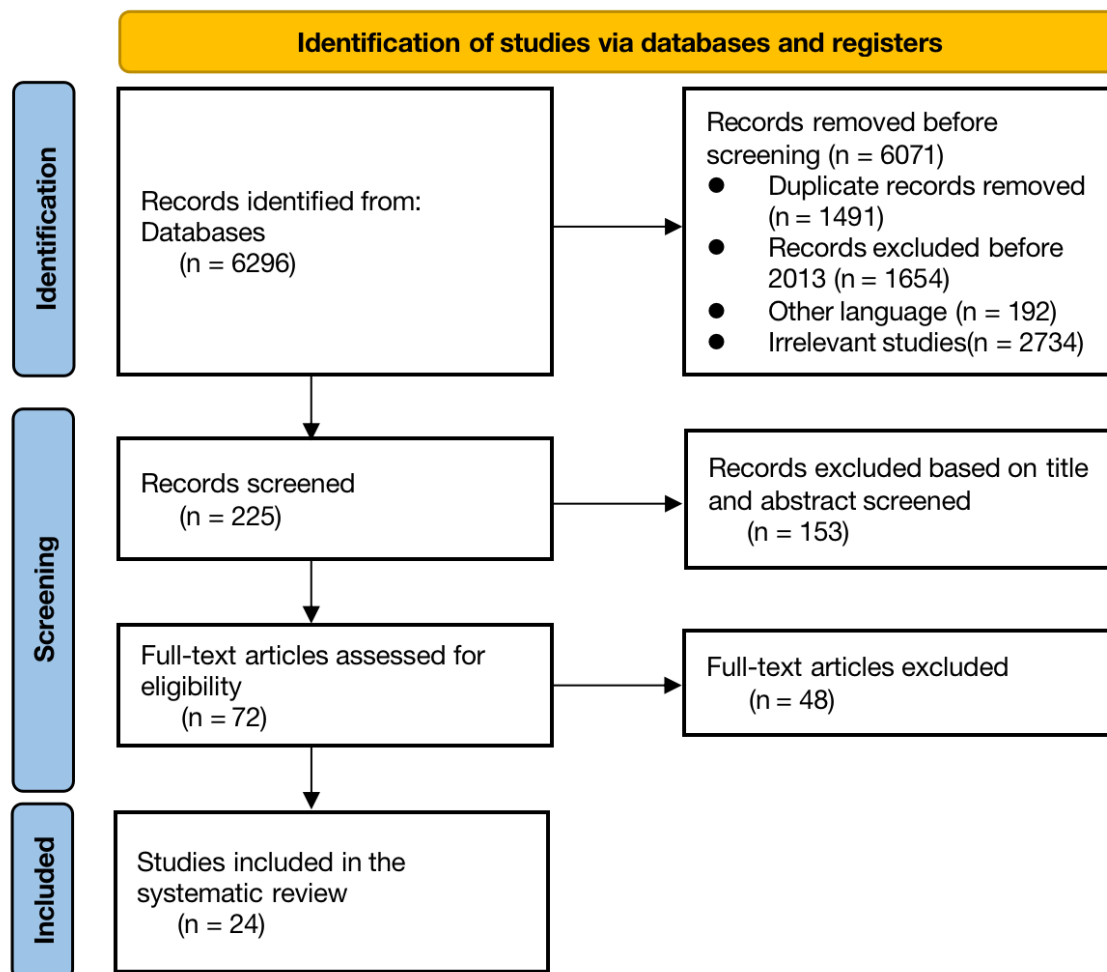


Figure 1. PRISMA Flow Diagram (Source: Authors' own creation)

In addition, this study used bibliometrics to analysed the relevant characteristics of research papers on the relationship between EAID and FC. Bibliometrics is a cross-discipline integrating mathematics, statistics, and bibliography (Ninkov et al., 2021), focusing on the quantification and synthesis of the knowledge system, which helps to objectively explore and present the knowledge system of the discipline and the spectrum of research in a certain field, but it is difficult to deeply dig the specific content of the literature.

Therefore, this study adopts a comprehensive research method combining quantitative and qualitative approaches, based on data mining and econometric analysis of the literature on the study of the relationship between EAID and FC in terms of "institutions", "countries", and

"sources", to distill the knowledge base of the relevant research areas, to grasp the hotspot changes and future trends, and to provide a basis for the relevant research.

### Descriptive Results

The raw data were obtained from Web of Science, ScienceDirect and Scopus databases and analyzed descriptively through bibliometric analysis to address three main RQs in the study, namely, *RQ1*. Which journals, countries, and authors hold the most significant influence in the research field? *RQ2*. What links between EAID and FC have been revealed by previous studies? *RQ3*. What are the potential future directions for the relationship between EAID and FC?

### Growing Trends in EAID and FC Research Fields

This section describes the annual output of research published articles on the relationship between EAID and FC. As shown in Figure 2, research studies on the relationship between EAID and FC shows an increasing trend from 2014 to the present.

Bibliometrix R package's analysis result reveals that the research literature on the relationship between EAID and FC was less than 50 articles in 2014, and the increase started to grow significantly by 2018, and it has already grown to 600 articles and above in 2023. As this area still holds great promise, it is believed that the number of relevant articles will continue to grow year after year in terms of analyzed results.

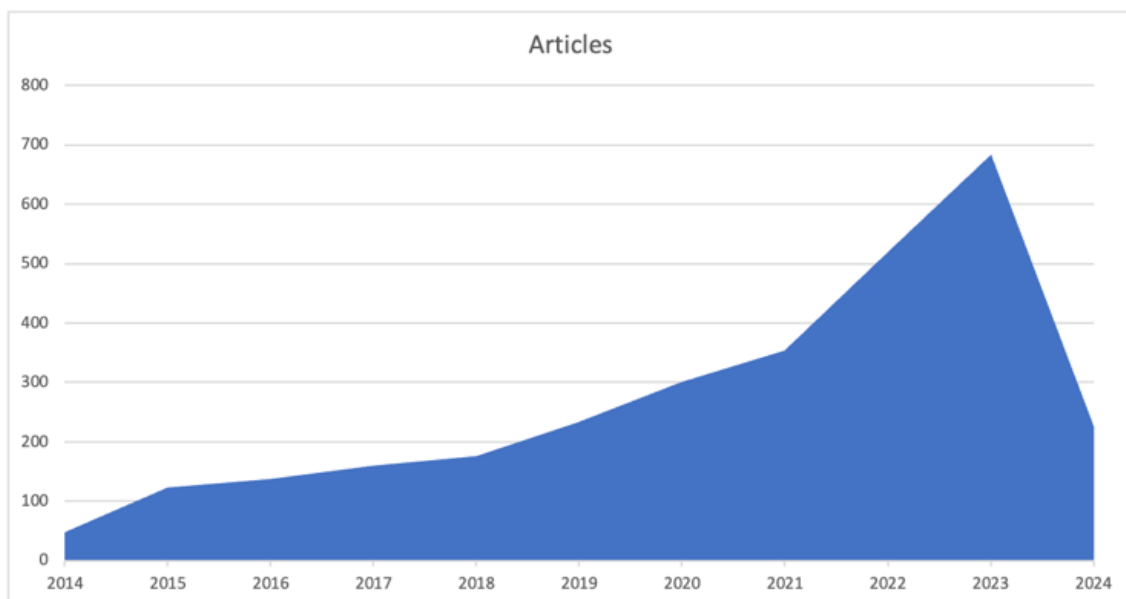


Figure 2. Annual Scientific Production (Source: Authors' own creation)

### Most Relevant Source

Figure 3 illustrates that the primary literature on the nexus between environmental accounting information disclosure (EAID) and financing constraints (FC) is predominantly published in esteemed journals with high Journal Citation Reports (JCR) rankings and impact factors. This underscores the significant interest of the international academic community in this relationship. The data indicate that, despite the relative novelty of this field, the intensifying challenges of global climate change and the increasing financing needs of

companies have drawn growing attention from a diverse array of scholars and reputable professional journals.

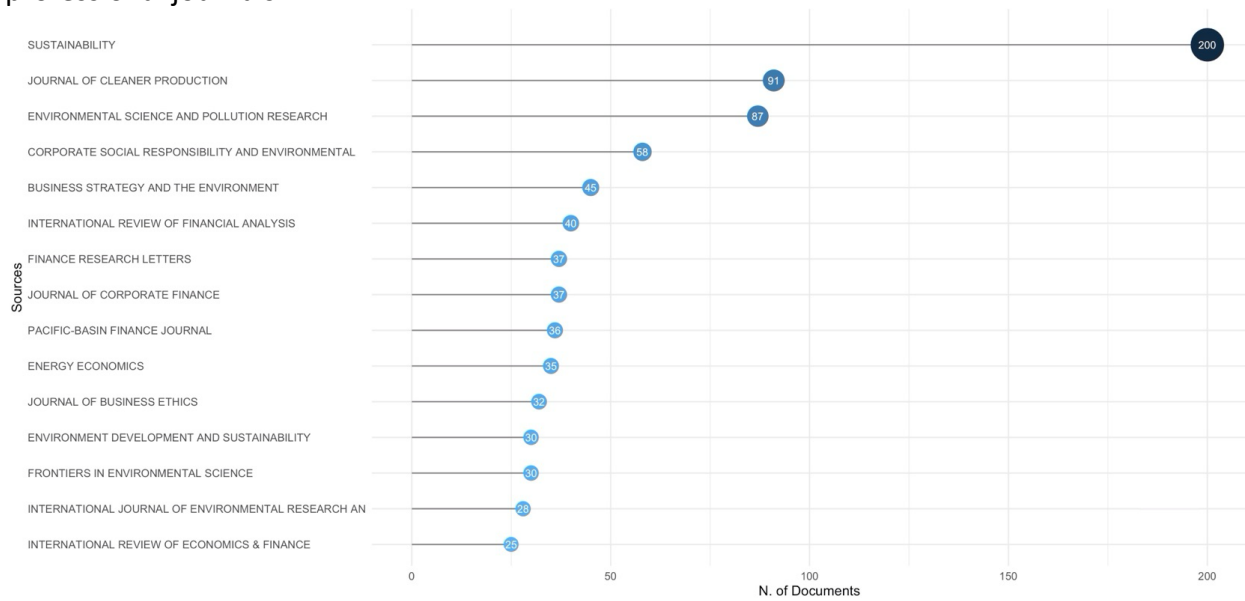


Figure 3. Most Relevant Sources (Source: Authors’ own creation)

**Country Collaboration Map**

Figure 4 illustrates the collaboration of countries around the world, highlighting joint research efforts with different institutions in each country. The blue color indicates that countries have research results, and the gray color indicates that countries have not published research results. As can be seen in Figure 4, there is a great deal of collaboration between countries in research on the relationship between EAID and FC. Thus, the countries that work closely with other countries are China, USA, UK, Australia, Italy, India and Canada.

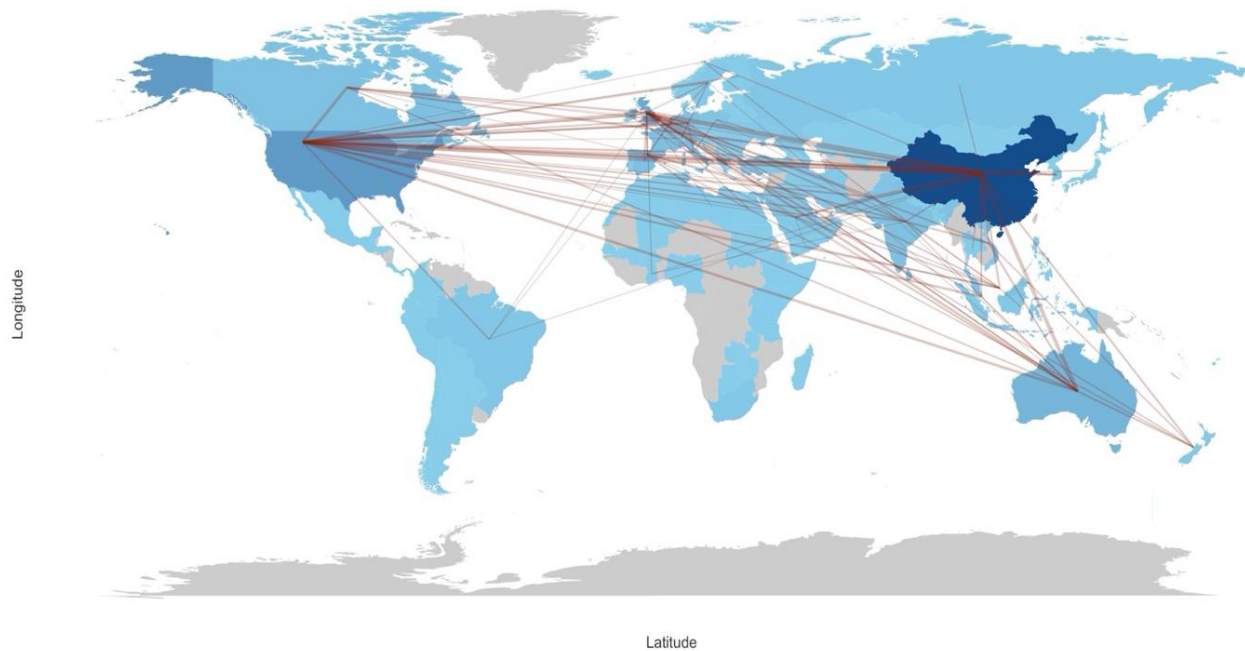


Figure 4. Country Collaboration Map (Source: Authors’ own creation)

**Three-field Plot on Keywords-Authors- Sources**

Figure 5 shows a three-field plot, representing keywords, authors, and sources (journals). Figure 5 reveals the top 20 most influential authors, keywords, and journals in EAID-FC related research. In the three-field plot diagram it can be seen that more topics and content are covered in each journal. A large number of papers have been published on China.

The findings suggest that numerous authors have studied the relationship between EAID and FC more broadly. In addition to EAID and FC, scholars have taken a strong interest in social responsibility, ESG, green innovation, information asymmetry and environmental regulation, among which *Sustainability*, *Journal of Cleaner Production*, *Business Strategy and the Environment*, *the Journal of Environmental Management*, *Environmental Science and Pollution Research* and so on.

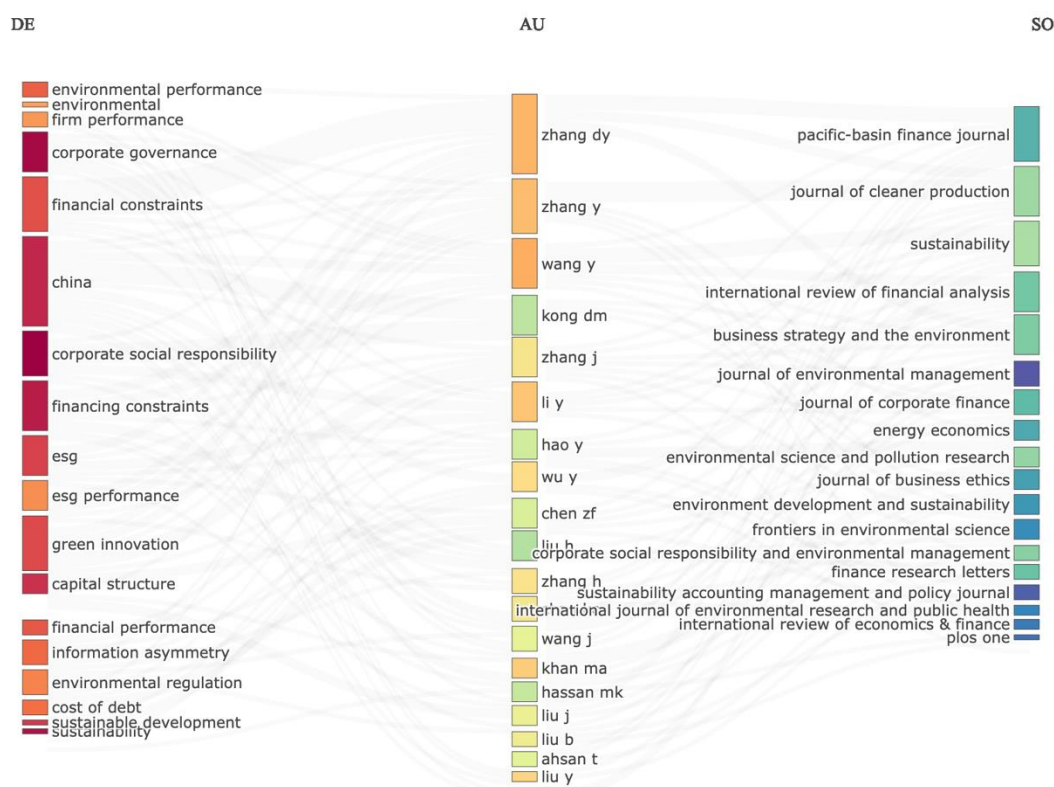


Figure 5. Three-field Plot (Keyword -Author - Source) (Source: Authors’ own creation)

**Literature Review and Discussion**

*Discussion and findings*

In this literature review, this study systematically examined the interaction between the relationship EAID and corporate financing constraints. By synthesizing and analyzing 24 articles, we identify four basic patterns: the effect of environmental accounting information disclosure (EAID) on financing constraints/ debt costs, the link between ESG performance and financing constraints, the role of green governance practices, and the interrelationship between EAID and corporate governance.

As shown in Table 1, the synthesized findings indicate that there is a positive relationship between high-quality EAID and lower debt financing costs, with media attention and environmental penalties identified as influential factors. Notably, superior ESG performance, especially on the social front, is associated with lower cost of corporate debt and alleviation



of financing constraints and is particularly favored by institutional investors. Green governance practices have been shown to alleviate financing constraints, especially in financially developed regions and state-owned enterprises. The literature also highlights the role of other variables in the relationship between EAID and financing constraints, such as the media attention and internal controls. Taken together, these insights emphasize the importance of EAID in corporate financing strategies and provide a basis for further research on the relationship between EAID and FC and its economic impact.

**Table 1**  
*A Summary of the Studies that were Reviewed*

| Authors   | Main Focus                                       | Findings   |
|---|--|--|
| Luo et al., (2019); Ding et al., (2022); Du et al., (2022); Zhou et al., (2022); Wu & Xu, (2022); Maaloul et al., (2023); Yang et al., (2024); Feng et al., (2024)  | EAID and FC /Debt Costs                          | EAID can alleviate financing constraints, and high-quality EAID is associated with lower debt financing costs. Media attention, particularly negative coverage, can influence the relationship between EAID quality and debt costs. In addition, Environmental administrative penalties increase the cost of debt, with incremental disclosures mediating this relationship.   |
| Yao et al., (2019); Alsahlawi et al., (2021); Arora & Sharma, (2022); Bai et al., (2022); Lavin & Montecinos-Pearce, (2022); Teplova et al., (2022); Hao & Wu, (2024); Qian, (2024) ; Amarna et al., (2024) | ESG Performance and Financing Constraints /Costs | Better ESG performance is linked to reduced financing constraints for companies. Higher ESG scores are associated with a reduction in corporate debt costs, especially the social aspect of ESG. Moreover, institutional investors' preference for ESG investment can alleviate financing constraints, particularly in non-state-owned and certain industry sectors. Stakeholder confidence in ESG disclosure is linked to lower financing costs, but the relationship can be moderated by real earnings management practices. |
| Liu et al., (2022); Shen et al., (2022); Chen et al., (2023); He et al., (2023); Li et al., (2024)  | Green Governance and FC                          | Green governance practices can alleviate financing constraints, especially in regions with higher financial development and for state-owned companies. Positive ESG performance can significantly lower company risk, with the effect varying based on company size and ownership.   |
| Meng et al., (2022); Zhao et al., (2023)  | EAID, Corporate Governance, and FC               | Heterogeneous institutional investors can influence debt financing pressures, with environmental disclosure acting as a governance tool. And the quality of internal control can strengthen the mitigating effect of EAID quality on financing constraints.  |

**Future Research Directions**

The literature reviews carefully analysis existing research on the relationship between EAID and FC, focusing on several key areas. While the current study provides important insights, it also reveals several gaps that deserve further exploration.

As shown in Table 2, future research is urgently needed to delve deeper into the lasting impact that the quality of EAID may have on company valuations and investor behavior. This research

must be conducted with a comprehensive perspective, taking into account the impact of external factors such as environmental regulations, market changes and policy evolution. These factors may alter the dynamic impact of EAID on company value and investor strategies.

Table 2  
*Potential Directions for Future Research*

| Research Gaps                                   | Future Research Directions  |
|---|---|
| Environmental Accounting Information Disclosure | <p>Explore the long-term effects of improved quality of EAID and the potential impact of such disclosure on firm value and investor behavior.</p> <p>Give full consideration to other factors that may affect corporate environmental disclosure, such as environmental regulation, market changes, policy changes, etc.</p> <p>Expanding the sample size to account for heterogeneity across industries.</p> <p>Explore how ESG disclosures play out in other samples, such as the impact in emerging economies with lower levels of financial development.</p>  |
| Environmental, Social and Governance            | <p>Further explore how ESG performance affects firm risk through other mechanisms and the impact of ESG performance on other types of risk that firms may face in the course of their operations, such as financial risk and operational risk.</p> <p>Develop and implement new tools and procedures to optimize ESG and reputation management, reporting, and audit and control processes.</p>   |
| Financing Constraints /Cost of Debt             | <p>Explore the in-depth understanding of financing constraints by decision-making processes and management motivations within companies.</p> <p>Exploring the impact of financing constraints in other types of companies, such as SMEs and environmentally friendly companies.</p> <p>Consider other financial market responses, such as debt and equity financing, which may affect a full understanding of a company's overall financing costs.</p> <p>Explore the differences in environmental effects of different types of companies (e.g., different sizes, different ownerships) under financing constraints.</p> |
| Corporate Governance                            | <p>Consider the combined effects of different types of environmental policies and how these policies interact with a company's internal governance and strategic decisions.</p>   |

In addition, the role of ESG (environmental, social, and governance) disclosures in emerging economies is fertile ground for future research, as these economies may not have well-developed financial systems. These economies can provide unique insights into how ESG disclosures are perceived in less-developed financial markets and how they affect company operations and financial results. Another key area for future research is the intricate relationship between ESG performance and various types of firm risk, both financial and operational. Understanding these mechanisms can provide a more complete picture of how ESG measures mitigate or exacerbate different risk profiles within companies. The development and implementation of innovative tools and processes to strengthen ESG management, reporting, auditing and control processes are recommended as promising areas for future work.

In the context of financing constraints and the cost of debt, future research is encouraged to explore the decision-making processes and motivations of management within companies facing these constraints. This could reveal new insights into how companies strategize and adapt to financial constraints, especially in the context of small and medium-sized enterprises



(SMEs) and environmentally friendly enterprises (EFEs), which may face unique challenges in accessing finance. Finally, the study of corporate governance, in particular how different environmental policies interact with companies' internal governance and strategic decisions, is considered an important area for future research. This research could shed light on the complex interplay between regulatory frameworks, corporate governance structures and their joint impact on company performance and risk management.

In summary, the future research avenues suggested in Table 2 aim to fill existing gaps and enrich our understanding of the relationships between EAID, ESG performance, financing constraints and corporate governance. These research avenues not only provide scholars with the opportunity to contribute to the scholarly discourse, but also have the potential to inform companies' practical strategies in the changing environment factors and corporate finance.

### **Conclusion**

A systematic literature review and bibliometric analysis investigated studies on the relationship between environmental accounting information disclosure (EAID) and financing constraints (FC) with the aim of identifying key influencing factors, emerging patterns from past research, and potential future directions. A total of 24 academic papers were assessed in this study, spanning the period from April 2014 to March 2024 (a decade). Notably, this study emphasizes that China is the country with the most results in the field, and *Sustainability* is the journal with the most publications on EAID and FC. The systematic review of the extant literature revealed four central themes that support the relationship between EAID and FC. Furthermore, this investigation offers valuable insights that may inform future scholarly inquiries. These discoveries contribute to the theoretical basis of EAID and FC research and hold considerable relevance for practical applications in the field, provide valuable guidance for academics to uncover unexplored research, guide industry sectors to enhance EAID practices and improve financing activities, and provide a basis for policymakers to formulate effective EAID policies and alleviate FC.

Every study, no matter how caution, is subject to limitations. The database utilized and the screening process employed in this investigation may have unintentionally excluded significant contributions to EAID and FC. The scope of the literature review was confined to journal articles, precluding the inclusion of valuable insights from alternative sources such as books, book chapters, and conference proceedings. Moreover, the qualitative nature of this study may not have adequacy to capture the full complexity of the relationship between EAID and FC. Consequently, further empirical research is needed to delve into these matters and to augment the current findings.

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