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Research Paper

The Strategic Role of Sustainability Auditing in Preventing Greenwashing through the Validation of ESG Disclosures

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Abstract: This study conducts a systematic literature review of 30 academic articles published between 2014 and 2024 to analyze the role of sustainability auditing in providing assurance over Environmental, Social, and Governance (ESG) disclosures. Using the Systematic Literature Review (SLR) approach guided by the PRISMA framework, the study identifies four main factors influencing the quality of sustainability assurance: the characteristics of assurance providers, the level of assurance (reasonable vs. limited), assurance standards and frameworks (ISAE 3000 vs. AA1000AS), and auditor independence. The findings indicate that sustainability auditing has a significant positive impact on the credibility of ESG information, enhances the quality and balance of disclosures, and promotes improvements in corporate accountability through the formalization of data management systems and the strengthening of stakeholder dialogue. However, sustainability auditing practices face substantial challenges, including the complexity and subjectivity of ESG information, competency gaps among practitioners, the absence of mandatory requirements in many jurisdictions, and suboptimal cost–benefit considerations. Data from KPMG show that although 99% of G250 companies reported sustainability information in 2024, only 71% obtained external assurance, indicating significant room for improvement. This study concludes that sustainability auditing is a critical mechanism within the corporate accountability ecosystem; however, its effectiveness depends on the harmonization of standards, stronger regulatory frameworks, enhanced auditor competence, and companies' genuine commitment to sustainability transparency.

Keywords: Sustainability Auditing, ESG Assurance, Disclosure Credibility, Corporate Accountability, Auditor Independence

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1 | INTRODUCTION

Over the past two decades, Environmental, Social, and Governance (ESG) reporting practices have undergone a significant transformation from merely voluntary initiatives into integral components of global corporate business strategies. This paradigm shift has been driven by increasing stakeholder awareness of the environmental and social impacts of corporate activities, as well as mounting regulatory pressures across jurisdictions (Eccles & Serafeim, 2013; Velte & Stawinoga, 2017). ESG disclosure is no longer viewed as an additional burden but rather as a strategic instrument capable of enhancing corporate reputation, mitigating risk, and creating long-term value for all stakeholders (Datt et al., 2019; Ioannou & Serafeim, 2015). Alongside the proliferation of ESG reporting, concerns have emerged regarding the credibility and reliability of disclosed information. The phenomenon of greenwashing—where companies portray an exaggerated image of environmental responsibility without substantive supporting actions—has eroded investor and stakeholder trust in the quality of ESG disclosures (Lyon & Montgomery, 2015; Marquis et al., 2016). Numerous empirical studies reveal a persistent gap between publicly stated ESG claims and firms' actual performance, raising fundamental questions about the accountability and transparency of sustainability reporting (Michelon et al., 2015; Hummel & Schlick, 2016). Within this context, sustainability auditing plays a critical role as an assurance mechanism that provides independent validation of the credibility and accountability of ESG disclosures. Sustainability auditing is a systematic process conducted by independent parties to evaluate whether sustainability information is prepared in accordance with applicable reporting standards, supported by sufficient evidence, and presented fairly (Simnett et al., 2009; Wong & Millington, 2014). Through this external verification mechanism, sustainability audits are expected to enhance the credibility of ESG reports, reduce information asymmetry, and strengthen corporate accountability to stakeholders (Casey & Grenier, 2015; Channuntapipat et al., 2020).

Nevertheless, sustainability auditing continues to face substantial challenges. The absence of globally harmonized audit standards, variations in assurance levels (reasonable versus limited assurance), and heterogeneity in auditor competencies represent key issues that constrain the effectiveness of sustainability audits in ensuring reporting quality (Perego & Kolk, 2012; Maroun, 2019). Furthermore, concerns regarding auditor independence—particularly when sustainability audits are performed by consultants who also provide non-audit services to the same clients—remain a central topic in both academic and professional debates (Channuntapipat et al., 2019; Cahan et al., 2016). Data from KPMG indicate a significant trend in the adoption of sustainability reporting and assurance practices among global companies. The following presents the development of the percentage of G250 companies (the world's 250 largest companies) that reported sustainability information and obtained external assurance during the 2020–2024 period:

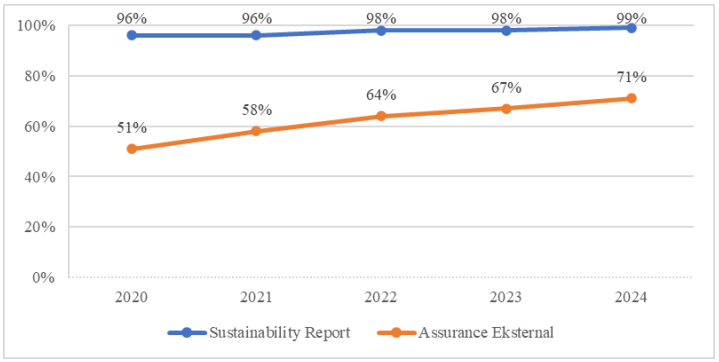

Fig. 1. Trends in Corporate Sustainability Reporting and External Assurance

Source: KPMG Survey of Sustainability Reporting (2020-2024)

The table above highlights an important phenomenon in the global sustainability reporting landscape. Although nearly all G250 companies (99% in 2024) have adopted sustainability reporting practices, only 71% have obtained external assurance for those reports. This 28% gap indicates that there remains substantial room for enhancing the credibility and accountability of ESG disclosures through independent audit mechanisms. The consistent growth in the adoption of external assurance—from 51% in 2020 to 71% in 2024—reflects an increasing awareness of the importance of third-party verification in ensuring the quality of sustainability information (KPMG, 2020–2024). Regulatory developments have also shaped the contemporary sustainability auditing landscape. The implementation of the Corporate Sustainability Reporting Directive (CSRD) in the European Union, climate-related financial disclosure requirements imposed by various capital market authorities, and the sustainability reporting standards developed by the International Sustainability Standards Board (ISSB) have created new momentum toward standardization and mandatory assurance of ESG disclosures (Dumay et al., 2017; De Villiers & Maroun, 2018; Christensen et al., 2021). These regulatory dynamics carry profound implications for

sustainability auditing practices and underscore the need for comprehensive research on the effectiveness of assurance mechanisms. Against this background, the present study aims to systematically synthesize and analyze academic literature on the role of sustainability auditing in providing assurance over ESG disclosures during the 2014–2024 period. Using a systematic literature review approach, this study seeks to provide a comprehensive understanding of the state of the art in sustainability auditing research, identify areas of consensus and contradiction in empirical findings, and formulate future research agendas that contribute to the advancement of sustainability auditing theory and practice. More specifically, this systematic review explores:

- Factors influencing the quality of sustainability auditing
- The impact of sustainability auditing on the credibility and reliability of ESG disclosures
- Challenges and barriers in sustainability auditing practice

2 | LITERATURE SURVEY

2.1 | Sustainability Audit dan Assurance

Sustainability audit is a systematic process for obtaining and evaluating evidence objectively regarding statements about economic, environmental, and social activities to ensure conformity with established criteria (Farooq & De Villiers, 2019; Boiral et al., 2020). Recent research indicates that sustainability audit differs from financial audit in several fundamental aspects: first, it covers a broader and more heterogeneous scope, encompassing environmental, social, and governance dimensions; second, reporting standards are less consolidated, with multiple frameworks such as GRI, SASB, TCFD, and ISSB coexisting; third, materiality is multi-stakeholder in nature, focusing not only on financial materiality but also on impacts on the environment and society (Quick & Inwinkl, 2020; Fuhrmann et al., 2023).

2.2 | Assurance Level and Standards

Sustainability auditing recognizes two main levels of assurance. *Limited assurance* involves limited procedures such as inquiries and analytical procedures, providing moderate confidence at a relatively low cost (Zorio et al., 2021). *Reasonable assurance* entails extensive procedures, including detailed testing and testing of internal controls, offering a high level of confidence but requiring substantial time and financial investment (Martínez-Ferrero et al., 2022; Darnall et al., 2022). The dominant standards are ISAE 3000, developed by the IAASB, which follows an approach consistent with financial auditing, emphasizing independence and evidence-based conclusions (Kend & Nguyen, 2020; Cho et al., 2022), and AA1000AS, which is stakeholder-centric and emphasizes stakeholder engagement and the principles of inclusivity, materiality, responsiveness, and impact (Manetti et al., 2021; Sierra-García et al., 2022; Beske et al., 2020).

2.3 | Greenwashing and the Need for Assurance

Greenwashing refers to the practice of companies portraying a more positive environmental or social image than their actual performance, encompassing symbolic rather than substantive actions, selective disclosure, misleading claims, and false statements (De Freitas Netto et al., 2020; Torelli et al., 2020). Research shows that greenwashing is more prevalent in companies subject to high scrutiny but with poor ESG performance, creating a legitimacy gap and eroding stakeholder trust (Elhag et al., 2026; Yu et al., 2020; Tashman et al., 2019; Seele & Gatti, 2021). Sustainability audits emerge as a mechanism to address greenwashing by providing independent verification of corporate sustainability claims, enhancing credibility through external oversight conducted by competent and independent parties (Pinto & Allui, 2020; Walker & Wan, 2022).

3 | RESEARCH METHODOLOGY

This study employs a Systematic Literature Review (SLR) approach to compile and synthesize empirical findings related to the impact of sustainability reporting on corporate performance. SLR is a systematic and transparent method for identifying, evaluating, and interpreting all relevant research associated with a specific research question, thereby minimizing bias and enhancing the replicability of the study (Lame, 2019). Furthermore, to ensure the rigor of the selection process, this study adopts the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines. PRISMA provides a structured framework consisting of four main stages identification, screening, eligibility, and final inclusion which are visualized through a flow diagram (Page et al., 2021). During the literature identification process, inclusion and exclusion criteria were applied to ensure that the selected articles were directly relevant to the research topic. Articles were included in the review only if they met all of the following criteria:

Table 1. Inclusion dan Exclusion Criteria

Inclusion Criteria	Exclusion Criteria
The article is published in a peer-reviewed academic journal indexed in the selected databases.	Conference papers, book chapters, working papers, editorial notes, or grey literature that have not undergone a rigorous peer-review process
The article is written in English to ensure consistency in interpretation and analysis	Articles written in languages other than English
The article has a substantive focus on sustainability auditing, ESG assurance, or closely related topics such as the quality of sustainability reporting, the credibility of ESG disclosures, or third-party verification	Articles that only mention sustainability auditing or assurance tangentially without in-depth analysis
The article provides empirical analysis (quantitative, qualitative, or mixed methods) or theoretical development relevant to the research problem	Articles with fundamental methodological weaknesses that undermine the credibility of the findings (as identified through quality assessment)
The full text of the article is available for in-depth review and analysis	rticles that are duplicates or different versions of the same publication

As part of the identification stage, the literature search was conducted systematically across four major recognized academic databases, namely Scopus, Web of Science, EBSCO, and ProQuest, with the support of the Publish or Perish software. Publish or Perish facilitates efficient and measurable retrieval of academic articles based on keyword searches. The selection of this tool has been recommended in the literature as an effective support instrument for SLR due to its capability to organize and filter evidence-based literature efficiently (Gusenbauer & Haddaway, 2020). The keywords and search strategy were designed to identify articles relevant to sustainability auditing and ESG disclosure assurance. The search string was developed through a combination of keywords including: "sustainability audit," "sustainability assurance," "non-financial audit," "non-financial assurance," "CSR audit," "CSR assurance," "corporate social responsibility assurance," "ESG," "environmental social governance," "sustainability report," "sustainability disclosure," "non-financial report," "integrated report," "credibility," "reliability," "validity," "accountability," "transparency," "quality," "third-party," "external assurance," "independent verification," and "attestation." The search was limited to articles published within the most recent ten-year period, from 2014 to 2024.

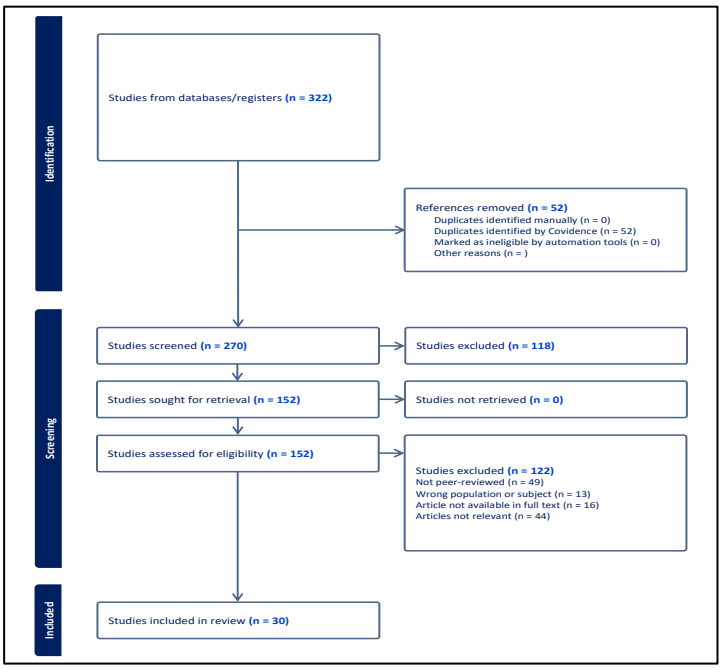

Fig. 2. PRISMA Diagram

Each retrieved article was screened using the Covidence application based on the predefined inclusion and exclusion criteria, and the selection results were documented in the PRISMA flow diagram. This process not only produced a robust body of credible studies but also facilitated the identification of research gaps and future research directions related to the impact of sustainability reporting on corporate performance. The detailed selection process is presented in Figure 2.

4 | DATA ANALYSIS AND DISCUSSIONS

This systematic literature review analyzes 30 articles published in reputable academic journals during the period 2014–2024. The articles were selected based on their relevance to the role of sustainability auditing in providing assurance over the validity and accountability of Environmental, Social, and Governance (ESG) disclosures. This section presents a comprehensive profile of the reviewed articles, including their temporal, geographical, methodological, and publication distributions. The analysis of the geographical context of the studies reveals a diverse distribution, reflecting the global nature of the sustainability assurance phenomenon. The following table presents the distribution of articles based on their geographical or national research contexts:

Table 2. Based on Geographical Context

No	Country	Number of Articles	Percentage (%)
1	Multi-Country (Europe)	6	20
2	Germany	3	10
3	England	2	6.7
4	Spain	2	6.7
5	United States	4	13.3
6	Canada	1	3.3
7	Australia	3	10
8	South Africa	2	6.7
9	Asia (Multi-Country)	2	6.7
10	Global (Cross Country)	5	16.7
	Total	30	100

Source: Data Processed

The geographical distribution reveals a dominance of studies conducted in European countries (43.3% when all European countries are combined), followed by North America (16.6%) and global or cross-country studies (16.7%). The prominence of Europe is consistent with the region's more advanced regulatory developments in sustainability reporting, including the EU Non-Financial Reporting Directive and the subsequent Corporate Sustainability Reporting Directive (CSRD).

4.1 | Methodological Characteristics

The reviewed articles employ a variety of methodological approaches, reflecting the diversity in examining the sustainability assurance phenomenon. The following table classifies the articles based on their research design and the methods employed:

Table 3. Distribution of Articles by Research Methodology

Research Methodology	Number of Article	Persentage
Kuantitatif – Archival / Content Analysis	12	40
Kualitatif – Interview / Case Study	6	20.0
Mixed Methods	4	13.3
Experimental	3	10.0
Survey	3	10.0
Literature Review/Conceptual	2	6.7
Total	30	100

Quantitative methods using archival data or content analysis dominate the literature (40%), reflecting the availability of secondary data from sustainability reports and assurance statements. Qualitative approaches through interviews and case studies (20%) provide in-depth insights into assurance practices and processes. Mixed methods (13.3%) combine the strengths of both approaches to achieve triangulation.

4.2 | Research Topics and Sub-Themes

The content analysis of the articles identifies the main thematic focuses addressed in the literature. These characteristics provide important context for understanding the findings discussed in the subsequent subsection, which offers an in-depth analysis of the substance of what these 30 articles reveal about the role of sustainability auditing in providing assurance over ESG disclosures. The following table classifies the articles according to their primary focus:

Table 4. Distribution of Articles by Primary Research Focus

Primary Research Focus	Number of Article	Persentage
Determinants of Assurance Adoption	8	26.7
Impact on Credibility / Quality	7	23.3
Assurance Provider Characteristics	5	16.7
Standards and Practices	4	13.3
Stakeholder Perceptions	3	10
Regulatory/Institutional Context	3	10
Total	30	100

5 | FACTORS INFLUENCING THE QUALITY OF SUSTAINABILITY AUDITING

The analysis of the literature identifies four main categories of factors that significantly influence the quality of sustainability auditing: the characteristics of assurance providers, the level of assurance, assurance standards and frameworks, and auditor independence. Each category carries important implications for the effectiveness of sustainability auditing in providing assurance over the validity and accountability of ESG disclosures.

5.1 | Characteristics of Assurance Providers

The literature identifies the characteristics of assurance providers as a fundamental determinant of sustainability audit quality. According to Hodge et al. (2014), the credibility of assurance providers significantly influences users' perceptions of the reliability of sustainability information, with auditors from large public accounting firms (Big Four) perceived to provide higher-quality assurance compared to consultants or non-accounting practitioners. These findings suggest that the reputation and track record of auditors play a crucial role in shaping stakeholder trust in the assurance process. The higher perceived quality of Big Four auditors likely stems from their extensive experience in financial auditing, more robust quality control infrastructure, and greater reputational risk in the event of audit failure. This view is further supported by Martínez-Ferrero and García-Sánchez (2017), who found that firms engaging Big Four assurance providers tend to disclose more comprehensive and higher-quality ESG information. This can be explained through a bonding mechanism, whereby highly reputable auditors have stronger incentives to maintain audit quality due to higher reputational stakes, broader client portfolios, and lower economic dependence on individual clients, thus enabling better independence. Nevertheless, Channuntapipat et al. (2020) provide a more nuanced perspective by noting that, while accounting auditors have an advantage in audit methodology and procedural independence, sustainability consultants often possess deeper technical expertise in specific environmental and social issues. This creates a complex trade-off in the selection of assurance providers. On one hand, the methodological rigor brought by accounting auditors is essential to ensure that the assurance process is conducted systematically and accountably. On the other hand, the substantive understanding of sustainability issues held by specialized consultants can be crucial for identifying material risks and evaluating sustainability performance in a substantive, rather than purely procedural, manner.

This heterogeneity in competencies implies that no single type of provider is optimal for all situations. The appropriate choice depends on the nature of the information being assured, the maturity of the company's sustainability management systems, and stakeholder expectations. This is reinforced by Simnett et al. (2016), who report that assurance provided by accounting firms tends to focus more on data quantification and compliance with standards, whereas engineering firms or specialized consultants emphasize technical aspects of environmental performance and operational processes, with evidence showing that companies in the extractive sector are more likely to use engineering consultants compared to firms in the financial services sector.

5.2 | Level of Assurance

According to Hummel et al. (2019), the majority of companies opt for limited assurance rather than reasonable assurance, with only a minority obtaining reasonable assurance. This difference in assurance levels carries significant implications that are not always well understood by stakeholders. Reasonable assurance requires auditors to perform far more extensive procedures, gather more evidence, and reduce the assurance risk to a lower, acceptable level compared to limited assurance. In practice, this means that reasonable assurance may involve larger sampling, more in-depth analytical procedures, external confirmations, and more comprehensive testing of internal controls. The practical consequence of this difference is that reasonable assurance provides a substantially higher level of confidence, but it also demands a significantly greater investment of time and cost. Companies that choose reasonable assurance tend to be larger, face higher environmental risks, experience more intense stakeholder pressure, and have more advanced internal sustainability management systems, often with a board-level sustainability committee and a Chief Sustainability Officer. This indicates that the choice of assurance level is not merely a technical decision but reflects an organization's strategic commitment to sustainability accountability and can serve as a signal of the organization's seriousness in managing and reporting sustainability performance. This view is reinforced by Reimsbach et al. (2018), who identify a positive trend in the adoption of reasonable assurance driven by strong preferences from institutional investors and ESG rating agencies that award higher scores, as well as the implementation of the Corporate Sustainability Reporting Directive (CSRD) in the European Union, which mandates limited assurance with a trajectory toward reasonable assurance.

Meanwhile, Gürtürk and Hahn (2016) reveal that non-professional investors often fail to understand the fundamental difference between the two assurance levels, as the mere presence of an assurance statement, regardless of its level, enhances perceived credibility. Limited assurance, however, provides a substantially lower level of confidence. This knowledge gap creates a significant risk in the sustainability information market, as less sophisticated stakeholders may make decisions based on a mistaken belief in the reliability of information that has received only minimal oversight. This can advantage companies seeking legitimacy benefits from assurance without genuine accountability, as they can obtain relatively inexpensive limited assurance while stakeholders perceive the credibility as equivalent to reasonable assurance. From a policy perspective, these findings highlight the need for greater transparency and education regarding what different levels of assurance truly entail, including the use of clearer and more comprehensible language in assurance statements to reduce the risk of stakeholder misinterpretation that could mislead decision-making.

5.3 |Assurance Standards and Frameworks

According to Maroun (2019), ISAE 3000 and AA1000AS are the two dominant standards in sustainability assurance practice, with ISAE 3000 used by the majority of engagements and AA1000AS by a significant minority. The coexistence of multiple standards creates fragmentation in the assurance landscape, which has negative implications for comparability and transparency. When different companies apply different standards, stakeholders face difficulties in comparing the quality and scope of assurance across firms. More problematically, many stakeholders lack a sufficient understanding of the differences between standards, which can lead to misinterpretation of assurance statements. From a market efficiency perspective, heterogeneity in standards may reduce the informational content of assurance and hinder optimal resource allocation. The choice of standards is often influenced by the type of assurance provider: accounting firms tend to use ISAE 3000 due to its alignment with their financial audit traditions, whereas sustainability consultants more frequently apply AA1000AS, which is more flexible and stakeholder-oriented, creating fragmentation that reduces comparability across companies and jurisdictions.

ISAE 3000 emphasizes procedural aspects and systematic evidence collection, while AA1000AS focuses more on stakeholder engagement and employs a principles-based approach. These philosophical differences reflect differing conceptions of the objectives of sustainability assurance. ISAE 3000, rooted in the financial audit tradition, prioritizes objectivity, verifiability, and independence—concepts long established in the auditing profession. This approach is appropriate when sustainability information can be clearly defined, measured objectively, and verified against pre-determined criteria. However, many sustainability issues inherently involve value judgments, trade-offs among diverse stakeholder interests, and uncertainties that are not easily resolved through traditional audit procedures. AA1000AS seeks to address this complexity by placing the stakeholder perspective at the center of materiality determination and the assurance process. This approach recognizes that sustainability is a multi-stakeholder concept and that accountability requires responsiveness to the concerns of diverse stakeholder groups. Practically, ISAE 3000 implementations tend to produce more structured assurance with extensive documentation, whereas AA1000AS is more flexible and emphasizes stakeholder dialogue.

Junior et al. (2014) note that the use of different standards results in substantial variation in audit scope, procedures performed, and information disclosed in assurance statements. These variations are not merely technical differences but reflect fundamental differences in what is considered quality assurance. From the ISAE 3000 perspective, quality is determined by the rigor of procedures, sufficiency of evidence, and clarity of the audit trail. From the AA1000AS perspective, quality is determined by the extent of stakeholder engagement, comprehensiveness of materiality assessment, and organizational responsiveness. Differences in the conception of quality have important implications: what constitutes good assurance under one standard may not necessarily be considered good under another. This creates challenges for harmonization efforts, as moving toward a single standard would require reconciling these differing philosophical foundations. This is reinforced by Sethi et al. (2017), who find that heterogeneity in assurance standards reduces comparability across reports and complicates users' evaluation of the quality of assurance provided, indicating the need for standard harmonization to enhance transparency and utility for information users.

Furthermore, Sierra-García et al. (2015) reveal that the choice of assurance standard is influenced by company and provider characteristics. Companies with high operational complexity tend to adopt ISAE 3000, while those emphasizing stakeholder engagement prefer AA1000AS. This pattern suggests that companies make strategic choices regarding assurance standards based on organizational characteristics and stakeholder expectations. Firms with complex operations, multiple business units, and geographic dispersion may prioritize the structure and standardization provided by ISAE 3000 to ensure consistency in assurance processes across the organization. Conversely, companies with a strong tradition of stakeholder engagement, active dialogue with civil society, and an emphasis on social license to operate may find AA1000AS more aligned with corporate values and stakeholder expectations. From a contingency theory perspective, this indicates that the optimal assurance approach may vary depending on organizational and institutional contexts, with implications that corporate governance characteristics also influence assurance standard selection, suggesting that the choice of assurance standard is embedded within broader governance frameworks and corporate accountability mechanisms.

5.4 |Auditor Independence

According to Edgley et al. (2015), there are three primary threats to auditor independence in sustainability assurance: the simultaneous provision of non-audit services, long-term commercial relationships with clients, and involvement in the preparation of reports prior to performing assurance. These threats create potential conflicts of interest that can compromise auditor objectivity and professional skepticism. The first threat, simultaneous provision of non-audit services, generates economic dependence that may discourage auditors from issuing a qualified opinion or challenging management representations, as doing so could jeopardize lucrative consulting relationships. The second threat, long-standing client relationships, may lead to excessive familiarity between auditors and client management, potentially eroding professional skepticism and creating a presumption of management integrity without sufficient verification. The third threat, involvement in report preparation, creates the most fundamental self-review threat: when auditors are asked to provide assurance on work products to which they have contributed, their core objectivity is compromised because they are effectively reviewing their own work. Most assurance practitioners acknowledge having faced situations where providing non-audit services threatens independence; although the majority believe existing safeguards are adequate, there is a gap between the perceived adequacy of safeguards and their actual effectiveness in maintaining substantive independence.

Meanwhile, Cheng et al. (2015) find that when auditors provide consulting and assurance services simultaneously, professional skepticism decreases and there is an increased tendency to issue more favorable opinions. These findings have serious implications for the credibility of the sustainability assurance market. If auditor independence is compromised, assurance statements lose their value as independent verification and become merely rubber stamps for management-prepared information. From a stakeholder perspective, if they cannot rely on the independence of assurance providers, they cannot trust the conclusions presented in assurance statements, undermining the very purpose of obtaining external assurance. This issue is particularly acute in sustainability assurance because, unlike financial audits in many jurisdictions, there are often fewer regulatory restrictions on non-audit services and less oversight by professional bodies. Differences in susceptibility between accounting firms and non-accounting consultants indicate that professional norms and ethical frameworks play a critical role in maintaining independence, where dual service provision creates economic dependence that can compromise auditor objectivity. This is reinforced by Birkey et al. (2016), who find that when fee ratios exceed certain thresholds, there is a significant decline in the identification of material misstatements and an increase in restatements, indicating that high fee ratios are correlated with reduced audit quality as measured through various proxies.

Cahan et al. (2016) further find that in countries with strong auditor independence regulations and effective enforcement, the negative impact of high fee ratios on assurance quality is substantially mitigated, whereas in countries with weaker regulations, the negative effects persist. These findings highlight the importance of the institutional context in determining the effectiveness of governance mechanisms. Strong regulations alone are not sufficient if enforcement is weak or penalties for violations are immaterial. Conversely, even in the absence of strict regulations, strong professional norms, reputational concerns, and market discipline can help preserve independence. The optimal approach likely involves a combination of: clear regulatory standards regarding independence requirements; effective enforcement mechanisms with meaningful sanctions for violations; professional oversight through accounting bodies and audit quality reviews; and market-based incentives through reputation effects and stakeholder scrutiny. Cross-country differences in the effectiveness of independence safeguards also indicate that a one-size-fits-all approach may not be appropriate and that independence frameworks need to be designed with consideration of the local institutional context, where uniform standards without accounting for contextual differences in regulatory enforcement and institutional quality may fail to achieve intended outcomes, and where standards must be accompanied by strong enforcement mechanisms to ensure effectiveness.

6 | THE IMPACT OF SUSTAINABILITY AUDITING ON THE CREDIBILITY AND ACCOUNTABILITY OF ESG DISCLOSURES

The literature provides strong empirical evidence regarding the impact of sustainability auditing on various aspects of the credibility and accountability of ESG disclosures. This section synthesizes findings related to the influence of assurance on information credibility, disclosure quality, and corporate accountability.

6.1 | The Impact on Information Credibility

According to Cohen and Simnett (2015), the presence of external assurance consistently enhances the perceived credibility of ESG information, with an average effect size of 0.42, categorized as moderate to large. This effect is stronger for quantitative information compared to qualitative information, reflecting the inherent challenges in verifying narrative claims and forward-looking statements. The findings from this meta-analysis indicate that assurance has a substantive impact on increasing stakeholder trust in sustainability information. The underlying mechanism for this credibility enhancement is likely multifaceted: assurance signals that the company is willing to submit its information to independent scrutiny, reduces information asymmetry between management and stakeholders, and provides users with a level of comfort that the information has been verified against relevant standards. The stronger impact on quantitative information reflects the fact that numerical data are more objectively verifiable compared to qualitative claims, which often involve judgment and interpretation. This is further supported by Casey and Grenier (2015), who explore the paradox of low assurance adoption in the United States despite empirical evidence of its benefits. The primary barriers identified include perceptions of an unfavorable cost-benefit ratio, the complexity of the assurance process, concerns about legal liability, and limited explicit demand from stakeholders for assurance.

6.2 | The Impact on Disclosure Quality

However, Cho et al. (2014) provide contradictory evidence by finding that companies with poor environmental performance are more likely to obtain assurance yet disclose more symbolic and less substantive information. This phenomenon can be explained through legitimacy theory, where underperforming firms use assurance as an impression management tool to maintain corporate legitimacy in the eyes of stakeholders and divert attention from their actual poor performance. The presence of an assurance statement can create an appearance of credibility without necessarily requiring substantive disclosure of negative information. From a strategic perspective, underperforming firms may selectively obtain assurance for certain aspects of sustainability reporting while omitting or downplaying areas of poor performance. Assurance providers, particularly if their independence is compromised or if the scope of assurance is narrow, may fail to detect or report material omissions or misleading presentations. This raises concerns about the potential for "assurance shopping," where companies seek providers who are lenient or willing to accept limited coverage that excludes problematic areas. The paradox highlighted by Cho et al. (2014) suggests that the impact of assurance on disclosure quality may be contingent and context-dependent. This is reinforced by Simnett et al. (2016), who find that assurance has a stronger positive effect on disclosure quality in countries with robust enforcement mechanisms, strong stakeholder-oriented cultures, well-developed capital markets, and mandatory reporting requirements, whereas in countries with weaker institutional environments, assurance tends to be ceremonial with limited impact on the substance of disclosures.

Meanwhile, Braam et al. (2016) show that assurance not only increases the quantity of disclosures but also improves balance, with the ratio of positive to negative information disclosed decreasing in assured reports. This indicates a greater willingness to disclose bad news when independent verification is obtained. These findings have important implications for understanding how assurance influences corporate disclosure behavior. Improved balance in reporting suggests that assurance can encourage more honest and comprehensive disclosure, rather than selective disclosure of favorable information. The underlying mechanism may be that the assurance process creates accountability pressure, making management less likely to engage in pronounced positive bias or omission of negative information, as such practices are more likely to be detected and challenged by independent assurance providers. From an information quality perspective, more balanced reporting provides stakeholders with a more realistic picture of corporate sustainability performance, enabling better-informed decision-making. However, it is important to note that improvements in balance may vary depending on the scope of assurance, the level of assurance, and the independence and competence of the assurance provider. This indicates that the effectiveness of assurance as a mechanism for enhancing disclosure quality is highly contingent on the broader institutional context, demonstrating that assurance does not operate in a vacuum but is embedded within a complex network of regulatory, cultural, and market factors that shape corporate disclosure behavior.

6.3 | Impact on Corporate Accountability

According to Park and Brorson (2015), the assurance process encourages greater formalization of internal ESG data collection and verification systems, clarifies responsibilities and accountability structures related to sustainability, and enhances dialogue with stakeholders. These findings reveal that the impact of assurance extends beyond external reporting to influence internal management processes and organizational governance. The increased formalization of data management systems indicates that preparing for assurance requires the development or enhancement of internal controls, data collection protocols, and verification procedures. This can result in more reliable and consistent data over time, benefiting not only external reporting but also internal decision-making and performance monitoring. Clarification of accountability structures suggests that the assurance process can highlight gaps in organizational governance related to sustainability and promote the establishment of clear ownership and responsibility. Enhanced stakeholder dialogue indicates that assurance, particularly when using stakeholder-oriented standards such as AA1000AS, can stimulate more systematic engagement with key stakeholders to understand their information needs and materiality perspectives. This is supported by Velte and Stawinoga (2017), who identify a positive correlation between assurance and various proxies of accountability, including responsiveness to stakeholder concerns, transparency in reporting negative information, and follow-up on sustainability commitments, with the majority of studies finding a positive relationship.

Meanwhile, Datt et al. (2019), using a different approach, analyzed the causal impact of mandatory assurance requirements on carbon performance in South Africa. Their findings show that firms required to obtain assurance experienced reductions in carbon intensity, improved completeness of carbon disclosures, higher likelihood of setting carbon reduction targets, and more systematic carbon management practices. This provides compelling evidence that assurance not only enhances disclosure quality but also drives substantive improvements in actual sustainability performance. The proposed mechanism is that assurance creates accountability pressure, providing incentives for actual performance improvement rather than merely enhanced disclosure. From a theoretical perspective, this aligns with institutional theory, which suggests that regulatory requirements and external pressures can drive organizational changes beyond symbolic compliance. From a practical perspective, it indicates that mandatory assurance can serve as an effective policy tool to promote genuine corporate sustainability, not just improved reporting. However, it is important to note that the effectiveness of mandatory assurance in driving performance improvements may depend on various contextual factors, including the strictness of regulatory enforcement, the sophistication of capital markets, and the strength of stakeholder activism. This dependence on context suggests that successful implementation of mandatory assurance requires not only legal requirements but also supportive institutional infrastructure and a stakeholder ecosystem capable of exerting meaningful pressure for substantive action.

7 | CHALLENGES AND BARRIERS IN SUSTAINABILITY AUDIT PRACTICES

Although there is empirical evidence on the benefits of sustainability audits, the literature also identifies several significant challenges and barriers that affect the effectiveness of assurance practices. This section synthesizes the challenges identified across various studies.

7.1 | Complexity and Subjectivity of ESG Information

According to Maroun (2019), the inherent characteristics of sustainability information create unique challenges in the assurance process. Unlike financial information, which has relatively clear definitions and measurement standards, ESG information is often multidimensional, context-specific, and involves significant subjective judgment. ESG information spans a wide range of dimensions with diverse sub-dimensions and indicators, lacking a single comprehensive framework universally accepted, resulting in heterogeneity in what is reported and how it is measured. The materiality and relevance of ESG issues vary substantially across industries, geographies, and specific company circumstances, meaning what is material for a mining company differs significantly from what is material for a financial services firm. Many ESG concepts are inherently subjective and value-laden, with the concept of "materiality" in sustainability lacking a uniform definition and being open to interpretation by different stakeholder groups with varying interests and perspectives.

This is further supported by Talbot and Boiral (2018), who found that practitioners face significant complexity in assuring greenhouse gas reporting. Specific challenges include verifying emissions data across multiple tiers in the supply chain, cultural and linguistic barriers in assessing practices across countries, and the difficulty of assigning responsibility when supply chains involve multiple intermediaries. Complexity is compounded by the rapid evolution of sustainability issues, the emergence of new topics, and the expanding scope of sustainability reporting. Meanwhile, O'Dwyer (2015), through an ethnographic study of assurance teams, revealed a fundamental tension between structured audit methodologies and the dynamic, evolving nature of sustainability information. Auditors face difficulties in determining appropriate evaluation criteria, identifying material misstatements in the absence of clear benchmarks, and balancing conflicting stakeholder perspectives. This tension creates an epistemological dilemma for auditors trained in financial audit traditions, where objectivity, verifiability, and precision are central values. In the context of sustainability, much information cannot be verified with the same precision as financial figures, and what constitutes a fair representation may depend on which stakeholder perspective is adopted. Auditors must exercise significant professional judgment in ambiguous situations, where multiple interpretations may be equally defensible.

This uncertainty can create discomfort for auditors and increase the risk that different auditors may reach different conclusions under similar circumstances. The findings further indicate that auditors face particular challenges in evaluating qualitative information, forward-looking statements, and claims about organizational processes that do not produce easily measurable outputs, all of which are key components of comprehensive sustainability reporting but challenging to assure with the same rigor as historical quantitative data.

7.2 | Limitations in Competence and Expertise

According to Huggins et al. (2018), sustainability assurance requires a unique combination of technical accounting knowledge, environmental science expertise, social impact assessment skills, and stakeholder engagement capabilities. Analysis indicates that the majority of assurance practitioners have a strong foundation in only one or, at most, two of these four competency areas. Specifically, accounting auditors tend to be strong in technical accounting but weak in environmental or social expertise, whereas environmental consultants are strong in environmental science but lack audit methodology skills, and most practitioners have minimal training in stakeholder engagement. This creates a significant skills gap, where only a small minority of assurance practitioners consider themselves highly competent across all required areas. The implication of this competency gap is that the quality of assurance may be compromised when engagements require expertise not possessed by the assurance team. For example, auditors without a background in environmental science may be unable to adequately evaluate the plausibility of emissions calculations or assess the appropriateness of methodologies used to measure biodiversity impacts. This is reinforced by Fernandez-Feijoo et al. (2015), who found that auditors with specialized sustainability credentials identified more inconsistencies in disclosures, provided more actionable recommendations, were more likely to detect material omissions, and produced more comprehensive assurance statements compared to auditors without such credentials.

Furthermore, Christensen et al. (2021) highlight an expectation gap in sustainability assurance, wherein a discrepancy exists between what stakeholders expect from assurance and what auditors can realistically provide given constraints in competence, time, and cost. Stakeholders often expect assurance over the effectiveness of sustainability strategies, future sustainability performance, completeness of sustainability reporting, and compliance with all relevant regulations. However, actual assurance coverage predominantly focuses on the accuracy of historical data, with limited attention to forward-looking information, strategic effectiveness, and completeness testing. This expectation gap generates dissatisfaction and undermines the perceived value of assurance among certain stakeholder groups. The gap is particularly problematic as it may mislead stakeholders into believing that assurance provides more comprehensive verification than it actually does. From a professional audit perspective, addressing the expectation gap requires both enhancing capabilities to provide more comprehensive assurance and improving communication about what assurance actually covers and its limitations. This necessitates significant investment in competency development, evolution of assurance methodologies, and enhanced transparency in assurance statements regarding coverage and limitations.

7.3 | Absence of Mandatory Requirements

According to Sethi et al. (2017), the absence of mandatory requirements in many jurisdictions results in suboptimal adoption rates and issues of adverse selection. Under voluntary regimes, the adoption rate of assurance among listed companies ranges between 35–42%, whereas in mandatory or comply-or-explain regimes, adoption reaches 87–94%. This dramatic difference indicates that regulatory intervention plays a crucial role in promoting assurance adoption. Statistical analyses show that regulatory regimes explain a significant proportion of the variance in assurance adoption across countries, even after controlling for economic development, capital market size, and cultural factors. In voluntary regimes, high-performing firms tend to self-select to obtain assurance to signal their superior performance and differentiate themselves from competitors. Conversely, low-performing firms avoid assurance to prevent disclosure of poor performance. The result of this dynamic is an incomplete market, where assurance fails to provide accountability for the segment of firms that most require external scrutiny. Information asymmetry persists for low-performing firms, and stakeholders cannot reliably infer whether the absence of assurance reflects a voluntary choice by high-performing firms or avoidance by low-performing firms.

This is reinforced by Larrinaga et al. (2020), who found that although the EU Non-Financial Reporting Directive significantly increased the level of disclosure, because it did not explicitly mandate assurance, voluntary adoption of assurance increased only moderately. This demonstrates that partial regulation, which mandates disclosure without assurance, can create significant regulatory gaps. Hasan et al. (2018) argue that the absence of mandatory requirements generates adverse selection problems that reduce the effectiveness of assurance as an accountability mechanism. The theoretical model they developed predicts that, under voluntary regimes, high-quality firms self-select into assurance, whereas low-quality firms avoid it, resulting in an incomplete market where assurance fails to provide accountability for the segment most in need of external scrutiny. This model is supported by empirical evidence showing a negative correlation between environmental or social performance and assurance adoption in voluntary regimes. The policy implication of these findings is that achieving widespread, high-quality assurance that serves as an effective accountability mechanism may require mandatory requirements. While voluntary approaches offer flexibility and reduce regulatory burden, they suffer from the fundamental limitation that firms most in need of assurance are least likely to obtain it voluntarily. This suggests that regulators concerned with corporate accountability in sustainability issues should seriously consider mandatory assurance requirements, with a design that carefully considers the implementation phase, the level of assurance required, and the supporting infrastructure necessary to ensure effective compliance and enforcement.

7.4 | Cost Issues and Cost-Benefit Considerations

Sustainability assurance can entail significant financial and resource commitments, which can influence firms' decisions to obtain external assurance. Moroney and Trotman (2016) conducted an empirical study on the determinants of sustainability assurance fees and found that median fees for limited and reasonable assurance vary substantially depending on scope, complexity, and firm size. For medium-sized firms, these costs can represent a material proportion of total expenditures. Key determinants of fees include firm size (the largest driver), operational complexity, environmental sensitivity of the industry, scope of assurance, and type of assurance provider, with premiums for Big Four auditors. While for large firms these costs constitute a relatively small share of revenue, for medium-sized firms they are more salient, creating disproportionate burdens that can potentially deter adoption. The fee structure also explains why most companies opt for limited assurance even though reasonable assurance provides a higher level of verification preferred by stakeholders. Reasonable assurance is substantially more resource-intensive, requiring extensive procedures, broader sampling, and higher engagement of internal and external personnel (Simnett et al., 2016; Hummel et al., 2019). Furthermore, Knechel et al. (2020) report a notable disconnect between sustainability managers and CFOs regarding perceived cost-benefit, with sustainability managers more likely to perceive net positive benefits, while CFOs are more skeptical. This discrepancy can create internal tension in decision-making regarding the adoption of assurance.

Beyond costs, companies must consider the potential returns from assurance. Briem and Wald (2018) developed a framework to assess the return on assurance investment (ROAI), incorporating tangible and intangible benefits. Tangible benefits include reduced cost of capital, improved access to capital markets, and potential premiums from ESG-focused investors. Intangible benefits encompass enhanced reputation, greater stakeholder trust, and improved internal processes. Their analysis indicates that median ROAI is positive, but with high variance, and a significant proportion of firms experience negative returns in the short term. This highlights that while assurance can create value, such value is not guaranteed and depends on multiple factors, including the effectiveness of the assurance process, how results are communicated and utilized, and the responsiveness of capital markets and other stakeholders. The high variance in returns suggests that some firms are able to strategically leverage assurance to create value, whereas others are less successful. Factors

influencing this variance include the quality of assurance obtained, integration of assurance insights into management processes, stakeholder engagement around assured information, and alignment with broader corporate sustainability strategies and performance. To maximize the return on assurance investment, companies need not only to obtain assurance but also to strategically leverage the outcomes in stakeholder communication, internal process improvement, and embedding assurance within a credible, overarching sustainability strategy rather than treating it as a standalone activity.

8 | CONCLUSION

This systematic literature review analyzes 30 articles from 2014–2021 to examine the role of sustainability auditing in providing assurance over ESG disclosures. The analysis identifies four key findings. First, audit quality is influenced by the characteristics of the assurance provider, the level of assurance, the standards applied, and auditor independence, with a trade-off between the methodological rigor of accounting auditors and the technical expertise of consultants. Second, sustainability audits generally enhance the credibility and quality of disclosures, although underperforming firms sometimes use assurance for impression management, and effectiveness depends on the institutional context. Third, assurance strengthens internal accountability through the formalization of data management systems, clarified responsibility structures, and stakeholder engagement, with evidence that mandatory assurance can drive actual improvements in sustainability performance. Fourth, auditing practices face significant challenges, including the complexity and subjectivity of ESG information, competency gaps, the absence of mandatory requirements, and cost-related considerations. Overall, sustainability auditing plays a critical role in enhancing the credibility and accountability of ESG disclosures. Harmonization of standards, appropriate regulatory requirements, development of assurance providers' competencies, corporate commitment to transparency, and ongoing research are necessary to ensure consistent and effective assurance practices, enabling sustainability assurance to function fully as a corporate accountability mechanism and contribute to a more sustainable future.

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