

# Bibliometric Analysis on Sustainability Accounting and Integrated Reporting Challenges

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## ABSTRACT

This study presents a comprehensive bibliometric analysis of the academic literature on sustainability accounting and integrated reporting, aiming to uncover key themes, influential contributors, and emerging trends within the field. Drawing data from the Scopus database and visualizing relationships using VOSviewer, the analysis covers publications from 2013 to 2023. Results indicate that core concepts such as integrated reporting, sustainability reporting, and sustainable development serve as central pillars of scholarly discourse, interconnected with themes like ESG, accountability, and climate change. The research highlights a temporal evolution from environmental concerns toward governance-oriented frameworks and reveals that most contributions originate from Western institutions, particularly the United Kingdom and Italy. Despite a maturing body of literature, the study identifies underexplored areas, including biodiversity reporting, digital innovations, and practitioner-level implementation challenges. These findings offer valuable insights for scholars, practitioners, and policymakers seeking to advance the quality, comparability, and impact of sustainability disclosures in alignment with global sustainability goals.

**Keywords:** Sustainability Accounting, Integrated Reporting, ESG, Bibliometric Analysis, VOSviewer.

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## 1. INTRODUCTION

The global urgency to address climate change, social equity, and environmental degradation has intensified the demand for businesses to move beyond traditional financial reporting towards more holistic disclosure practices. Sustainability accounting and integrated reporting have emerged as vital tools to capture the broader impact of corporate activities on environmental, social, and governance (ESG) dimensions. These approaches aim to foster transparency, enhance stakeholder communication, and promote accountability in aligning corporate operations with the Sustainable Development Goals (SDGs). As stakeholders, including investors, regulators, and civil society, seek a deeper understanding of how organizations create value over time, integrated reporting frameworks are increasingly positioned as essential elements of corporate strategy [1]–[3].

Sustainability accounting extends the scope of conventional accounting systems by incorporating non-financial metrics, such as carbon emissions, energy efficiency, human rights, and community engagement. These measurements are indispensable for evaluating a company's long-term viability and environmental footprint. Meanwhile, integrated reporting seeks to consolidate financial and non-financial disclosures into a single, coherent document that reflects the interdependencies between financial performance and sustainability efforts. Initiatives such as the International Integrated Reporting Framework (IIRC) and the Global Reporting Initiative (GRI) have provided the structural basis for these practices, aiming to support integrated thinking and sustainable value creation [4], [5].

Despite growing support for sustainability accounting and integrated reporting, their practical implementation presents complex challenges. These include issues related to

standardization, measurement reliability, data availability, and stakeholder engagement. The voluntary nature of many reporting initiatives also contributes to variations in scope and quality, reducing comparability across firms and sectors. Furthermore, tensions persist between the goals of sustainable development and shareholder primacy, particularly when disclosures expose environmental or social risks that might conflict with short-term profitability [6]–[8]. These challenges underline the necessity of critically examining the academic landscape to understand the evolution, focus, and gaps in sustainability accounting and integrated reporting research.

In recent years, bibliometric analysis has gained prominence as a systematic approach to map scholarly output, identify influential contributions, and uncover research patterns in specific fields. Applied to sustainability accounting and integrated reporting, bibliometric methods enable scholars to trace thematic developments, detect citation dynamics, and assess collaboration networks across countries, institutions, and authors. As the literature continues to expand in response to regulatory reforms, climate action policies, and investor pressure, bibliometric analysis provides a powerful lens to distill critical insights from a rapidly growing body of knowledge [9], [10].

Although sustainability accounting and integrated reporting have attracted considerable scholarly attention, there remains a lack of clarity regarding the key conceptual clusters, citation structures, and dominant themes that define the field. The fragmentation of research across accounting, environmental science, corporate governance, and management journals further complicates efforts to synthesize the literature. This dispersal leads to knowledge silos that hinder interdisciplinary dialogue and the formulation of coherent theoretical frameworks. Moreover, the practical challenges of implementation—such as the integration of ESG indicators into financial models, assurance of non-financial data, and resistance from organizational leadership—are not yet systematically captured in the existing research landscape. Consequently, there is an urgent need for a bibliometric review that consolidates fragmented insights and maps out future research directions. The objective of this study is to conduct a comprehensive bibliometric analysis of the academic literature on sustainability accounting and integrated reporting challenges

## 2. LITERATURE REVIEW

### 2.1 *Conceptual Foundations of Sustainability Accounting*

Sustainability accounting extends traditional accounting by incorporating environmental and social performance metrics, often referred to as triple bottom line reporting: profit, people, and planet [11]. This concept emphasizes the need for a broader accounting system that reflects not only financial outcomes but also social justice and environmental stewardship. Scholars such as [12] argue that sustainability accounting is not merely about expanding disclosures but rethinking the very objectives of accounting itself—from reporting shareholder value to capturing the externalities of corporate activities.

Over time, sustainability accounting has embraced a variety of approaches, including environmental cost accounting (e.g., internalizing environmental degradation), social return on investment (SROI), and sustainability performance indicators. These methods seek to quantify non-financial performance, yet critics highlight the difficulties in standardizing these measures due to their context-specific nature and methodological complexity [13]. Furthermore, there are debates regarding

whether sustainability accounting can ever be truly objective or whether it is inherently normative, shaped by power dynamics and organizational priorities [14].

## **2.2 *Integrated Reporting as a Communication Tool***

Integrated reporting (IR) emerged as a response to the fragmented and siloed nature of corporate disclosure practices. It aims to provide a holistic view of how organizations create value over time by integrating financial and non-financial information into a single, concise report. The International Integrated Reporting Council developed the <IR> Framework, which introduces six capital categories—financial, manufactured, intellectual, human, social and relationship, and natural capital—as the building blocks of value creation.

Scholars have explored the adoption and diffusion of IR across different regions. [15] identify early adopters, where IR became a listing requirement on the Johannesburg Stock Exchange, as influential in legitimizing the practice globally. However, empirical studies show that IR implementation often varies in depth and quality, with many companies producing reports that are integrated in name only [16]. Concerns persist about IR's capacity to fulfill its promise of enhanced transparency, especially when reports remain heavily focused on financial narratives and fail to disclose substantive ESG risks or trade-offs [17].

## **2.3 *Institutional Influences and Reporting Standards***

The proliferation of sustainability-related disclosure standards—such as the Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-related Financial Disclosures (TCFD)—has contributed to a crowded and sometimes contradictory reporting landscape. While these frameworks provide important guidance, the lack of harmonization among them poses challenges for comparability, assurance, and user comprehension [18].

Institutional theory has been frequently applied to explain corporate adoption of sustainability accounting and IR. Companies often adopt reporting practices due to normative pressures (e.g., expectations from stakeholders), coercive pressures (e.g., regulations), or mimetic pressures (e.g., copying peers) [19]. However, this institutional isomorphism can lead to decoupling—where disclosures become symbolic rather than substantive [20]. Empirical studies show that while many firms adopt sustainability reports to gain legitimacy, they may not implement corresponding changes in their operational or strategic practices [21].

## **2.4 *Empirical Studies on Implementation Challenges***

Numerous studies have investigated the drivers and barriers to sustainability reporting. On the one hand, organizations perceive benefits such as enhanced reputation, improved stakeholder trust, and better risk management. On the other hand, practical challenges include data collection difficulties, lack of expertise, internal resistance, and concerns over competitive sensitivity [22]. Small and medium enterprises (SMEs) in particular face resource constraints that limit their ability to engage with complex reporting requirements [23].

The credibility of sustainability and integrated reports is another critical issue. The voluntary nature of many reporting initiatives leads to selective disclosures, impression

management, and greenwashing [24]. Scholars call for stronger assurance mechanisms and regulatory oversight to improve the reliability of disclosed information. Moreover, assurance remains limited in scope and often lacks the rigor of financial audit processes, raising concerns about its effectiveness in deterring manipulation [25].

### 3. METHODS

This study employed a quantitative bibliometric analysis to explore the intellectual landscape, thematic evolution, and research challenges associated with sustainability accounting and integrated reporting. Data were retrieved from the Scopus database, chosen for its comprehensive coverage of peer-reviewed journals across disciplines. The search strategy involved using keywords such as “sustainability accounting,” “integrated reporting,” “sustainability reporting,” and “non-financial disclosure,” applied to article titles, abstracts, and keywords, limited to the publication years 2013–2023. Only journal articles published in English were included to ensure consistency and academic rigor. The collected dataset was then analyzed using VOSviewer, a software tool designed for constructing and visualizing bibliometric networks. The analysis focused on co-authorship patterns, keyword co-occurrence, citation analysis, and thematic clustering, enabling the identification of influential authors, institutions, and research trends.

## 4. RESULTS AND DISCUSSION

### 4.1 Network Visualization

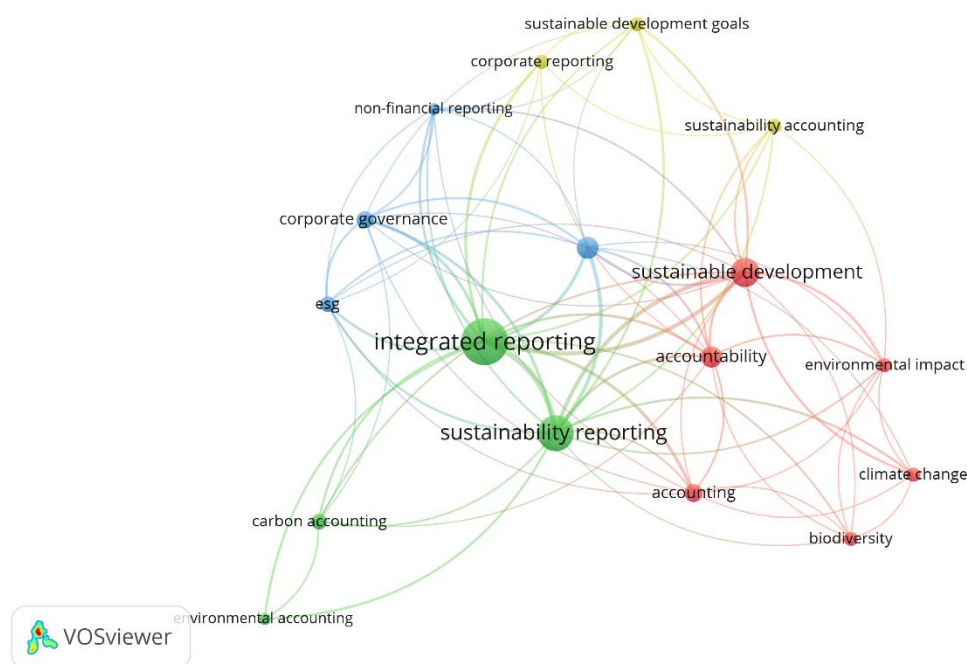


Figure 1. Network Visualization

Source: Data Analysis Result, 2025

The network visualization displays keyword co-occurrence in the field of sustainability accounting and integrated reporting, revealing four prominent thematic clusters represented by color-coded nodes and linkages. The size of each node reflects the frequency of the keyword in the analyzed literature, while the connecting lines represent co-occurrence strength. At the center of the network lie pivotal terms such as “integrated reporting”, “sustainability reporting”, and “sustainable development”, indicating their centrality and interconnectedness within the research

landscape. These central terms act as bridges across multiple clusters, underscoring their conceptual and practical significance in shaping scholarly discourse.

The green cluster, which includes nodes like sustainability reporting, integrated reporting, carbon accounting, and environmental accounting, suggests a strong focus on environmental measurement and disclosure practices. This cluster encapsulates the technical and procedural dimensions of sustainability reporting, reflecting research efforts to quantify environmental externalities and embed them into corporate reporting structures. The presence of terms like carbon accounting emphasizes the growing academic and regulatory emphasis on climate-related financial disclosure, driven by climate risk awareness and environmental accountability.

The red cluster is closely associated with sustainable development, climate change, environmental impact, accountability, and biodiversity. This cluster represents a normative and goal-oriented perspective, focusing on the broader societal and ecological implications of corporate actions. Research in this area often draws from policy frameworks like the UN Sustainable Development Goals (SDGs), linking corporate reporting to environmental justice, long-term ecological resilience, and multi-stakeholder accountability. The density of interconnections within this cluster suggests a rich dialogue on how accounting practices intersect with global sustainability agendas.

The blue cluster encompasses terms such as corporate governance, non-financial reporting, ESG, and corporate reporting, pointing toward the institutional and managerial dimensions of integrated and sustainability reporting. This cluster explores how governance structures, investor expectations, and regulatory frameworks influence the adoption and quality of disclosures. It highlights a significant research interest in understanding how corporate boards, ESG strategies, and compliance mechanisms shape reporting behavior. The overlap between ESG and corporate governance indicates that non-financial metrics are increasingly viewed as integral to strategic decision-making and risk management.

The yellow cluster appears to bridge the red and blue areas, with terms like sustainability accounting and sustainable development goals connecting broader sustainability concerns with accounting methodologies. This intermediary position suggests a cross-cutting research interest that links normative sustainability goals to the technical implementation of accounting systems. It also reflects an emerging scholarly trend aimed at reconciling the theoretical ideals of sustainability with the practical constraints of accounting standards and frameworks. This bridging role reinforces the necessity of interdisciplinary collaboration to advance both the conceptual and applied aspects of sustainability accounting and integrated reporting.

4.2 Overlay Visualization

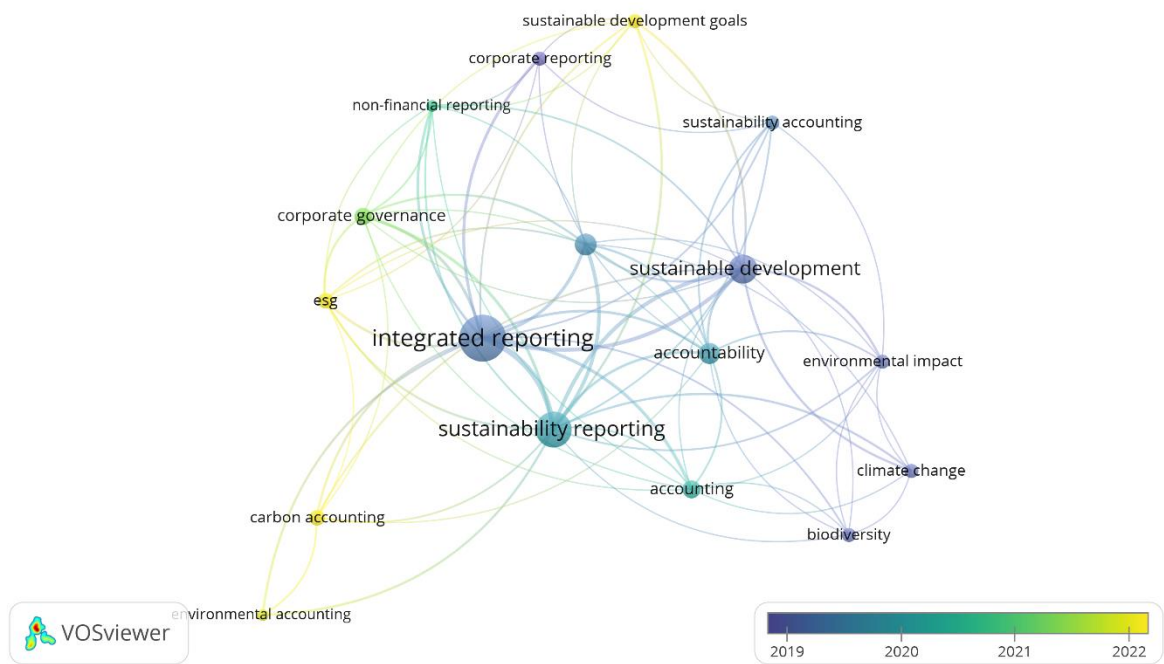


Figure 2. Overlay Visualization  
Source: Data Analysis Result, 2025

This overlay visualization reveals the temporal evolution of keywords in the literature on sustainability accounting and integrated reporting. The color gradient, ranging from dark blue (older, around 2019) to yellow (more recent, around 2022), highlights the average publication year of each keyword’s occurrence. Core terms like “integrated reporting”, “sustainability reporting”, and “sustainable development” are colored in teal to light blue, indicating that while they have been central to the discourse for several years, their research activity peaked around 2020–2021, suggesting established but ongoing interest. In contrast, keywords such as “ESG”, “corporate governance”, and “sustainable development goals” appear in yellow to light green, indicating their increasing relevance in more recent years (2021–2022). This shift reflects the growing emphasis on aligning corporate reporting with global sustainability frameworks (e.g., SDGs) and integrating ESG metrics into decision-making processes. These newer focal points may signify a trend toward policy-driven and investor-oriented reporting, with researchers exploring how governance structures and regulatory pressures influence the quality and scope of sustainability disclosures. Meanwhile, keywords like “climate change”, “biodiversity”, and “environmental impact” remain in darker shades (dark blue to blue), suggesting they were more prominent in earlier stages of research. Their relatively lower average year indicates that while environmental themes were foundational in framing sustainability accounting, newer studies may now be shifting toward integrative models, strategic governance, and accountability structures.

4.3 Citation Analysis

Table 1. The Most Impactful Literatures

Citations	Authors and year	Title
1805	[26]	Safeguarding human health in the Anthropocene epoch: Report of the Rockefeller Foundation-Lancet Commission on planetary health

Citations	Authors and year	Title
997	[27]	Determinants of sustainability reporting: A review of results, trends, theory, and opportunities in an expanding field of research
567	[28]	Integrated reporting: Insights, gaps and an agenda for future research
479	[29]	The international integrated reporting council: A story of failure
396	[30]	Sustainability and stakeholder management: The need for new corporate performance evaluation and reporting systems
381	[31]	The international integrated reporting council: A call to action
337	[32]	Integrated reporting and internal mechanisms of change
303	[33]	Integrated reporting: On the need for broadening out and opening up
252	[34]	Integrating corporate sustainability assessment, management accounting, control, and reporting
251	[35]	Saying more with less? Disclosure conciseness, completeness and balance in Integrated Reports

Source: Scopus, 2025

4.4 Density Visualization

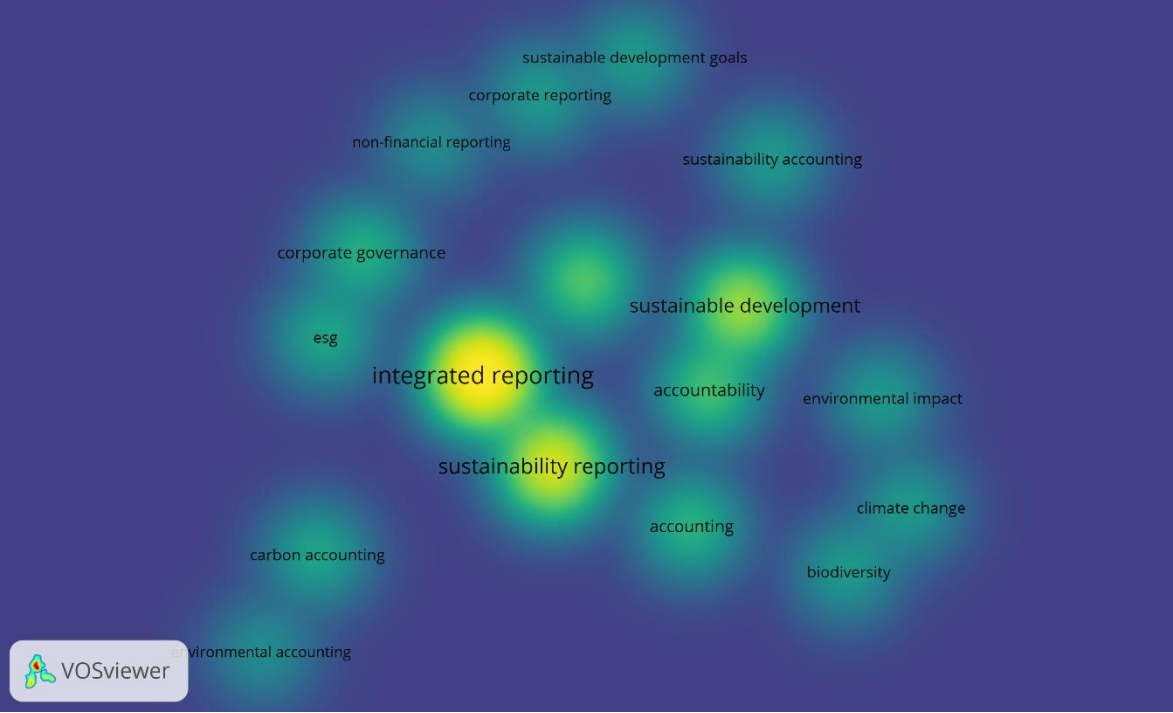


Figure 3. Density Visualization

Source: Data Analysis Result, 2025

The density visualization illustrates the intensity of keyword occurrences within the literature on sustainability accounting and integrated reporting. The color gradient from blue (low density) to yellow (high density) indicates how frequently keywords appear in relation to others within the analyzed corpus. Keywords such as “integrated reporting” and “sustainability reporting” are shown in bright yellow, signifying their position as the most frequently discussed and central themes. These terms form the core of the research domain, reflecting widespread academic engagement and their foundational role in framing the discourse on corporate transparency and sustainability communication. Surrounding these core nodes are moderately intense green and light-



yellow terms like “sustainable development,” “accountability,” “ESG,” and “environmental impact”, which represent significant but slightly less dominant topics. On the periphery, terms such as “biodiversity,” “carbon accounting,” and “environmental accounting” appear in cooler blue tones, suggesting they are emerging or niche topics that, while relevant, have not yet reached the same level of academic focus.

#### 4.5 Co-Authorship Network

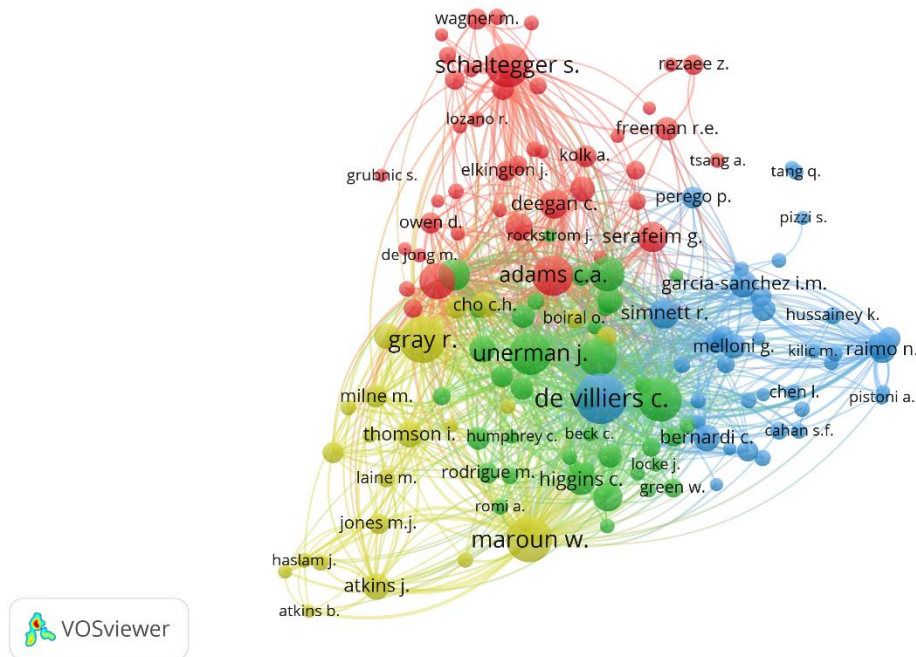


Figure 4. Author Visualization

Source: Data Analysis Result, 2025

The author collaboration network visualizes the interconnected scholarly community within the field of sustainability accounting and integrated reporting. The network is clustered by color, indicating distinct research groups or co-authorship communities. Notably, central figures like de Villiers C., Adams C.A., Gray R., Unerman J., and Schaltegger S. emerge as pivotal scholars due to the size of their nodes (indicating publication volume and influence) and the density of connections (signifying frequent collaboration). The green cluster reflects a group focused on social and environmental accounting, while the red cluster centers on sustainability innovation and policy perspectives. The blue cluster includes authors with a focus on integrated reporting and performance measurement frameworks.



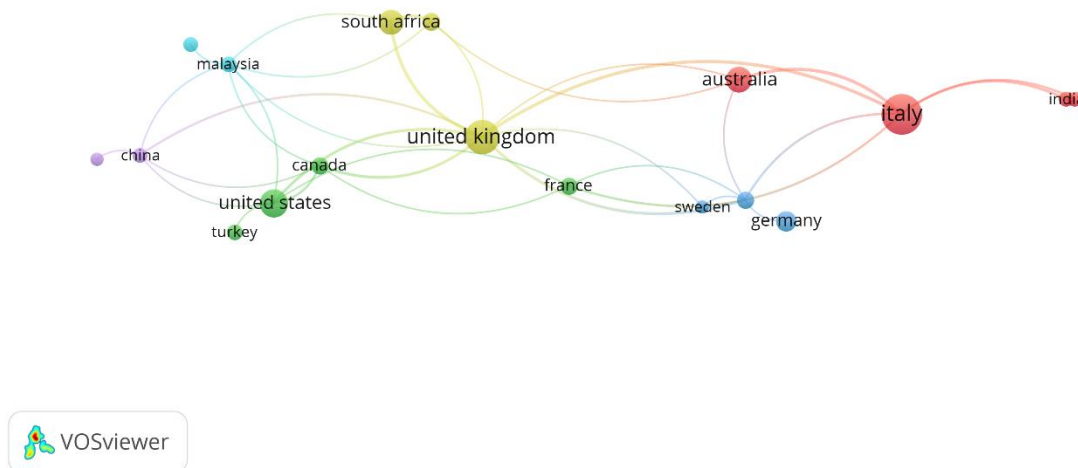


Figure 5. Country Visualization

Source: Data Analysis Result, 2025

This country collaboration network map highlights the geographic distribution and international research partnerships in the field of sustainability accounting and integrated reporting. The United Kingdom emerges as the central hub with the most extensive collaborations, connecting actively with countries such as South Africa, Canada, France, Australia, and the United States. Italy forms another influential cluster with strong ties to Germany, Sweden, and India, indicating a distinct regional focus. Meanwhile, countries like China, Malaysia, and Turkey appear more peripheral, suggesting limited but emerging involvement in global scholarly networks. The visualization underscores a predominantly Western-led research landscape, with growing participation from developing and transitional economies, pointing toward increasing globalization and diversification of academic discourse in this domain.

## Discussion

### 1. Central Themes and Conceptual Core

The co-occurrence network reveals that “integrated reporting,” “sustainability reporting,” and “sustainable development” form the core conceptual triad in this field. These keywords act as intellectual anchors, bridging adjacent clusters such as *carbon accounting*, *corporate governance*, *climate change*, and *accountability*. Their central positioning suggests that much of the literature has focused on how sustainability and financial performance intersect, reflecting growing pressures on corporations to be transparent about their contributions to sustainable development. Notably, “integrated reporting” emerged as the most dominant term, highlighting the increasing global relevance of frameworks such as the IIRC Framework. Its linkages to both financial and non-financial domains underscore the effort to unify traditional financial reporting with sustainability disclosures, promoting a more holistic understanding of corporate value creation. The clustering of “sustainability reporting” alongside environmental and accountability-related terms reflects a parallel strand of research emphasizing the normative responsibility of firms toward society and the planet.

## 2. Temporal Evolution of Research Priorities

The overlay visualization provides key insights into how the field has evolved over time. Early discussions (2019–2020) centered around environmental themes such as climate change, biodiversity, and environmental impact, which were instrumental in laying the groundwork for sustainability concerns in accounting. These topics helped to establish the urgency and moral imperative for corporate transparency beyond profit motives. More recent publications (2021–2022), as indicated by the yellow to light green hues, show a pivot toward governance-related terms like ESG, corporate governance, and sustainable development goals. This shift suggests that the discourse has moved from general sustainability awareness to more formalized and institutionalized forms of measurement, standard-setting, and assurance. The integration of ESG frameworks reflects the increasing influence of investors, regulators, and international bodies in demanding standardized disclosures aligned with global goals and fiduciary accountability. This transition also reflects broader macroeconomic and policy shifts. The alignment of reporting practices with the UN SDGs, the growing popularity of ESG investing, and increased scrutiny of corporate behavior during the COVID-19 pandemic have all accelerated the demand for coherent sustainability metrics. Scholars have responded by focusing on frameworks, assurance practices, and stakeholder inclusiveness in reporting mechanisms.

## 3. Authorial Influence and Collaboration Patterns

The author collaboration network reveals a concentrated core of influential scholars, including de Villiers C., Adams C.A., Gray R., Unerman J., and Schaltegger S. These researchers form dense clusters, reflecting their prolific contributions and frequent co-authorship within their respective subfields. The green cluster led by de Villiers and Unerman, for instance, appears to focus heavily on integrated reporting and accountability, while the red cluster around Schaltegger leans toward sustainability performance and innovation. Interestingly, some authors act as intellectual bridges between clusters—suggesting cross-fertilization between different research traditions, such as critical accounting, environmental policy, and corporate strategy. These collaborations illustrate the interdisciplinary nature of the field, requiring inputs from economics, sustainability science, law, and business ethics. However, the map also shows fragmentation, as many clusters operate in relative silos, indicating a need for more integrative frameworks that combine technical accounting practices with normative sustainability goals.

## 4. Density and Visibility of Research Topics

The density visualization highlights that terms like “integrated reporting” and “sustainability reporting” are not only central but also most intensely researched, appearing in bright yellow zones. These terms represent the most mature and visible areas of study. Around these hotspots lie moderately researched topics like accountability, sustainable development, and ESG, which, while important, have not yet achieved the same concentration of scholarly attention. Peripheral topics such as biodiversity, carbon accounting, and environmental accounting appear in cooler colors, indicating emerging or niche interest areas. These findings suggest that while researchers are beginning to acknowledge the broader scope of sustainability issues, much of the field still revolves around general frameworks rather than topic-specific disclosures. Given the global urgency of climate action and biodiversity loss, these underrepresented areas offer opportunities for future research that can enrich and diversify sustainability reporting.

### Geographic Distribution and International Collaboration

The country collaboration map reveals that the United Kingdom plays a central role in the global network of sustainability reporting research. It is the most connected country, collaborating extensively with both Anglophone (e.g., United States, Australia, South Africa) and European nations (e.g., France, Germany, Sweden). The UK's prominence likely stems from its early adoption of sustainability standards, strong academic institutions, and active policy engagement in corporate

governance reforms. Italy also emerged as a significant contributor, forming a regional collaboration cluster with Germany, Sweden, and India. Meanwhile, countries such as China, Malaysia, and Turkey appear more peripheral but are beginning to establish a presence. This spatial dynamic suggests that while the field is largely dominated by Western institutions, it is gradually globalizing, with emerging economies becoming more engaged in the discourse on sustainable reporting. Increasing inclusivity and geographic diversity will be essential to capture context-specific reporting challenges, especially in developing regions facing unique sustainability pressures.

### 5. Research Gaps and Future Directions

The bibliometric findings point to several underexplored yet critical areas that merit further investigation. First, while climate change and environmental impacts are acknowledged, there is limited work on biodiversity reporting, social inequalities, and just transition frameworks within the accounting literature. Second, the predominance of institutional and framework-focused studies means that practitioner-level challenges, such as internal resistance, capacity gaps, and data management, remain insufficiently addressed. Additionally, despite the increasing emphasis on ESG integration, there is a need to critically assess the assurance quality and standardization of non-financial disclosures. The proliferation of ESG frameworks, each with differing metrics and emphases, risks creating confusion among preparers and users of sustainability reports. Comparative studies evaluating the effectiveness of different reporting regimes could help identify best practices and promote harmonization. Moreover, the role of technology in transforming sustainability reporting—such as the use of blockchain for audit trails, AI for ESG scoring, or data visualization tools—remains under-researched. As digitalization reshapes the landscape of corporate communication, future research should explore how digital tools can enhance transparency, traceability, and stakeholder engagement.

## CONCLUSION

This bibliometric analysis of sustainability accounting and integrated reporting reveals a dynamic and expanding research field centered on the integration of financial transparency with environmental and social accountability. Core themes such as integrated reporting, sustainability reporting, and sustainable development dominate the discourse, supported by a strong network of influential authors and institutions, particularly in the United Kingdom and Italy. Over time, the research focus has shifted from foundational environmental concerns to the adoption of structured governance frameworks like ESG and SDG alignment. Despite growing scholarly engagement, the study highlights notable gaps, including limited exploration of biodiversity, assurance quality, and the role of emerging technologies. Future research should address these gaps through interdisciplinary approaches and global collaboration to ensure sustainability reporting evolves into a robust, credible, and transformative tool for corporate accountability.

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