

# Sustainability Accounting in Developing Countries: Trends and Patterns in ESG Research (2015–2025)

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## ABSTRACT

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This study aims to identify and analyze the development and trends in sustainability accounting research, particularly in the context of Environmental, Social, and Governance (ESG) issues within developing countries during the period from 2015 to 2025. By applying a bibliometric approach, this research utilizes secondary data sourced from reputable databases and processed using VOSviewer software to map the landscape of academic publications. The analysis includes publication volume, co-authorship networks, country collaborations, and keyword co-occurrence. The results indicate a significant increase in ESG-related studies, with China emerging as the leading contributor, followed by India and South Africa. Key research themes that have frequently appeared include ESG disclosures, corporate performance, climate change, renewable energy, and gender diversity in governance. These findings highlight both the progress and the existing gaps in ESG accounting research across developing nations. The study offers valuable insights for researchers, educators, and policymakers to better understand the dynamics of ESG integration in accounting practices and to guide future research directions in the field of sustainability accounting.

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## 1. Introduction

Environmental, Social, and Governance (ESG) accounting has become a central focus amidst growing pressure from investors, regulators, and society for greater sustainability reporting. Developing countries, including Indonesia, face unique challenges in adopting ESG reporting [1], such as limited resources and evolving regulatory frameworks [2]. A bibliometric study can help identify research trends, influential authors, and existing gaps in this field.

The ESG theme aligns with global agendas such as the Sustainable Development Goals (SDGs) and local regulations (e.g., Indonesia's POJK No. 51/2017), and helps academics and practitioners understand the dynamics of ESG research [3]. ESG has become a critical paradigm in modern financial reporting, alongside rising global awareness of sustainability and corporate

responsibility [4]. ESG not only emphasizes financial performance [5], but also the non-financial impacts of companies on the environment, society, and governance. The relevance of ESG to global agendas, such as the SDGs, and national regulations, such as POJK No. 51/2017, lies in their shared goals to foster sustainable development, transparency, and accountability [6].

This study aims to map the development of ESG accounting literature in developing countries from 2015 to 2025, identify the most influential authors, journals, and institutions, and uncover major research themes and gaps to inform future studies.

## 2. Literature Review

### Environmental, Social, and Governance (ESG)

ESG is a financial reporting framework that integrates non-financial metrics to assess corporate performance in three dimensions [7]: environmental (e.g., carbon and waste management), social (e.g., gender equality and employee welfare), and governance (e.g., transparency, board independence, and anti-corruption). ESG facilitates the measurement of sustainability impacts and supports value-based investment decisions [8].

ESG is a reporting framework that integrates three key dimensions:

**Environmental:** Focuses on a company's impact on the ecosystem, including carbon emissions, natural resource usage, and waste management. In accounting, this involves carbon accounting and environmental cost disclosures, aligned with standards such as PSAK 57 [9].

**Social:** Evaluates the company's relationship with labor, communities, and customers, addressing issues like gender equity, occupational health, and CSR. Social accounting involves non-financial reporting, such as community program spending or employee well-being indicators [10].

**Governance:** Pertains to transparency, board independence, and fraud prevention. Good governance in accounting ensures compliance with standards (e.g., PSAK or IFRS) and risk management [11].

### Sustainable Development Goals (SDGs)

The SDGs are 17 global development goals set by the United Nations in 2015, with a 2030 target. They address global issues such as poverty eradication (SDG 1), climate action (SDG 13), and strong institutions (SDG 16). SDGs correlate with ESG, as ESG reporting provides measurable indicators that support SDG achievement, such as reducing emissions or enhancing social inclusion [12].

Accounting supports the SDGs through integrated reporting that combines financial and non-financial performance [13]. For example, companies can map CSR expenditures to specific SDGs like SDG 4 (Quality Education). Accountants also measure the financial impacts of pro-SDG strategies, such as investments in renewable energy, and ensure the data is auditable—bridging global commitments to operational practice.

### POJK No. 51/2017

Indonesia's Financial Services Authority Regulation No. 51/POJK.03/2017 mandates public

companies to prepare sustainability reports that address economic, social, and environmental aspects. This regulation aligns with ESG principles by emphasizing sustainability risk management and transparency, and supports SDG implementation nationally through environmental and social impact reporting [14].

In accounting practice, POJK No. 51/2017 requires the integration of sustainability data into annual reports, increasing complexity in financial disclosures. Accountants must ensure that ESG data comply with applicable accounting standards (e.g., PSAK) and POJK requirements, such as sustainability risk disclosures. The regulation also encourages adoption of international standards like GRI to enhance the global competitiveness of Indonesian companies.

### **ESG and the SDGs**

ESG aligns directly with several SDGs, especially those focused on environmental (SDG 13: Climate Action; SDG 15: Life on Land), social (SDG 5: Gender Equality; SDG 8: Decent Work and Economic Growth), and governance (SDG 16: Peace, Justice, and Strong Institutions). ESG reporting, such as carbon emissions disclosures, supports SDG 13 by providing data for impact monitoring. Social ESG initiatives, such as community empowerment or gender policies, contribute to SDGs 5 and 8. Governance practices such as transparency and anti-corruption measures align with SDG 16 [15].

ESG reporting enables companies to measure and communicate their SDG contributions, improving transparency for stakeholders including investors and regulators. Reporting frameworks like the Global Reporting Initiative (GRI) or International Sustainability Standards Board (ISSB) help companies link ESG indicators to SDGs such as emission reduction (SDG 13) or educational access (SDG 4). ESG thus functions as an operational tool to translate SDG commitments into measurable and accountable business practices.

### **ESG and POJK No. 51/2017**

In Indonesia, POJK No. 51/2017 on Sustainable Finance requires public companies to submit sustainability reports covering economic, social, and environmental aspects. This regulation promotes ESG integration in business strategies and reporting [16]. The regulation highlights environmental risk management, social welfare, and governance—all core pillars of ESG. For instance, companies must report on waste or emissions management (environmental ESG) and CSR programs (social ESG).

The relevance of POJK No. 51/2017 to ESG lies in its role in enhancing the competitiveness of Indonesian companies globally. ESG-aligned reporting that meets international standards can attract sustainability-conscious investors. Moreover, POJK No. 51/2017 supports Indonesia's national agenda toward the SDGs, including carbon emission reduction under the Paris Agreement. It thus bridges global SDG commitments with local practice through the ESG framework.

### **Integration of ESG, SDGs, and POJK No. 51/2017**

These three elements intersect in building an inclusive and sustainable economy. ESG provides the tools to measure and report sustainability performance [16], SDGs offer the global goal-setting framework, and POJK No. 51/2017 delivers the national legal foundation for implementation. For

instance, an Indonesian energy company that reports carbon emission reductions under POJK No. 51/2017 not only complies locally but also contributes to SDG 13 and improves its ESG score—attracting sustainability-focused investors. However, challenges such as limited technical capacity, high implementation costs, and inconsistent reporting standards still hinder ESG adoption in Indonesia [17]. Thus, harmonization between global standards (e.g., ISSB) and local regulations (e.g., POJK No. 51/2017) is essential to maximize impact.

### 3. Methodology

This study employs a quantitative research design using a bibliometric approach to map research developments, identify trends, and discover research gaps based on academic literature data. The data source is the Scopus database, an internationally recognized indexing service that provides comprehensive metadata (titles, abstracts, authors, affiliations, citations, etc.).

The data analysis tools used are Publish or Perish (PoP) for data collection and VOSviewer for bibliometric network visualization. PoP facilitates the retrieval of article metadata from sources such as Scopus, while VOSviewer generates visualizations such as co-authorship, co-citation, and co-word maps.

The keyword search for research articles includes: “ESG accounting”, “sustainability reporting”, “environmental accounting”, “social accounting”, and “governance accounting”. The sample criteria consist of peer-reviewed articles written in English, published between 2015 and 2025, with at least one citation, and focused on ESG accounting in developing countries. Based on the PoP-assisted search, a total of 971 articles were initially found. However, only 130 articles met the inclusion criteria for analysis.

### 4. Results and Discussion

To gain a comprehensive understanding of the development of ESG accounting research in developing countries, this study conducted a bibliometric analysis using data from the Scopus database. The analysis focused on several key dimensions, including publication trends over time, co-authorship patterns among researchers and countries, citation impact, and thematic evolution through keyword co-occurrence. The following figures and table illustrate the main findings from the bibliometric mapping, visualized using VOSviewer. Each visualization provides insight into how the field of ESG accounting has grown and evolved in the context of emerging economies. The discussion begins with an overview of the publication trends from 2015 to 2025.

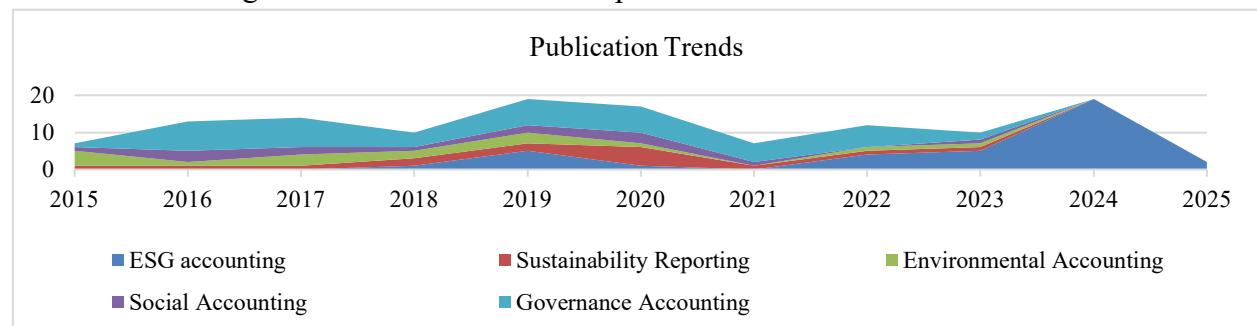


Figure 1 Quantity of Publications  
Source: secondary data (processed, 2025)

Figure 1 illustrates the annual growth of ESG-related accounting publications in developing countries over the period of 2015 to 2025. The figure shows a significant upward trend, especially in the last five years, reflecting increasing global and regional attention toward sustainability issues. This upward trajectory indicates a growing scholarly interest and an expanding research landscape in ESG topics, driven by regulatory developments, stakeholder demands, and the pressing need for sustainable development practices in emerging economies.

After identifying the trend in publication volume over time, it is also important to examine the patterns of collaboration among researchers. Figure 2 highlights the co-authorship network, illustrating how ESG accounting research in developing countries is shaped by scholarly cooperation.

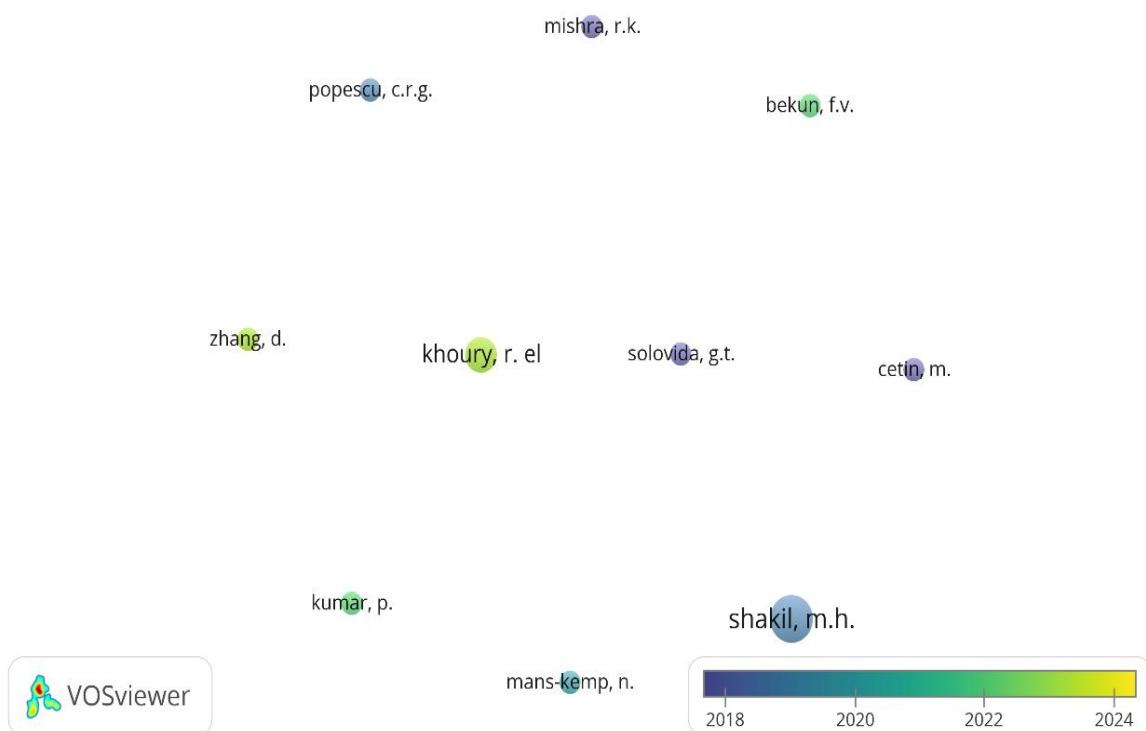


Figure 2 presents the co-authorship network among individual researchers in ESG-related accounting studies. The visualization highlights key author clusters, showing collaborative relationships and the formation of research communities. The density of connections within certain clusters suggests the presence of prolific research groups or institutions actively contributing to ESG discourse. This indicates a collaborative spirit among scholars and reflects the multidisciplinary nature of ESG research, which often spans finance, environmental studies, governance, and policy-making. In addition to collaboration, the influence of individual studies can be observed through citation analysis. Table 1 presents the top 10 most cited articles, shedding light on the foundational and most impactful works in the ESG accounting literature across developing nations.

Table 1 List of Top 10 Citations

No	Authors	Title	Citations
1	Li Xiaorong, Wang Steven Shuye, Wang Xue (2017)	Trust and stock price crash risk: Evidence from China	346
2	XIE Heping, WU Lixin, ZHENG Dezhi (2019)	Prediction on the energy consumption and coal demand of China in 2025	294
3	Festur Victor Bekun, (2022)	Mitigating Emissions in India: Accounting for the Role of Real Income, Renewable Energy Consumption and Investment in Energy	290
4	Michel Beine, Christopher Parsons (2015)	Climatic factors as determinants of international migration	269
5	Pavitra Dhamija, Surajit Bag (2020)	Role of artificial intelligence in operations environment: a review and bibliometric analysis	246
6	Mahmoud Arayssi, Mustafa Dah, Mohammad Jizi (2016)	Women on boards, sustainability reporting and firm performance	243
7	Shamsul N. Abdullah, Ku Nor Izah Ku Ismail, Lilac Nachum (2015)	Does having women on boards create value? the impact of societal perceptions and corporate governance in emerging markets	241
8	Mehmet Cetin (2016)	Sustainability of urban coastal area management: A case study on Cide	232
9	Bifan Zhu, Yanfang Wang, Jian Ming, Wen Chen, Luying Zhang (2018)	Disease burden of COPD in china: A systematic review	213
10	Ahmed Aboud, Ahmed Diab (2018)	The impact of social, environmental and corporate governance disclosures on firm value: Evidence from Egypt	206

Table 1 provides a list of the ten most cited articles in ESG-related accounting research from developing countries. The most cited article by Li Xiaorong et al. (2017) discusses the link between trust and stock price crash risk in China, highlighting the economic implications of governance issues. Other highly cited works focus on energy consumption forecasting, the role of renewable energy in mitigating emissions, and the presence of women on corporate boards. These citation patterns indicate the centrality of governance, environmental policy, and inclusivity as key research themes in ESG literature within developing economies.

Beyond individual authors, the geographical distribution of research collaboration is equally significant. Figure 3 visualizes co-authorship among countries, offering insight into which nations are most actively engaged in international ESG accounting research.

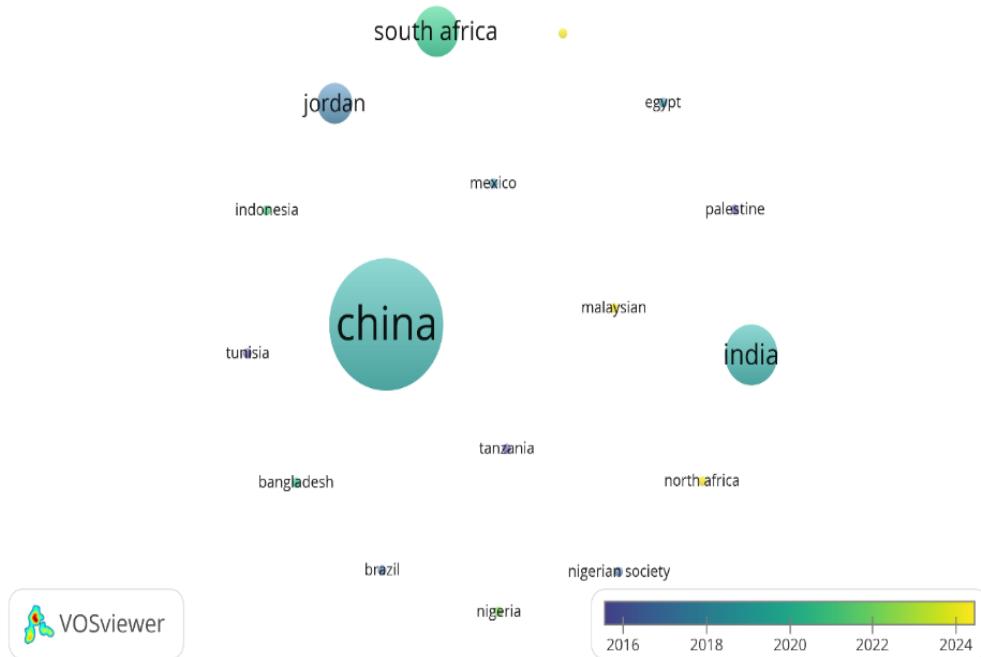


Figure 3 displays the network of co-authorship at the country level. It reveals that certain countries, notably China, India, and South Africa, act as major hubs of international collaboration in ESG research. These countries not only produce a high volume of research but also engage actively with scholars from other regions, suggesting their leadership roles in shaping ESG accounting narratives in the global South. The figure underscores the importance of cross-border academic cooperation in addressing sustainability challenges that transcend national boundaries.

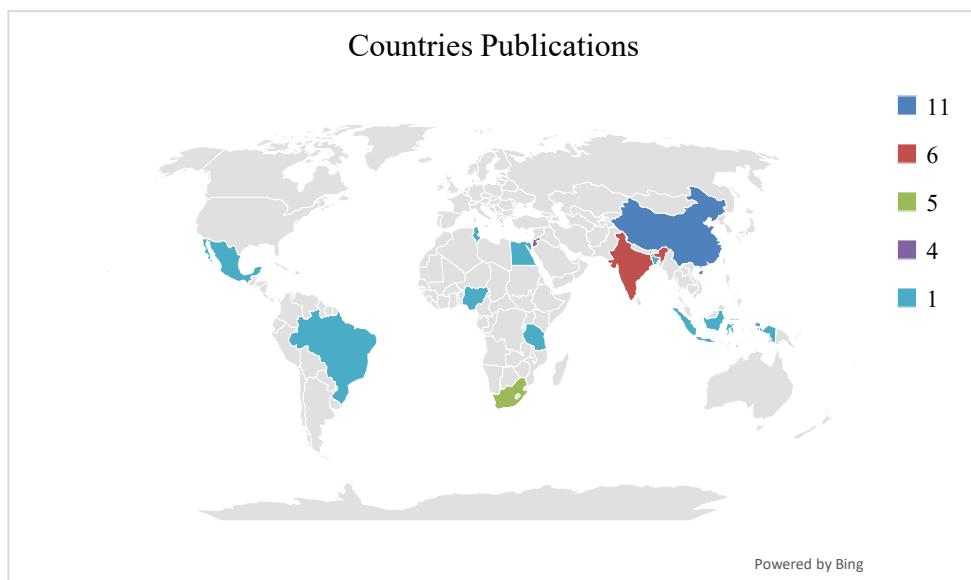


Figure 4 Top 16 Countries of ESG Accounting Publications  
Source: secondary data (processed, 2025)

Figure 4 ranks the top 16 developing countries contributing to ESG-related accounting literature. China leads with 11 publications, followed by India (6) and South Africa (5). The presence of countries like Egypt, Indonesia, Brazil, and Malaysia, though with fewer publications, reflects a geographically diverse engagement with ESG topics. This distribution suggests growing awareness and policy interest in ESG reporting and accountability mechanisms across various regions, despite differences in economic scale and institutional development.

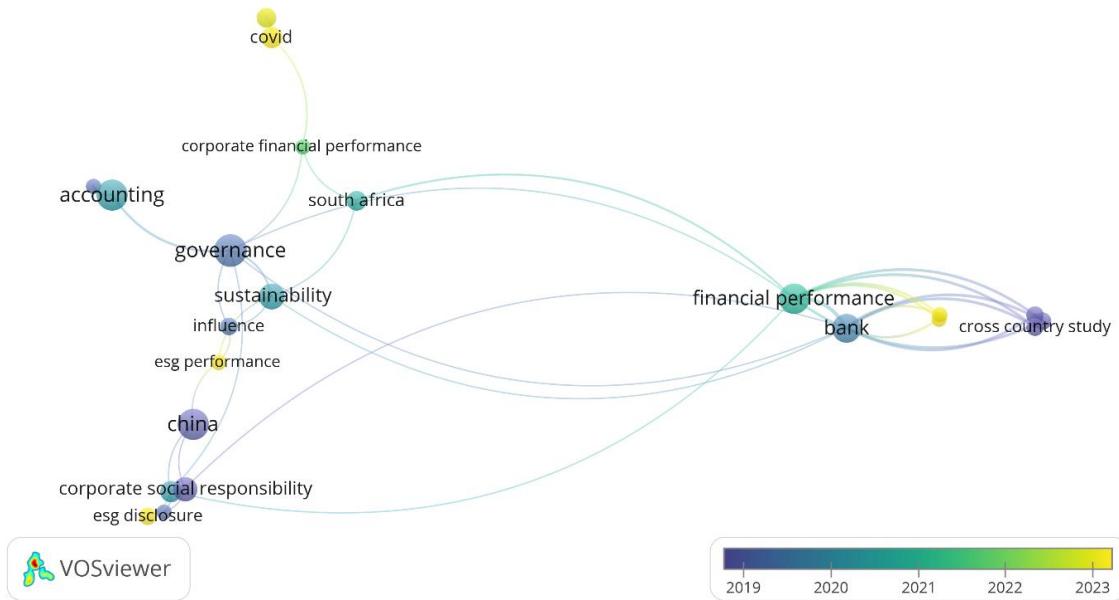


Figure 5 Co-Occurrences All Keywords  
Source: secondary data (processed, 2025)

Figure 5 visualizes the co-occurrence of keywords in ESG accounting publications. Prominent terms include “sustainability reporting,” “corporate governance,” “ESG disclosure,” “renewable energy,” and “firm performance.” The clustering of these keywords reveals dominant thematic areas and interconnected topics, indicating that ESG research in developing countries largely revolves around performance metrics, regulatory frameworks, and environmental responsibility. This network provides valuable insight into the intellectual structure and evolving priorities within the ESG research community.

## 5. Discussion

The findings of this study are consistent with prior bibliometric analyses indicating a global increase in ESG-related publications, particularly in emerging economies. The dominance of countries like China, India, and South Africa aligns with previous studies highlighting their growing research capacity and policy engagement in sustainability practices [1,14]. The most cited works focus on ESG’s intersection with corporate performance, environmental policy, and social responsibility, which reinforces prior observations about the multidimensional impact of ESG on business strategy [5,7].

Notably, this study enriches the literature by specifically examining the bibliometric landscape in developing countries—an area that has been less explored. While earlier studies have

emphasized the role of ESG in financial performance, this research also reveals growing attention to issues such as gender diversity and renewable energy, signaling a broader scope in ESG-related research themes.

There are several limitations to this study. First, the analysis is restricted to publications indexed in the Scopus database, potentially excluding relevant articles from other databases or grey literature. Second, the search was limited to English-language publications, which may have overlooked ESG studies published in local languages. Third, bibliometric analysis focuses on quantity and relationships but does not assess the methodological quality or empirical validity of the studies analyzed.

Future research should consider expanding the scope to include databases such as Web of Science or Google Scholar and incorporate multilingual publications for a more comprehensive mapping. Qualitative content analysis could also complement bibliometric methods to deepen understanding of the narratives and methodologies used in ESG research. Moreover, comparative studies between developed and developing countries would be valuable to identify structural and policy differences in ESG implementation and reporting.

## 6. Conclusion

This study presents a bibliometric analysis of sustainability accounting research in developing countries from 2015 to 2025, with a specific focus on ESG (Environmental, Social, and Governance) themes. Using Scopus-indexed data and visualized through VOSviewer, the analysis identified major trends, influential authors, and key thematic clusters in the field.

The findings indicate that ESG research has gained significant momentum in developing countries, particularly in China, India, and South Africa. Co-authorship networks suggest a growing culture of collaboration, and citation analysis highlights governance, environmental management, and social equity as dominant themes. Keyword co-occurrence analysis further reveals strong interest in corporate governance, sustainability reporting, and renewable energy.

These insights are valuable for academics, policymakers, and practitioners aiming to strengthen the role of ESG in shaping sustainable development and regulatory frameworks. The study contributes to filling a gap in bibliometric research on ESG accounting in emerging economies and sets the stage for further inquiry into policy impact and institutional adoption.

## 7. Recommendation

Based on the findings of this study, it is recommended that academic institutions in developing countries actively foster interdisciplinary and cross-border collaboration in ESG-related research to enrich the diversity of perspectives and address region-specific sustainability challenges. Policymakers are encouraged to strengthen regulatory frameworks that support ESG disclosures, aligning national guidelines such as POJK No. 51/2017 with international standards like the Global Reporting Initiative (GRI) and the International Sustainability Standards Board (ISSB) to enhance global comparability and investor confidence. Meanwhile, corporate practitioners should integrate ESG considerations into their core business strategies, supported by investments in data infrastructure and staff training to improve the quality and reliability of sustainability reporting. Furthermore, future research should expand to include underrepresented countries and adopt

mixed-method approaches that combine bibliometric analysis with qualitative assessments. This will provide a more comprehensive understanding of how ESG principles are implemented and their real-world impact across sectors in developing economies.

## Appendix

### Appendix A: Detailed Search Parameters for Bibliometric Analysis

The following table outlines the search parameters used in Publish or Perish (PoP) to retrieve ESG-related accounting articles from the Scopus database. These parameters ensure the selection of relevant articles focused on developing countries from 2015 to 2025.

**Table A1: Search Parameters**

Parameter	Description
Database	Scopus
Keywords	"ESG accounting", "sustainability reporting", "environmental accounting", "social accounting", "governance accounting"
Publication Period	2015–2025
Language	English
Inclusion Criteria	Peer-reviewed articles, minimum 1 citation, focus on developing countries
Exclusion Criteria	Non-English articles, grey literature, articles not related to ESG accounting
Total Initial Articles	971
Articles After Screening	130

### Appendix B: Top Keywords and Their Frequencies

The keyword co-occurrence analysis conducted using VOSviewer identified the most frequent terms in the 130 analyzed articles. The table below lists the top 10 keywords, their frequencies, and their relevance to ESG dimensions.

**Table A2: Top 10 Keywords in ESG Accounting Literature**

Keyword	Frequency	ESG Dimension
Sustainability Reporting	85	General ESG
Corporate Governance	62	Governance
ESG Disclosure	58	General ESG
Renewable Energy	45	Environmental
Firm Performance	42	General ESG
Carbon Accounting	38	Environmental

Social Responsibility	35	Social
Environmental Management	32	Environmental
Gender Diversity	28	Social
Stakeholder Engagement	25	Social

### Appendix C: Co-Authorship Network Details

The co-authorship network visualized in Figure 2 (main text) was generated using VOSviewer with the following settings:

- **Unit of Analysis:** Authors
- **Minimum Number of Documents per Author:** 3
- **Minimum Number of Citations per Author:** 5
- **Total Authors Meeting Threshold:** 78
- **Clustering Method:** VOSviewer's default clustering algorithm (resolution: 1.0, minimum cluster size: 5 authors)

The network identified five major clusters, with the largest cluster centered around authors from China, focusing on governance and firm performance. The second largest cluster included authors from India and South Africa, emphasizing environmental accounting.

### Appendix D: Country-Level Publication Data

The following table provides detailed publication counts for the top 16 developing countries contributing to ESG accounting research, as referenced in Figure 4 (main text).

Table A3: Publication Counts by Country

Country	Number of Publications	Percentage of Total
China	11	8.46%
India	6	4.62%
South Africa	5	3.85%
Malaysia	4	3.08%
Indonesia	4	3.08%
Brazil	3	2.31%
Egypt	3	2.31%
Thailand	2	1.54%
Vietnam	2	1.54%
Nigeria	2	1.54%
Pakistan	2	1.54%
Bangladesh	1	0.77%
Philippines	1	0.77%
Colombia	1	0.77%

Turkey	1	0.77%
Mexico	1	0.77%

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