

Environmental information disclosure: A bibliometric analysis of current trends and future directions



Yuyiqi Shen, Kamarul Baraini Keliwon *, Abu Hanifah Ayob, Syaima Adznan, Cao Yang, Nan Zhou

Faculty of Economics and Management, Universiti Kebangsaan Malaysia, Bangi, Selangor, Malaysia

ARTICLE INFO

Article history:

Received 26 May 2025

Received in revised form

3 May 2026

Accepted 2 July 2026

Keywords:

Environmental information disclosure

Bibliometric analysis

Corporate sustainability

Research trends

Stakeholder transparency

ABSTRACT

With the growing global focus on sustainability and corporate responsibility, environmental information disclosure (EID) has become an important tool for improving transparency, building trust, and supporting sustainable development. Although many studies and several review papers on EID exist, most remain general and lack in-depth analysis. Therefore, this study conducts a comprehensive bibliometric analysis to examine the current research landscape, identify major trends, and clarify the knowledge structure of the field. The analysis is based on 885 Scopus-indexed documents published between 1982 and 2025 and uses Microsoft Excel, BiblioMagika, OpenRefine, Bibliometrix, and VOSviewer to perform frequency analysis, citation impact assessment, and bibliometric network mapping. The results show that research on EID began in 1982 and increased rapidly after 2011, with China and the United States emerging as the leading contributors. The field shows an average of 1,123.98 citations per year, 54.61 citations per paper, and 2.85 authors per paper, highlighting its growing academic importance. In practice, transparent environmental information disclosure strengthens corporate social responsibility, enhances stakeholder trust, and supports sustainable development strategies, while socially it supports evidence-based decision-making by citizens, policymakers, and communities. Finally, this study provides an updated overview of EID research and identifies four potential future research directions, contributing to the further development of this field.

© 2026 The Authors. Published by IASE. This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

Environmental Information Disclosure (EID) forms one of the most valuable cumulations of corporate governance, sustainability, and corporate responsibility in the past decades. No longer seen as a voluntary practice, No longer seen as a voluntary practice, EID is now a multifaceted requirement that encompasses various aspects of corporate responsibility, and companies are expected to adhere to it. Additionally, EID now takes the form of a global standard and is now in agreement with several international agreements such as the Paris Agreement and the United Nations Sustainable Development Goals (Gurol and Lagasio, 2023; Yang et al., 2020a). In the wake of the growing interest in environmental challenges like climate change,

biodiversity erosion, and environmental degradation, regulators and society generally are the ones insisting on transparent and standard reporting of environmental performance by firms. EID has become an intrinsic part of sustainable business and ethics in a bid to ensure regulatory compliance and sustainable development (Boffa et al., 2023; Jizi et al., 2014; Xi et al., 2022; Shoeb et al., 2022).

The greatest advisory function of EID instruments is the promotion of transparency, as it would offer the opinions of the interested party to assess the corporate responsibility and vulnerability to environmental hazards (Wang et al., 2021). EID would reduce the information asymmetry and instill considerable trust, first, in individual investors and consumers and a larger group of people and, second, would prove to be a competent strategic course of action to act upon the perception of investors and their preference for the corporation as well as the image of a corporation. It is not a voluntary disclosure process anymore because it is obligatory, provided by regulators, socially responsible shareholders, consumers, and NGOs (Cordeiro et al., 2020).

* Corresponding Author.

Email Address: baraini@ukm.edu.my (K. B. Keliwon)

<https://doi.org/10.21833/ijaas.2026.07.002>

Corresponding author's ORCID profile:

<https://orcid.org/0000-0001-9785-1829>

2313-626X/© 2026 The Authors. Published by IASE.

This is an open access article under the CC BY-NC-ND license

(<https://creativecommons.org/licenses/by-nc-nd/4.0/>)

Presently, different companies make sustainability reports annually or according to a specific model and approach, such as the Global Reporting Initiative (GRI) and the Task Force on Climate-Related Financial Disclosures (TCFD).

EID reveals a broad scope of issues including greenhouse gas emissions, energy and water usage, waste disposal, emission of gases, and the safeguarding of biodiversity (Dong et al., 2023; Jain et al., 2015; Ramakrishnan et al., 2022; Rweyendela et al., 2023; Ramdhony et al., 2023). They have developed a new status of carbon disclosure, and in carbon footprint reporting, carbon mitigation strategies are becoming mandatory (Konadu et al., 2022). Besides the current performance, EID can house forthcoming policy direction, innovation, and a sustainability policy declaration.

Disclosure, however, is a different practice mostly in firms and industries. To fulfill the goal of reporting, institutional factors are considered, such as the governance system, sustainability boards and committees, and leadership orientation (Boffa et al., 2023; Chebbi and Ammer, 2022; Khan et al., 2021). Industry features are also very significant: specialists working in industries with high impact, such as the mining industry, oil industry, and chemicals, are exposed to stakeholder pressure and are required to disclose more than economic service industries. Stakeholder activism presents disclosure demands as well in industries that entail more environmental externalities (Sutantoputra, 2022).

According to EID, as a research subject, has developed expeditiously within a very short period and addresses a number of areas, such as whether the disclosure activity affects voluntary and mandatory disclosure (Jain et al., 2015; Kalu et al., 2016; Nekhili et al., 2017; Odera et al., 2016), or the effect of EID and business environmental performance (Gallego-Álvarez and Pucheta-Martínez, 2022; Khan, 2022), and regulatory and financial implications of the disclosure practice (Chen et al., 2022).

To establish this shift, the present paper utilizes the materials used in bibliometrics to follow the conceptual and intellectual progress, as well as the subject matter of the studies concerning EID. The approach used by research to identify and discuss emergent issues, prolific authors, and the emergence of high-profile journals and institutions is to use citation networks, which creates a complete picture regarding the transformation and development of EID as an educational field:

RQ1: What are the current trends and impacts in the field of EID?

RQ2: Who are the key contributors in EID research, including influential authors, institutions, countries, and journals?

RQ3: What is the knowledge structure of research within the EID field?

RQ4: What are the most influential articles under the EID topic?

By addressing these questions, the study seeks to capture not only the breadth of research on EID but also the intellectual patterns and linkages shaping the field. It makes four key contributions. First, it synthesizes fragmented literature, identifying dominant themes, emerging areas, and research gaps. Second, it maps the principal contributors: authors, institutions, and journals, highlighting collaborative networks that drive scholarly progress. Third, it uncovers the intellectual and conceptual frameworks of EID research, showing how ideas circulate within academia. Fourth, by identifying the most influential publications, it offers a curated set of seminal works for future scholars. The paper is organized as follows: Section 2 reviews the literature and outlines the bibliometric approach; Section 3 details data sources, search strategies, and analytical methods; Section 4 presents findings, including descriptive statistics, collaboration patterns, and thematic clusters; Section 5 discusses theoretical and practical implications; and Section 6 concludes with key contributions and directions for future research.

2. Methodology

2.1. Materials and methods

To examine the information structure changes and time variations in respect of environmental information disclosure (EID), a biometric method is considered in the current research, which is mathematical and statistical research to determine the level of performance of research and unearth different levels of information about publication, citations, co-authors, and keyword search (Kashi and Shah, 2023). They may also be searched thematically by geography, commonly used terms, materials that frequently appear together, and online authors and publications (Battour et al., 2024; Abdul Rahman et al., 2022).

Two levels were used: Level I was the data cleaning and description, which was guided by Microsoft Excel with BiblioMagika cleaning the names of author, institution, and country where the author worked, and OpenRefine cleaning the keywords and deleting and unifying the keywords (Punj et al., 2023). Level II gave the input to the VOSviewer (van Eck and Waltman, 2010) to map co-authors, co-citation, and co-occurrence of keywords to scale its measure of film performance and obtain thematic mapping and trend maps with the help of the Bibliometrix package in R (Aria and Cuccurullo, 2017).

2.2. Data collection

The articles focused on peer-reviewed journals, conference proceedings, and scholarly articles, which combined formed a significant portion of the primary sources of relevant data, were chosen as the primary database in the bibliometric type of research, which makes Scopus one of the most

trustworthy bibliographic tools (Ellili, 2022). A search on June 15, 2024, with the query "environmental information disclosure" OR "environmental disclosure" and limited to the Bank, Business, Management and Accounting, Economics, Econometrics and Finance, Environmental Science, and Social Sciences returned 885 records not prior to the year 2024. The inclusion criteria were as follows: (1) must directly or closely focus on EID (e.g., corporate disclosure on environmental issues, environmental accounting disclosure, environmental sustainability disclosure, environmental, social, and governance (ESG) disclosure), (2) must be a journal article or credible conference paper, and (3) must be in English. Irrelevant materials were filtered out

with duplicates, references to research, non-research (e.g., reviews, notes, indirectly related articles), and English. Filtering was involved in data cleaning (both automatic and manual). Cross-matching of titles, authors, and document information was used to remove duplicates; language was narrowed indefinitely in the Scopus language field, and document types were used to buy research items solely. All the high-quality publications (885) were exported as a CSV file and analyzed with Bibliometrix.

This facilitated precision and consistency in setting the dynamics of publications, important contributors, collaboration networks, and influential works (Fig. 1).

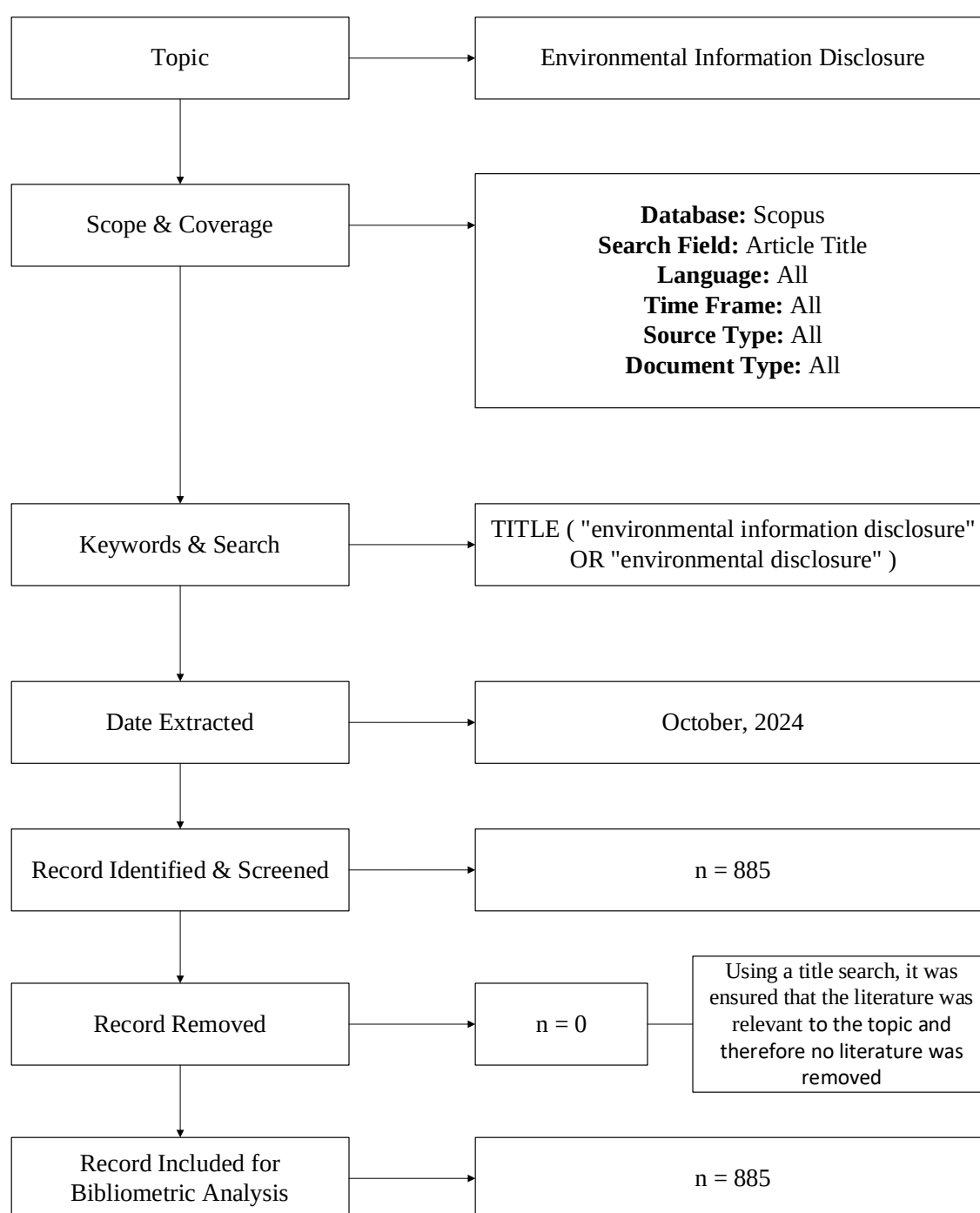


Fig. 1: Preferred reporting items for systematic reviews and meta-analyses (PRISMA) diagram showing the number of documents at each stage of the screening process

2.3. Main information

The following section provides descriptive information on the dataset of 885 documents. Table 1 presents the core details of the collected literature, which spans from 1982 to 2025, reflecting several decades of ongoing research in this field. The 885 documents were authored by a total of 2,520 unique contributors and have accumulated 48,331 citations, averaging 54.61 citations per article. This high average citation count highlights the significant impact of these studies within the academic community. The mean number of authors per document is 2.85, indicating that collaborative, multi-author research has become the dominant approach in this field.

Table 1: Main information about the data

Description	Results
Publication years	1982 - 2025
Total publications	885
Citable year	43
Number of contributing authors	2520
Number of cited papers	737
Total citations	48,331
Citation per paper	54.61
Citation per cited paper	65.58
Citation per year	1123.98
Citation per author	19.18
Authors per paper	2.85
Citation sums within h-core	45,528
h-index	98
g-index	205
m-index	2.279

Table 2 presents the types of documents indexed in Scopus related to environmental information disclosure. Research articles make up the majority, with 763 publications (86.21%), followed by conference papers (56 publications; 6.33%) and reviews (27 publications; 3.05%). Other document

types include book chapters (2.37%) and notes (0.79%).

Table 2: Document type

Document type	Total publications	Percentage (%)
Article	763	86.21%
Conference paper	56	6.33%
Review	27	3.05%
Book chapter	21	2.37%
Note	7	0.79%
Book	6	0.68%
Erratum	3	0.34%
Editorial	1	0.11%
Short survey	1	0.11%
Total	885	100%

Table 3 illustrates the types of publication sources associated with environmental information disclosure research. Journal articles constitute the largest portion (89.60%), followed by conference proceedings (5.65%), book series (2.60%), books (1.81%), and trade journals (0.34%).

Table 3: Source type

Source type	Total publications	Percentage (%)
Journal	793	89.60%
Conference proceeding	50	5.65%
Book series	23	2.60%
Book	16	1.81%
Trade journal	3	0.34%
Total	885	100%

Table 4 provides information on the academic fields of publication sources for environmental information disclosure. Most source titles are classified under Business, Management, and Accounting (476 publications; 53.79%), followed by Environmental Science (351 publications; 39.66%), Economics, Econometrics, and Finance (305 publications; 34.46%), and Social Sciences (270 publications; 30.51%).

Table 4: Subject area

Subject area	TP	%
Business, management and accounting	476	53.79%
Environmental science	351	39.66%
Economics, econometrics and finance	305	34.46%
Social sciences	270	30.51%
Energy	128	14.46%
Engineering	88	9.94%
Computer science	59	6.67%
Decision sciences	57	6.44%
Arts and humanities	36	4.07%
Earth and planetary sciences	25	2.82%
Medicine	19	2.15%
Mathematics	11	1.24%
Multidisciplinary	10	1.13%
Psychology	8	0.90%
Agricultural and biological sciences	6	0.68%
Chemical engineering	6	0.68%
Biochemistry, genetics and molecular biology	4	0.45%
Materials science	2	0.23%
Chemistry	1	0.11%
Neuroscience	1	0.11%
Pharmacology, toxicology and pharmaceuticals	1	0.11%
Physics and astronomy	1	0.11%

3. Results and findings

This section presents an analysis of all literature meeting the criteria for EID, evaluated across

multiple aspects, including research trends, key contributors, source titles, geographic distribution of publications, affiliated institutions, author demographics, keyword analysis, and citation

counts. The structure of the analysis is organized according to the research questions posed in current research.

3.1. Publication and citation trends in EID research

Fig. 2 indicates that Environmental Information Disclosure (EID) publications and citations have made steady increases in the long term, and these have been characterized by four successful phases.

3.1.1. 1982–2000: Emergence and slow development

Studies were investigatory, with fewer than a decade of papers a year and weak citations. Key works, including Hackston and Milne (1996), with 1,233 citations, about one-third of that year, and firm size, profitability, and industry as determinants of disclosure good performance, were notable spikers (Seow, 2024).

3.1.2. 2001–2010: Initial growth and rising interest

The output increased by August 2010 (21 papers) compared to eight in 2001, and citations are growing remarkably well. The foundational contribution by Deegan (2002), referred to 2,167 times, developed an EID based on a theory of legitimacy and in accordance with further studies. The average annual citations exceeded 1,500, which indicated the emergence of a new discipline called EID.

3.1.3. 2011–2020: Rapid expansion and field maturity

Publications rose significantly, with 21 in 2011 and a steady 76 in 2020. There was also an improvement in citation levels; Wang et al. (2020), Lu and Wang (2021), Ren et al. (2020), and Xiang et al. (2020) all have more than 100 citations (concerning the links of EID and green innovation with environmental performance). This was the decade of maturity in the field owing to a wider range in subject matter and approach.

3.1.4. 2021–present: Surge in interest and continued growth

Though in 2021 it went down to 74, it improved to 122 in 2024. Recent papers have not received many citations because of lag effects, but the content of publications is rapidly increasing, indicating a sustainable pace and constant popularity of sustainability and governance discussions.

3.2. Top source titles in EID research

Table 5 contains the list of the 20 journals having the most EID publications. In terms of open-access

premier and interdisciplinary nature, Sustainability (Switzerland) has the highest number of papers; it doesn't have an advertisements section. And in the wake of Cleaner Production (32) and Business Strategy and the Environment (31), which are environmental management and sustainable business practices publications. Together they emphasize the multidisciplinary nature of EID, with an emphasis on environmental science, corporate governance, sustainability research, and business strategy, and as hubs of theory development, evidence, and policy.

Co-citation analysis among source titles (Fig. 3) further shows that the Journal of Business Ethics is the most influential journal (1,457 citations). Its central role in shaping EID research is highlighted. Other highly cited journals include Accounting, Organizations and Society (1,220 citations) and Business Strategy and the Environment (1,075 citations). These results highlight the interdisciplinary nature of EID research, linking the fields of corporate governance, sustainability, environmental management, and financial disclosure.

Overall, the growing importance of open access platforms like Sustainability in advancing corporate sustainability research, while traditional journals such as the Journal of Business Ethics and Accounting, Organizations and Society provide the backbone of the field with their strong citation influence.

3.3. Country contributions to EID publications worldwide

Fig. 4 illustrates global contributions to EID research, based on authors' affiliated countries. China leads with 1,002 contributing authors, indicating a significant focus on EID within Chinese research institutions. Other major contributors include the United States, United Kingdom, Canada, Australia, Brazil, Indonesia, and Malaysia.

The analysis results of the co-authorship network among countries (Fig. 5) indicate that China and the United States are not only the two major contributors to research on EID but also the most closely collaborating countries in this field. This outstanding performance is influenced by a combination of policy, economic, and research factors.

In relation to policy matters, China has come up with corporate environmental management and research that has been done through the relevant policies such as the revised Environmental Protection Law and the so-called dual carbon. Quite contrary, America has already created a sophisticated EID and strengthened control over ESG-related policies within the purview of the Securities and Exchange Commission (SEC) and the Clean Air Act. In terms of economics, in capital markets, Chinese companies are improving their international competitive policy and green finance because of the transparency of the ESG investment

standards in the capital market, as the disclosure of both environmental performances has become typical in the U.S. Both China and the United States are research institute-based and university-based EID workhouses regarding research. The U.S and China also help in the consolidation of all the academic ties of the United Kingdom, Canada, and Australia. Spain and Portugal have a very

interdependent research core, with France, Romania and Italy co-authorship core networks, so there is a co-operation pattern between European States that is more active.

Another twenty-four younger economies like India, Egypt, and Kenya are also getting their necks in, and this would suggest EID research has become global.

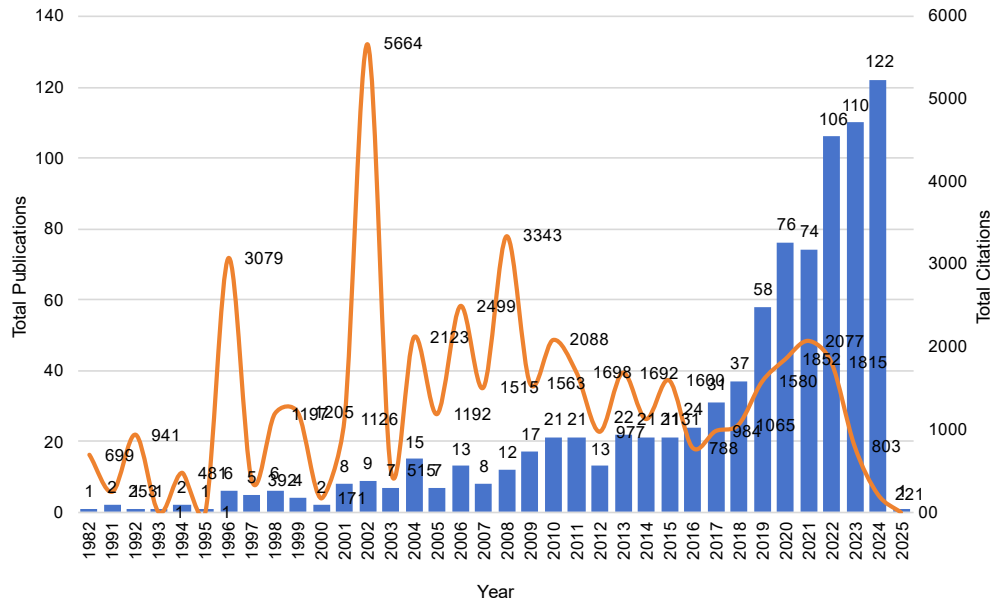


Fig. 2: Total publications and citations by year

Table 5: Top 20 source titles that publish documents on EID

Source Title	TP	NCP	TC	C/P	C/CP	h	g	m	PYS
Sustainability	33	112	33	465	14.09	14.09	12	20	2018
Journal of Cleaner Production	32	107	32	2921	91.28	91.28	23	32	1993
Business Strategy and the Environment	31	82	28	2465	79.52	88.04	23	31	2001
Corporate Social Responsibility and Environmental Management	24	74	23	2031	84.63	88.30	17	24	2008
Environmental Science and Pollution Research	21	68	20	346	16.48	17.30	11	18	2019
Accounting, Auditing and Accountability Journal	20	39	20	8567	428.35	428.35	19	20	1991
Environment, Development and Sustainability	16	56	13	123	7.69	9.46	6	10	2017
International Journal of Environmental Research and Public Health	15	49	15	229	15.27	15.27	8	15	2019
Journal of Business Ethics	14	37	14	1758	125.57	125.57	13	14	2004
E3s Web of Conferences	12	29	4	9	0.75	2.25	2	2	2018
Frontiers in Environmental Science	11	38	11	91	8.27	8.27	5	9	2022
Polish Journal of Environmental Studies	11	39	11	79	7.18	7.18	5	8	2016
Journal of Environmental Management	11	35	9	173	15.73	19.22	6	11	2020
Social and Environmental Accountability Journal	11	19	9	158	14.36	17.56	7	11	1994
Social Responsibility Journal	10	25	9	302	30.20	33.56	8	10	2009
Energy Economics	9	30	8	376	41.78	47.00	6	9	2020
International Journal of Energy Economics and Policy	9	36	6	62	6.89	10.33	4	7	2019
IOP Conference Series: Earth and Environmental Science	9	37	4	9	1.00	2.25	1	2	2020
Applied Economics	9	22	8	161	17.89	20.13	7	9	2016
Accounting, Organizations and Society	9	20	9	9236	1026.22	1026.22	9	9	1982

TP: Total number of publications; NCP: Number of cited publications; TC: Total citations; C/P: Average citations per publication; C/CP: Average citations per cited publication; h: h-index; g: g-index; m: m-index; PYS: Publication year start

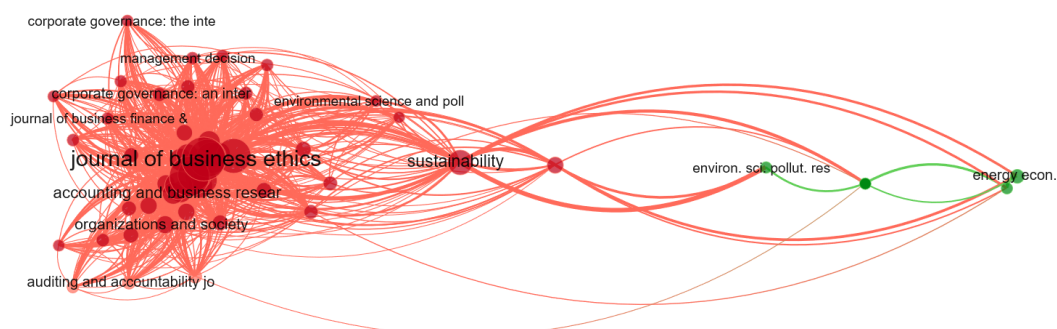


Fig. 3: Co-citation analysis among source titles

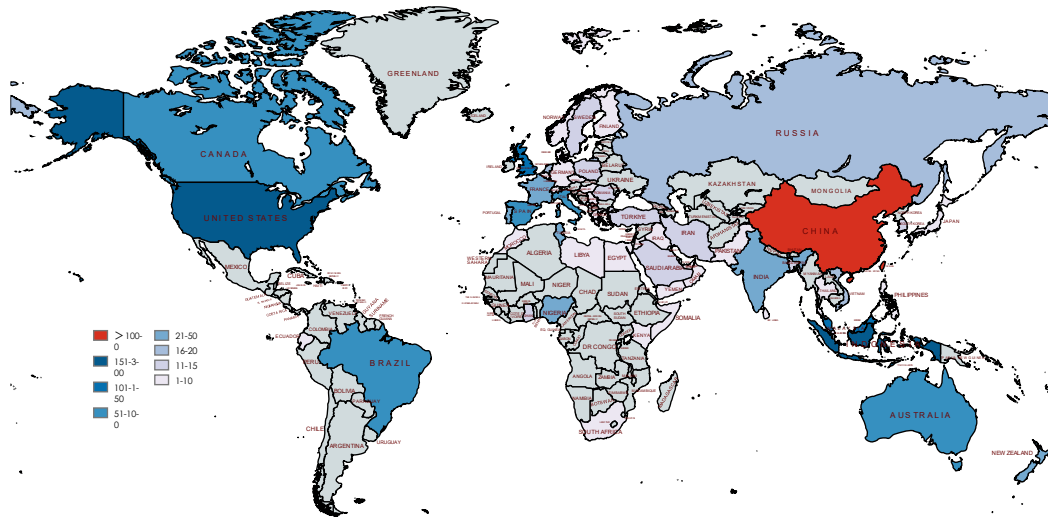


Fig. 4: Worldwide production of EID research

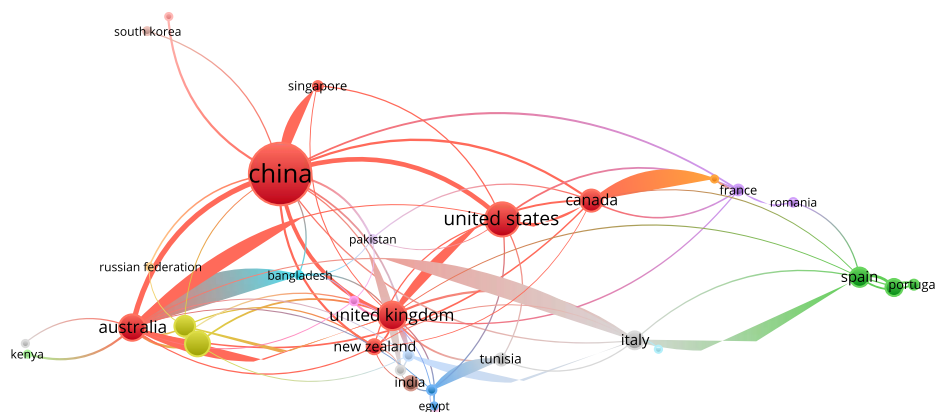


Fig. 5: Co-authorship network among countries

3.4. Institutions publishing EID research

Table 6 shows the top 20 higher education institutions in terms of EID research output, as measured by the number of contributing authors. A total of 907 institutions contributed to the 885 articles analyzed. China University of Mining and Technology has the largest number of contributing authors, leading with 51, followed by Zhejiang Sci-Tech University (34), Southeast University (31),

Universitas Negeri Semarang in Indonesia (30), and Central South University (29).

In terms of influence, measured by total citations, Illinois State University is prominent with a citation count of 5,577 and an average of 278.85 citations per article, making it one of the most highly cited institutions. RMIT University and Université du Québec à Montréal follow with citation counts of 4,849 and 2,189, respectively.

Table 6: Most productive institutions

Institution name	Country	NCA	NCP	TC	C/P	C/CP	PYS
China University of Mining and Technology	China	51	48	667	13.08	13.90	2017
Zhejiang Sci-Tech University	China	34	29	286	8.41	9.86	2020
Southeast University	China	31	28	302	9.74	10.79	2019
Universitas Negeri Semarang	Indonesia	30	19	75	2.50	3.95	2019
Central South University	China	29	28	989	34.10	35.32	2016
Xi'an Jiaotong University	China	24	19	375	15.63	19.74	2009
Harbin Institute of Technology	China	24	23	845	35.21	36.74	2014
Shanghai Jiao Tong University	China	22	22	1597	72.59	72.59	2010
Illinois State University	United States	20	20	5577	278.85	278.85	1992
Hunan University	China	17	17	482	28.35	28.35	2017
Shandong University of Finance and Economics	China	16	13	197	12.31	15.15	2018
Nanjing Normal University	China	15	15	187	12.47	12.47	2020
Rmit University	Australia	15	15	4849	323.27	323.27	2002
University of Sfax	Tunisia	14	9	273	19.50	30.33	2009
Zhongnan University of Economics and Law	China	14	10	158	11.29	15.80	2019
Université Du Québec À Montréal	Canada	14	12	2189	156.36	182.42	1999
University of Granada	Spain	13	13	235	18.08	18.08	2004
University of Science and Technology of China	China	13	13	741	57.00	57.00	2020
Universiti Putra Malaysia	Malaysia	13	9	68	5.23	7.56	2016
Southwestern University of Finance and Economics	China	13	11	392	30.15	35.64	2021

The results further show that the author from China University of Mining and Technology has established the most extensive academic cooperation network among Institutions in this field (Fig. 6). It has formed a core research cluster in China with Shanghai Jiao Tong University, Southeast University and Xi'an Jiaotong University.

In addition, the Chinese universities in international cooperation have strong relationships. It has close cooperation with Nanyang Technological University in Singapore and the University of Queensland in Australia. Similarly, Diponegoro University in Indonesia shows a strong academic partnership with Universitas Negeri Semarang, reflecting the trend of regional collaboration in EID research in Southeast Asia.

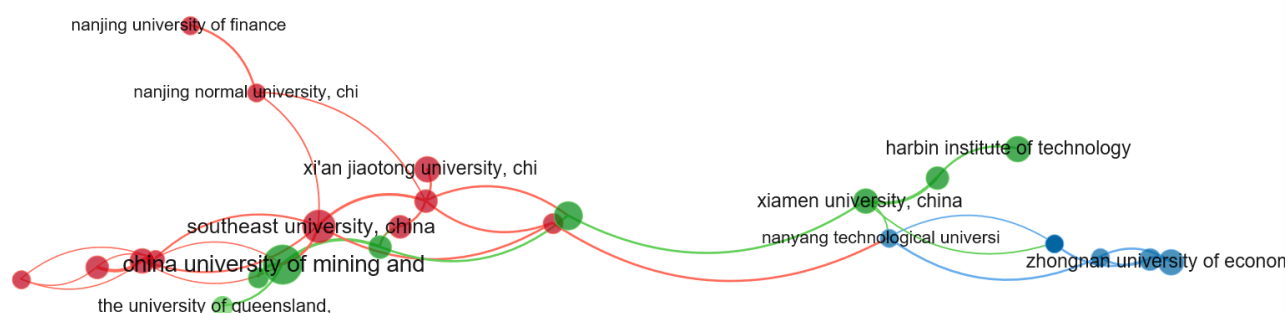


Fig. 6: Co-authorship network among institutions

Table 7: Most productive authors

Full name	Current affiliation	Country	TP	NCP	TC	C/P	C/CP	PYS
Patten, Dennis M.	Illinois State University	United States	18	18	5369	298.28	298.28	1992
Cho, Charles H.	York University	Canada	12	12	2172	181.00	181.00	2006
Yang, Yongliang	Zhejiang Sci-Tech University	China	11	10	96	8.73	9.60	2020
Yao, Sheng	Shanghai University	China	11	11	140	12.73	12.73	2017
Magnan, Michel	Concordia University	Canada	11	10	2163	196.64	216.30	1999
Cormier, Denis	Université du Québec à Montréal	Canada	10	9	2112	211.20	234.67	1999
Gerged, Ali Meftah	De Montfort University	United Kingdom	8	8	507	63.38	63.38	2018
Wahyunigrum, Indah Fajarini Sri	Universitas Negeri	Indonesia	8	5	34	4.25	6.80	2018
Li, Yi	Ningbo University	China	7	7	64	9.14	9.14	2020
de Villiers, Charl	The University of Auckland	New Zealand	6	6	697	116.17	116.17	2006
Deegan, Craig	RMIT University	Australia	6	6	4711	785.17	785.17	1996
Djajadikerta, Hadrian Geri	Curtin University	Australia	6	6	161	26.83	26.83	2012
Freedman, Martin	Towson University	United States	5	5	346	69.20	69.20	2001
Moneva, José M.	University of Zaragoza	Spain	5	5	460	92.00	92.00	2000
Van Staden, Chris J.	Auckland University of Technology	New Zealand	5	5	843	168.60	168.60	2006
Lu, Yingjun	Shanghai University of International Business and Economics	China	5	3	310	62.00	103.33	2014
Abeysekera, Indra	Charles Darwin University	Australia	5	3	310	62.00	103.33	2014
Roberts, Robin W.	University of Central Florida	United States	4	4	754	188.50	188.50	2006
Beddewela, Eshani S.	University of Huddersfield	United Kingdom	4	4	220	55.00	55.00	2018
Cowton, Christopher J.	University of Huddersfield	United Kingdom	4	4	193	48.25	48.25	2018

Co-authorship network analysis results (Fig. 7) show that Dennis M. Patten and Charles H. Cho formed a highly close research cooperation cluster and played a core role in EID research. Their collaborative network covers multiple scholars.

3.6. Analysis of keywords in EID literature

Using VOSviewer, 1,702 author keywords were identified, of which 80 met the threshold of at least

3.5. Authors publishing EID research

Table 7 presents the top 20 most productive authors in Environmental Information Disclosure (EID) research. Overall, 2,520 scholars have contributed to publications in this field. At the top is Dennis M. Patten (Illinois State University, USA), with 18 publications. He is followed by Charles H. Cho (York University, Canada) with 12 articles, and Yang Yongliang (Zhejiang Sci-Tech University, China) with 11 articles. Other prominent contributors include Hadrian Geri Djajadikerta (Curtin University, Australia), José M. Moneva (University of Zaragoza, Spain), Indra Abeysekera (Charles Darwin University, Australia), and Chris J. Van Staden (Auckland University of Technology, New Zealand).

five occurrences. Country-specific terms (e.g., China, Malaysia, India, and Indonesia) were excluded to emphasize thematic keywords. The keyword co-occurrence map generated by VOSviewer reveals five main clusters that structure EID research. In the visualization, colors represent thematic clusters, font sizes reflect keyword frequency, and line thicknesses indicate the strength of relationships between keywords. Keywords that frequently co-occur are grouped into the same color-coded cluster, while the

distance between keywords reflects the strength of their association, with shorter distances indicating stronger relationships. Based on this analysis, five

major themes emerged within EID research, as described below.

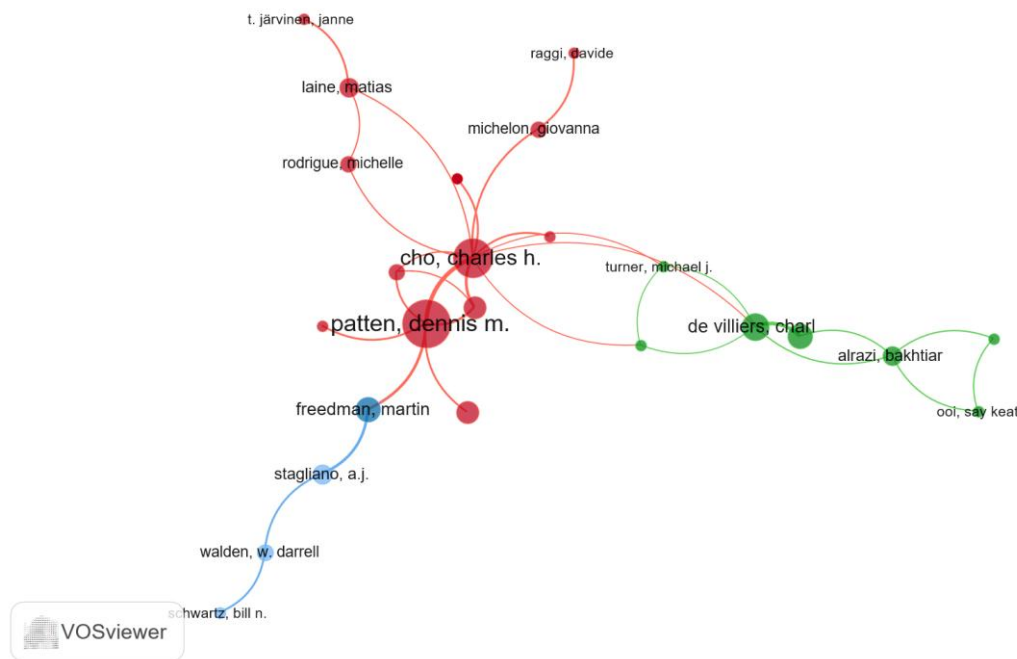


Fig. 7: Co-authorship network analysis

3.6.1. Red cluster: Environmental information disclosure and performance

This group is associated with performance and the theoretical foundation of environmental disclosure. It is in inquiry of the relations to firm value, environmental and economic performance (Cai et al., 2023; Wang et al., 2023; Ren et al., 2020; Doan and Sassen, 2020), regarding such theoretical frameworks as legitimacy, stakeholder, and institutional theories (Akhter et al., 2023; Cahyono et al., 2024; Pucheta-Martínez and Gallego-Álvarez, 2024).

3.6.2. Green cluster: Environmental disclosure content and supervision

The publications specialize in disclosure practices and external pressures. However, environmental reporting, voluntary reports, annual reports, and content analysis are also mentioned (Brammer and Pavelin, 2006; D'Amico et al., 2016; Hanić et al., 2021), and climate change, environmental policy, and local government influences (Kılıç and Kuzey, 2019; Ju et al., 2024; Xue et al., 2021).

3.6.3. Blue cluster: Corporate social responsibility and corporate governance

This group is concerned with the standard of reporting, governance, and corporate social responsibility (CSR). It is largely determined by CSR and stakeholder demands, but disclosure is determined by governance structures, ownership,

and listing status (Campanella et al., 2021; Wei et al., 2024; Suttipun, 2021). Such a professional is also guided by standards, such as the GRI, and studies of disclosure quality (Lee, 2017; Wahyuningrum et al., 2023; Luo et al., 2024).

3.6.4. Yellow cluster: Green innovation and environmental financial instruments

Research studies explore interaction among innovation and finance on one side and EID on the other side. They are green innovation and digital transformation (Ding et al., 2022; Zhang and Zhao, 2023; Meng and Zhang, 2022; Ma et al., 2019), and green credit and other tools help businesses to coordinate the performance of their operations concerning the environment and financial outcomes (Xing et al., 2021; Opuni-Frimpong et al., 2024).

3.6.5. Purple cluster: Social and political factors

This cluster includes political relationships, industry effects, and ESG consideration. The disclosure decision depends on the political relations and existence of polluting industries (Cheng et al., 2017; Du et al., 2022; Wirth et al., 2016; Chao et al., 2023), but the sustainable development process is preconditioned by emerging markets and the idea of sustainable development (Tsang et al., 2023; Hui et al., 2024; Erin et al., 2022).

3.7. Development trend of EID-related keywords

The biblioshiny analysis reveals the keyword priorities alteration (Fig. 8). The expanding

corporate issue concerns that underpin the validation of emerging trends in EID terms, focused on corporate financial performance, digital

transformation, gender diversity in corporate governance, and green innovation, according to recent research.

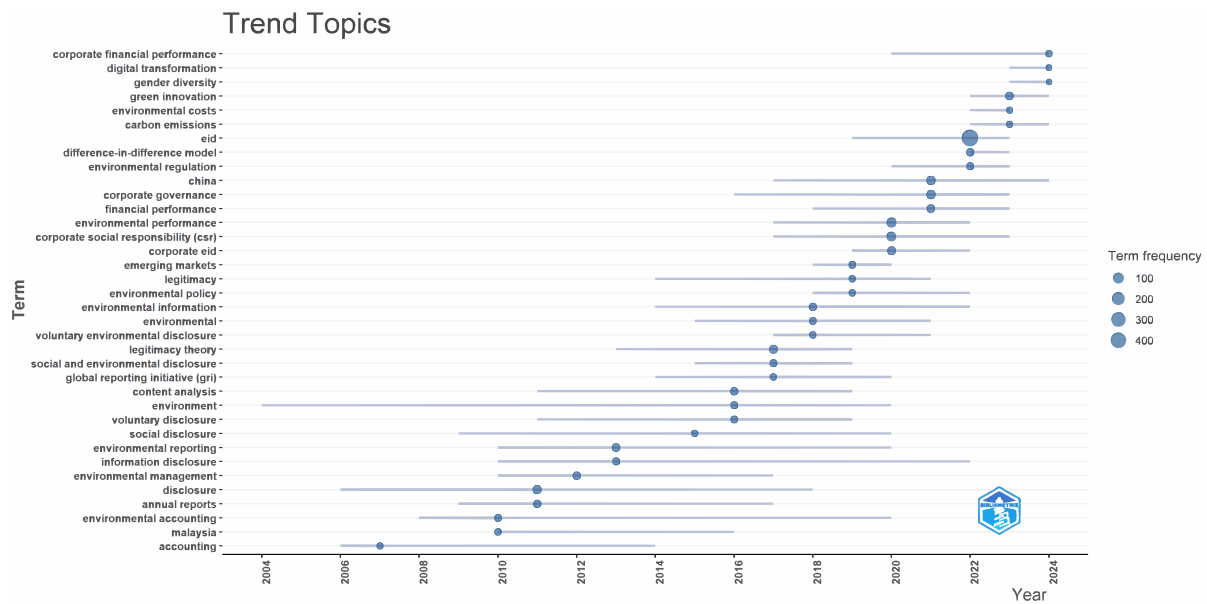


Fig. 8: Development trend of EID-related keywords

An author keyword search of 885 articles allowed us to find the most popular works cited for each of the key terms, and four main lessons were found. Firstly, the connection between Environmental Information Disclosure (EID) and corporate financial performance (CFP) is inconclusive. [Li et al. \(2017\)](#) and [Yang et al. \(2020b\)](#) revealed that there is a negative relationship, in addition to the fact that, as stated by [Yang et al. \(2020b\)](#), internationalization leads to the minimization of this cost. [Deswanto and Siregar \(2018\)](#) indicated no relations between EID and market value, and no mediating relations between financial and environmental performances. Although environmental performance is more likely to influence disclosure ([Li et al., 2017](#); [Deswanto and Siregar, 2018](#)), voluntary disclosure is uncommon, so scholars suggest implementing mandatory EID policies in accordance with internationalization and regionalization.

Second, EID enables digital transformation, which is a sustainable approach to business development. EID was demonstrated by [Lu and Li \(2023\)](#) to foster green innovation when there was a lack of information and when there was a constrained financial ability. Just like [Zhang and Zhao \(2023\)](#), a U-shaped interaction was found between EID and environmental performance mediated by digitalization, and [Liu et al. \(2022\)](#) managed to determine that digitalization can also replace the influence of EID on productivity. Taken together, these results indicate that EID assists in innovation and performance; digital technologies complement and substitute the operations of EID.

Third, gender diversity is a big phenomenon that affects EID. There is also a positive connection between strong disclosure and women directors, but environmental committees could balance this

association ([Gerged et al., 2023](#); [Bilal et al., 2024](#)). Positive effects in relation to independent or non-executive directors are witnessed on board size, foreign and female directors ([Emmanuel et al., 2018](#)). A bibliometric study conducted by [Arslan et al. \(2023\)](#) also positively confirmed the role of gender diversity in sustainability disclosure, in which female representation in the top management causes a better environment with increased spending on environmental issues and corporate responsibility views. Further studies are necessary to develop relationships between gender diversity and other governance processes.

Fourth, EID helps to promote green innovation with mixed results. [Feng et al. \(2021\)](#) and [Li et al. \(2022\)](#) gave positive results in terms of innovation and economic performance and found analogous results, where [Li et al. \(2022\)](#) were more successful beyond eastern China in a DID approach and gleaned results on patenting. On the contrary, [Xing et al. \(2021\)](#) argued that disclosure cannot enhance financing capacity because authentic green innovation is the only way to enable bank lending. In addition to that, greenwashing reduces the plausibility of disclosure. Mechanisms that should be investigated in the future to enable authenticity and interaction of EID, financial policy, and regional development to support sustainable growth.

3.8. Analysis of citations contained in EID research

Scopus shows the 20 most-cited papers on EID and is presented in [Table 8](#). First in the list is Introduction: The legitimizing effect of social and environmental disclosures--a theoretical foundation by [Deegan \(2002\)](#) with 2,167 citations (94.22

citations per year), making legitimacy theory one of the prominent foundations of theory in explaining company disclosures. The second new study, which empirically proves the positive relation between performance and disclosure, is Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis (1,993 citations; 117.2 per year), by Clarkson et al.

(2008). Third, the relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach (1,324 citations; 63.05/year) by Al-Tuwaijri et al. (2004) presented a disclosure, environmental, and economic performance combination model.

Table 8: Top 20 highly cited articles

Reference	Title/focus	TC	C/Y	Key findings
Deegan (2002)	Legitimacy theory foundation	2167	94.22	Legitimacy theory offers a strong lens for explaining motivations behind social and environmental reporting.
Clarkson et al. (2008)	Environmental performance and disclosure	1993	117.24	Positive correlation between performance and voluntary disclosure; supports economic disclosure theory.
Al-Tuwaijri et al. (2004)	Disclosure, performance and economics	1324	63.05	Good performance linked to positive economic outcomes and quantifiable disclosures.
Cho and Patten (2007)	Disclosure as legitimacy tool	1240	68.89	Poor performers disclose under pressure; industry type influences disclosure type.
Hackston and Milne (1996)	NZ companies' disclosure determinants	1233	42.52	Disclosure shaped by size and industry; below international norms.
Neu et al. (1998)	Public impressions via reports	1142	42.3	Financial stakeholders and regulators drive disclosures; activists reduce them; impression management evident.
Patten (2002)	Performance vs disclosure	950	41.3	Negative correlation: non-sensitive industries disclose more based on emissions.
Patten (1992)	Exxon Valdez response	941	28.52	Oil firms increased disclosures post-crisis to restore legitimacy.
Deegan and Gordon (1996)	Australian practices	937	32.31	Positive info emphasized; disclosure linked to lobbying attention.
O'Donovan (2002)	Extending legitimacy theory	866	37.65	Firms adopt micro-legitimization strategies in annual reports.
Milne and Adler (1999)	Reliability of content analysis	861	33.12	Minimal training sufficient for broad analysis; detailed coding requires more training.
Deegan et al. (2002)	BHP case study	791	34.39	Disclosures rose and shifted with media scrutiny; supports legitimacy theory.
Lyon and Maxwell (2011)	Greenwashing and audit threat	729	52.07	Pressure reduces greenwashing but may also deter disclosure; EMSs mitigate low-performer greenwashing.
Deegan and Rankin (1996)	Objectivity in reporting	717	24.72	Firms disclose mainly favorable info even post-litigation; misleading practices.
Wiseman (1982)	Early evaluation of reports	699	16.26	Disclosures incomplete, unrelated to actual performance.
Cormier et al. (2005)	German disclosure drivers	672	33.6	Influenced by risk, ownership, asset age, and norms; convergence over time.
Jenkins and Yakovleva (2006)	Mining industry trends	653	34.37	Large differences in quality; leaders show greater responsibility.
Brammer and Pavelin (2008)	UK voluntary disclosure	603	35.47	Quality shaped by size and industry; media exposure not significant.
Plumlee et al. (2015)	Disclosure quality and firm value	540	54	High-quality disclosure linked to firm value; tone and type matter.
Cho et al. (2010)	Language of disclosure	534	35.6	Poor performers use optimistic tone to mask weak results; language is crucial.

4. Discussion

The results of this bibliometric study provide insights into the state and evolution of environmental information disclosure (EID) literature, highlighting both its maturity and persisting gaps. Research output has grown steadily over the past two decades, reflecting global recognition of EID as central to transparency, accountability, and sustainability practices (Linnenluecke et al., 2020). This expansion aligns with the integration of sustainability reporting into governance frameworks such as the Global Reporting Initiative and ESG disclosures (Pizzi et al., 2020). Recent concentration of publications suggests that EID has shifted from a niche to a mainstream research field, driven by regulatory reform and stakeholder demands.

Geographically, China dominates EID output, reflecting strong national research capacity and regulatory reforms such as mandatory corporate

disclosure (Zhou et al., 2023). While this growth is significant, the prevalence of domestic-oriented studies limits generalizability across geopolitical contexts (Liu et al., 2022). Collaboration networks further highlight the prominence of Chinese institutions, particularly the China University of Mining and Technology, which maintains strong regional and limited international ties. Indonesian universities also demonstrate robust cooperation, whereas Africa, the Middle East, and Latin America remain underrepresented, raising concerns of conceptual imbalance.

This rising number of publications since 2011 is not only an indication of growing policy and market interest in corporate environmental performance that has now sufficiently expanded GRI and ESG models but also of methodological innovation in the bookshelf and text mining, which has allowed large-scale analysis of the subject. This tendency of Chinese authors is particularly vivid and owes its main idea to changes in regulations, expansion of

one of the spheres of higher education of engineering and management, and funding choice of studied research. However, this is not what can be referred to as theoretical leadership since when we consider all those works of influential intellects in theory, still there are many of them concentrated in Western journals such as the *Accounting, Organizations and Society* as well as the *Journal of Business Ethics* (Tan et al., 2025; Zheng and Kouwenberg, 2019; Zhao et al., 2023).

At the author level, influential scholars such as Dennis M. Patten (USA), Charles H. Cho (Canada), and Hadrian Geri Djajadikerta (Australia) demonstrate that while China leads in publication volume, intellectual leadership is more globally dispersed (Battour et al., 2024). Western contributions continue to shape the research agenda through multidisciplinary approaches to accounting, governance, and environmental management (Cho et al., 2022). Thematic mapping shows a transition from traditional disclosure studies to broader topics such as ESG performance, sustainability assurance, and stakeholder engagement (Pizzi et al., 2020). Keyword analysis reveals stronger links between EID, climate change, resource productivity, and the SDGs (Linnenluecke et al., 2020).

Such dominance of legitimate theory in EID literature is linked to the aspect of reported focus on disclosure in efforts to respond to the pressure stakeholders and organizations are under. We hypothesize that the legitimacy-seeking behavior study can help us to understand the strengthened disclosure of firms operating in high-polluting industries as well as post-shock spur in disclosure. This is complementary to the stakeholder theory, insofar as it accepts discrepancies between disclosure under investor pressures, community and pressure of the non-governmental organizations; our cluster analysis showing that governance and CSR themes are manifestation of at any rate, the overall managerial policies towards stakeholders. The institutional theory may also be applied to understand why the country of origin/regions are greatly clustered: regulatory and normative powers (the environmental regulation in China) create localized disclosure norms that facilitate intra-country cooperation and applicable reporting forms. Those structures might be integrated into a multi-level framework where institutional pressures, stakeholder salience, and firm resources co-exist to influence the practice of EIDs and the implications of EID in the market.

Nevertheless, gaps remain, particularly in research on SMEs, emerging economies outside Asia, and non-corporate organizations. Differences in regulatory contexts also persist: Chinese studies emphasize compliance with shifting legislation, while Western research explores voluntary disclosure and stakeholder influence (Liu et al., 2022). These contrasts underscore the difficulty of establishing universal EID standards across diverse institutional and cultural environments (Ellili, 2022). Collaboration patterns further show an imbalance

between regional and global engagement, with intra-country and intra-regional networks producing strong but often homogeneous research. Expanding cross-regional cooperation would enrich methodological diversity and integrate perspectives from regions with varied governance and sustainability challenges.

5. Conclusion

The paper tracked the history of Environmental Information Disclosure (EID) studies based on the increasing stakeholder expectation of disclosure. It analyzed author, journal, institutional, and key influential articles based on 885 Scopus-indexed articles using the bibliometric method of analysis with the help of visualization software (VOSviewer and R Studio).

Results showed that the *Journal of Cleaner Production*, *Business Strategy and the Environment* and *Sustainability* (Switzerland) contain more publications, whereas *Journal of Business Ethics* and *Accounting, Organizations and Society* have greater citation power because their range is larger. China and the United States are the leaders in research on EID at the international level, and there is intensive institutional partnership on the matter, both domestic and cross-border.

A Keyword Clustering Relationship Framework representing five clusters was determined during keyword co-occurrence analysis. Among the emerging themes, it is possible to include corporate financial performance, digital transformation, gender diversity, and green innovation. The most popular framework remains the legitimacy theory, but more current views also tend to suggest that EID is the sustaining force, innovative activity, and financial markets.

Theoretically, the paper demonstrates EID identity to explore the interaction with digital transformation and green innovation in increasing virtue and competitiveness (Li et al., 2017; Zhang and Zhao, 2023; Gerged et al., 2023). In practice, cluster analysis reveals the relationship between EID, governance, green finance, and strategic management and presents findings to policymakers, investors, and managers to develop sustainability practices. Limitations are that they used a single database (Scopus); they also used limited search terms. Further studies are recommended to cover more databases (e.g., Web of Science, Google Scholar, PubMed) and adopt a broader set of keywords. Nevertheless, the article brings a systematic review of the intellectual framework of EID, its development process, and its perspectives, summarizing the current information and leading to the development of theoretical and practical research in corporate sustainability and responsibility.

6. Recommendation

The present paper discusses the status of Environmental Information Disclosure (EID) and

establishes some research gaps. To begin with, there has been insufficient research into the causal relationship that exists between EID and firm performance. The majority of the research is correlational, as it does not determine the direction of effect. Long-term results must be demystified by comparing mandatory and voluntary EID policies, with causal inference techniques, including difference-in-differences. Furthermore, evidence on the impact of outside influences on the existence of the EID-performance nexus (marketization and government intervention) is limited.

Second, digital transformation and the importance that it relates to EID and green innovation are underexplored. Although the advantages of big data and artificial intelligence are assumed, there are insufficient empirical studies examining their influence on transparency. On the same note, the application of blockchain in helping to minimize greenwashing, enhance reliable supply chains, and enhance EID are aspects that have not been addressed. The differences in sites and the industry or firms are also very poorly understood in respect to preference towards digital tools.

Third, there is still no complete research on matters of gender diversity, corporate governance, and EID. Little literature has studied the role of female executives or gender balanced boards in disclosure practices or gender balanced boards, gender moderating governance structures, including board independence and environmental committees, in the relationship between EID and innovation. Comparative studies across countries that consider the elements of cultural and institutional variations might be fruitful.

Fourth, that EID has contrary effects on financial markets is shown by limited evidence. Scholarly studies do not commonly explore the impacts of disclosure patterns and ESG ratings in relation to investor action, financing expenses, or issue of green bonds or availability of sustainable finance. Closer consideration should also be given to the moderating effect of the green financial regulations (e.g. subsidies or crown trades). These gaps will facilitate theoretical knowledge on EID, as well as guiding positive policies to improve corporate environmental responsibility and practical performance.

List of abbreviations

C/CP	Average citations per cited publication
C/P	Average citations per publication
C/Y	Average citations per year
CFP	Corporate financial performance
CSR	Corporate social responsibility
EID	Environmental information disclosure
ESG	Environmental, social, and governance
GRI	Global reporting initiative
NCA	Number of contribution authors
NCP	Number of cited publications
NGOs	Non-governmental organizations
PRISMA	Preferred reporting items for systematic reviews and meta-analyses

PYS	Publication year start
R	R programming language
SEC	Securities and Exchange Commission
TC	Total citations
TCFD	Task force on climate-related financial disclosures
TP	Total number of publications

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

References

- Abdul Rahman NA, Ahmi A, Jraisat L, and Upadhyay A (2022). Examining the trend of humanitarian supply chain studies: Pre, during and post COVID-19 pandemic. *Journal of Humanitarian Logistics and Supply Chain Management*, 12(4): 594-617. <https://doi.org/10.1108/JHLSCM-01-2022-0012>
- Akhter F, Hossain MR, Elrehail H, Rehman SU, and Almansour B (2023). Environmental disclosures and corporate attributes, from the lens of legitimacy theory: A longitudinal analysis on a developing country. *European Journal of Management and Business Economics*, 32(3): 342-369. <https://doi.org/10.1108/EJMBE-01-2021-0008>
- Al-Tuwaijri SA, Christensen TE, and Hughes KE (2004). The relations among environmental disclosure, environmental performance, and economic performance: A simultaneous equations approach. *Accounting, Organizations and Society*, 29(5-6): 447-471. [https://doi.org/10.1016/S0361-3682\(03\)00032-1](https://doi.org/10.1016/S0361-3682(03)00032-1)
- Aria M and Cuccurullo C (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4): 959-975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Arslan HM, Chengang Y, Komal B, and Chen S (2023). Nexus between environmental disclosures and top management team characteristics: A systematic review. *Environmental Science and Pollution Research*, 30: 9763-9781. <https://doi.org/10.1007/s11356-022-22615-7> PMID:36059014
- Battour M, Ratnasari RT, Ahmi A, Sukmana R, and Hendratmi A (2024). The current state of published literature on halal tourism and hospitality: A bibliometric review. *Journal of Islamic Marketing*, 15(4): 963-989. <https://doi.org/10.1108/JIMA-02-2023-0054>
- Bilal, Gerged AM, Arslan HM, Abbas A, Chen S, and Manzoor S (2024). A bibliometric review of corporate environmental disclosure literature. *Journal of Accounting Literature*, 46(2): 214-237. <https://doi.org/10.1108/JAL-01-2022-0006>
- Boffa D, Prencipe A, D'Amico L, and Corsi C (2023). Gender inclusiveness and female representation on the board of directors of the benefit company model: evidence from Italy. *Sustainability*, 15(7): 5852. <https://doi.org/10.3390/su15075852>
- Brammer S and Pavelin S (2006). Voluntary environmental disclosures by large UK companies. *Journal of Business Finance and Accounting*, 33: 1168-1188. <https://doi.org/10.1111/j.1468-5957.2006.00598.x>
- Brammer S and Pavelin S (2008). Factors influencing the quality of corporate environmental disclosure. *Business Strategy and the Environment*, 17: 120-136. <https://doi.org/10.1002/bse.506>

- Cahyono S, Harymawan I, Djajadikerta HG, and Noman AHM (2024). Corporate business strategy, CEO's managerial ability, and environmental disclosure: The perspective of stakeholder theory. *Business Strategy and the Environment*, 33: 8149-8189. <https://doi.org/10.1002/bse.3894>
- Cai R, Lv T, Wang C, and Liu N (2023). Can environmental information disclosure enhance firm value?—An analysis based on textual characteristics of annual reports. *International Journal of Environmental Research and Public Health*, 20(5): 4229. <https://doi.org/10.3390/ijerph20054229>
PMid:36901240 PMCID:PMC10001672
- Campanella F, Serino L, Crisci A, and D'Ambra A (2021). The role of corporate governance in environmental policy disclosure and sustainable development. Generalized estimating equations in longitudinal count data analysis. *Corporate Social Responsibility and Environmental Management*, 28: 474-484. <https://doi.org/10.1002/csr.2062>
- Chao S, Wang S, Li H, and Yang S (2023). The power of culture: Does Confucian culture contribute to corporate environmental information disclosure? *Corporate Social Responsibility and Environmental Management*, 30: 2435-2456. <https://doi.org/10.1002/csr.2495>
- Chebbi K and Ammer MA (2022). Board composition and ESG disclosure in Saudi Arabia: The moderating role of corporate governance reforms. *Sustainability*, 14(19): 12173. <https://doi.org/10.3390/su141912173>
- Chen X, Li W, Chen Z, and Huang J (2022). Environmental regulation and real earnings management—Evidence from the SO₂ emissions trading system in China. *Finance Research Letters*, 46: 102418. <https://doi.org/10.1016/j.frl.2021.102418>
- Cheng Z, Wang F, Keung C, and Bai Y (2017). Will corporate political connection influence the environmental information disclosure level? Based on the panel data of A-shares from listed companies in Shanghai stock market. *Journal of Business Ethics*, 143: 209-221. <https://doi.org/10.1007/s10551-015-2776-0>
- Cho CH and Patten DM (2007). The role of environmental disclosures as tools of legitimacy: A research note. *Accounting, Organizations and Society*, 32(7-8): 639-647. <https://doi.org/10.1016/j.aos.2006.09.009>
- Cho CH, Jérôme T, and Maurice J (2022). Assessing the impact of environmental accounting research: Evidence from citation and journal data. *Sustainability Accounting, Management and Policy Journal*, 13(5): 989-1014. <https://doi.org/10.1108/SAMPJ-09-2021-0384>
- Cho CH, Roberts RW, and Patten DM (2010). The language of US corporate environmental disclosure. *Accounting, Organizations and Society*, 35(4): 431-443. <https://doi.org/10.1016/j.aos.2009.10.002>
- Clarkson PM, Li Y, Richardson GD, and Vasvari FP (2008). Revisiting the relation between environmental performance and environmental disclosure: An empirical analysis. *Accounting, Organizations and Society*, 33(4-5): 303-327. <https://doi.org/10.1016/j.aos.2007.05.003>
PMCID:PMC9910778
- Cordeiro JJ, Profumo G, and Tutore I (2020). Board gender diversity and corporate environmental performance: The moderating role of family and dual-class majority ownership structures. *Business Strategy and the Environment*, 29: 1127-1144. <https://doi.org/10.1002/bse.2421>
- Cormier D, Magnan M, and Van Velthoven B (2005). Environmental disclosure quality in large German companies: Economic incentives, public pressures or institutional conditions? *European Accounting Review*, 14(1): 3-39. <https://doi.org/10.1080/0963818042000339617>
- D'Amico E, Coluccia D, Fontana S, and Solimene S (2016). Factors influencing corporate environmental disclosure. *Business Strategy and the Environment*, 25: 178-192. <https://doi.org/10.1002/bse.1865>
- Deegan C (2002). Introduction: The legitimising effect of social and environmental disclosures—a theoretical foundation. *Accounting, Auditing & Accountability Journal*, 15(3): 282-311. <https://doi.org/10.1108/09513570210435852>
- Deegan C and Gordon B (1996). A study of the environmental disclosure practices of Australian corporations. *Accounting and Business Research*, 26(3): 187-199. <https://doi.org/10.1080/00014788.1996.9729510>
- Deegan C and Rankin M (1996). Do Australian companies report environmental news objectively? An analysis of environmental disclosures by firms prosecuted successfully by the environmental protection authority. *Accounting, Auditing & Accountability Journal*, 9(2): 50-67. <https://doi.org/10.1108/09513579610116358>
- Deegan C, Rankin M, and Tobin J (2002). An examination of the corporate social and environmental disclosures of BHP from 1983-1997: A test of legitimacy theory. *Accounting, Auditing & Accountability Journal*, 15(3): 312-343. <https://doi.org/10.1108/09513570210435861>
- Deswanto RB and Siregar SV (2018). The associations between environmental disclosures with financial performance, environmental performance, and firm value. *Social Responsibility Journal*, 14(1): 180-193. <https://doi.org/10.1108/SRJ-01-2017-0005>
- Ding J, Lu Z, and Yu CH (2022). Environmental information disclosure and firms' green innovation: Evidence from China. *International Review of Economics & Finance*, 81: 147-159. <https://doi.org/10.1016/j.iref.2022.05.007>
- Doan MH and Sassen R (2020). The relationship between environmental performance and environmental disclosure: A meta-analysis. *Journal of Industrial Ecology*, 24: 1140-1157. <https://doi.org/10.1111/jiec.13002>
- Dong R, Shao C, Xin S, and Lu Z (2023). A sustainable development evaluation framework for Chinese electricity enterprises based on SDG and ESG coupling. *Sustainability*, 15(11): 8960. <https://doi.org/10.3390/su15118960>
- Du M, Chai S, Wei W, Wang S, and Li Z (2022). Will environmental information disclosure affect bank credit decisions and corporate debt financing costs? Evidence from China's heavily polluting industries. *Environmental Science and Pollution Research*, 29: 47661-47672. <https://doi.org/10.1007/s11356-022-19229-4>
PMid:35184238
- Ellili NOD (2022). Bibliometric analysis and systematic review of environmental, social, and governance disclosure papers: Current topics and recommendations for future research. *Environmental Research Communications*, 4(9): 092001. <https://doi.org/10.1088/2515-7620/ac8b67>
- Emmanuel O, Uwuigbe U, Teddy O, Tolulope I, and Eytomi GA (2018). Corporate diversity and corporate social environmental disclosure of listed manufacturing companies in Nigeria. *Problems and Perspectives in Management*, 16(3): 229-244. [https://doi.org/10.21511/ppm.16\(3\).2018.19](https://doi.org/10.21511/ppm.16(3).2018.19)
- Erin OA, Bamigboye OA, and Oyewo B (2022). Sustainable development goals (SDG) reporting: An analysis of disclosure. *Journal of Accounting in Emerging Economies*, 12(5): 761-789. <https://doi.org/10.1108/JAEE-02-2020-0037>
- Feng Y, Wang X, and Liang Z (2021). How does environmental information disclosure affect economic development and haze pollution in Chinese cities? The mediating role of green technology innovation. *Science of the Total Environment*, 775: 145811. <https://doi.org/10.1016/j.scitotenv.2021.145811>
PMid:33631595
- Gallego-Álvarez I and Pucheta-Martínez MC (2022). The moderating effects of corporate social responsibility assurance in the relationship between corporate social

- responsibility disclosure and corporate performance. *Corporate Social Responsibility and Environmental Management*, 29: 535-548. <https://doi.org/10.1002/csr.2218>
- Gerged AM, Chijoke-Mgbame AM, Konadu R, and Cowton CJ (2023). Does the presence of an environmental committee strengthen the impact of board gender diversity on corporate environmental disclosure? Evidence from sub-Saharan Africa. *Business Strategy and the Environment*, 32: 2434-2450. <https://doi.org/10.1002/bse.3257>
- Guroi B and Lagasio V (2023). Women board members' impact on ESG disclosure with environment and social dimensions: evidence from the European banking sector. *Social Responsibility Journal*, 19(1): 211-228. <https://doi.org/10.1108/SRJ-08-2020-0308>
- Hackston D and Milne MJ (1996). Some determinants of social and environmental disclosures in New Zealand companies. *Accounting, Auditing & Accountability Journal*, 9(1): 77-108. <https://doi.org/10.1108/09513579610109987> **PMCID:PMC10022816**
- Hanić A, Jovanović O, and Stevanović S (2021). Environmental disclosure practice in the Serbian banking sector. *Management: Journal of Contemporary Management Issues*, 26(2): 115-144. <https://doi.org/10.30924/mjcmi.26.2.7>
- Hui Z, Li H, and Elamer AA (2024). Financing sustainability: How environmental disclosures shape bank lending decisions in emerging markets. *Corporate Social Responsibility and Environmental Management*, 31: 3940-3967. <https://doi.org/10.1002/csr.2789>
- Jain A, Keneley M, and Thomson D (2015). Voluntary CSR disclosure works! Evidence from Asia-Pacific banks. *Social Responsibility Journal*, 11(1): 2-18. <https://doi.org/10.1108/SRJ-10-2012-0136>
- Jenkins H and Yakovleva N (2006). Corporate social responsibility in the mining industry: Exploring trends in social and environmental disclosure. *Journal of Cleaner Production*, 14(3-4): 271-284. <https://doi.org/10.1016/j.jclepro.2004.10.004>
- Jizi MI, Salama A, Dixon R, and Stratling R (2014). Corporate governance and corporate social responsibility disclosure: Evidence from the US banking sector. *Journal of Business Ethics*, 125: 601-615. <https://doi.org/10.1007/s10551-013-1929-2>
- Ju Y, Hou H, Cheng Y, and Feng Y (2024). Assessing the impact of government-led green supply chain demonstration on firms' financial distress: The role of environmental information disclosure quality and supply chain concentration. *Journal of Cleaner Production*, 440: 140786. <https://doi.org/10.1016/j.jclepro.2024.140786>
- Kalu JU, Buang A, and Aliagha GU (2016). Determinants of voluntary carbon disclosure in the corporate real estate sector of Malaysia. *Journal of Environmental Management*, 182: 519-524. <https://doi.org/10.1016/j.jenvman.2016.08.011> **PMid:27529312**
- Kashi A and Shah ME (2023). Bibliometric review on sustainable finance. *Sustainability*, 15(9): 7119. <https://doi.org/10.3390/su15097119>
- Khan MA (2022). ESG disclosure and firm performance: A bibliometric and meta analysis. *Research in International Business and Finance*, 61: 101668. <https://doi.org/10.1016/j.ribaf.2022.101668>
- Khan MK, Zahid RA, Saleem A, and Sági J (2021). Board composition and social & environmental accountability: a dynamic model analysis of Chinese firms. *Sustainability*, 13(19): 10662. <https://doi.org/10.3390/su131910662> **PMCID:PMC9704557**
- Kılıç M and Kuzey C (2019). Determinants of climate change disclosures in the Turkish banking industry. *International Journal of Bank Marketing*, 37(3): 901-926. <https://doi.org/10.1108/IJBM-08-2018-0206>
- Konadu R, Ahinful GS, Boakye DJ, and Elbardan H (2022). Board gender diversity, environmental innovation and corporate carbon emissions. *Technological Forecasting and Social Change*, 174: 121279. <https://doi.org/10.1016/j.techfore.2021.121279>
- Lee KH (2017). Does size matter? Evaluating corporate environmental disclosure in the Australian mining and metal industry: A combined approach of quantity and quality measurement. *Business Strategy and the Environment*, 26: 209-223. <https://doi.org/10.1002/bse.1910>
- Li D, Zhao Y, Sun Y, and Yin D (2017). Corporate environmental performance, environmental information disclosure, and financial performance: Evidence from China. *Human and Ecological Risk Assessment: An International Journal*, 23(2): 323-339. <https://doi.org/10.1080/10807039.2016.1247256>
- Li G, Xue Q, and Qin J (2022). Environmental information disclosure and green technology innovation: Empirical evidence from China. *Technological Forecasting and Social Change*, 176: 121453. <https://doi.org/10.1016/j.techfore.2021.121453>
- Linnenluecke MK, Marrone M, and Singh AK (2020). Conducting systematic literature reviews and bibliometric analyses. *Australian Journal of Management*, 45(2): 175-194. <https://doi.org/10.1177/0312896219877678> **PMCID:PMC10905119**
- Liu H, Liu W, and Chen G (2022). Environmental information disclosure, digital transformation, and total factor productivity: Evidence from Chinese heavy polluting listed companies. *International Journal of Environmental Research and Public Health*, 19(15): 9657. <https://doi.org/10.3390/ijerph19159657> **PMid:35955011 PMCID:PMC9368149**
- Lu J and Wang J (2021). Corporate governance, law, culture, environmental performance and CSR disclosure: A global perspective. *Journal of International Financial Markets, Institutions and Money*, 70: 101264. <https://doi.org/10.1016/j.intfin.2020.101264> **PMCID:PMC7550273**
- Lu Z and Li H (2023). Does environmental information disclosure affect green innovation? *Economic Analysis and Policy*, 80: 47-59. <https://doi.org/10.1016/j.eap.2023.07.011>
- Luo X, Jaidi J, and Nipo DT (2024). Firm size, firm performance, and environmental information disclosure quality: Evidence from listed a-shares companies in China's Shanghai and Shenzhen stock exchanges. In: Hamdan A, Alareeni B, and Khamis R (Eds.), *Digital technology and changing roles in managerial and financial accounting: Theoretical knowledge and practical application*: 193-201. Emerald Publishing Limited, Leeds, UK. <https://doi.org/10.1108/S1479-351220240000036018>
- Lyon TP and Maxwell JW (2011). Greenwash: Corporate environmental disclosure under threat of audit. *Journal of Economics & Management Strategy*, 20: 3-41. <https://doi.org/10.1111/j.1530-9134.2010.00282.x>
- Ma Y, Zhang Q, Yin Q, and Wang B (2019). The influence of top managers on environmental information disclosure: The moderating effect of company's environmental performance. *International Journal of Environmental Research and Public Health*, 16(7): 1167. <https://doi.org/10.3390/ijerph16071167> **PMid:30939767 PMCID:PMC6479823**
- Meng J and Zhang Z (2022). Corporate environmental information disclosure and investor response: Evidence from China's capital market. *Energy Economics*, 108: 105886. <https://doi.org/10.1016/j.eneco.2022.105886>
- Milne MJ and Adler RW (1999). Exploring the reliability of social and environmental disclosures content analysis. *Accounting,*

- Auditing & Accountability Journal, 12(2): 237-256.
<https://doi.org/10.1108/09513579910270138>
- Nekhili M, Nagati H, Chtioui T, and Rebolledo C (2017). Corporate social responsibility disclosure and market value: Family versus nonfamily firms. *Journal of Business Research*, 77: 41-52. <https://doi.org/10.1016/j.jbusres.2017.04.001>
- Neu D, Warsame H, and Pedwell K (1998). Managing public impressions: environmental disclosures in annual reports. *Accounting, Organizations and Society*, 23(3): 265-282. [https://doi.org/10.1016/S0361-3682\(97\)00008-1](https://doi.org/10.1016/S0361-3682(97)00008-1)
- O'Donovan G (2002). Environmental disclosures in the annual report: Extending the applicability and predictive power of legitimacy theory. *Accounting, Auditing & Accountability Journal*, 15(3): 344-371. <https://doi.org/10.1108/09513570210435870>
- Odera O, Scott AH, and Gow J (2016). Factors influencing corporate social and environmental disclosures: A systematic review. *International Journal of Business Governance and Ethics*, 11(2): 116-134. <https://doi.org/10.1504/IJBGE.2016.078199>
- Opuni-Frimpong J, Oheneba Akomaning J, and Ofori-Boafo R (2024). Environmental disclosures and financial performance amid banking crisis and COVID-19: Evidence from Ghana. *Journal of Financial Reporting and Accounting*, 24(4): 2092-2112. <https://doi.org/10.1108/JFRA-08-2023-0498>
- Patten DM (1992). Intra-industry environmental disclosures in response to the Alaskan oil spill: A note on legitimacy theory. *Accounting, Organizations and Society*, 17(5): 471-475. [https://doi.org/10.1016/0361-3682\(92\)90042-Q](https://doi.org/10.1016/0361-3682(92)90042-Q)
- Patten DM (2002). The relation between environmental performance and environmental disclosure: A research note. *Accounting, Organizations and Society*, 27(8): 763-773. [https://doi.org/10.1016/S0361-3682\(02\)00028-4](https://doi.org/10.1016/S0361-3682(02)00028-4)
- Pizzi S, Caputo A, Corvino A, and Venturelli A (2020). Management research and the UN sustainable development goals (SDGs): A bibliometric investigation and systematic review. *Journal of Cleaner Production*, 276: 124033. <https://doi.org/10.1016/j.jclepro.2020.124033>
- Plumlee M, Brown D, Hayes RM, and Marshall RS (2015). Voluntary environmental disclosure quality and firm value: Further evidence. *Journal of Accounting and Public Policy*, 34(4): 336-361. <https://doi.org/10.1016/j.jaccpubpol.2015.04.004>
PMCID:PMC9910778
- Pucheta-Martínez MC and Gallego-Álvarez I (2024). Environmental disclosure as a response to civil liberties and political rights in countries, myth or reality? The moderating role performed by board gender diversity. *Corporate Social Responsibility and Environmental Management*, 31: 6363-6386. <https://doi.org/10.1002/csr.2929>
- Punj N, Ahmi A, Tanwar A, and Rahim SA (2023). Mapping the field of green manufacturing: A bibliometric review of the literature and research frontiers. *Journal of Cleaner Production*, 423: 138729. <https://doi.org/10.1016/j.jclepro.2023.138729>
- Ramakrishnan J, Liu T, Yu R, Seshadri K, and Gou Z (2022). Towards greener airports: Development of an assessment framework by leveraging sustainability reports and rating tools. *Environmental Impact Assessment Review*, 93: 106740. <https://doi.org/10.1016/j.eiar.2022.106740>
- Ramdhony D, Omran M, and Hussainey K (2023). Board attributes and corporate social responsibility disclosure quality based on information typology. *Review of Accounting and Finance*, 22(4): 508-531. <https://doi.org/10.1108/RAF-01-2023-0009>
- Ren S, Wei W, Sun H, Xu Q, Hu Y, and Chen X (2020). Can mandatory environmental information disclosure achieve a win-win for a firm's environmental and economic performance? *Journal of Cleaner Production*, 250: 119530. <https://doi.org/10.1016/j.jclepro.2019.119530>
- Rweyendela AG, Pauline NM, and Lema GA (2023). Strategic environmental assessment for low-carbon development: developing an analysis framework. *Journal of Environmental Planning and Management*, 66(11): 2223-2246. <https://doi.org/10.1080/09640568.2022.2074825>
- Seow RYC (2024). Determinants of environmental, social, and governance disclosure: A systematic literature review. *Business Strategy and the Environment*, 33: 2314-2330. <https://doi.org/10.1002/bse.3604>
- Shoeb M, Aslam A, and Aslam A (2022). Environmental accounting disclosure practices: A bibliometric and systematic review. *International Journal of Energy Economics and Policy*, 12(4): 226-239. <https://doi.org/10.32479/ijeep.13085>
- Sutantoputra A (2022). Do stakeholders' demands matter in environmental disclosure practices? Evidence from Australia. *Journal of Management and Governance*, 26: 449-478. <https://doi.org/10.1007/s10997-020-09560-8>
- Suttipun M (2021). The influence of board composition on environmental, social and governance (ESG) disclosure of Thai listed companies. *International Journal of Disclosure and Governance*, 18: 391-402. <https://doi.org/10.1057/s41310-021-00120-6>
- Tan QL, Hashim S, and Zheng Z (2025). Environmental social governance (ESG) in digitalization research: A bibliometric analysis. *SAGE Open*, 15(1). <https://doi.org/10.1177/21582440241310953>
- Tsang A, Frost T, and Cao H (2023). Environmental, social, and governance (ESG) disclosure: A literature review. *The British Accounting Review*, 55(1): 101149. <https://doi.org/10.1016/j.bar.2022.101149>
- van Eck NJ and Waltman L (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84: 523-538. <https://doi.org/10.1007/s11192-009-0146-3>
PMid:20585380 PMCID:PMC2883932
- Wahyuningrum IF, Humaira NG, Budihardjo MA, Arumdani IS, Puspita AS, Annisa AN, Sari AM, and Djajadikerta HG (2023). Environmental sustainability disclosure in Asian countries: Bibliometric and content analysis. *Journal of Cleaner Production*, 411: 137195. <https://doi.org/10.1016/j.jclepro.2023.137195>
- Wang K, Cui W, Mei M, Lv B, and Peng G (2023). The moderating role of environmental information disclosure on the impact of environment protection investment on firm value. *Sustainability*, 15(12): 9174. <https://doi.org/10.3390/su15129174>
- Wang S, Wang H, Wang J, and Yang F (2020). Does environmental information disclosure contribute to improve firm financial performance? An examination of the underlying mechanism. *Science of the Total Environment*, 714: 136855. <https://doi.org/10.1016/j.scitotenv.2020.136855>
PMid:32018986
- Wang Y, Wilson C, and Li Y (2021). Gender attitudes and the effect of board gender diversity on corporate environmental responsibility. *Emerging Markets Review*, 47: 100744. <https://doi.org/10.1016/j.ememar.2020.100744>
- Wei M, Wang Y, and Giamporcaro S (2024). The impact of ownership structure on environmental information disclosure: Evidence from China. *Journal of Environmental Management*, 352: 120100. <https://doi.org/10.1016/j.jenvman.2024.120100>
PMid:38266519
- Wirth H, Kulczycka J, Hausner J, and Koński M (2016). Corporate social responsibility: Communication about social and environmental disclosure by large and small copper mining companies. *Resources Policy*, 49: 53-60. <https://doi.org/10.1016/j.resourpol.2016.04.007>
- Wiseman J (1982). An evaluation of environmental disclosures made in corporate annual reports. *Accounting, Organizations*

- and Society, 7(1): 53-63.
[https://doi.org/10.1016/0361-3682\(82\)90025-3](https://doi.org/10.1016/0361-3682(82)90025-3)
- Xi B, Dai J, and Liu Y (2022). Does environmental information disclosure affect the financial performance of commercial banks? Evidence from China. *Environmental Science and Pollution Research*, 29: 65826-65841.
<https://doi.org/10.1007/s11356-022-20401-z>
PMid:35488157
- Xiang X, Liu C, Yang M, and Zhao X (2020). Confession or justification: The effects of environmental disclosure on corporate green innovation in China. *Corporate Social Responsibility and Environmental Management*, 27: 2735-2750. <https://doi.org/10.1002/csr.1998>
- Xing C, Zhang Y, and Tripe D (2021). Green credit policy and corporate access to bank loans in China: The role of environmental disclosure and green innovation. *International Review of Financial Analysis*, 77: 101838.
<https://doi.org/10.1016/j.irfa.2021.101838>
- Xue J, He Y, Liu M, Tang Y, and Xu H (2021). Incentives for corporate environmental information disclosure in China: Public media pressure, local government supervision and interactive effects. *Sustainability*, 13(18): 10016.
<https://doi.org/10.3390/su131810016>
- Yang R, Duan ZW, Du MJ, and Miao X (2020a). A comprehensive knowledge pedigree on environmental transparency. *Polish Journal of Environmental Studies*, 30(1): 535-554.
<https://doi.org/10.15244/pjoes/123290> **PMid:33297686**
- Yang Y, Yao C, and Li Y (2020b). The impact of the amount of environmental information disclosure on financial performance: The moderating effect of corporate internationalization. *Corporate Social Responsibility and Environmental Management*, 27: 2893-2907.
<https://doi.org/10.1002/csr.2010>
- Zhang W and Zhao J (2023). Digital transformation, environmental disclosure, and environmental performance: An examination based on listed companies in heavy-pollution industries in China. *International Review of Economics & Finance*, 87: 505-518. <https://doi.org/10.1016/j.iref.2023.06.001>
- Zhao X, Nan D, Chen C, Zhang S, Che S, and Kim JH (2023). Bibliometric study on environmental, social, and governance research using CiteSpace. *Frontiers in Environmental Science*, 10: 1087493. <https://doi.org/10.3389/fenvs.2022.1087493>
- Zheng C and Kouwenberg R (2019). A bibliometric review of global research on corporate governance and board attributes. *Sustainability*, 11(12): 3428.
<https://doi.org/10.3390/su11123428>
- Zhou W, Zhuang G, and Liu L (2023). Comprehensive assessment of energy supply-side and demand-side coordination on pathways to carbon neutrality of the Yangtze River Delta in China. *Journal of Cleaner Production*, 404: 136904.
<https://doi.org/10.1016/j.jclepro.2023.136904>