

## CSR RESEARCH TRENDS IN THE ENERGY SECTOR: A BIBLIOMETRIC REVIEW

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### Abstract

CSR is an important aspect of sustainability and ethical governance in the energy sector. The research conducted a bibliometric analysis using Scopus database and explored the trend and knowledge building around CSR in the energy sector. The study analysed a bibliometric dataset of scholarly publications and assessed citation patterns, co-authorship networks, and keyword co-occurrences. The findings reveal a surge in the publication over the years 2004 to sept 2025, particularly around 2019 and 2023. Key factors that influence CSR are firm size, profitability, leverage, industry type, board size & composition, CEO duality & characteristics, CEO's career orientation & incentive, ownership type, market type etc. The study also found insufficient study of CSR in energy sector. The study identified major trends, thematic areas, and research gaps. Study shows the top journals, articles, authors, and countries that are contributing to this subject.

**Keywords:** Corporate Social Responsibility, Energy Sector, Bibliometric Analysis, Sustainability, Determinants of CSR.

### Introduction

CSR has increasingly been recognized as a vital element of corporate strategy, notably in industries such as the energy sector that exert substantial environmental and social influence. The concept of CSR refers to a company's voluntary initiatives that go beyond regulatory compliance to address social, environmental, and economic concerns (Carroll, 1999). CSR is labelled as "a concept through which companies integrate social and environmental concerns in their commercial operations and in their interaction with their stakeholders on a voluntary basis" (European Commission, 2006). From this standpoint, Corporate Social Responsibility (CSR) begins where legal obligations end and CSR aligns with the economic principle of mutual benefit, the legal duty to respect both individual and collective rights, and the ethical responsibility to conserve non-renewable natural resources as a legacy for future generations (Meseguer-Sánchez et al., 2021). Fontaine (2013) defines CSR as "a continuing commitment by businesses to behave appropriately, fairly, and responsibly and to contribute to economic development by improving the lives of workers and their families, as well as the local community and society as a whole." If CSR viewed strategically, rather than being seen as a cost, it is embraced as a strategic move that enables organizations to stand out from their competitors. (Beji et al., 2021; Porter & Kramer, 2006; Serra-Cantalops et al., 2018). Many companies employ CSR to get more social inclusivity and become socially acceptable (Pegg 2012). Australian companies have adopted CSR and made changes in its approaches as it helps in creating better stakeholders' relationship (Heard et al. (2017). Many companies want to contribute to larger goal of sustainable development and environmental concern (Bhattacharyya, 2007; Mezher et al., 2010). Lozano (2015) in this study stated that management found that there are internal, connecting and external drivers affecting CSR. Studies have shown that companies which have implemented CSR, use their reputation to attract, hold and motive credible employees (, Bolton et al. 2011; Raman 2018).

We want to find out the corpus of research which have studied the factors affecting CSR and its implementation. Researchers have widely studied the factors influencing CSR implementation. Researchers have studied its antecedents, mediators, and moderators, as well as the outcomes it generates at the organizational level (Fatima & Elbanna, 2023). Globally concerns over climate change, sustainability, and ethical business practices intensify, so energy companies are increasingly adopting CSR initiatives to address environmental, social, and governance (ESG) challenges (Agudelo & Davidsdottir, 2020). Effective CSR practices in this sector enhance corporate image and stakeholder trust and also promotes sustainable development goals (SDGs) and regulatory compliance (Fallah et al. 2022).

Given the rising academic interest in CSR practices in the energy industry, it is essential to systematically analyse existing literature to understand the key factors influencing CSR adoption and implementation. At present, the evaluation of CSR outcomes is largely subjective, differing not only between companies but also across various departments within the same organization (University of Houston, 2018). Prior studies have explored various determinants but the field remains fragmented, necessitating a structured review to map prevailing research themes and identify emerging trends.

Authors uses many techniques to identify the trends in research but bibliometric analysis is considered as a scientific way of analysing the trend map out the network of key authors, the area of their study and institutional network etc. (Broadus, 1987; Diodato, 1994; Pritchard, 1969). Unlike other techniques such as quantitative and qualitative analysis bibliometric analysis is more reliable and scientific in nature. (Aria and Cuccurullo 2017).

The primary objective of this study is to systematically examine the determinants of Corporate Social Responsibility (CSR) in the energy sector and to identify the research trends, influential contributors, and emerging themes through bibliometric analysis. While CSR has been widely studied, research on its drivers within the energy sector remains fragmented, with studies focusing on specific determinants such as board diversity (Beji et al., 2021), stakeholder pressure (Gonzalez-Porras et al. 2021), social, economic and political drivers (Stjepcevic, & Siksnyte, 2017), and a processual and interactional approach to CSR (Bolton et al., 2011). Many studies have done bibliometric analysis but they have not studied energy sector with it (Rani et al. 2025). However, there is limited comprehensive mapping of how these factors interact and evolve over time in the energy industry context. As known by everybody the energy sector is both a major contributor to environmental challenges and an important player in advancing sustainability. That's why it is important to explore CSR determinants in this domain to align corporate practices with the Sustainable Development Goals (Lozano, 2015; Fallah et al., 2022). This research not only consolidates the dispersed body of knowledge but also provides a scientific overview of CSR scholarship in the energy sector through bibliometric analysis and also highlighted gaps and directions for future inquiry (Aria & Cuccurullo, 2017; Meseguer-Sánchez et al., 2021).

The body of literature on CSR is growing but still significant gaps are remaining in the understanding of the determinants of CSR in the energy sector. Some studies have seen links between financial performance and CSR adoption (Kludacz-Alessandri & Cygańska, 2021). Some has seen media exposure, firm size, share ownership concentration and its relation with CSR disclosure (Wang et al. 2013). Some other studies talk about social, economic and environmental factors of CSR which ultimately impact competitive advantage (Cader et al., 2022). But all their findings are can be seen to be mixed and context-specific. Some research has also studied cross-country differences in

CSR reporting and assurance (Karaman et al., 2021). So much of this work is either country-specific, cross-sectional, or focused narrowly on disclosure rather than a comprehensive mapping of determinants. Bibliometric studies on CSR normally examine CSR in broad contexts like finance, ESG and sustainability. It rarely focuses exclusively on determinants in the energy sector (Meseguer-Sánchez et al., 2021). This study addresses these gaps by providing a global bibliometric analysis of CSR determinants in the energy sector, identifying influential authors, research clusters, and emerging trends. For industry, such insights can guide energy firms in prioritizing the most impactful financial, regulatory, and stakeholder factors to develop evidence-based CSR strategies and enhance sustainability performance.

#### Methodology

This research applies a bibliometric analysis to systematically explore the landscape on factors influencing CSR in the energy sector. Bibliometric analysis is a quantitative research method and draw qualitative insights that utilising statistical and network-based techniques to analyse large volumes of academic literature, identifying key trends, influential authors, major themes, and research gaps (Hassan & Duarte 2024).

The dataset is collected from Scopus Database. Scopus is considered as one of the widely recognized database for bibliographic mapping. The search criteria for this study used keywords such as “Corporate Social Responsibility”, “Energy Sector,” “Determinants of CSR”, “Factors Affecting CSR,” and “Energy Industr\*”. For this study timeframe from 2004 to 2025 has been selected because it reflects both historical developments and recent knowledge around CSR research within the energy sector. Also the research papers have started to be published after 2004. Only “journal articles”, “conference papers”, “review articles” and “book chapters” published in English are considered to maintain consistency and reliability. The extracted metadata includes citation details such as title, authors, journal, publication year, keywords, abstracts, citation counts, and co-authorship networks.

The keyword “Corporate Social Responsibility” has been used in other bibliometric research papers like (Meseguer-Sánchez et al., 2021; Ye et al., 2020). We did not use “CSR” as a keyword to avoid contamination of data as it may include papers from other fields also (Zhu and Hua, 2016; Zemigala, 2019). CSR in medical field means Central Serous Retinopathy (CSR) (Hassan, S. A. et al. 2021; Castro-Correia, 1992). In the field of social science CSR refers to Community Service Register. In the engineering field CSR may mean as Current Source Rectifier (Guo et al., 2015; Cuzner & Venkataraman 2014).

The keyword “determinants of CSR” was chosen to show the corpus of papers which have showed the factors which affect CSR. The Keyword was chosen as an author keyword in Aqif & Wahab, (2021). To be more inclusive we introduced the keyword “factors affecting CSR” for this study as it is similar to the term “determinants of CSR”. The terms “CSR”, “energy” and “sector” and “industry was studied by authors Agudelo et al. (2020). Similar term power sector and power industry was also used to be more inclusive. Many researches have studied factors which affect CSR in the energy sector (Curran, 2017; Ekatah et al., 2011; Mobus, 2012).

Table 1. Search Criteria and Article Selection.

Screening Criteria	Accepted	Rejected
Search parameters		
<b>Search engine:</b> Scopus		
<b>Search date:</b> 25th sept, 2025		
<b>Search term:</b> ("Corporate Social Responsibility" AND ("Determinants of CSR" OR "Factors affecting CSR" OR "Energy Sector" OR "Energy Industr*" OR "Power sector" OR "power Industr*"))	351	–
<b>Time Range:</b> 2004 to 2025	351	0
<b>Subject area:</b> "Business, management and accounting", "Economics, econometrics and finance", "Social sciences", and "Energy"	307	44
<b>Document type:</b> "Articles", "Conference papers", and "Reviews" and " Book Chapter"	303	4
<b>Article selection</b>		
<b>Language screening:</b> Include documents in English only	296	7
<b>Source Type:</b> "Journal", "Conference proceedings"	270	26
<b>Publication Stage:</b> Only "Final stage"	266	4

To analyse the collected data, the study applies descriptive analysis, citation analysis, keyword co-occurrence analysis, and network analysis using VOSviewer (Belmonte-Ureña et al., 2019; Meseguer-Sánchez et al., 2021; Sedighi, 2016; (Van Eck & Waltman, 2007). It creates network maps for each variable which facilitate the grouping and analysis of words for better processing (Meseguer-Sánchez et al., 2020).

The descriptive analysis examines the publication trends over time and identifies the top contributing authors, journals, and institutions in the field. Citation and co-citation analysis is used to determine the most highly cited papers, that maps the relationships between foundational studies and major research clusters. The keyword co-occurrence analysis helps to identify thematic research areas and emerging trends. The collaboration analysis through network shows global research contributions and their connections. The study showed key academic partnerships in CSR research within the energy sector through co-authorship networks.

All data used in this study is publicly available for ethical considerations. The research also adhered to academic integrity and ensured proper attribution of all sources that were analysed.

**Discussion**

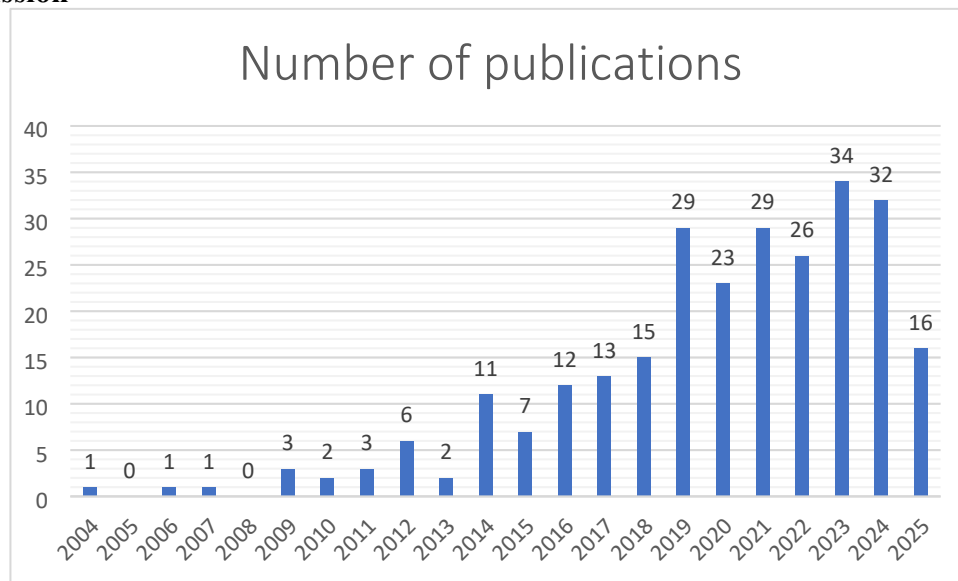


Figure 1. Number of Publications Over the Period.

The chart (Figure 1) shows a clear growth trend in the publications on CSR related publications. By looking at the chart a significant increase can be seen around 2018-2019. The surge could be because of increased awareness of climate change and policy changes. Although there was a dip in 2015 which may be due to shifts in research focus or funding related to CSR. The most notable decline occurred in 2020 and this could be due to the COVID-19 pandemic which ultimately disrupted research activities. But still a subsequent recovery and sustained high publication rates can be seen in recent years (2023-2024) which indicates the relevancy of this research area. This trend through this bar graph provides valuable insights for bibliometric analysis by showing how research focus has evolved over time and now increasing year by year.

**Descriptive Analysis**

Table 2. The Top Journals Based on Number of Publications.

Journals	Number of Publications	Percentage
Sustainability (Switzerland)	28	10.53
Energies	13	4.89
Corporate Social Responsibility and Environmental Management	11	4.14
Social Responsibility Journal	10	3.76
Journal of Cleaner Production	8	3.01
Energy Economics	5	1.88
Journal of Business Ethics	5	1.88
Energy Policy	4	1.50
Cogent Business and Management	3	1.13
Extractive Industries and Society	3	1.13
Finance Research Letters	3	1.13
Journal of Business Research	3	1.13
Journal of Global Responsibility	3	1.13

The table 2 shows the top journals which are publishing research on CSR and sustainability in the energy sector. “Sustainability (Switzerland)” has published more works and leads with 28 publications (10.53%) which shows its wide scope and focus on sustainability related models. “Energies” and “Corporate Social Responsibility and Environmental Management” journals follow which shows the interest in the nexus of energy and corporate responsibility. Journals like “Journal of Cleaner Production” and “Journal of Business Ethics” publishes ethical, environmental, and efficiency related works. Finally all these journals centred around sustainability, ethics, and energy policy etc. and these journals reflect global efforts toward responsible energy transitions through their platform.

Table 3. Top Universities Based on Publications.

<b>Organization</b>	<b>Number of Documents</b>	<b>Country</b>
Xi'an Jiaotong University	6	China
Colorado School of Mines	4	United States
Bucharest University of Economic Studies	3	Romania
Business School of Sichuan University	3	China
fuzhou university of foreign studies and trade	3	China
Haskoli Islands	3	Iceland
Northwestern Polytechnical University	3	China
Poznań University of Economics and Business	3	Poland
Silesian University of Technology	3	Poland
Southwestern University of Finance and Economics	3	China
The University of The West Indies	3	Trinidad And Tobago
Universidad De Castilla-la Mancha	3	Spain
Universitas Lampung	3	Indonesia
Universiti Teknologi Mara	3	Malaysia
Università Degli Studi Di Salerno	3	Italy
Vilniaus Universitetas	3	Lithuania

The table 3 shows universities where each university is contributing three or more publications on CSR and sustainability in the energy sector. Here all the universities which have been taken shows highest work related to this theme of research and others have less publications than three. By carefully analyzing the table it shows a geographically diverse academic landscape where CSR and sustaianbililty related studies are being carried out. Chinese institutions like “Xi'an Jiaotong University”, and “Business School of Sichuan University” show that China is focusing more and more on sustainable development. The table also shows universities from the U.S., Europe consisting Romania, Lithuania, and Indonesia from Asia also which means areas around the world is working on this theme. The even distribution of studies suggests a growing but decentralized academic interest around the world.

Co-authorship Based on Countries:

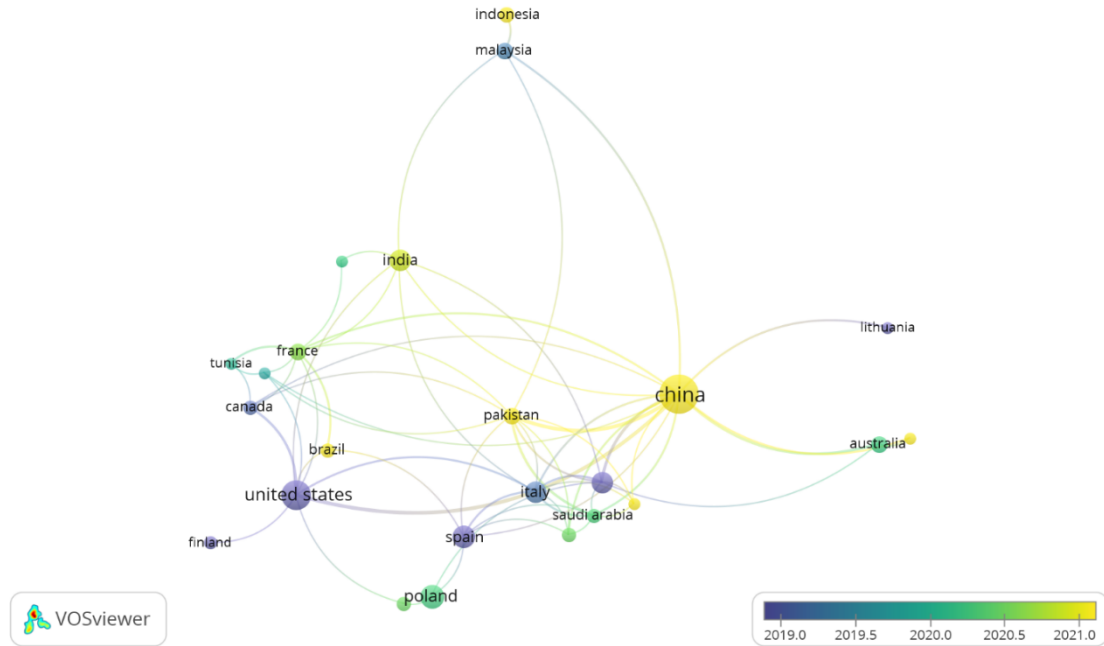


Figure 2. Co-authorship Map Based on Countries Generated Using Vosviewer.

The VOSviewer co-authorship analysis of countries for CSR related research identifies China as the leading contributor with the largest and yellow-coloured node which indicate high output and recent activity. China has taken central position and has numerous links which reflect a strong international collaboration. The map shows some regional clusters such as European cluster (Italy, Spain, Romania, etc.) which shows strong intra-regional ties. But non regional cluster such as North American & Asian cluster (India, France, Canada, etc.) show cross-continental collaboration. Also, a Southeast Asian cluster (Indonesia, Malaysia) indicate localized cooperation around this field. In the map Lithuania and Australia appear more isolated due to lack of connection with other countries. It can be seen that China's contributions are recent and Europe shows sustained research activity. This analysis show China’s dominance and regional collaboration patterns with varying worldwide research dynamics.

Table 4. Top Countries by Number of Publications.

Country	Documents	Percentage
China	56	21.05
United States	29	10.90
Poland	20	7.52
United Kingdom	19	7.14
Spain	18	6.77
India	17	6.39
Italy	17	6.39
Australia	10	3.76
France	9	3.38
Malaysia	9	3.38

The table 4 shows China as the leading contributor to CSR and sustainability related research in the energy sector where China has 56 publications (21.05%). China is seemed to be motivated by its focus on environmental and sustainable policies. After China, U.S. has most publications with 29 documents (10.9%). Publications of U.S. reflects its strong academic engagement in the said area. Then European countries like Poland, Spain, Italy, the UK, and France also rank high in this field maybe because of strict CSR regulations. India also has an important share of 6.39% means academic interest is increasing with evolving sustainability frameworks. Many contributions from Malaysia and Australia can be seen which shows CSR’s global importance across varied regulatory and economic settings.

Co-authorship Analysis Based on Authors:

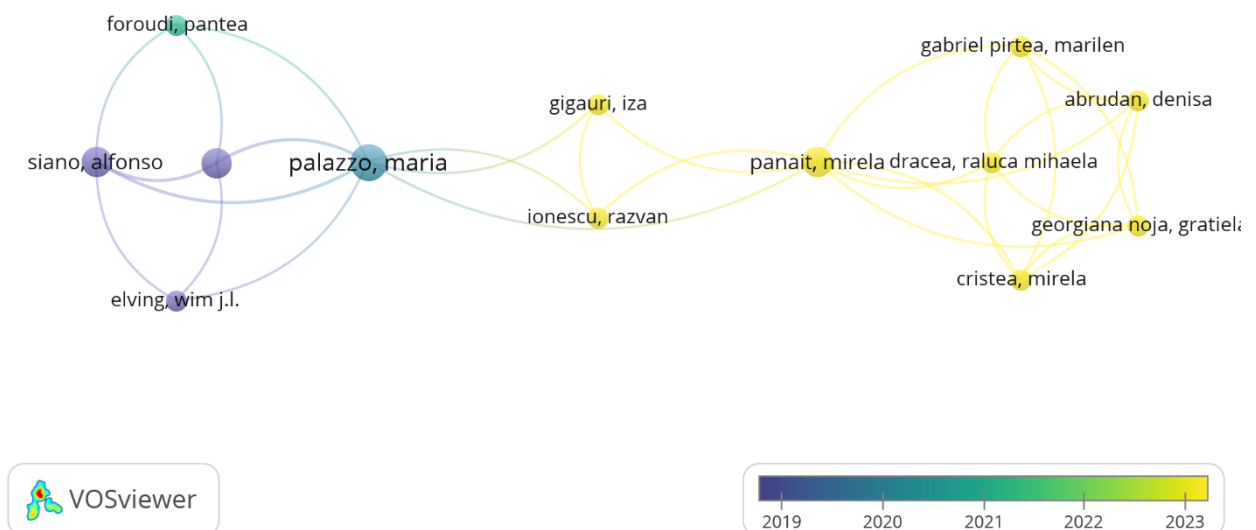


Figure 3. Co-authorship Map Based on Authors Generated Using VOSviewer.

The co-authorship network in CSR research shows two distinct clusters: the blue/purple group (consisting Foroudi, Pantea, Siano, Alfonso) and the yellow/orange group (consisting Gabriel Pirtea, Marilen, Cristea, Mirela). These clusters show a strong internal collaboration but it still shows minimal interaction between the authors. As per the map a clear interlink can be seen between Palazzo, Maria and Ionescu, Razvan. The yellow/orange cluster shows recent studies and collaboration (2022–2023). Central authors like Palazzo and Pirtea are the main authors in this field of study. But the analysis of this map shows a fragmented research landscape. This study suggests that there is a need for stronger cross-cluster collaboration.

Table 5. Top Ten Co-Cited Authors on the Subject.

S. NO.	Authors	Citation	Total Link
1	A.B. Carroll	128	2209
2	S. Brammer	73	2172
3	A. McWilliams	71	1743
4	J. Moon	67	1992
5	C. Deegan	64	2225
6	A. Kolk	62	1801
7	R.E. Freeman	61	1256
8	D.M. Patten	60	2260
9	D. Siegel	58	1495
10	D. Jamali	57	1502

The table 5 shows the top ten most cited authors in the research area around CSR and sustainability. The table shows major intellectual impact of around the field of study. A.B. Carroll tops the list with 128 citations for his outstanding work for CSR pyramid and other CSR related study (Carroll A.B., 2016). As per the list S. Brammer, A. McWilliams, and J. Moon are noted authors in this field for advancing strategic and institutional CSR perspectives (Brammer et al., 2012, McWilliams & Siegel, 2001, Moon, 2007). Scholars like C. Deegan and D.M. Patten gave theories on social and environmental accounting (Deegan, 2014, Patten, 1991). R.E. Freeman’s gave stakeholder theory which is considered as one of the most important works (Freeman, 1984). These cited authors show that studies are interdisciplinary in nature around CSR research. These studies continue to influence global academic and policy discussions on sustainable business practices.

Co-Occurrence Analysis Based on All Keywords:

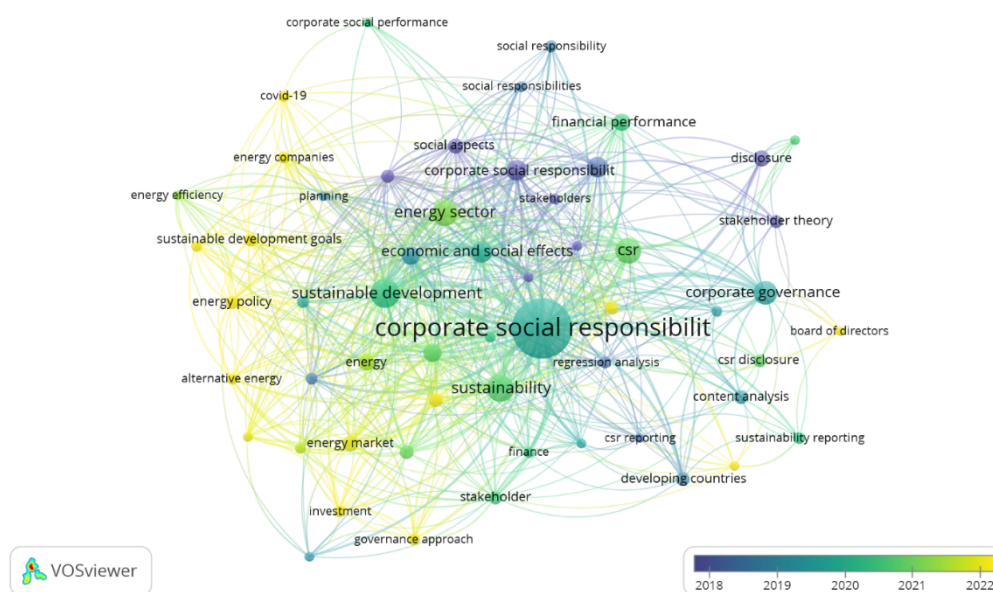


Figure 4. Co-Occurrence Map Based on All Keywords Generated Using VOSviewer.

Figure 4 identifies Corporate Social Responsibility (CSR) as the central theme which is presented by the largest node in the map. The network analysis shows intertwined network. Corporate Social Responsibility is studied mostly with Sustainability, sustainable development, energy sector, energy companies, regression analysis, corporate governance etc. Stakeholder engagement and disclosure are also important themes which are studied along with CSR. The yellow cluster shows energy sector, purple cluster shows corporate social responsibility, the green cluster shows sustainable development and light purple and green cluster shows sustainable reporting. These all clusters are interconnected together showing the use of them together. Temporal trends show a sustained relevance of CSR and sustainability. Also a growing attention towards investments, governance, and market dynamics is visible from in-depth analysis.

Table 6. Top Ten Keywords for the Study.

<b>Keyword</b>	<b>Occurrences</b>	<b>Total Link Strength</b>
Corporate Social Responsibility	174	432
Sustainable Development	40	189
Energy sector	34	140
Sustainability	34	119
CSR	33	100
Corporate governance	28	70
Economic and social effects	22	116
Corporate social responsibilities (CSR)	21	96
Corporate social responsibility (CSR)	21	58
China	19	75

The table 6 highlights the top ten keywords for CSR and sustainability research. As found in the VOSviewer analysis "Corporate social responsibility" is the used more dominantly which have 174 occurrences and the highest link strength (432) which shows its central role. Keywords like "sustainable development," "sustainability," and "CSR" show a strong connection between "corporate governance" and broader sustainability goals. "Energy sector" (34 occurrences, 140 link strength) shows its important role in sustainability related transitions. Keywords such as "corporate governance" and "economic and social effects" indicate CSR's broad impact on management and society. The frequent mention of "China" points out that it has a significant contribution due to its expanding energy market, evolving sustainability policies and their focus on sustainability related study.

Co-Citation Based on Authors:

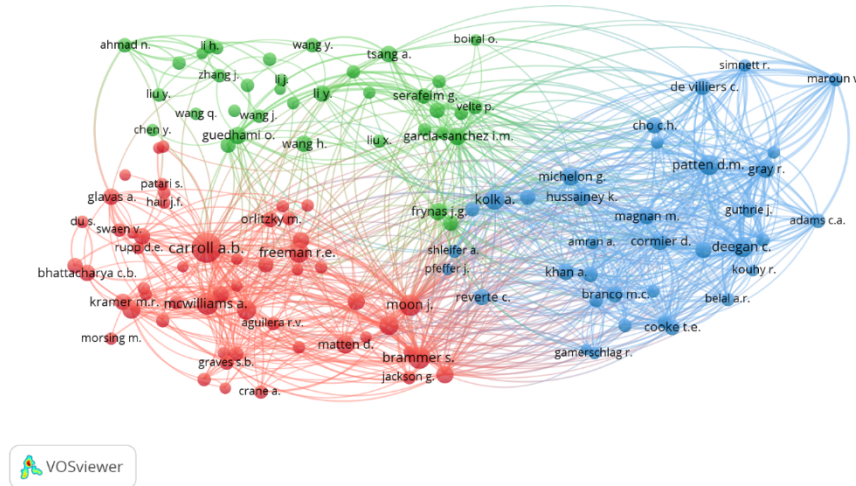


Figure 5. Co-Citation Based on Authors Generated Using VOSviewer.

The co-citation analysis of authors for CSR research (Fig. 5) shows three thematic clusters. The Green Cluster shows authors like Ahmad N., Li H., and Guedhami O where they focus on quantitative, empirical studies linking CSR with financial performance, stakeholder relations, and strategic management. The inclusion of Hair J.F. shows that they have a strong methodological foundation. The Red Cluster consists Carroll A.B., Freeman R.E., and Aguilera R.V. and they represent strong foundational CSR theories (Carroll A.B., 2016, Freeman, 1984, Williams & Aguilera, 2008). Their contribution in the theoretical knowledge includes stakeholder theory, institutional perspectives, and Carroll’s CSR pyramid. The Blue Cluster includes Boiral O., Cho C.H., and Kolk A. etc. and they impart knowledge about CSR reporting, social and environmental accounting, and institutional requirements (Kolk, 2016). Carroll, Freeman, and Aguilera have strong co-citation links and this shows their influential roles. The map shows the cohesive nature of each cluster's research themes.

Top Cited Publications

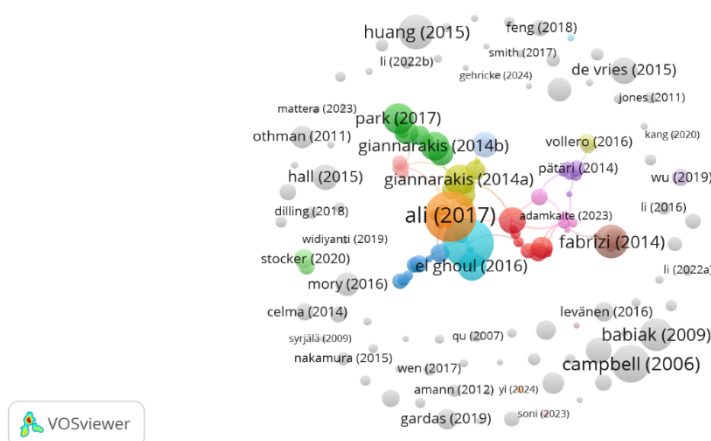


Figure 6. Top Cited Publications Map Generated Using VOSviewer.

The diagram (fig5) displays the top documents in the field based on citation metrics, generated using VOSviewer. The above are the articles which have at least 50 citations. Each circle represents a publication, but the magnitude of the node shows the amount of citations, and spatial proximity suggesting thematic similarity. *Ali (2017)*, *Jackson (2010)*, and *Campbell (2006)* emerged as the most influential works within this research domain.

Table 7. Top Ten Cited Documents.

Documents	Citations	Links
“Determinants of Corporate Social Responsibility (CSR) Disclosure in Developed and Developing Countries: A Literature Review” (Ali et al., 2017)	705	18
“Corporate social responsibility in Western Europe: An institutional mirror or substitute?” (Jackson & Apostolakou, 2010)	651	8
“Institutional analysis and the paradox of corporate social responsibility” (Campbell, 2006)	366	0
“Corporate social responsibility research in accounting” (Huang & Watson, 2015)	323	2
“The Role of CEO’s Personal Incentives in Driving Corporate Social Responsibility” (Fabrizi et al., 2014)	294	5
“Determinants of corporate social responsibility in professional sport: internal and external factors” (Babiak & Wolfe, 2009)	282	0
“Corporate social responsibility as a determinant of consumer loyalty: An examination of ethical standard, satisfaction, and trust” (Park et al., 2017)	248	2
“The determinants influencing the extent of CSR disclosure” (Giannarakis, 2014)	247	11
“Family control and corporate social responsibility” (El Ghouli et al. 2016)	220	3
“Corporate governance and financial characteristic effects on the extent of corporate social responsibility disclosure” (Giannarakis, 2014)	215	4

CSR reporting is influenced by some firm-specific factors like size, industry, profitability, and governance. This was considered along with broader political, social, and cultural contexts (Ali et al., 2017). In developed countries stakeholder pressures from regulators, investors, and media drive CSR disclosure. In developing nations external forces like international buyers and global regulatory bodies have greater influence (Ali et al., 2017). Jackson & Apostolakou (2010) used neo-institutional theory and found that firms in liberal market economies (e.g., Anglo-Saxon countries) score higher on CSR because of its role as a substitute for formal stakeholder mechanisms. On the other hands in coordinated economies such as Continental Europe, CSR is more implicit and embedded in institutional structures.

Campbell (2006) finds that responsible corporate behaviour is more likely in environments with strong regulations, industry self-regulation, active NGOs, and supportive social norms. Engagement in business associations and stakeholder dialogue also enhances CSR commitment.

Fabrizi et al. (2014) show that CEO incentives affect CSR engagement. Higher equity-

based pay and bonuses reduce CSR activity. Powerful, long-tenured, or less career-driven CEOs show a strong preference to engage in CSR efforts. CEO characteristics like tenure, power, and age significantly shape CSR decisions.

#### Bibliographically Coupled Documents

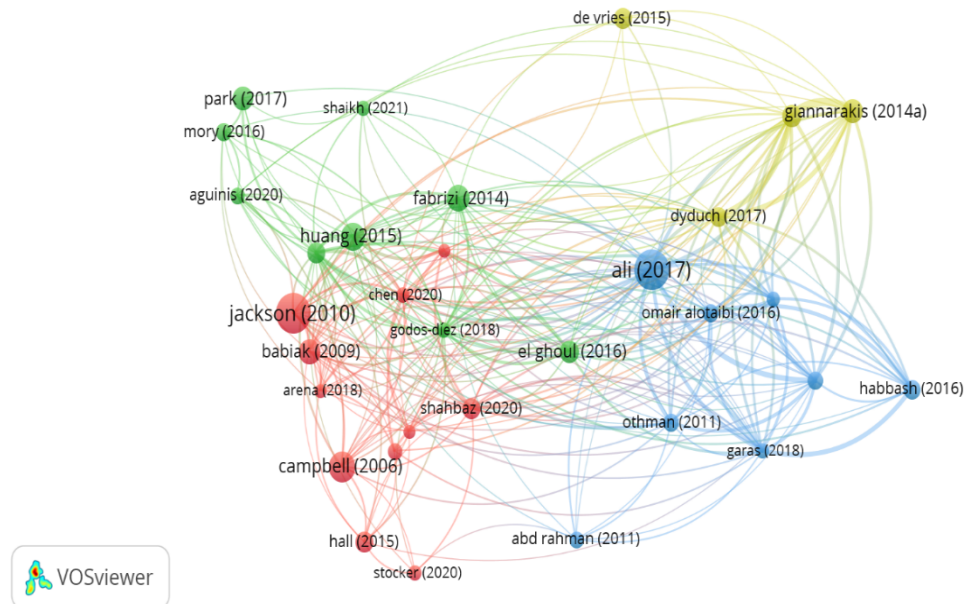


Figure 7. Bibliographically Coupled Documents Map Generated Using VOSviewer.

The bibliometric coupling analysis includes studies sharing 80 or more common references (fig 7). Every node shows a scholarly article with the magnitude reflecting citation frequency or influence. Links between nodes show the strength of bibliographic coupling. The more and thicker the links, the greater the number of shared references. Color-coded clusters highlight thematically related groups of studies. The red cluster, centred on works like Jackson (2010) and Campbell (2006) reflects a strong thematic focus. The green (e.g., Habbash 2016) and blue (e.g., Giannarakis 2014a) clusters represent distinct yet related research streams. Ali (2017) which is centrally positioned acts as a bridging document connecting multiple clusters.

This study investigates the factors influencing CSR disclosure in companies of the USA. Key findings state that larger companies and those which have bigger boards disclose more CSR information. But CEO duality negatively impacts disclosure levels (Giannarakis, 2014). Industry differences also play a role as financial and healthcare companies disclose more because of stakeholder's scrutiny and reputational concerns (Giannarakis, 2014). But the consumer staples and IT firms tend to disclose less. Firm size, board structure, and industry type significantly affect CSR transparency (Giannarakis, 2014).

Giannarakis, 2014 showed that profitable and larger companies disclose more although highly leveraged firms disclose less. It showed that committed board increases CSR transparency (Giannarakis, 2014). Other governance factors like board age, gender diversity, size, meetings, and CEO duality show no significant effect (Giannarakis, 2014). Babiak & Wolfe (2009) studied CSR in professional sports teams. The study found that external pressures which are societal expectations, stakeholders, industry norms and internal resources affect CSR efforts (Babiak & Wolfe, 2009). It suggested that there are many challenges in identifying true motivations because managers may not disclose profit

related reasons.

Park et al. (2017) found that companies which have high ethical standards and has consumer-company value alignment will increase consumer trust, satisfaction and loyalty in the retail industry. The study found trust and satisfaction are key mediators. It has also been seen that personal value alignment with CSR goals has little impact. They suggest that companies should communicate their ethical commitments to strengthen loyalty.

El Ghouli et al. (2016) show that family-controlled firms tend to reduce CSR achievements. It happens because of agency conflicts and resource diversion. It is evident that CSR improves when ownership shifts from family to non-family but worsens in reverse. Then, weak institutional environments exacerbate this underperformance. Also, larger and profitable companies disclose more and highly leveraged firms disclose less. Some governance factors like board age and gender diversity show no significant influence on the disclosure of CSR activities.

#### Conclusion

This study presents an elaborate bibliometric analysis of Corporate Social Responsibility (CSR) research from 2004 to May, 2025. The study found major trends, key contributors, and research gaps. The findings show researchers growing interest in CSR in recent years. Their interests can be influenced by regulatory developments, sustainability initiatives, and increasing stakeholder expectations.

The descriptive analysis conducted shows a steady rise in CSR publications which has peaked in 2018–2019. A temporary dip can be seen in 2020 may be due to the COVID-19 pandemic. By the analysis of top journals and institutions the dominance of China, the United States, and European countries in CSR research can be clearly seen. Contributions from India and other developing nations are also increasing which shows a worldwide expansion in scope.

Citation and co-citation analyses identified some important foundational scholars such as A.B. Carroll, S. Brammer, and R.E. Freeman. The study revealed three main research clusters which are institutional/stakeholder perspectives, corporate governance, and financial performance, and CSR disclosure and accountability. A key gap can be seen, is the limited interdisciplinary and international collaboration across clusters and regions.

Keyword co-occurrence analysis focused on themes such as sustainability, corporate governance, economic impact, energy, financial implications, regulatory influences, the SDGs, and the effects of COVID-19. It shows a shift toward more policy-driven and outcome-oriented CSR in the energy sector.

Co-authorship network analysis showed a strong regional collaboration. China came out to be the leading contributor. But minimal interaction between clusters can be seen, which suggests that there is need for greater interdisciplinary and international knowledge exchange.

The study also shows that CSR in the energy sector is not explored fully as we explore the past publications. All the analysis shows that energy sector has been used very less even as a keyword. So future studies may focus on studying CSR practices in this sector. The study acknowledges some limitations such as the reliance of the study only on Scopus as the sole database. The study's exclusion of non-English publications may overlook important regional insights. It also notes that citation-based metrics may not fully reflect the qualitative impact of research.

This bibliometric mapping of CSR determinants in the global energy sector which shows a consolidated knowledge base for researchers and guiding future empirical and theoretical work (Rani et al., 2025). The findings help firms design evidence-based CSR strategies aligned with global best practices for industries. The policymakers can use them

to develop supportive regulations. Stakeholders, including investors and communities, benefit from improved transparency and benchmarking of CSR efforts. At last this research strengthens the link between academic insights and practical CSR implementation, advancing sustainability in the energy sector.

This bibliometric assessment also provides important insights into publication trends, influential themes, and academic collaboration in CSR research. Future studies should incorporate multiple databases and consider qualitative dimensions. Future Study should explore detailed financial and non-financial factors that influence CSR practices in this sector.

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