

# Sustainable Investing: Navigating the Research Trends

B Naresh Goud\*

Irala Lokanandha Reddy\*\*

R Prasanth Kumar\*\*\*

## Abstract

*Sustainable investing has become a significant research area due to its incredible potential to drive positive environmental and social impact alongside financial returns. This article analyses the academic literature on sustainable investment and highlights major research through bibliometric analysis of the Elsevier Scopus database. The author tries to raise awareness of the related areas of sustainable investing in the following ways: (i) To ascertain which emerging concepts have received the most study attention, (ii) By knowing prominent authors, (iii) To identify the top publishing journal, (iv) Visualising study trends through network and overlay visualisation analysis, (v) The synthesis areas for future studies. Co-word analysis is employed in this study to uncover the underlying semantic relationships among terms used in sustainable investing research. The VOSviewer and Biblioshiny applications were used to provide an up-to-date overview of studies. The research results of this article are beneficial for those who practice, academicians, to direct their writings on sustainable investment, providing an organised framework for the field's advancement and identifying attractive areas for future research.*

**Keywords:** ESG investment, Green investment, Impact Investment, Socially responsible investment (SRI), Sustainable investment.

**Citation:** Goud, B. Naresh., Reddy, Irala Lokanandha, & Kumar, R. Prashanth. (2024). Sustainable Investing: Navigating the Research Trends. *Journal of Management and Entrepreneurship*, 18(3), 79–93. <https://doi.org/10.70906/20241803079093>

\* University of Hyderabad, School of Management, Hyderabad, Telangana, India, E-mail: [nizamianuoh0124@gmail.com](mailto:nizamianuoh0124@gmail.com), Mobile: 98662-10318

\*\* Professor, University of Hyderabad, School of Management, Hyderabad, India, 500046, E-mail: [irala@uohyd.ac.in](mailto:irala@uohyd.ac.in), Mobile No: 98665-39823

\*\*\* Associate Professor, University of Hyderabad, School of Management, Hyderabad, India, 500046, E-mail: [prasanth@uohyd.ac.in](mailto:prasanth@uohyd.ac.in), Mobile No: 81999-50506

## Introduction

Throughout the past several decades, the global economic landscape has been shifting toward sustainable investing, reflecting an increasing understanding of the interdependence between environmental, societal, and governance-ESG aspects, and economic security has become significant over time. Traditional investment techniques frequently focus on financial rewards over societal and environmental implications (Renneboog et al., 2008; Sparkes, 2003; Statman, 2000). Sustainable investing tackles this tension by offering a framework for aligning financial objectives with responsible and sustainable company operations. There is a dire need for an in-depth examination of sustainable investment, highlighting the business and scientific difficulties it tackles, explaining the research aims, and defining the anticipated future studies. The effort aims to respond to the underlying study-related inquiries: (i) Which developing concepts have drawn the most attention to the study? (ii) What are the research area's publication trends, title trends, and keywords? (iii) What are the top publishing journals for sustainable investment? The first question aids comprehension of various concepts in the research for the previous period and the development of novel concepts in sustainable investment research. This allows readers to quickly understand the various concepts of sustainable investments and what has been contributed through those concepts. The second, sustainable investment research, is quickly transforming and driven by various strategies, including a net-zero transformation, resource requirements, regulations, business plans, and a concentration on positive effects. Investors and businesses must stay updated about emerging trends as the area expands. Furthermore, this study attempts to learn about new modifications in creating research titles and the new keywords used throughout the research. Furthermore, the analysis identifies which journals publish the most studies on sustainable investments. So, several additional phrases deal with related or comparable concepts, such as ethical investment, sustainable investment (Mallin et al., 1995; Bauer et al., 2006; Domini & Kinder, 1984;), green investment (Martin & Moser, 2016), ESG-investment (Friede et al., 2015; van Duuren et al., 2016), value-based investment, or socially-responsible investment (Barnett & Salomon,

2006; Cox et al., 2004), and so forth. Sullivan and Mackenzie (2017) mentioned that socially responsible investments often blend environmental and social considerations into financial analysis and investment decisions.

As shareholders try to connect their portfolios with ethical and sustainable practices, there is a growing interest in an in-depth awareness of sustainable investment research's evolution, trends, and impact. Searcy and Elkhawas (2012) analyse sustainable investment, which integrates the environment, society, and governance considerations into making investing choices, and it has developed as a game changer on the global economic scene. It is based on the idea that businesses are significant in addressing societal and sustainability issues. It seeks to integrate financial objectives with ethical and environmentally friendly procedures (Elkington, 1997). Gond and Piani (2013) explore that businesses are under more extraordinary investigation for contributing to climate change, labour exploitation, and corporate governance problems. Sustainable investing seeks to resolve this issue by establishing a new standard recognising the interdependence between financial performance and ethical business practices. The scientific challenge in sustainable investing concentrates on the importance of a detailed investigation to comprehend the numerous relationships and novel investment concepts emerging in sustainable finance. Although the theoretical underpinnings of environmentally friendly investing have gained acknowledgement, there is a continual requirement for empirical evidence and methodological breakthroughs to confirm the effect of sustainability issues influencing the results of investments. A rigorous and quantitative review of the available literature must be conducted to connect the disparity.

Numerous concepts of sustainable investment are emerging in research. There is some uncertainty in understanding sustainable investing because, for many reasons, new concepts have emerged in the research. So, this paper allows for an exhaustive overview of the issues. This manuscript investigates this notion of sustainable investing (SI) using the complete text evaluation of content and identifies significant issues for future research. Singhania et al. (2023) noticed an imbalance in the number

of review articles that considered both views. For example, of 67 literature reviews conducted between 2004 and 2023, the prominent viewpoint is the "investment management perspective" on sustainable investment. Singhania et al. (2023) study contrasts with earlier bibliometric studies (Losse & Geissdoerfer, 2021; Beisenbina et al., 2022) in that it incorporates all known viewpoints on sustainable investing and covers more excellent range of sustainable investment studies. Abhayawansa and Mooneeapen (2022) identify the environmental, social, and governance (ESG) literature produced between 2009 and 2021, outlining four broad themes. Daugaard (2019) reviewed 463 research papers and books on ESG (Environmental, Social, and Governance) investments published between 1972 and 2017, uncovering study subjects on various aspects of investing concerning ESG. Islam (2022) investigates four significant concepts in IM (impact investing): ecology, personality features, making choices, and effect measurement. The review by Beisenbina et al. (2022) covers sustainable investment literature generated between 1988 and 2021. Poyser and Daugaard (2023) established a framework for "indigenous community investments," presenting it as an exceptional academic area.

Descriptive bibliometric analysis, network analysis, overlay visualization, and co-word analysis are employed to address critical contributions that remain necessary for sustainable development. Additionally, research is conducted to provide knowledge aimed at fostering a promising future. To do this, the work organises the existing literature, defines different categories in the study area, opts for the most influential publications, authors, nations, journals, and keywords, and investigates their connections.

## The conceptual foundation of sustainable investing

To explain the bibliographic examination, this paper presents a brief theoretical backdrop. This article will provide (i) A brief review of the concept's evolution, (ii) highlight contemporary trends, (iii) compare and contrast common terminology, and define Sustainable investment. The explosion in popularity of sustainable investment has seen a shift from fringe ethical investing to a mainstream approach that incorporates factors similar to the environment,

society, and governance in making investment opportunities (Hamilton et al., 1993). Eccles et al. and Serafeim G. (2013) observe that the transformation to long-term viability necessitated the transition from negative screening to integrating positive ESG components into investing evaluation and choice-making. Shareholders became involved with business organisations on ESG issues, advocating for enhanced responsibility and openness in corporate practices (Karpoff et al., 1993). Pension funds, asset managers, and institutional investors began incorporating ESG factors throughout their money-management techniques, signalling an upward trajectory toward widespread acceptance. European Commission (2018) describes how the framework for regulation has evolved, including governments and financial organisations introducing guidelines to encourage or compel business enterprises to make ESG information available. MSISI (2019) defines sustainable investing as increasingly integrated into various investment methods, including theme investing, green bonds, and other ESG-focused investment products. Impact investing evolved to generate beneficial purposes with demonstrable social and environmental effects and financial benefits.

Sustainable investing trends are dynamic, reflecting investors' fluctuating objectives and society's broader focus on ecological, social-related, and governance issues. The expanding emphasis on promoting initiatives prepared to change the consequences of environmental change while reducing the adverse effects of greenhouse gas emissions. Investor has become more concerned about the impact of the environment's risks and options on the value they derive from their holdings. The COVID-19 pandemic has enhanced renewed interest in social bonds and investments that help solve public health issues and support communities during emergencies. Serafeim et al. (2018) describe that modern technology, like artificial intelligence (AI) and analytics for large amounts of data, is becoming increasingly prevalent in ESG analysis to improve the assessment and measurement of sustainability indicators. Sustainable financial planning incorporates ecological, social, and governance (ESG) factors throughout financial selection procedures to generate economic rewards while contributing to more significant environmental and societal goals (Eccles et al., 2013). According to Losse and Geissdoerfer (2021), various substitutes

for sustainable investment include responsible investment, ethical investment, green investment, ESG investment, value-based investing, socially conscious investing, environmental investment, and socially responsible investment. The terms above all refer to the same general procedure and are frequently employed similarly.

Finally, given this explanation, diverse jargon, and various terminologies, what will sustainable investing entail? The scholarly argument has numerous meanings. On the other hand, Losse and Geissdoerfer (2021) describe other scholars who questioned the need for a unique definition in the initial stages. Sustainable investments use numerous "social screens" without deliberately sacrificing performance. This notion is more significant in scope, including non-financial factors in an otherwise exclusively financial investment process.

## Methodological Approach and Data

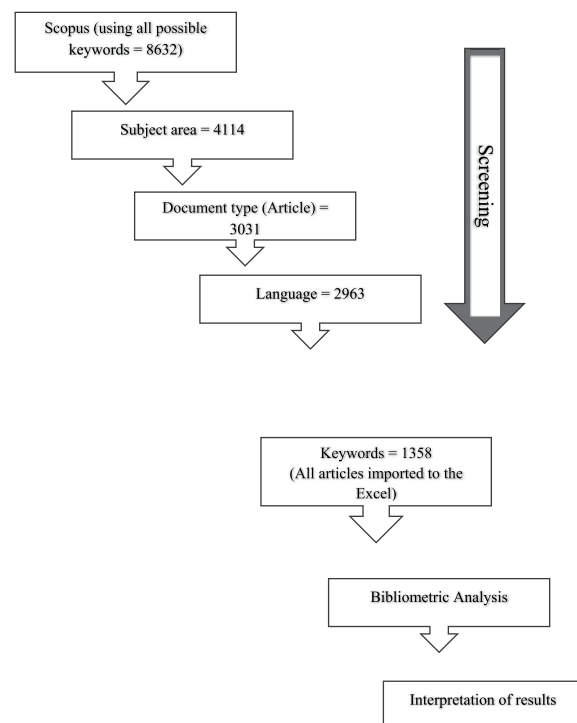
The present article provides a bibliometric examination of the sustainable investing information available in finance and sustainability research studies. Bibliometric research is a widely recognised technique for obtaining a quantitative overview of a subject matter (Donthu et al., 2021). Bibliometric studies serve as crucial supplements to the assessments and viewpoints of prominent researchers in the area of study (Prمود et al., 2023). Quantitative approaches may test opinions and contribute to knowledge, making them an outstanding means of identifying significant contributions in cross-disciplinary domains (Mukherjee et al., 2022). Bibliometric research is employed to identify relevant papers in sustainable investing and monitor their growth over time. Additionally, the analysis highlights the most referenced contributors, publications, countries, and fields of study. The cardinal indicator is used to track the distribution of publications over time, with search term regions defined by citation count and geographic areas (Mingers J, 2009).

## Collection of Data

This evidence was brought together from the Elsevier Scopus database. The Scopus database was selected for its comprehensive literature coverage and accuracy in search results. The analysis focused on eleven terms related to sustainable investments,

which have become more prevalent in recent years; those are TITLE-ABS-KEY ("sustainable invest\*" OR "climate invest\*" OR "socially responsible invest\*" OR "responsible invest\*" OR "socially conscious invest\*" OR "green invest\*" OR "environmental invest\*" OR "ethical invest\*" OR "ESG invest\*" OR "value-based invest\*" OR "impact invest\*") AND PUBYEAR > 1990. The search was conducted from 1991 to 06 February 2024, to provide an in-depth analysis of sustainable investment, incorporating historical context, growth, policy changes, technological advancements, and major global events (e.g., the 2008 financial crisis, climate summits, and the COVID-19 pandemic). This extensive data collection spanning several decades allows for uncovering long-term trends and patterns, as previous studies did not encompass all keywords used in this work. Consequently, the research becomes more rigorous and relevant. During this stage, 8,632 articles were located, and 1,358 papers were ultimately selected to meet the study's requirements.

**Figure 1 shows the methodological approach before proceeding to an expanded description here.**



*Source: Authors*

## Fig.1 Review process

In the subsequent phase, the search boundaries were refined by applying a specific set of criteria:

	Inclusion	Exclusion
<b>Topic region</b>	Economics, Econometrics, Finance, Business, Management, and Accounting	Social sciences, Environmental-science, Arts and Humanity, Engineering, Toxicology and Pharmaceuticals, Energy, Decision sciences, Psychology, Mathematics, Agricultural and Biological sciences, Medicine, Earth and Planetary Sciences, Pharmacology, and Material Science, Computer science.
<b>Kind of Publication</b>	Article	Book chapter, Review, Conference Paper, Book
<b>The use of language</b>	English	Spanish, Arabic

**Source:** Authors

Since the outcome, the amount of data collected dropped to 1358 articles. These papers were evaluated for applicability to a critical area of sustainable investment. Eight thousand six hundred thirty-two periodicals were removed for unnecessary use of the notion derived from reading the article's title and abstract. Finally, 1358 articles were considered for bibliographic review using the needed filters for the analysis.

This paper employs the Biblioshiny and VOSviewer software tools to perform the analysis for applying authors' and countries' affiliations, journals, keywords, and author's names, which were selected for the sample of 1358 documents. The standardisation implies unifying spellings, such as research contributor's name with one or two initials, affiliation or journal name with slight variations, or jargon with similar meanings but distinct spellings. To minimise the impact of subjective changes on co-word analysis results, keywords were standardised by grouping Single and plural names (e.g., "sustainable investment" and "sustainable investments.") and nouns with abbreviations (for example, "socially responsible funds" and "SRI").

## Data Analysis and Findings from Bibliometric Study

### Papers

According to the information, that initial paper was published in 1996. Fig 2 depicts the expanding total quantity of articles and citations in sustainable investment. (Beisenbina et al., 2023) The global financial crisis encouraged academics to examine standard economic models, contributing to an upsurge in fascination with the area.

Table 1 illustrates the most prominent 20 referenced articles regarding sustainable investing. The selected papers have the most citations. "Journal of Business Ethics" (JBE) is the highest cited article. Few papers focused on the ESG rating, ESG portfolio, and related variables than that part; Halbritter and Dorfleitner (2015) discovered that the ESG portfolio failed to demonstrate significant earnings disparity among organisations with larger ESG and lower ESG ratings that the essence of the ESG factors on returns is highly reliant on the rating source, company sample, and period. Islamic funds do not have a stable or exploitable link between their ESG ratings and returns, and their performance and style vary depending on the Islamic financial market development, the investment region, and the period (Hoepner et al., 2011). The researcher explored how traditional asset managers are responsible for environmental, societal, and governance-related factors in their investing procedure. They also found that ESG-related information is mainly helpful for risk management. Scholtens (2006) discusses how financial institutions, markets, and investors can affect firms' environmental, social, and governance performance, such as through lending, investing, screening, engagement, and divestment, and argues that finance can promote or discourage sustainable and responsible business practices, depending on the financial actors' incentives, information, and preferences. Dorfleitner et al. (2015) discovered that the various ratings differ in distribution and risk and that the impact of social and environmental factors on outcomes significantly relies on the assessment grade source, the firm sample, and the time frame. Researchers present a theoretical underpinning for responsible investing and illustrate how ESG issues alter multiple financial success metrics (Dam et al.,

2015). This PRI initiative allows wealthy investors to work alongside and influence business behaviour on ESG difficulties (Gond & Boxenbaum, 2013). Cortez et al. (2009) assess the effectiveness of ordinary funding and conclude that they are equivalent in rating according to ESG.

Plenty of research on socially responsible investment concepts occurred in the highest journals. 2 case studies show how Video measurement tools influenced the perceptions and behaviours of other actors in the SRI industry, such as investors, rating agencies, and corporations. This article provides information on measurement tools, organisational entrepreneurship, and SRI (Dejean et al., 2004). Second, it produces knowledge of standardisation, firms' work, and responsible investment (Slager et al., 2012). Arjalies, D. L. (2010) contributes knowledge, institutional change, and SRI, providing practical implications for SRI practitioners and regulators. Based on a survey, Sievanen et al. (2013) investigate the determinants of SRI in European pension funds and conclude that legal, ownership, and size variables are essential.

**Table 1 The most cited twenty articles on sustainable investing.**

Author	year	TI	SO	TC	TCPY
Scholtens B	2016	ESG Integration and the Investment Management Process: Fundamental Investing Reinvented	Journal of Business Ethics	263	29.22
Scholtens B	2006	Finance as a driver of corporate social responsibility	Journal of Business Ethics	257	13.53
Dorfleitner G	2015	The Wages of Social Responsibility - Where Are They? A Critical Review of ESG Investing	Review of Financial Economics	188	18.8
Gond J-P	2004	Measuring The Unmeasured: An Institutional Entrepreneur Strategy in An Emerging Industry	Human Relations	185	8.81
Gond J-P	2012	Standardization As Institutional Work: The Regulatory Power of a Responsible Investment Standard	Organization Studies	171	13.15
Hoepner Agf	2011	Islamic Mutual Funds' Financial Performance and International Investment Style: Evidence From 20 Countries	European Journal of Finance	170	12.14
Dorfleitner G	2015	Measuring The Level and Risk of Corporate Responsibility - An Empirical Comparison of Different ESG Rating Approaches	Journal Of Asset Management	163	16.3
Wang Y	2016	Public Awareness and Willingness to Pay for Tackling Smog Pollution in China: at Case Study	Journal of Cleaner Production	159	17.67
Cortez Mc	2009	The Performance of European Socially Responsible Funds	Journal of Business Ethics	140	8.75
Arjalies D-L	2010	A Social Movement Perspective on Finance: How Socially Responsible Investment Mattered	Journal of Business Ethics	110	7.333
Scholtens B	2017	The Opportunity Cost of Negative Screening in Socially Responsible Investing	Journal of Business Ethics	95	11.88
Scholtens B	2018	Fossil Fuel Divestment and Portfolio Performance	Ecological Economics	88	12.57
Scholtens B	2013	The Drivers of Responsible Investment: The Case of European Pension Funds	Journal of Business Ethics	70	5.833
Scholtens B	2013	Drivers Of Socially Responsible Investing: A Case Study Of Four Nordic Countries	Journal Of Business Ethics	68	5.667
Cortez Mc	2015	Performance Of European Socially Responsible Funds During Market Crises: Evidence from France	International Review of Financial Analysis	67	6.7

Cortez Mc	2016	The Performance of US and European Green Funds in Different Market Conditions	Journal of Cleaner Production	65	7.222
Gond J-P	2013	Enabling Institutional Investors' Collective Action: The Role of The Principles for Responsible Investment Initiative	Business And Society	65	5.417
Gond J-P	2013	The Glocalization of Responsible Investment: Contextualization Work in France and Québec	Journal of Business Ethics	64	5.333
Weber O	2012	Enabling Social Innovation Through Developmental Social Finance	Journal of Social Entrepreneurship	62	4.769
Scholten B	2015	Toward A Theory of Responsible Investing: On the Economic Foundations of Corporate Social Responsibility	Resource and Energy Economics	56	5.6

**Abbreviations:** TC = total citations; TCPY = total citations per year.

**Source:** Authors

The authors compared the results of French Socially responsible and ordinary funding during the adverse periods and learned that they differ depending on the screening strategies (Leite et al., 2015). Researchers examine the efficacy of European and US green funds versus traditional amounts in various marketplace scenarios and conclude that green funds fail the standard of reference, particularly during periods of low interest and noncrisis (Cortez et al., 2016). Based on a survey, Sievanen et al. (2013) investigate the causes of sustainable investment in European retirement savings schemes and conclude that legal, ownership, and size considerations are essential.

### Authors

Table 2 displays the top ten most relevant authors in the field of sustainable investing, identified using the fractionalized counting method. It is a way of assigning credits to the authors or other units of analysis of a publication based on their relative contribution or participation, and it is often used in bibliometric analysis to avoid double-counting of publications and to calculate normalised indicators of research impact (Mutz & Daniel, 2019).

$$C_i = 1/n_i$$

$C_i$  is the credit given to the  $i^{\text{th}}$  author of a publication, and  $n_i$  is the number of authors.

Scholten B has collaborated with more authors, so he has a higher fractionalised count of 4.25 and 9 articles. Weber O has more articles among the top 10 authors and has the second-highest fractionalised count. The authors contributed valuable research both individually and through collaborative efforts.

Table 1 presents the top 20 cited papers, highlighting the leading 20 authors with the highest citation counts in this field. Scholten B has the highest number of citations, with 263 overall and 29.2 average citations per year. Remain following authors are continuing in the citation's rankings Dorfleitner G, Gond J-P, Hoepner Agf, Dorfleitner G, And Wang Y. A. Most authors published their articles in the Journal of Business Ethics (FT50 Journal).

**Table 2 Most important contributors.**

Authors	Articles	Articles Fractionalized
SCHOLTENS B	9	4.25
WEBER O	10	3.92
ARJALIÈS D-L	6	3.58
NILSSON J	6	3.58
GOND J-P	9	3.53
ISLAM SM	5	3.50
REVELLI C	4	3.50
RICHARDSON BJ	4	3.50
DORFLEITNER G	8	3.17
HOEPNER AGF	9	3.00

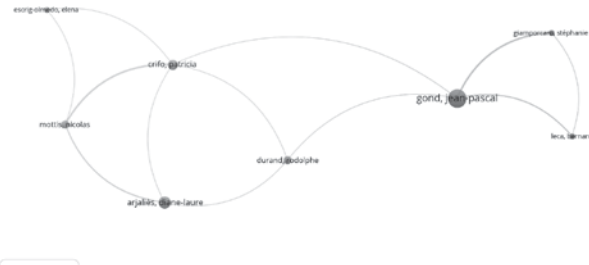
Source: Authors

**Co-Authors analysis**

Co-authorship analysis studies the patterns and trends of scientific collaboration based on the joint publication of authors. It can reveal the structure, size, productivity, impact, and dynamics of research groups, institutions, disciplines, regions, or countries. It can also help identify a domain's most influential or central authors, topics, or subfields. Fig. 2 depicts the co-authors' collaborative work from the fractionalised score. The writer's engagement system considers the disregarded papers and numerous contributors' document limit of 5 and assumes a minimum of three articles. This criterion explains why certain notable writers do not appear in their representation because they contributed to fewer than three publications. A list of 2822 authors came to light, with just 125 meeting the threshold. In that figure, three clusters and the most extensive set of connected items comprise eight items. Each node represents an author, and lines connecting them indicate authorship on one or more papers. The different colours of the lines represent different levels of collaboration intensity or different topics they have worked on. A green line connects the authors "Mottis, Nicolas" and "Crifo, Patricia," a red line connects "Gond, jean-pascal" and "Leca, Bernard," and a blue line connects "Arjalies, "diane-Laure." The same-coloured lines represent the author's work on the same topic, and different colours represent different levels of collaboration intensity or different topics they have worked on. The

redline cluster has the highest total link strength and more documents than the remaining clusters. Finally, the teamwork networks have no central hub, and the node connects loosely, meaning that a co-writer work has poor collaboration.

**Fig.2 Co-author's network visualization**



Source: Authors

The total number of articles per contributor on this subject matter is illustrated in Table 3. To perform this computation, this study examines the number of authors participating rather than the number of collaborating authors in every work (Nájera-Sánchez et al., 2019). The sample includes 2,362 unique authors who have published a single document. Additionally, 2,851 different authors have engaged in co-authorship collaborations on at least one document. Approximately 82.8% of these writers published a single item in the Scopus database. More than 11.2% wrote two pieces, 3.3% authorised three, and 0.1% produced more than nine articles.

**Table 3: Documents per author**

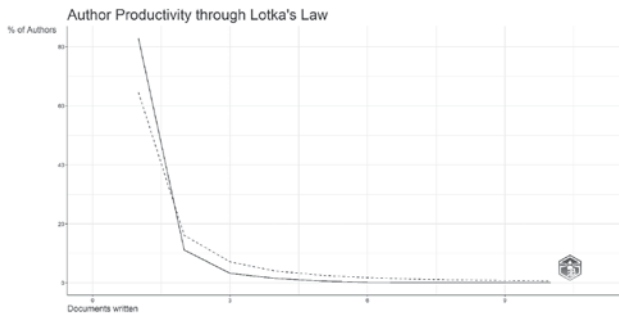
Documents written	N. of Authors	Proportion of Authors
1	2362	0.828
2	319	0.112
3	93	0.033
4	44	0.015
5	19	0.007
6	6	0.002
7	2	0.001
8	2	0.001
9	3	0.001
10	1	0

Source: Authors



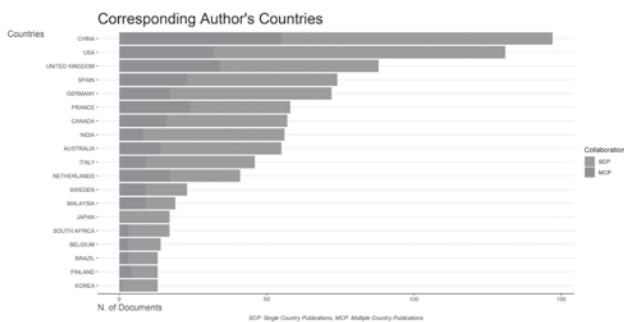
Lotka's law is one of the traditional principles of bibliometrics that characterises the proportional spread of scientific productivity among writers in any subject. It asserts that the total amount of writers who publish  $x$  papers in a given period is inversely proportional to  $x$  squared. In other words, many authors publish only one paper, but few publish many. The Lotka allocation for the writings about the studied discipline is shown in Fig. 4. The graph depicts an inverse relationship between the authors and the documents, based on Lotka's Law. It shows that the number of papers increases, and the percentage of all papers decreases. This means that many authors publish only one paper, but few publish many papers. This relationship can help to be aware of the distribution of scientific productivity and the structure of communities in a particular field or over a specific period.

**Fig.3 Lotka's Law in Sustainable Investing**



Source: Authors

**Figure 4: Most productive countries in sustainable investing**



Source: Authors

To conclude the assessment of the writers, this study looked into their interconnections. The above graph highlights the leading countries' contributions

regarding research productivity on this issue. China has 55 documents as a single-country publication and 92 with multiple-country publications. The USA, UK, Spain, Germany, France, and others are the countries after China.

**Journals**

**Table 4: Top 10 Journals Sources by Bradford's Law.**

Journals	Rank	Freq
Journal of Business Ethics	1	109
Journal of Sustainable Finance and Investment	2	90
Journal of Cleaner Production	3	78
Business Strategy and the Environment	4	38
Finance Research Letters	5	34
Corporate Social Responsibility and Environmental Management	6	28
Journal of Banking and Finance	7	19
Business and Society	8	18
Journal of Portfolio Management	9	17
International Review of Financial Analysis	10	16

Source: Authors

Bradford's law analyses the allocation of writings across resources and discovers an essential collection of resources that contains many papers on sustainable investments. Bradford's law, created by Bradford, asserts that few resources frequently control an area. These places are determined according to their frequency and the dispersion of articles that have been released. As such, resources are rated in lessening article production and grouped across three sections, each producing approximately one-third of all publishing. Nevertheless, while one moves forward beyond one section to the next, the number of articles in each new section grows exponentially. Following that law, the initial one-third of all articles are published by a limited number of sources (Zone-1), identifying the "key resources" that propel the discipline. The following one-third of the articles are published by a broader set of resources (Zone-2), while 1/3rd is published by an increasingly wide variety (Zone-3). The primary resources initially identified section is highly knowledgeable. The

outcomes of the zone explore the primary resources of sustainable investing. Zone- produced 463 papers in 11 resources; Zone 2 issued 448 research papers in 64 resources; and Zone 3 produced 447 items in 323. Writers understand that most relevant papers on the issue can be found in core sources, and they finally focus on those articles (Dhingra et al., 2023).

### Co-word analysis

The analysis of co-words uncovers interactions among text information and literary topics via search term engagement (Wang et al., 2012). Subsequently, it depends on the idea that terms indicate a document's principal content while also providing a snapshot of the existing research on an area of research. This method is frequently used to find trends and new subjects in scientific domains. According to Garfield (1990), keywords can completely capture the information of a document. However, there is insufficient scientific evidence to demonstrate its efficacy. The search phrase in the Table for this investigation included twenty-three terms.

**Table 5 Search strings for bibliometric research.**

Search string	Number of articles (Scopus)
Socially Responsible Investment	212
Socially Responsible Investing	159
Impact Investing	122
Green Investment	117
Sustainable Investment	94
Socially Responsible Investments	85
Responsible Investment	80
Sustainable Investing	78
Environmental Investments	76
ESG Investing	66
Ethical investment	65
SRI	60
Sustainable investments	58
Environmental investment	54
Socially Responsible Investment (SRI)	38
Impact investment	38
Ethical investing.	35
Green investments	33
Responsible Investing	33

Socially Responsible Investing (SRI)	30
Ethical investments	18
ESG investment	17
ESG investments	15

*Source: Authors*

### Co-occurrence of keywords: Network visualization analysis

To identify areas of concentrated research in sustainable investing, the co-occurrence of authors' keywords was analyzed. VOSviewer associates terms that appear across multiple papers. There are a total of 3266 writer key phrases, and the selection requirement is a prerequisite of 10 situations, and 77 writer words meet the requirement. Research occurred to maintain the network intelligibility and identify critical linkages and features. The 5th figure indicates commonly interacting author keywords and their connection ratings. The link indicates an interconnected relationship between two keywords. The overall link strength represents the number of papers in the sample where a pair of keywords co-occurred. It demonstrates that the writers focus more research on the notion of socially accountable investing, with a total strength link of 253 and 211 instances; second, ESG, with a total strength link of 249 and 115 occurrences; third, Corporate social responsibility, with a total link of 218 and 116 occurrences; fourth socially responsible investing with a total strength link of 205 and 156 occurrences and research has been happening on the numerous topics.

**Table 6 Keyword occurrences**

Keywords	Occurrences	Total strength link
socially responsible investment	211	253
ESG	115	249
Corporate social responsibility	116	218
socially responsible investing	156	205
Impact investing	122	153
SRI	66	136
Sustainability	63	129
Sustainable Investing	78	125
Sustainable development	56	114

Responsible investment	79	101
Sustainable finance	45	101
Mutual funds	54	99
Sustainable investment	94	99
Ethical investment	64	84
socially responsible investments	60	78

Source: Authors

Fig.5 Keywords Network Visualization



Source: Authors

### Keyword Overlay Visualization

Overlay visualisation helps researchers and institutions understand the evolution of topics within their field over time. Visualizing these networks provides insights into the interconnectedness of scholarly work. Overlay visualization enables the exploration of patterns, clusters, and trends within bibliometric networks. From Figure 6, keywords show both topics studied together, which are in the line between, while the thickness reflects the relationship's frequency and intensity. The smaller the line, the stronger the relationship between the two keywords. The amount of space of each tagging in the centre of the circle represents the item's weight. Based on the graphic, the transition from blues to a deep green, mild green, and yellow shows the mean year of keyword recurrence. A total of 3266 author keywords appear on sustainable investing; 77 meet the threshold with a minimum of ten keyword occurrences. These keywords are divided into seven clusters.

- Cluster-1 has 18 author keywords such as China, climate change, climate finance, corporate governance, corporate sustainability, environmental investment, environmental investments, environmental

performance, financial performance, green finance, green bonds, green innovation, green investment, green investments, sustainable development, sustainable developments, sustainable investment, sustainable finance.

- Cluster-2 has 17 author keywords: SRI, Asset-pricing, sustainable investments, and volatility, COVID-19, socially responsible investing, CSR, ESG, ESG investments, ethical investing, governance, India, performance, retail investors, risk, sin stocks, sustainable investing.
- Cluster-3 has 15 author keywords, such as socially responsible investing (SRI), environmental, ethical investment, ethical investment, ethics, finance, corporate social response, mutual funds, performance evaluation, socially responsible investments, business ethics, portfolio management, socially responsible investment (SRI), sustainability, and corporate social responsibility (CSR).
- Cluster-4 has author keywords such as divestment, pension funds, emerging markets, ESG investment, fiduciary duty, shareholder engagement, institutional investors, institutional theory, responsible investment, socially responsible investment, and stakeholder theory.
- Cluster-5 has author keywords such as event study, social enterprise, impact investment, impact measurement, responsible investing, social entrepreneurship, social impact, social finance, venture capital, and impact investing.
- Cluster-6 has author keywords such as ESG investing, performance measurement, portfolio theory, and risk management.
- Cluster-7 has author keywords such as corporate social responsibility and financial markets.

From 2000 to 2022, the number of things produced on investments based on sustainable principles increased significantly. This analysis provides insights into the progression of research on environmentally friendly investments. The most significant terms in earlier literature include "Performance evaluation,"



analysis approaches, such as co-author analysis, co-word analysis, network visualisation analysis, keyword overlay analysis, and multiple techniques for discovering new insights. The concept of sustainable investment is an emerging and active topic that requires more research.

## Future Trends

The paper outlines knowledge gaps in sustainable investment. The following section proposes approaches to resolve gaps and advance research on sustainable investment.

The co-word analysis reveals several popular issues related to sustainable investments, indicating the field's conceptual structure. In these contemporary days, socially responsible funds, green investment, climate finance, and ESG investments are the buzzing topics because now investors are becoming very socially concerned about their investment characteristics. ESG integration is a popular technique for carefully analysing ESG elements and hazards. However, this method is more commonly applied in equity and pension funds than in other financial products, suggesting that sustainable concerns can be applied to new financial products. Investors are increasingly interested in making a positive social impact; therefore, environmental, social, and governance factors must be interconnected.

Additionally, requiring more obligations to report ESG information is a significant disadvantage. Investors could benefit from consistent and similar ESG information to make sound economic choices.

## References

- Arjaliès, D.-L. (2010). A Social Movement Perspective on Finance: How Socially Responsible Investment Mattered. *Journal of Business Ethics*, 92(S1), 57–78. <https://doi.org/10.1007/s10551-010-0634-7>
- Barnett, M. L., & Salomon, R. M. (2006). Beyond dichotomy: the curvilinear relationship between social responsibility and financial performance. *Strategic Management Journal*, 27(11), 1101–1122.
- Bauer, R., Otten, R., & Rad, A. T. (2006). Ethical investing in Australia: Is there a financial penalty? *Pacific-Basin Finance Journal*, 14(1), 33–48. <https://doi.org/10.1016/j.pacfin.2004.12.004>
- Beisenbina, M., Fabregat-Aibar, L., Barberà-Mariné, M., & Sorrosal-Forradas, M. (2022). The burgeoning field of sustainable investment: Past, present and future. *Sustainable Development*. <https://doi.org/10.1002/sd.2422>
- Cox, P., Brammer, S., & Millington, A. (2004). An Empirical Examination of Institutional Investor Preferences for Corporate Social Performance. *Journal of Business Ethics*, 52(1), 27–43. <https://doi.org/10.1023/b:busi.0000033105.77051.9d>
- Dam, L., & Scholtens, B. (2015). Toward a theory of responsible investing: On the economic foundations of corporate social responsibility. *Resource and Energy Economics*, 41, 103–121. <https://doi.org/10.1016/j.reseneeco.2015.04.008>
- Daugaard, D. (2019). Emerging new themes in environmental, social and governance investing: a systematic literature review. *Accounting & Finance*, 60(2). <https://doi.org/10.1111/acfi.12479>
- Déjean, F., Gond, J.-P., & Leca, B. (2004). Measuring the Unmeasured: An Institutional Entrepreneur Strategy in an Emerging Industry. *Human Relations*, 57(6), 741–764. <https://doi.org/10.1177/0018726704044954>
- Dhingra, B., Yadav, M., Saini, M., & Mittal, R. (2023). A bibliometric visualization of behavioral biases in investment decision-making. *Qualitative Research in Financial Markets*. <https://doi.org/10.1108/qrfm-05-2022-0081>
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133(133), 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>
- Dorfleitner, G., Halbritter, G., & Nguyen, M. (2014). Measuring the Level and Risk of Corporate Responsibility - An Empirical Comparison of Different ESG Rating Approaches. *SSRN Electronic Journal*, 16, 450–466. <https://doi.org/10.2139/ssrn.2536265>
- Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The Impact of Corporate Sustainability on Organizational Processes and Performance. *Management Science*, 60(11), 2835–2857.
- Elkington, J. (1997). *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*. Capstone.

- Geobey, S., Westley, F. R., & Weber, O. (2012). Enabling Social Innovation through Developmental Social Finance. *Journal of Social Entrepreneurship*, 3(2), 151–165. <https://doi.org/10.1080/19420676.2012.726006>
- Gond, J.-P., & Boxenbaum, E. (2013). The Glocalization of Responsible Investment: Contextualization Work in France and Québec. *Journal of Business Ethics*, 115(4), 707–721. <https://doi.org/10.1007/s10551-013-1828-6>
- Mahajan, P.S, Raut, R. D., Kumar, P., & Singh, V. (2023). Inventory management and TQM practices for better firm performance: a systematic and bibliometric review. *The Tqm Journal*, 36(2), 405–430. <https://doi.org/10.1108/tqm-04-2022-0113>
- Gond, J.-P., & Piani, V. (2012). Enabling Institutional Investors' Collective Action. *Business & Society*, 52(1), 64–104. <https://doi.org/10.1177/0007650312460012>
- Halbritter, G., & Dorfleitner, G. (2015). The wages of social responsibility — where are they? A critical review of ESG investing. *Review of Financial Economics*, 26(1), 25–35.
- Hamilton, S., Jo, H., & Statman, M. (1993). Doing Well While Doing Good? The Investment Performance of Socially Responsible Mutual Funds. *Financial Analysts Journal*, 49(6), 62–66. <https://doi.org/10.2469/faj.v49.n6.62>
- Karpoff, J. M., & Lott, J. R. (1993). The Reputational Penalty Firms Bear from Committing Criminal Fraud. *The Journal of Law and Economics*, 36(2), 757–802. <https://doi.org/10.1086/467297>
- Leite, P., & Cortez, M. C. (2015). Performance of European socially responsible funds during market crises: Evidence from France. *International Review of Financial Analysis*, 40, 132–141. <https://doi.org/10.1016/j.irfa.2015.05.012>
- Losse, M., & Geissdoerfer, M. (2021). Mapping socially responsible investing: A bibliometric and citation network analysis. *Journal of Cleaner Production*, 296, 126376. <https://doi.org/10.1016/j.jclepro.2021.126376>
- Mallin, C. A., Saadouni, B., & Briston, R. J. (1995). THE FINANCIAL PERFORMANCE OF ETHICAL INVESTMENT FUNDS. *Journal of Business Finance & Accounting*, 22(4), 483–496. <https://doi.org/10.1111/j.1468-5957.1995.tb00373.x>
- Mukherjee, D., Lim, W. M., Kumar, S., & Donthu, N. (2022). Guidelines for advancing theory and practice through bibliometric research. *Journal of Business Research*, pp. 148, 101–115. <https://doi.org/10.1016/j.jbusres.2022.04.042>
- Renneboog, L., Ter Horst, J., & Zhang, C. (2008). Socially responsible investments: Institutional aspects, performance, and investor behavior. *Journal of Banking & Finance*, 32(9), 1723–1742. <https://doi.org/10.1016/j.jbankfin.2007.12.039>
- Scholtens, B. (2006). Finance as a Driver of Corporate Social Responsibility. *Journal of Business Ethics*, 68(1), 19–33. <https://doi.org/10.1007/s10551-006-9037-1>
- Scholtens, B., & Sievänen, R. (2012). Drivers of Socially Responsible Investing: A Case Study of Four Nordic Countries. *Journal of Business Ethics*, 115(3), 605–616. <https://doi.org/10.1007/s10551-012-1410-7>
- Searcy, C., & Elkhawas, D. (2012). Corporate sustainability ratings: an investigation into how corporations use the Dow Jones Sustainability Index. *Journal of Cleaner Production*, 35, 79–92. <https://doi.org/10.1016/j.jclepro.2012.05.022>
- Sievänen, R., Rita, H., & Scholtens, B. (2012). The Drivers of Responsible Investment: The Case of European Pension Funds. *Journal of Business Ethics*, 117(1), 137–151. <https://doi.org/10.1007/s10551-012-1514-0>
- Silva, F., & Cortez, M. C. (2016). The performance of US and European green funds in different market conditions. *Journal of Cleaner Production*, 135, 558–566. <https://doi.org/10.1016/j.jclepro.2016.06.112>
- Singhania, M., Bhan, I., & Chadha, G. K. (2023). Sustainable investments: a scientometric review and research agenda. *Managerial Finance*. <https://doi.org/10.1108/mf-04-2023-0238>
- Slager, R., Gond, J.-P., & Moon, J. (2012). Standardization as Institutional Work: The Regulatory Power of a Responsible Investment Standard. *Organization Studies*, 33(5-6), 763–790. <https://doi.org/10.1177/0170840612443628>
- Sparkes, R. (2003). *Socially Responsible Investment*. John Wiley & Sons.
- Trinks, A., Scholtens, B., Mulder, M., & Dam, L. (2018). Fossil Fuel Divestment and Portfolio Performance. *Ecological Economics*, 146,

740–748. <https://doi.org/10.1016/j.ecolecon.2017.11.036>

van Duuren, E., Plantinga, A., & Scholtens, B. (2015). ESG Integration and the Investment Management Process: Fundamental Investing Reinvented. *Journal of Business Ethics*, 138(3), 525–533. <https://doi.org/10.1007/s10551-015-2610-8>

Wang, Y., Sun, M., Yang, X., & Yuan, X. (2016). Public awareness and willingness to pay for tackling smog pollution in China: a case study. *Journal of Cleaner Production*, 112, 1627–1634. <https://doi.org/10.1016/j.jclepro.2015.04.135>