

Sustainability Marketing Beyond Greenwashing: A Bibliometric Mapping

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ABSTRACT

This article aims to map the development and structure of knowledge about *sustainability marketing* that goes beyond the practice of *greenwashing* using a bibliometric approach. Data was taken from the Scopus database with keywords related to sustainability marketing, green marketing, and greenwashing. Included articles are limited to English-language journal and *review* articles that explicitly address sustainable marketing, green claims, and sustainability communication in a business context. The data was then analyzed using *performance analysis* and *science mapping* techniques with the help of VOSviewer software and Bibliometrix packages. The mapping results show that sustainability marketing research is still very centered on three core keywords, namely *greenwashing*, *marketing*, and *green marketing*. The keyword network forms several main clusters related to sustainability marketing and reporting strategies, sustainability and transparency communication, linkages with *corporate social responsibility* and the circular economy, and green macroeconomic contexts. The overlay analysis indicates a shift in focus from the initial study of consumer behavior, CSR, and environmental sustainability to more cutting-edge issues such as sustainability communication, social media utilization, and carbon footprint disclosure. The country collaboration map shows the dominance of several key countries with a fairly wide network of international cooperation. These findings confirm that the future research agenda needs to move beyond the identification of greenwashing towards the development of sustainability marketing practices that are more transparent, verifiable, and make a real contribution to the transition to a green economy.

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1. INTRODUCTION

The issue of sustainability now occupies a central position in business discourse and public policy. Climate change,

environmental degradation, and social inequality are driving global pressure on companies to change the way they create and communicate value. In this context, marketing can no longer be understood

simply as an effort to encourage short-term sales, but as part of a company's strategy to sustain economic performance, preserve the environment, and simultaneously strengthen social welfare [1], [2].

Historically, marketing attention to environmental issues evolved from environmental marketing to green marketing, and then evolved into sustainability marketing that is oriented towards the integration of ecological, social, and economic dimensions in the overall marketing mix [2]. Sustainability marketing is seen as a holistic approach that seeks to meet the needs of consumers and stakeholders without sacrificing the capabilities of future generations, through product design, pricing, distribution channels, and communication that are aligned with sustainability principles [2], [3]. Along with that, the literature shows an increase in interest in the topic of sustainable consumer behavior, corporate sustainability orientation, and the role of marketing in driving more responsible business transformation [4].

However, the development of sustainability claims is also accompanied by the rampant practice of greenwashing. Greenwashing refers to a company's efforts to communicate an eco-friendly image that is not entirely in line with actual performance, either through exaggerated, unmeasurable, or ambiguous [5], [6]. This practice has the potential to erode consumer confidence in sustainability claims, pose reputational risks, and trigger stricter regulatory interventions. On the other hand, the phenomenon of greenwashing also raises a critical question: to what extent does sustainable marketing practice and research really move beyond just green imagery towards substantive and measurable transformation?

In the academic realm, the study of green marketing, sustainability marketing, and greenwashing is growing very rapidly. A number of studies have conducted systematic and bibliometric reviews related to green marketing, green marketing strategies, and their relationship with consumer behavior [7], [8]. Other bibliometric studies map green

marketing research in various regions and business contexts, showing a significant increase in publications and citations in the last two decades [9]–[11]. On the other hand, [12] conducted a bibliometric analysis of the term *marketing sustainability* and highlighted various themes, key actors, and trends in the emergence of concepts in the marketing and sustainability literature.

However, most of these studies tend to focus on green marketing in general or on specific terminology mapping, and have not specifically examined how the corpus of sustainability marketing literature is conceptually and empirically positioned in relation to the issue of greenwashing. In other words, there is still room to understand how sustainability marketing research maps evolve "beyond greenwashing" – for example, through the themes of transparency, accountability, sustainability reporting, stakeholder engagement, and long-term value design. This gap is important to fill in order to see the extent to which the scientific community has shifted from a focus on green claims to marketing practices that tangibly support the sustainability transition.

Departing from this background, this article aims to map the development and structure of knowledge in sustainability marketing research through a bibliometric approach. In particular, this study seeks to: (1) describe the trends of influential publications, authors, institutions, and journal sources in the field of sustainability marketing; (2) identify the clusters of main themes and keywords that dominate the discourse; and (3) explore how the issue of greenwashing and efforts to overcome it arise and be integrated into the research landscape. The findings of this mapping are expected to provide a comprehensive picture of the position, dynamics, and direction of sustainability marketing development, as well as develop a future research agenda that encourages credible sustainable marketing practices that are free from greenwashing.

2. METHODS

This study uses a bibliometric approach with quantitative descriptive properties to map the development and main themes of research on *sustainability marketing* related to the issue of *greenwashing* [13], [14]. Data were taken from the Scopus database, which is widely used in bibliometric studies due to its extensive and curated international journal coverage [15]. The search was conducted using keywords such as "sustainability marketing", "sustainable marketing", "sustainable branding", "sustainable consumption", "greenwashing", and "green claims" in the titles, abstracts, and keywords, with the help of Boolean operators to ensure the articles obtained remained relevant [16]. The search results were then filtered so that only English-language journal articles and review articles that clearly discussed sustainable marketing, green marketing, or greenwashing in the context of corporate marketing and communication were included in the analysis [14].

The collected data is exported in a processable format (e.g. CSV), then through a data cleansing process. At this stage, the names of authors, institutions, and keywords

that are spelled differently but refer to the same thing are standardized, as is common in bibliometric studies to reduce network analysis distortions [13]. After that, a bibliometric analysis was carried out to see the trend in the number of publications per year, the most productive authors and institutions, the journals that published the most related articles, as well as the distribution of countries and collaboration patterns. Furthermore, theme mapping was carried out through keyword and citation linkage analysis to identify topic clusters, including how *greenwashing* appears in the literature and how research is starting to move towards more substantive *sustainability marketing* practices [14], [16]. The process of analysis and visualization of publication networks is assisted by software such as VOSviewer and/or Bibliometrix packages in R, which are commonly used to map citation networks, collaborations, and keyword co-occurrence in bibliometric studies ([16], [17]).

3. RESULTS AND DISCUSSION

3.1 Network Visualization

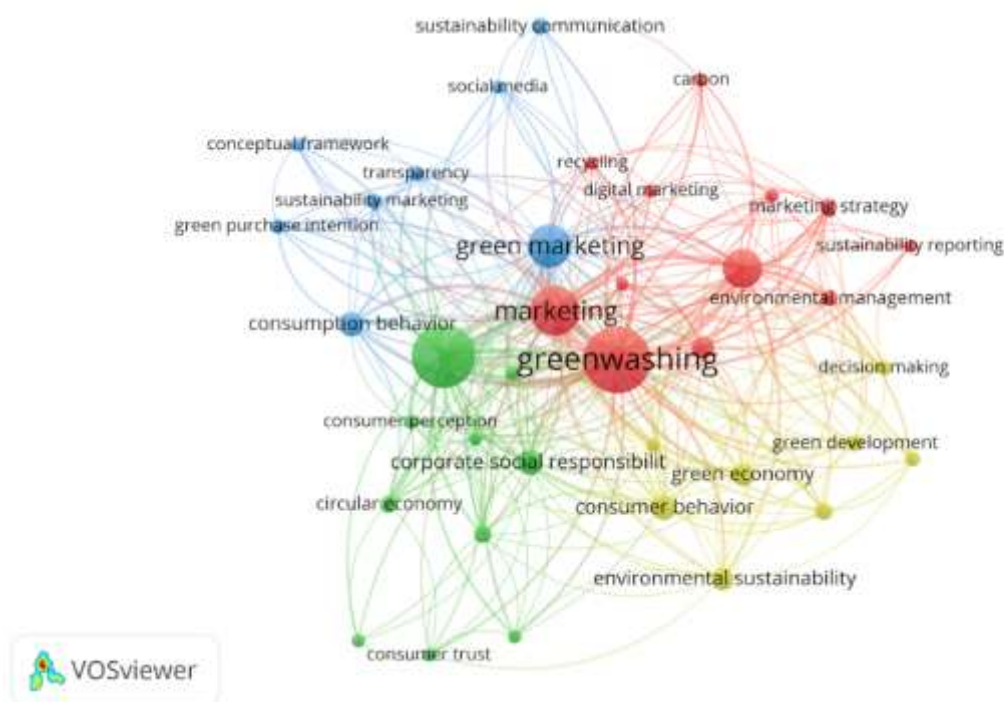


Figure 1. Network Visualization

Source: Data Analysis Result, 2025

The image is a map of the keyword co-occurrence of the articles analyzed with VOSviewer. The size of the circle indicates how often a keyword appears; The larger, the more often it is used. The thickness and number of lines connecting between keywords shows how often the two keywords appear together in a single article. The different colors indicate a cluster of relatively different but interconnected themes.

It can be seen that "greenwashing" and "marketing" are the biggest and most middle keywords. This means that most of the publications in the corpus do revolve around the discussion of marketing practices related to *greenwashing*. The word "green marketing" is also quite large and close, suggesting that discussions about green marketing are often inseparable from debates about the authenticity of sustainability claims and the potential for greenwashing.

The red cluster is related to managerial and strategic perspectives. It contains terms such as *marketing strategy*, *sustainability reporting*, *environmental management*, *digital marketing*, *recycling*, and *carbon*. This cluster describes research that looks at how companies manage marketing strategies, sustainability reporting, and environmental management, and how they can be related to greenwashing practices.

The blue cluster focuses on sustainability communication and the narrative delivered to the public. Keywords such as *sustainability marketing*, *sustainability communication*, *transparency*, *social media*, *green purchase intention*, *conceptual framework*, and *consumption behavior* show that these themes highlight how sustainability messages are communicated, the extent to which transparency is built, and its impact on consumption intentions and behaviors.

The green cluster contains many terms related to corporate social responsibility (*corporate social responsibility*, *circular economy*, *consumer perception*, *consumer trust*). This cluster describes research that links companies' sustainability initiatives, such as the circular economy and CSR, to consumer perceptions and their beliefs—which can ultimately be an antidote or trigger for suspicion of greenwashing.

The yellow cluster represents more macro and policy-based themes, such as *environmental sustainability*, *green economy*, *green development*, *consumer behavior*, and *decision making*. This shows that some of the literature places sustainability marketing and greenwashing in the context of the transition to a green economy, decision-making, and consumer behavior at a broader level.

3.2 Overlay Visualization

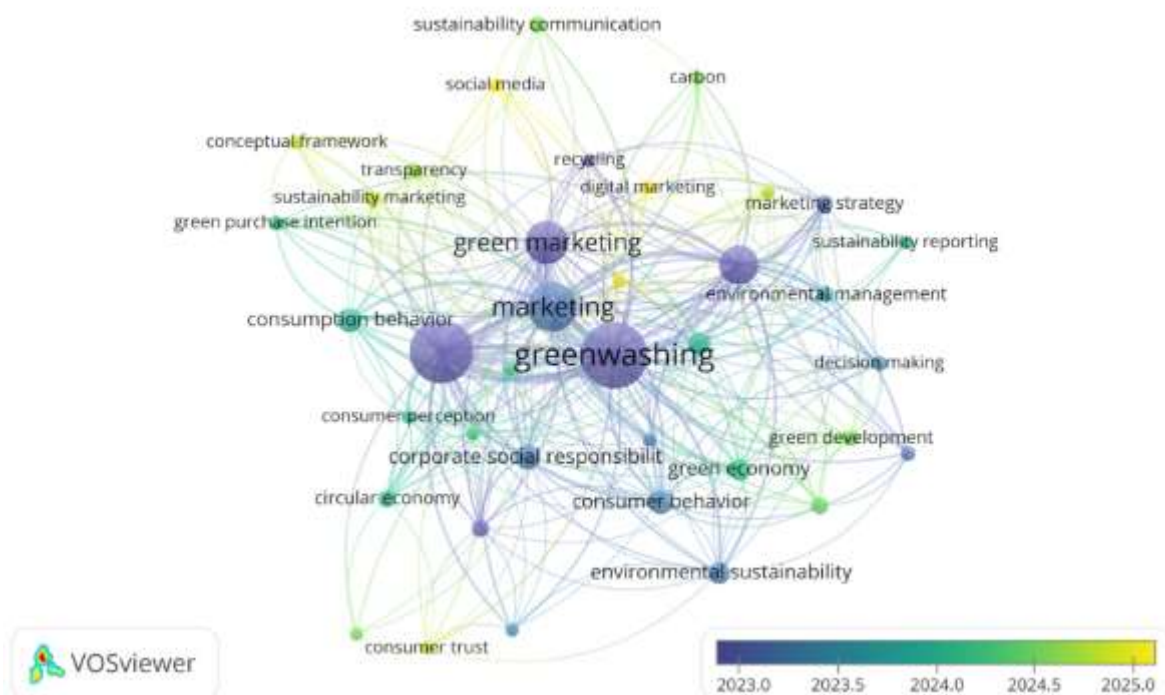


Figure 2. Overlay Visualization

Source: Data Analysis Result, 2025

The image shows the same keyword map as before, but is now colored by the year it appeared. Blue indicates a topic that appears more at the beginning of the period (around 2023), while green–yellow indicates a newer topic (closer to 2024–2025). It can be seen that core keywords such as *greenwashing*, *marketing*, *green marketing*, *consumer behavior*, *corporate social responsibility*, and *environmental sustainability* tend to be blue to green, meaning that they have been discussed quite consistently since the beginning of the period. Meanwhile, terms such as *sustainability marketing*, *transparency*, *sustainability communication*, *social media*, *digital marketing*, *recycling*, and *carbon* tend to be green-yellow,

which suggests that recent research is starting to shift to the issue of more transparent sustainability communication, the use of social media and digital, as well as its relation to carbon footprints and recycling practices. This suggests that sustainability marketing research is gradually moving from a general focus on greenwashing to a more concrete and up-to-date discussion of how to communicate and manage sustainability.

3.3 Citation Analysis

A plethora of papers have appeared in hisjournals and accounts for AI integration, and an increasing cademic interestin .

Table 1. The Most Impactful Literatures

Quotes	Authors and year	Title
658	Parguel, B., Benoît-Moreau, F., Larceneux, F. (2011)	How Sustainability Ratings Might Deter 'Greenwashing': A Closer Look at Ethical Corporate Communication

Quotes	Authors and year	Title
498	Szabo, S., Webster, J. (2021)	Perceived Greenwashing: The Effects of Green Marketing on Environmental and Product Perceptions
284	Rahman, I., Park, J., Chi, C.G.-Q. (2015)	Consequences of "greenwashing": Consumers' reactions to hotels' green initiatives
194	Yang, Z., Nguyen, T.T.H., Nguyen, H.N., Nguyen, T.T.N., Cao, T.T. (2020)	Greenwashing behaviours: Causes, taxonomy and consequences based on a systematic literature review
155	De Jong, M.D.T., Harkink, K.M., Barth, S. (2018)	Do you want to do green stuff? Effects of Corporate Greenwashing on Consumers
151	Pimonenko, T., Bilan, Y., Horák, J., Starchenko, L., Gajda, W. (2020)	Green brand of companies and greenwashing under sustainable development goals
121	Disterheft, A., Caeiro, S., Azeiteiro, U.M., Leal Filho, W. (2013)	Sustainability science and education for sustainable development in universities: A way for transition
112	Adamkiewicz, J., Kochańska, E., Adamkiewicz, I., Łukasik, R.M. (2022)	Greenwashing and sustainable fashion industry
112	Martínez, M.P., Cremasco, C.P., Gabriel Filho, L.R.A., ... da Silva, D., (2020)	Fuzzy inference system to study the behavior of the green consumer facing the perception of greenwashing
101	Braga Junior, S., Martínez, M.P., Correa, C.M., Moura-Leite, R.C., Da Silva, D. (2019)	Greenwashing effect, attitudes, and beliefs in green consumption

Source: Scopus, 2025

These studies provide significant insights into the ongoing evolution of

companies via AI technologies, especially their efforts on artificial intelligence.

3.4 Density Visualization

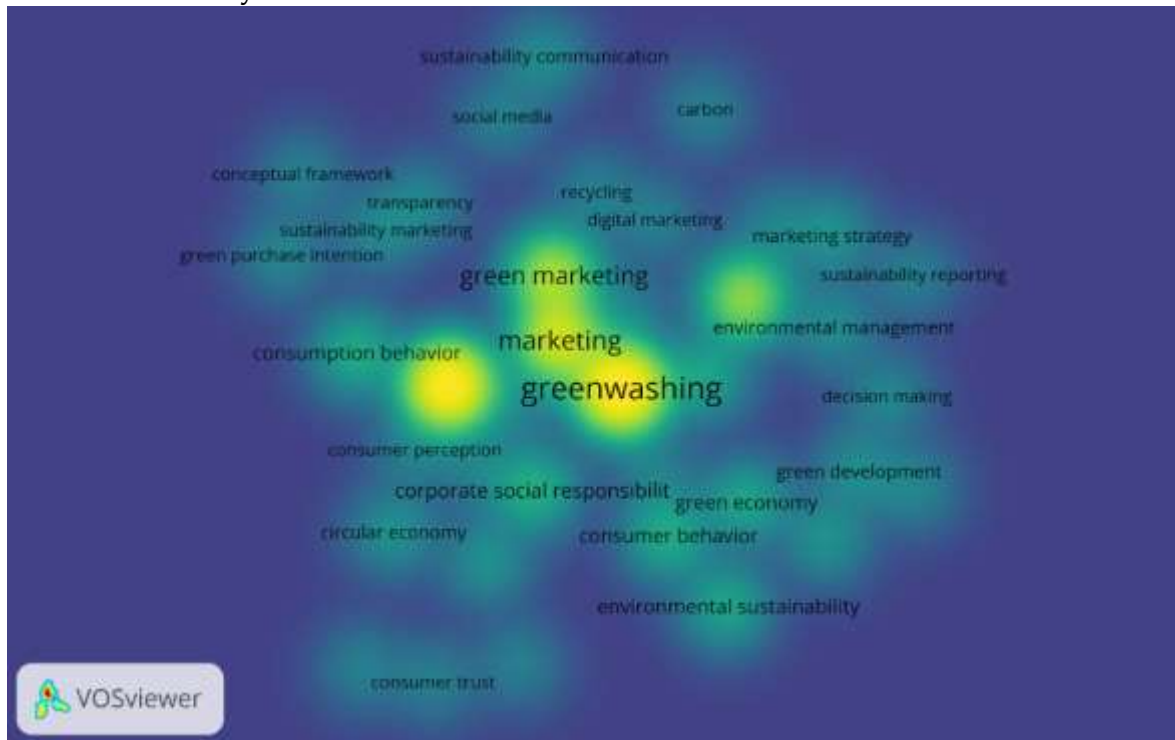


Figure 3. Density Visualization

Source: Data Analysis Result, 2025

The image is a density visualization map of the keyword. Yellow indicates the area with the highest concentration of keyword occurrences, green indicates moderate density, while dark areas are hardly discussed much in the corpus. It is seen that the most concentrated point is around the words "greenwashing", "marketing", "green marketing", and "consumption behavior", meaning that most of the articles focus on the relationship between marketing practices, greenwashing, and consumption behavior. Around them, the green around terms such as

"corporate social responsibility", "green economy", "environmental sustainability", "marketing strategy", and "sustainability reporting" suggest that these themes appear quite frequently but not as intense as the previous core. Meanwhile, marginal keywords such as "consumer trust", "sustainability communication", "social media", and "carbon" had lower density, suggesting that these topics are still relatively underexplored compared to the discussion centers on greenwashing and marketing.

3.5 Co-Authorship Network

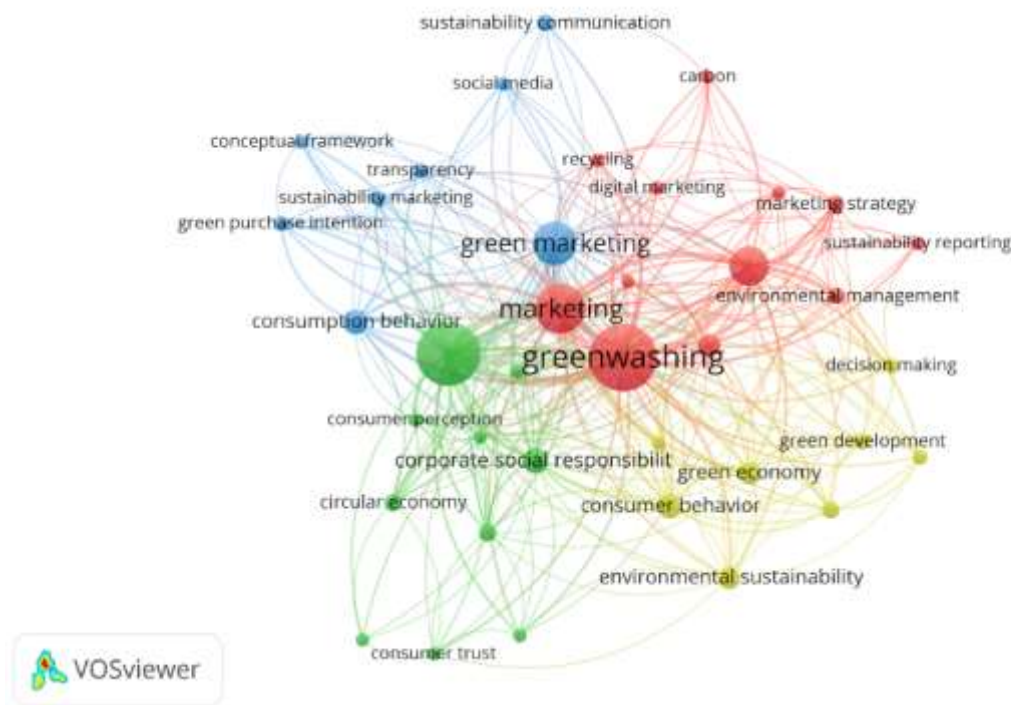


Figure 4. Author Visualization

Source: Data Analysis Result, 2025

The image shows a map of a network of keywords divided into several color clusters. In the middle appear "greenwashing", "marketing", and "green marketing" with a large circle size, meaning that these three terms are the center of discussion in the literature. The red cluster on the right side contains words such as *marketing strategy*, *sustainability reporting*, *environmental management*, and *digital marketing*, which describe research on sustainability strategy and management at the company level. The blue cluster at the top-left is dominated by *sustainability marketing*, *transparency*, *sustainability communication*, *social media*, and *green purchase intention*, which are related to sustainability communication and consumer response. The

green cluster at the bottom focuses on *corporate social responsibility*, *consumer perception*, *consumer trust*, and *circular economy*, which is the relationship between the company's sustainability initiatives and consumer trust/perception. Meanwhile, the yellow cluster at the bottom right contains *environmental sustainability*, *green economy*, and *green development* which better describes the macroeconomic context of the green economy. The tight network of lines shows that the issue of greenwashing connects all these clusters, so that it becomes the main node in the discussion of sustainability marketing.

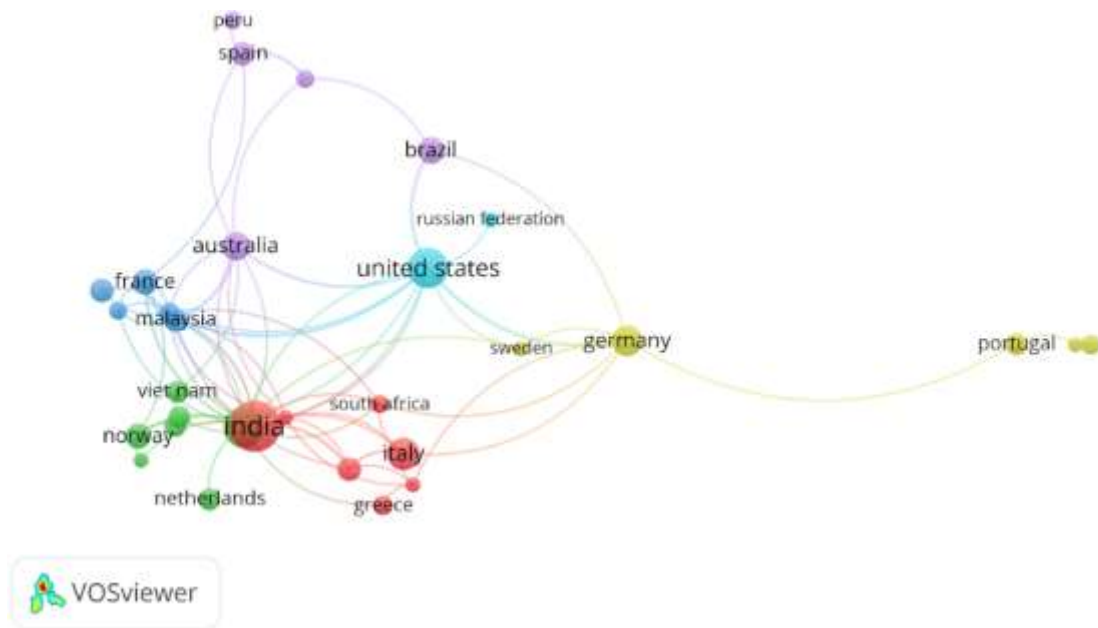


Figure 5. Country Visualization
 Source: Data Analysis Result, 2025

The image shows the network of cooperation between countries in publications on the topic you are researching. The size of the circle indicates productivity—the larger it is, the more articles from the country—while the connecting line indicates the intensity of collaboration. It can be seen that India, United States and Italy become an important node with a fairly large circle and many connections to other countries. India is widely connected with European countries (Italy, Netherlands, Greece, Norway) and Asia (Vietnam, Malaysia), while the United States is the main link with various clusters, including Australia, Brazil, the Russian Federation, and several European countries. Germany appears to be a bridge to Portugal, which is comparatively more separate and has a narrow network of collaborations. In general, this map suggests that research on the theme of sustainability marketing/greenwashing is dominated by some key countries with cross-regional collaboration networks, while some other countries are still playing a more peripheral role with limited cooperation.

Discussion

The mapping results show that research on sustainability marketing in this corpus is still very centered on three core terms, namely *greenwashing*, *marketing*, and *green marketing*. The large size of the nodes and the position they are in the middle of the network indicate that most articles position sustainability in the perspective of how marketing practices are associated with potentially misleading green claims. This is in line with the findings of the literature that places *greenwashing* as a major source of consumer confusion and skepticism towards sustainability claims [5], [6]. At this point, sustainability marketing seems to be largely framed as an effort to manage reputational risk due to dubious green claims, rather than as a truly transformative change in the value model.

The keyword network structure shows four main theme clusters. The first cluster focuses on sustainability strategy and management at the company level, represented by terms such as *marketing strategy*, *sustainability reporting*, *environmental management*, and *digital marketing*. This cluster illustrates how companies seek to integrate environmental issues into planning and

reporting, but are often still oriented towards image management and compliance. This confirms the argument that many organizations stop at the level of "symbolic management" rather than substantive changes to business processes [18]. On the other hand, the presence of *digital marketing* and *recycling* shows that there is a growing focus on how companies utilize digital channels and recycling practices as part of the sustainability narrative.

The second cluster focuses on *sustainability marketing*, *sustainability communication*, *transparency*, *social media*, and *green purchase intention*. This theme marks a shift from simply claiming "green" to questions about how sustainability messages are communicated, how transparent information is provided, and how it affects consumer intentions and behaviors. The emergence of *transparency* as one of the important nodes can be read as a scientific response to criticism of greenwashing; the emphasis shifts to clarity of information, data openness, and the ability of consumers to evaluate claims. However, the relative density that is still lower than that of *greenwashing* nodes suggests that transparency and honest communication are still a growing agenda, not yet fully dominant.

The third cluster is dominated by the concepts of *corporate social responsibility*, *consumer perception*, *consumer trust*, *circular economy*, and *green economy*. This series of terms links sustainability marketing to broader sustainability initiatives, both at the corporate level (CSR, circular economy) and at the system level (green economy). The strong relationship between CSR and consumer perception/trust corroborates the finding that clarity of social and environmental evidence can improve vulnerability to accusations of greenwashing [19]. However, the density map shows that *consumer trust* is still on the edge of a less congested zone. This means that while trust is often cited as a key issue, there is not much research that actually places trust as a central variable in the context of greenwashing and sustainability marketing.

The fourth cluster places *environmental sustainability*, *green development*, and *green economy* as macro contexts. The presence of this cluster suggests that some researchers are beginning to link marketing strategies to a broader sustainable development agenda, including the transition to a green economy and environmental policies. However, the relationship between this cluster and the greenwashing node center is still looser than other clusters. It can be read that the bridge between micromarketing studies (campaigns, communication, purchasing decisions) and macro discourses on the green economy transition still needs to be strengthened, for example through studies that explain how truly sustainable marketing practices contribute to structural change, not just repackaging the same products.

An analysis of the overlays by year of publication shows interesting dynamics. Keywords related to *consumer behavior*, *CSR*, and *environmental sustainability* tend to appear earlier in the observation period. These topics form the initial foundation of discussions about how consumers respond to green claims and how companies position social-environmental activities in marketing strategies. Meanwhile, terms related to digital communication and transparency—such as *sustainability communication*, *social media*, *digital marketing*, *recycling*, and *carbon*—are emerging newer and brighter in color. This pattern shows a shift in focus from simply assessing the impact of green campaigns on consumer behavior to discussing the media and forms of communication used, including carbon footprint disclosure demands and more specific recycling practices.

The density map reaffirms that the most explored areas of research are around *greenwashing*, *marketing*, *green marketing*, and *consumption behavior*. Meanwhile, some keywords with strategic potential are still in the low-density zone, such as *consumer trust*, *sustainability communication*, and *social media*. This condition opens up opportunities for further research that focuses more on how companies build long-term trust through consistent sustainability communication, as

well as the role of digital platforms in accelerating or correcting greenwashing practices. Future research can steer sustainability marketing "beyond greenwashing" by testing mechanisms that link transparency, information quality, and trust building in the long term.

The network of collaboration between countries places India, the United States, and Italy as important nodes in the production and collaboration of publications. These countries are intensively connected with various partners in Europe, Asia, and parts of Africa, showing that the discourse of sustainability marketing and greenwashing is no longer a monopoly of Western countries alone, but is also being adopted by developing countries with different market contexts. However, there are still some relatively isolated countries with limited collaboration networks, such as Portugal. This indicates an imbalance in research capacity and integration into the global network. From a research agenda perspective, stronger collaboration between developed and developing countries can enrich understanding of how greenwashing and sustainability marketing perform in different regulatory contexts, cultures, and market structures.

Conceptually, these findings show that sustainability marketing is still in a transition phase. On the one hand, greenwashing remains a major point of gravity, so much research revolves around the issue of misleading claims and their impact on consumers. On the other hand, there is a movement towards themes that go beyond greenwashing, such as transparency, sustainability communication, circular economy, and carbon footprint measurement. The challenge for future research is to strengthen this second path: developing a framework and empirical evidence on marketing practices that not only avoid greenwashing, but actually drive changes in business models, consumption behaviors, and market structures toward long-term sustainability.

4. CONCLUSION

The bibliometric mapping in this article shows that sustainability marketing research is still very centered on three core keywords, namely *greenwashing*, *marketing*, and *green marketing*. These three terms become the main node that connects various other topics, so sustainability tends to be discussed from the perspective of green claims and image risks, rather than from a truly profound change in business model. The structure of the keyword network reveals four main clusters: sustainability strategy and management at the enterprise level, sustainability communication and transparency, linkages with CSR and the circular economy, and green macroeconomic contexts.

An analysis of the overlays by year of publication shows a shift in focus from the initial study of consumer behavior, CSR, and environmental sustainability to newer topics such as sustainability communication, social media utilization, carbon footprint disclosure, and recycling practices. The density map confirms that the most frequently researched areas still revolve around greenwashing and consumption behavior, while potentially strategic themes such as *consumer trust*, *sustainability communication*, and the role of digital platforms are in less congested zones. This means that the room to develop studies that really encourage sustainability marketing "beyond greenwashing" is still wide open.

Geographically, the collaborative network shows that India, the United States, and Italy are important nodes in the production and cooperation of publications, with considerable connections to other countries. However, there are still relatively isolated countries with limited collaboration networks. This condition indicates the need to strengthen research networks between countries, especially between developed and developing countries, so that understanding of sustainability marketing and greenwashing practices in various regulatory and cultural contexts becomes richer.

In practical terms, these findings imply that the forward agenda is not enough

to focus solely on the identification of greenwashing, but needs to be directed towards the development of frameworks and empirical evidence on marketing practices that are transparent, verifiable, and aligned with the transformation towards a green economy. Future research may pay greater attention to the mechanisms of consumer trust-building, the role of digital

communication, the quality of sustainability information, as well as the relationship between marketing strategies and structural changes at the supply chain and public policy levels. Thus, sustainability marketing has the opportunity to move from just an imaging tool to an instrument that truly supports the long-term sustainability transition.

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