



## Trends in Scientific Production on Greenwashing based on Scopus (1990-2023)

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### ABSTRACT

Greenwashing is a misleading practice that affects environmental sustainability and has an impact on the organizational, social, and environmental levels, as it is generated to create a non-real and illusory image of ecological responsibility. The present study conducted a review of the scientific production in the Scopus database, obtaining 1438 documents. Inclusion criteria were used and the PRISMA statement was used to guide the documentary analysis. Likewise, bibliometric tools such as VOSviewer and biblioshiny were used. The results obtained show that the topic of study has grown exponentially in recent years and the keywords that stand out are corporate social responsibility, environmental communications and reporting, normative regulation, and implications at the financial, social, and ethical levels. There is also interest in consolidating new collaborative networks among authors, with the most cited paper being “The drivers of greenwashing.” It was concluded that greenwashing is a multidisciplinary phenomenon that requires attention from the scientific community and that it is the clients or consumers who perceive the lack of ethics and the absence of environmental commitment in organizations. Criminal liability arising from greenwashing is identified as a future line of research.

**Keywords:** Environment, Economics, Ethics, Environmental Management, Organization

**JEL Classifications:** K13, K15, Q56, Q580

## 1. INTRODUCTION

The social impact of business is reflected in consumer perceptions of environmental protection. However, organizations do not always adopt ethical practices or do not always comply with the requirements of sustainable development. Various legislations around the world attempt to regulate and sanction specific behaviors. However, there is a gap in the mass consolidation of environmental awareness. This produces disorder and reflects a lack of leadership on the issue of sustainability. In the described problem, the key concept called Greenwashing arises (Adamkiewicz et al., 2022; Braga Junior et al., 2019; Siano et al., 2016; Blome et al., 2017).

Greenwashing is a term that attempts to contribute to the development of organizations by prioritizing ethical practices in business operations and avoiding malpractice in environmental care. The economic impact is directly related to consumer confidence, which is why any situation covered by deception aimed at presenting false environmental credentials will have a negative outcome (Laufer, 2003; Lyon and Maxwell, 2011; Zhang et al., 2018; Delmas and Burbano, 2011; Testa et al., 2020; Baum, 2012; Chen and Dagestani, 2023; Wang et al., 2020). In this context, the emergence of green products can be seen, which focuses on reducing the environmental damage caused by countries' incipient public policies. Given the situation described above, a transformation with transversal changes involving the

whole of society is desirable (Fernandes et al., 2020; Lee et al., 2018; Hassan et al., 2020; Zhang, 2022; Liu et al., 2023). It will also be necessary for companies to consider environmental costs when offering their products and/or services.

The literature provides background information on greenwashing from different perspectives. For example, some studies emphasize the potential consequences of a refusal to implement environmental practices in organizations (Delmas and Burbano, 2011; De Freitas Netto et al., 2020; Seele and Gatti, 2017). Another group of researchers focused on the tourism sector and the actions that these companies should consider to contribute to environmental sustainability (Font et al., 2017; Chen et al., 2019). The need to offer environmentally friendly services to generate greater customer confidence is also mentioned (Gupta et al., 2019). Additionally, the importance of considering the definition of green products (Sdrolia and Zarotiadis, 2019) and the advantages and disadvantages of legislation applicable to greenwashing (Markham et al., 2014) were studied. In 2020, the systematic review of articles published between 2000 and 2020 was conducted using journals affiliated with the Web of Science, ScienceDirect, Springer, and Emerald Insight (Yang et al., 2020).

Furthermore, in the last decade, research related to environmental performance and its influence on corporate stakeholders has emerged (Testa et al., 2018; Marquis et al., 2016; Kim and Lyon, 2015; Yu et al., 2020; De Vries et al., 2015; De Freitas Netto et al., 2020; Hahn and Lülfs, 2014; Siano et al., 2017). This research expresses the importance of greenwashing, as it is evident that this phenomenon has negative consequences on consumers' purchase intention. This affects the brand value, corporate reputation, and financial profitability of organizations (Chen et al., 2019; Akturan, 2018; De Jong et al., 2018; Guo et al., 2017; Testa et al., 2018; Du et al., 2016; Yang et al., 2020; De Jong et al., 2020; Ioannou et al., 2023; Li et al., 2022).

Additionally, it can be seen that although there is progress in the scientific production of greenwashing, there are still areas that require further exploration. For example, in the analysis of biodegradable plastic products and their link with the business economy (Nazareth et al., 2019; Li et al., 2022), in the urgency of considering greenwashing in the supply chain (Pizzetti et al., 2021). On the other hand, the need for preventive legislation in line with public policies is also evident (Sun and Zhang, 2019; Pimonenko et al., 2020; Eppinger, 2022; Liu et al., 2023) and in the transition towards a circular economy that guarantees sustainable development (Testa et al., 2020; Vergara and Agudo, 2021; Karaman et al., 2021).

Ultimately, this study is important because it identifies the scientific production of greenwashing and promotes the procurement of environmentally friendly goods or services. Organizations should establish guidelines to mitigate harm and raise awareness among staff about the indiscriminate use of resources affecting future generations (Laufer, 2003; Lyon and Maxwell, 2011; Zhang et al., 2018; Delmas and Burbano, 2011; Testa et al., 2020; Lyon and Maxwell, 2011; Baum, 2012; Fernandes et al., 2020; Lee et al., 2018; Hassan et al., 2020; Zhang, 2022; Liu et al., 2023). In

addition, the aim is to achieve an adequate perception to join in caring for the environment. Likewise, to punish those who pretend, deceive, and sell the idea of eco-environmental products only for economic purposes, but not as a priority purpose.

In this sense, the potential and relevance of this topic are proven because it focuses on the transition towards a more sustainable and responsible economy. Legislation and corporate ethics are the pillars that inform the consumer whether or not there are misleading practices that reflect the absence of environmental protection (Fernandes et al., 2020; Markham et al., 2014; Zhang, 2022; Liu et al., 2023). Therefore, this study aims to analyze the scientific production of Greenwashing through a documentary and bibliometric analysis, to contribute to the consolidation of ethical and environmentally friendly business practices.

This article will address the following research questions:

What is the annual scientific output on greenwashing?

What are the 10 most cited papers in the scientific output on greenwashing?

What are the most used keywords in the scientific output on greenwashing?

Who are the authors in the collaborative network?

What are the arguments for and against greenwashing reported in the scientific output?

## 2. METHODS

The scopus database was considered the main source for extracting scientific production on greenwashing. This decision corresponds to the multidisciplinary nature that brings together high-impact journals (Archambault et al., 2009), as well as its broad coverage that includes the areas of economics, law, and management, among others, which are related to the present research topic.

The PRISMA statement was used to guide the documentary and bibliometric analysis as shown in the results section (Page et al., 2021). This statement made it possible to identify, select, evaluate, and synthesize the scientific production on greenwashing. This was possible because a standardized process was followed that included the identification of records, screening, eligibility, and final inclusion of papers. From this, it is possible to distinguish which articles were included in the respective analysis.

The scopus search used the strategy of considering titles, abstracts, and keywords (TITLE-ABS-KEY("greenwashing" OR "green washing" OR "eco-friendly claims" OR "environmental claims")). This strategy made it possible to include variants and synonyms that relate to the research topic. The initial result was 1710 documents, for which the following inclusion criteria were applied: The period from January 01, 2000 to December 31, 2023, final publication status, and English language. No restrictions were placed on the types of documents.

The selected documents were analyzed using the VOSviewer tools and the Biblioshiny interface (Aria and Cuccurullo, 2017). The document review was carried out using the Rayyan software, which is characterized by the fact that it contributes to the selection

and analysis of systematic reviews through a process of coding and categorization of the results. The bibliometric indicators of production (number of publications per year), visibility (number of citations), and collaboration between authors and institutions were also used (Ardanuy, 2012).

### 3. RESULTS AND DISCUSSION

#### 3.1. Annual Scientific Production

The total number of papers analyzed was 1438. An annual growth rate of 19.11% was observed in the scientific production of Greenwashing. In terms of document types, articles predominated, representing 69% of the total. In the same line, book chapters reached 12%. Similarly, different types of documents were included but did not exceed 10%.

It can be seen that until 2013 the scientific production related to greenwashing was scarce in the scopus database. However, in the period from 2014 to 2020, there was a moderate increase. On the other hand, in the period from 2021 to 2023, there was an exponential growth in the number of documents related to the research topic.

The detected trend represents a topic of interest for the scientific community. The increase in recent years is exponential and demonstrates the concern for environmental care and the rejection of unethical corporate practices. The present topic of study is important because it is based on transparent and responsible behavior in organizations.

Figure 1 shows the interest of researchers in greenwashing, which is why it is considered a promising topic.

#### 3.2. Top 10 most Cited Documents

Table 1 shows the most cited papers in the scientific production on greenwashing. It is necessary to recognize the growing projection of citations obtained. This demonstrates the attention of researchers and the constant support of countries to promote initiatives that detect actions against the environment.

It is also apparent that the subject matter of the documents listed in Table 1 is diverse. Greenwashing relates to corporate

social responsibility, environmental communications and reporting, regulatory regulation, as well as financial and ethical implications (Panwar et al., 2014; Wang and Sarkis, 2017; Plec and Pettenger, 2012).

In this sense, greenwashing is seen as a topic with research potential from a multidisciplinary perspective.

The most cited article argues that greenwashing is a harmful practice for society because it does not contribute to sustainable development and promotes consumer distrust. Organizations hide their environmental responsibility. This corporate inaction generates adverse economic consequences and violates legislation that protects the environment (Delmas and Burbano, 2011).

In Table 1 some studies agree on the negative consequences of greenwashing. For example, researchers Walker and Wan (2012) state that society does not need symbolic actions that are unsubstantiated and that if organizations do so, they are only affecting their financial development. Additionally, in line with this view, researchers Ramus and Montiel (2005) acknowledge that greenwashing is used to generate a positive image of environmental protection. The aforementioned studies agree that environmental responsibility is linked to economic development, therefore, every action of the organization will always be monitored by society. This is possible thanks to the decision-making power of consumers, who recognize the priority of offering products and services that are environmentally friendly to natural resources. Citizen participation is vital, hence the need to raise awareness to contribute to the care of the environment. The commitment of all is required to stop malicious practices that damage the perception of the actions taken by companies to protect the environment in which we live.

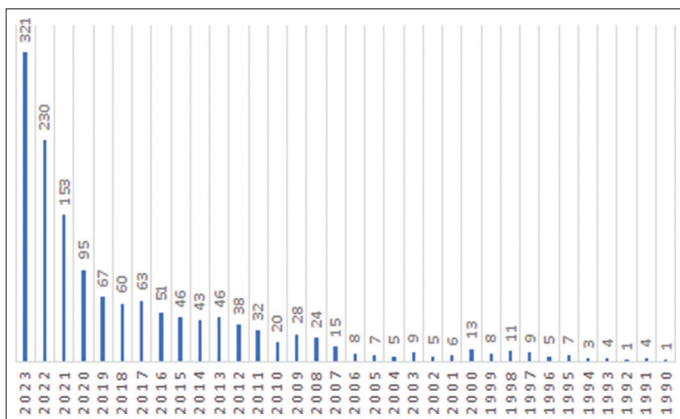
Researchers Parguel et al. (2011) and Nyilasy et al. (2014) state that the credibility of organizations is a social commitment. Both studies agree in recognizing that the consumer plays an active role, therefore, misleading greenwashing information has a negative impact. At this point, the researchers Laufer (2003) and Lyon and Maxwell (2011) argue that the idea of misinformation is assimilated as a matter of course, a situation that sooner or later will turn into a financial crisis.

In this regard, researchers Wu and Shen (2013) and Marquis et al. (2016) emphasize that society must be more participatory in detecting organizations that cause environmental damage. In this way, it is possible to promote global legislation aimed at protecting natural resources and the respective sanctions in the event of non-compliance.

#### 3.3. The most used Keywords

Figure 2 shows that the most frequently cited keywords are greenwashing and sustainability. These are followed by corporate social responsibility, climate change, environmental policy, ethics, and marketing, among others. It can be seen that the scientific production analyzed focused on organizations and the respect they show for environmental conservation (Szabo and Webster 2021; Smith and Font, 2014; Du, 2015; Kärnä et al., 2001).

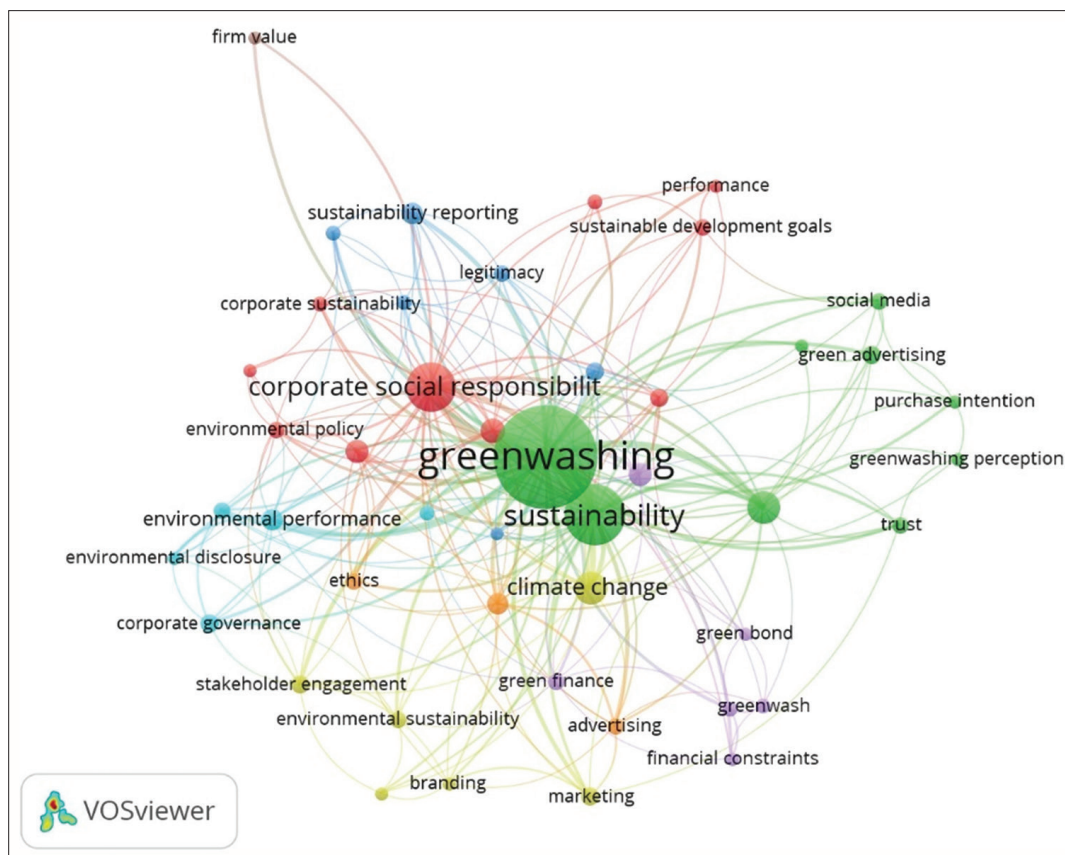
Figure 1: Annual scientific publication



**Table 1: Most cited scientific production**

Author	Title	Journal	Total citations
Delmas and Burbano (2011)	The drivers of greenwashing	California Management Review	994
Laufer (2003)	Social accountability and corporate greenwashing	Journal of business ethics	769
Lyon and Maxwell (2011)	Greenwash: corporate environmental disclosure under threat of audit	Journal of economics and management strategy	639
Parguel et al. (2011)	How sustainability ratings might deter “greenwashing”: A closer look at ethical corporate communication	Journal of business ethics	459
Wu and Shen (2013)	Corporate social responsibility in the banking industry: Motives and financial performance	Journal of banking and finance	458
Ottman et al. (2006)	Avoiding green marketing myopia: Ways to improve consumer appeal for environmentally preferable products	Environment	434
Marquis et al. (2016)	Scrutiny, norms, and selective disclosure: A global study of greenwashing	Organization science	428
Walker and Wan (2012)	The harm of symbolic actions and green-washing: Corporate actions and communications on environmental performance and their financial implications	Journal of business ethics	423
Ramus and Montiel (2005)	When are corporate environmental policies a form of greenwashing?	Business and society	356
Mahoney et al. (2013)	A research note on standalone corporate social responsibility reports: Signaling or greenwashing?	Critical perspectives on accounting	356

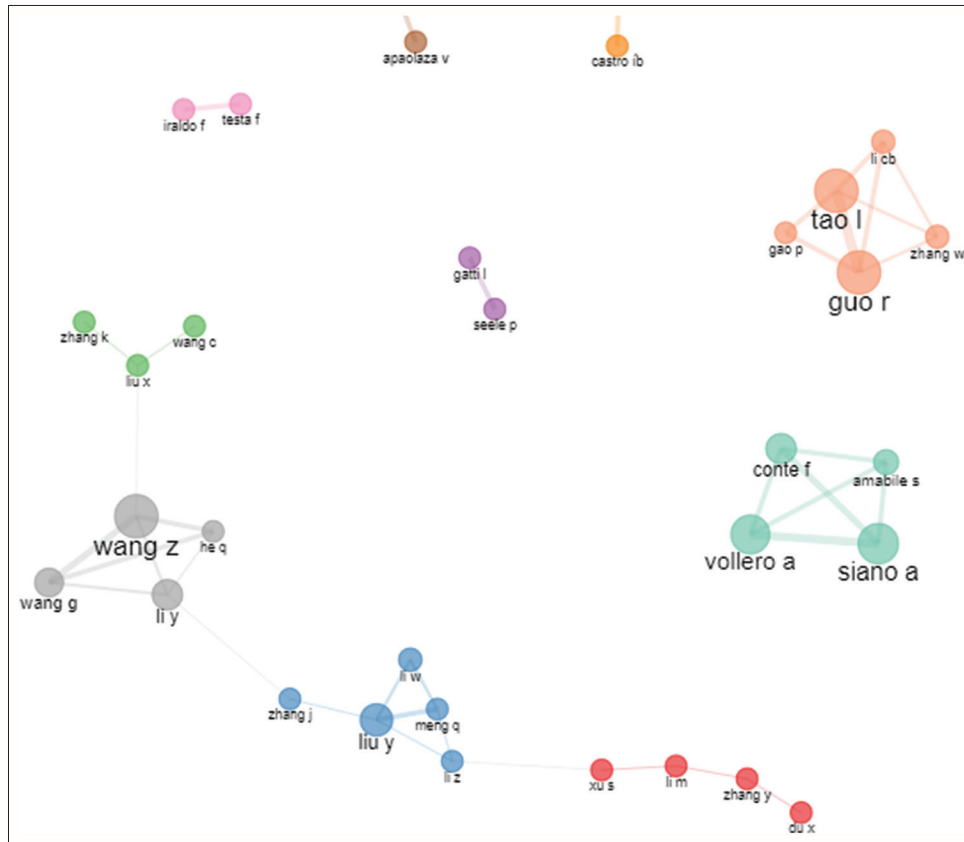
**Figure 2: Keywords**



It can be seen that the central term is greenwashing and that there are interconnected concepts reflecting the complexity and variability of the topic under study. Organizations cannot continue to create an environmentally responsible image when the reality is the opposite. It is advisable to detect in time misleading practices that mislead customers or consumers.

**3.4. The Authors who are Part of the Collaborative Network**

Figure 3 shows an international collaborative network between the authors of the green, grey, blue, and red clusters. Some clusters are just forming, those on the left-hand side. In contrast, the clusters on the right are consolidating.

**Figure 3:** A collaborative network of authors

Similarly, it is recorded that there are authors at the extremes who are more isolated, which shows that the network is starting or that they are individual contributions. It is necessary to take the authors who stand out as a reference and try to establish new connections with them so that the network can diversify for the benefit of the scientific community.

### 3.5. Arguments for and against Greenwashing Reported in the Scientific Output

#### 3.5.1. Arguments in favor of greenwashing

No arguments are reported in favor of implementing greenwashing in organizations. Authors agree that greenwashing is a misleading practice that is often detected by customers. Lack of information or too much cumbersome information can be the ideal scenario for this trend to develop (Testa et al., 2018; Seele and Gatti, 2017; Lee et al., 2018).

#### 3.5.2. Arguments against greenwashing

Greenwashing is not a recommended practice because it damages the credibility of organizations, reduces customer or consumer trust, and discourages the purchase of environmentally friendly or green products that benefit the environment (Siano et al., 2017; Testa et al., 2018; Zhang et al., 2018; Yu et al., 2020).

It is a misleading practice that affects organizations committed to environmental sustainability and discourages pro-environmental behavior. It is also dissonant with sustainability-oriented public policies (Henninger et al., 2016; Bowen, 2010; Parguel et al., 2015; Munshi and Kurian, 2005; Wu et al., 2020; Font et al., 2017; Gupta et al., 2019; Chen et al., 2019; Nazareth et al., 2019).

Greenwashing is associated with lower financial returns for organizations as investors lose credibility in the green brand, which affects economic growth. Regaining lost trust is a slow process that includes the loss of customers or consumers. Loyalty does not do justice to this deceptive practice aimed at hiding environmental responsibility (Testa et al., 2018; Pimonenko et al., 2020; Akturan, 2018; Guo et al., 2017; Pizzetti et al., 2021; Brandon et al., 2022).

This deceptive practice hinders responsible innovation and represents a step backward in the communication guidelines of organizations. It also distorts the concept of integrity and calls into question the ethical behavior of leaders, who should not be permissive of such practices that aim to disregard natural resources (De Hoop et al., 2016; De Jong et al., 2018; Baum, 2012).

Greenwashing raises doubts about the quality of green products, which affects the benefits offered to customers. In the same vein, it reduces the multiplier effect in those organizations that intend to become more sustainable, i.e. there is respect for the environment. It harms workers' activities because organizational cynicism sets in (Liu et al., 2023; Yang et al., 2020; Lee et al., 2018; Jones, 2019; Tuhkanen and Vulturius, 2022; Li et al., 2022).

In that sense, the literature review affirms that greenwashing is a deceptive practice that affects the credibility of organizations at an economic, social, and ethical level. No relevant information was found regarding the sanctioning or legislation applicable to this practice, which represents an opportunity for future research.

## 4. CONCLUSION

The last 5 years have seen an exponential increase in scientific production on greenwashing. This phenomenon reflects the trend in the research community's concern to identify and analyze misleading practices that impede environmental sustainability in organizations. Customers or consumers play a key role in perceiving and questioning actions that appear to avoid environmental protection.

The most cited papers in the scientific production on greenwashing have in common that they deal with a diversity of topics. The analysis of the selected papers shows that organizational credibility, financial growth, regulatory regulation, and corporate social responsibility are prominent in the literature. The perceived trend shows that the present study can be analyzed from a multidisciplinary approach.

The keywords most used in the scientific production on greenwashing are sustainability, corporate social responsibility, environmental policy, and business ethics. This result proves the importance of the topic and the need to promote studies from a multidisciplinary approach for the benefit of the scientific community.

The network of collaboration between authors shows that there are consolidated clusters and others that are in process. Likewise, the connections between the groups are incipient, which makes it a topic for further research. It is important to recognize the importance of institutional support in the emergence of future lines of research and the growth of the scientific community.

No arguments in favor of greenwashing are reported in the scientific literature. However, it has been identified that scientific production is in favor of arguing that this phenomenon consists of deceptive practices aimed at hiding the environmental responsibility of organizations. Leaders who accept the implementation of this phenomenon are aware that it can have a negative economic, social, and ethical impact.

The criminal liability derived from greenwashing is identified as a future line of investigation since it is necessary to punish conduct that affects integrity in organizations and that endorses environmental deprotection.

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