Analysis of the "Greenwashing" Phenomenon in the ESG Investment Environment

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Abstract. With the continuous development of the green financial market and the evolution of ESG reports, the corresponding "greenwashing" problems emerge in endlessly. This study takes ESG reports and enterprise greenwashing papers from 2022 as the object of analysis and reviews the research results in this field from the aspects of classification, causes, expression forms, influence and governance of greenwashing phenomena. According to the analysis. with the increasing scale of China's green finance market, the forms of greenwashing are gradually diversified. The imperfect information disclosure system, the asymmetry of market information and the more pursuit of short-term interests by enterprises are the main factors for the occurrence of greenwashing phenomenon. The impact of green analysis from consumer, corporate governance, gradually to the social and environmental level. Based on the above content, the research puts forward many governance opinions on greenwashing behavior, e.g., improving the system and unified standards from the government level as the perspective, strengthening information disclosure and news media supervision from the market perspective, strengthening internal governance from the perspective of enterprises, and improving the level of professional knowledge.

Keywords: Greenwashing; ESG investment; green finance; sustainable development.

1. Introduction

With the progress of modern society and the rapid development of the economy, enterprises need to undertake more diversified environmental and social responsibilities to achieve high-quality development, and the investment philosophy of society has also changed accordingly. ESG, also known as Environment, Social Responsibility, and Governance, is an investment concept proposed by the United Nations in 2004 [1]. This concept believes that in addition to traditional financial indicators, in enterprise investment, the operating situation and sustainable development potential of the enterprise should also be evaluated from the dimensions of three non-financial factors. At the same time, it is also used to measure whether a company has sufficient social responsibility. China introduced the ESG concept later than the Western market, but in recent years, its implementation of the "dual carbon" goal has provided a rich and excellent political foundation for the rapid development of ESG in the Chinese market. Under the guidance of national policies, more and more Chinese investors and regulatory agencies are paying attention to the performance of enterprises in ESG. Not only that, more and more companies are also considering ESG as an important investment value concept and development strategy guide.

The increase and diffusion of ESG influence and attention in the investment market has given rise to greenwashing behavior. The so-called "greenwashing" behavior refers to the practice of polluting the environment by enterprises in order to ensure their own interests by implementing green behaviors on the surface [2]. "Green drifting behavior" refers to the financing party diverting funds obtained in the green finance market and planned for environmental protection projects for other purposes, for non-green projects that fail to meet environmental benefits expectations. With the promulgation and effective implementation of national green finance policies, China's green finance market has developed rapidly, but with it comes the gradual emergence of the phenomenon of "greenwashing" [3]. The emergence of "greenwashing" has reduced the dividend effect of green finance on economic

development, hindered the high-quality development of emerging Chinese green markets and the Chinese economy, and reduced the operational efficiency of financial markets. "Greenwashing" is a portmanteau of "green" and "whitewash" [4]. Delmas and Burbano characterize greenwashing as the deception of consumers regarding a company's environmental efforts or the ecological advantages of its goods or services, and they represent corporate classifications based on environmental performance and communication, along with the factors that contribute to greenwashing, in a matrix structure [5]. The types are given in Table 1. In terms of manifestations, greenwashing in the corporate sector primarily manifests as the "washing" of carbon emission-related data and disclosures. Huang et al. argue that corporate greenwashing mainly involves selectively releasing environmentally favorable information or strategically framing environmental performance [6]. Li et al. define corporate greenwashing behavior as two types: selective disclosure, which involves reporting environmental issues selectively, and representational manipulation, which involves strategically framing environmental performance [7].

Table 1. Type of Firms based on Environmental Performance and Communication

Communication about Environmental Performance	Bad	Good
Positive	Greenwashing Firms	Vocal Green Firms
No	Silent Brown Firms	Silent Green Firms

Greenwashing is a hot topic in research both domestically and internationally, and academic attention and exploration of it are at an important stage of development. Current research on greenwashing largely focuses on motivations and influencing factors. Li and Wang argue that greenwashing behavior aligns with the fraud triangle analysis model, being a product of the interplay of pressure, opportunity, and rationalization [8]. Hart and Zingales suggest that greenwashing occurs because companies prioritize shareholder interests over social obligations [9]. Laufer and Skarmeas propose that greenwashing behavior makes it easier for companies to gain public trust. However, once exposed, it not only damages the company's image but also affects peer companies in the industry, leading to a negative impact on the entire industry and triggering a crisis of consumer trust [10]. Consumer dissatisfaction with greenwashed products has also significantly damaged the development potential of sustainable finance. Greenwashing reduces consumer support for truly green products with higher prices, ultimately leading to the displacement of the good with the bad.

Based on the phenomenon of greenwashing that has gradually emerged in the ESG investment environment with the development of the green finance market since 2022. This study analyzes the causes and effects of greenwashing through literature research, and studies the methods of governance and suppression of greenwashing. This paper mainly discusses the manifestations and causes of greenwashing from the perspectives of institutions and markets, the impact of greenwashing from the perspectives of consumers, society, the environment, and businesses as well as the governance measures of greenwashing in the ESG investment environment from the perspectives of the government, the market, and enterprises.

2. Classification of Greenwashing

Firstly, according to the different levels of occurrence, greenwashing can be divided into company level greenwashing and product level greenwashing [11]. The former refers to enterprises making environmentally unfriendly decisions and behaviors that go against publicity while promoting their green and environmentally friendly concepts and shaping a good image. Compared to others, the academic community pays more attention to the latter, which is the greenwashing behavior at the product project level. At the product project level, there are so-called "seven deadly crimes" of greenwashing behavior, including superficiality, lack of evidence, ambiguous wording, confusion, avoidance of emphasis, deception of the public, and worship of certification, which constitute the main way for enterprises to mislead consumers with environmental claims. The greenwashing behavior at the product project level first manifests as the absence of a real green project, but rather

as the financing party of the greenwashing project packaging non green projects into green projects through various means, and then obtaining corresponding financial support in the green financial market with the packaged projects.

The second manifestation at this level is that green projects exist, but when raising funds for projects, the funding demander utilizes the information advantage of the borrower to divert some of the green funds to other non-green projects, to obtain higher or faster returns. The specific methods of these two types of greenwashing behaviors are roughly similar. For example, to showcase their good image of being responsible for the environment, green companies may selectively disclose environmental information that is beneficial to themselves, while concealing unfavorable information. Alternatively, greenwashing companies may choose to qualitatively describe key information without the support of case studies, factual statements, and quantitative data, further increasing the difficulty for investors to judge the authenticity of their environmental actions. Secondly, according to different expressions, greenwashing can be divided into declarative greenwashing and executive greenwashing. The former is more commonly referred to as the use of textual viewpoints in advertisements by businesses in order to create misleading environmental claims.

Finally, based on the "actions" and "inactions" of the enterprise, greenwashing can be divided into two forms: "diversion of attention" and "decoupling", which are used to describe whether the enterprise meets the expectations of investors in sustainable practices. The former refers to the business practice of concealing environmentally unfriendly behavior through false disclosure of information, in order to achieve the goal of diverting the attention of stakeholders; The latter refers to companies claiming that their marketing strategies can meet the green expectations of stakeholders, but in reality, they do not make any substantial changes to their subsequent business practices. As passive recipients of information, public investors can only obtain information through market signals released by the company and make corresponding judgments.

3. Causes & Forms of Expression

From an institutional perspective, the standards and norms of green finance behavior are a prerequisite and important foundation for ensuring the healthy and rapid development of the green finance market. However, with the increasingly large scale of China's green finance market, the problem of incomplete environmental information disclosure standards for relevant enterprises in China has gradually been exposed, and in terms of disclosure content, methods, requirements, etc., the domestic market has not yet formed a unified standard [11]. Meanwhile, due to the limitations of natural diversity and geographical complexity in environmental information, existing environmental information disclosure and measurement systems are also difficult to perfectly adapt to various enterprises in the market. And these existing institutional issues provide a certain breeding ground for the "greenwashing" behavior of enterprises. The first survival principle of a company is profitability. So, when facing market policies and institutional changes, companies may choose to comply with regulations, but this may mean that companies need to actively seek the possibility of change and further profitability within the institutional framework. This possibility is likely to rapidly decrease in the large and fiercely competitive Chinese market, thereby compressing profit margins to the limit. In this situation, companies pursuing profits are likely to choose to "manipulate" the system in a greenish way, as the saying goes, "there are policies above and countermeasures below." This means that companies may choose to use symbolic means to evade the limitations of the institutional framework and short-term high costs, and even seek personal gain from it. It is obvious that for most enterprises, greenwashing behavior, as a means of manipulating the system, is more in line with their short-term interests.

From a market perspective, a green market is a typical information asymmetry market, which gives rise to the phenomenon of greenwashing. In the green market, credit debtors and bond issuers are in an information advantage position, with more comprehensive and comprehensive information [12]. However, creditors, bond approvers, and buyers are relatively lacking in information and in a

disadvantaged position. This provides a more obvious and hidden advantage for companies with a "greenwashing intention". They can intentionally package non green projects as green projects, guide investors, regulatory review departments, and media to make incorrect judgments, and obtain corresponding green funds at a lower cost. Moreover, the existing preferences of testing and rating agencies also provide direction for the greenwashing behavior of enterprises and financial institutions. After obtaining funds, the financing party can also utilize its advantage in controlling information to invest funds in areas with higher current returns but more significant differences from green finance. Due to incomplete or even incorrect information disclosure in the green finance market, regulatory authorities have insufficient access to information and are unable to effectively regulate the green credit, green debt approval process, financing fund management, and project execution effectiveness of enterprises, resulting in a significant reduction in regulatory efficiency. As the bottom of the information chain, the public and social entities such as newspapers and media have relatively less information, which further reduces the effectiveness of external supervision of green finance.

Table 2. Typical Industries and their exhibited Greenwashing Behaviors

The specific industries	The greenwashing behavior exhibited by the industry
Energy suppliers (power companies, oil and gas companies, etc.)	The company claims to be adopting green resources, but it may only purchase a small portion of energy from other renewable energy projects, while its main energy source still comes from traditional polluting energy. Some large energy companies have been criticized for engaging in a green reshuffle, attempting to cover up the negative impact of their main business on the environment by promoting a small amount of renewable energy investment.
High carbon industries (automobile manufacturers, etc.)	The enterprise promotes zero strategy without substantial plans or significant actions, or only reduces emissions during operation, and its production process still has a negative impact on the environment. Enterprises promote green commitments but invest heavily in non-green projects, evading stakeholder testing through technological means.
Service industry targeting consumer groups (mainly including catering, clothing, daily necessities, cosmetics, etc.)	Companies provide customers with green and environmentally friendly products, but there is no relevant factual basis to ensure and prove the green attributes of their products or materials. At the same time, the company's supply chain may even involve significant resource waste and environmental damage. Enterprises promote their concepts of environmental protection and resource recycling to the public, but the solutions they adopt are ineffective, and some even harmful to the environment. Some companies have proposed initiatives for sustainable development in the future, but they have not simultaneously established effective supplier screening and control systems.
Financial industry	Financial enterprises may affix and label ESG green labels on relevant financial products without effective and accurate factual evidence. Enterprises are able to promote and identify ESG risks and opportunities, but have not taken comprehensive and realistic actions. Enterprises engage in one-sided and false behaviors in the disclosure and promotion of environmental information.
The plastic packaging industry	Plastic manufacturers claim that their products are biodegradable, but these plastics around the world may require specific conditions to degrade, rather than rapidly decomposing in the natural environment as advertised.

From the perspective of enterprises, green finance market enterprises often have three characteristics: high market competitiveness, high enterprise scale, and low profitability. The resulting performance expectation gap will affect the management's formulation and adjustment of future plans, and drive them to make adaptive decisions. Firstly, it will significantly increase the internal and external pressure on the enterprise. Driven by the motivation to enhance their own interests, enterprises are prone to opportunistic behavior, and "greenwashing" becomes a "strategic" choice to cope with the gap in performance expectations, to seek their own legitimacy and economic benefits to achieve the so-called "will". The possibility of enterprises choosing greenwashing is

directly proportional to the magnitude of internal and external pressures. Secondly, long-term differences in performance expectations can lead to greater external pressure and resource constraints on the enterprise, and decision-makers will have a stronger perception of the threat to the survival of the enterprise. To reduce the huge pressure caused by the gap in performance expectations, some managers will consider "greenwashing" as one of the backup options, and the possibility of choosing is also proportional to the length of time. At the same time, the gap in performance expectations can bring negative social evaluations and doubts about the professional abilities of enterprises. This positive feedback mechanism will further strengthen the resource constraints faced by enterprises. Management may face higher performance pressure or may continue to increase the possibility of pursuing short-term benefits by choosing to "float green" to protect personal interests. For external investors, the widening gap in performance expectations can cause concerns about the company's operating conditions, leading to a reduction in investment in the company to control investment risks. This also weakens the company's ability to obtain funds to a certain extent. The greenwashing behavior in different industries has unique characteristics. The Table 2 lists several typical industries and their exhibited greenwashing behaviors [13].

4. Impact of Greenwashing

4.1. Impact on Consumers

Consumers often find it difficult to accurately identify a company's environmental behavior due to information asymmetry when evaluating it. For instance, Chinese consumers struggle to identify greenwashing practices by companies, showing excessive trust in green advertising and products, which reveals irrational consumption tendencies [14]. When companies overly promote their environmental initiatives through marketing strategies, consumers are prone to being misled by such information, overestimating the company's environmental performance. Once consumers harbor doubts, this skeptical attitude towards green products prompts them to seek more information about the product, spread negative word-of-mouth, and thus influence their purchasing behavior [15]. In developing countries, consumers generally lack such environmental awareness. In studying the impact of greenwashing on audiences, others revealed how greenwashing in green advertising alters consumer attitudes, as well as the mediating roles of confusion and perceived risk for green consumers in the relationship between greenwashing and consumer green trust [16]. Ambiguous green claims released by companies may weaken consumers' trust in green products, or lead them to feel confused, which will affect their purchasing decisions and consumption intentions. Consumers may question the company's credibility in the long run due to ambiguous environmental claims [17].

4.2. Impact on Enterprises

The impact of greenwashing on corporate reputation is evident in its effects on brand satisfaction and investment intention. Consumers' satisfaction with a brand decrease after perceiving irresponsible actions by the company [18]. Such incidents may lead to consumer boycotts, shareholder complaints, and even legal actions, all of which can have long-term negative effects on corporate reputation. Moreover, greenwashing, as a deceptive practice, negatively influences investors' intention to invest. The negative impact on corporate reputation also further affects a company's operational performance and financial metrics [19]. The research conducted by Walker & Wan indicates that in Canada's heavily polluting industries, there is no significant correlation between actual environmental practices and financial performance of companies. Conversely, the negative impact of corporate greenwashing on financial performance is severe [20]. From a financial perspective, the exposure of greenwashing issues can adversely affect a company's profitability, operational capabilities, and growth potential, hindering survival and development. Some scholars argue that while companies may gain short-term benefits through the misuse of corporate social responsibility to engage in greenwashing, they will inevitably face penalties for environmental protection and information disclosure violations when their greenwashing activities are exposed [21]. Relevant environmental law enforcement agencies

may order the shutdown and rectification of production departments with serious pollution, causing a standstill in the company's operations during the rectification period. However, the benefits during this period are unlikely to match the costs, plunging the company into a dual dilemma of production and environmental protection. On the other hand, due to the failure to fulfill commitments in information disclosure, companies may face penalties from securities commissions, litigation risks, and adverse impacts on their daily operations.

The market also exhibits varied reactions to greenwashing behavior. Ye and Pan studied three greenwashing incidents involving PetroChina and found that the capital market responded to these events with varying degrees of punishment effects [22]. The severity of greenwashing behavior, the intensity of government penalties against the company, and the event's impact on the public are all factors that contribute to the capital market's more pronounced punitive effects.

Laufer posits that greenwashing leads to an "illusion of environmental action," where companies focus excessively on the effects of opportunistic actions while neglecting genuine environmental commitments and efforts [23]. In strategic decision-making, this phenomenon is termed "greenwashing dependency," which undermines opportunities for companies to develop and innovate in authentic environmental domains and, in the long run, weakens their competitive advantage [21]. The studies generally acknowledges that corporate greenwashing practices can have adverse effects on companies. However, Lee approaches the market outcomes of greenwashing from an economic perspective. His research findings suggest that greenwashing can incentivize some companies to adopt greener practices when environmental concerns are not crucial or when the expenses of implementing corporate social responsibility are excessive, motivated by the existence of informed participants in the market [24], which provide a counterpoint for many critics of greenwashing.

4.3. Impact on Society and Environment

The prevalence of greenwashing behavior has exacerbated consumer skepticism about the authenticity of green products, even endangering green sales across entire industries. If consumers find it difficult to trust green marketing campaigns, it can lead to increased transaction costs and reduced efficiency in society [25]. Greenwashing also leads to a "bad money drives out good" phenomenon in the market [25]. Because the public finds it difficult to distinguish the true environmental attributes of products, they can only choose lower-priced greenwashed goods based on price mechanisms, squeezing out the space for truly green products and causing them to gradually exit the competitive market. Additionally, according to institutional theory, companies tend to mimic the behaviors of successful firms within the industry, leading other companies in the same industry to imitate greenwashing behaviors, triggering a group effect and causing the widespread diffusion of greenwashing [26].

Companies engage in greenwashing to conceal or downplay their environmental pollution and destruction. Due to asymmetric information, regulators and the public may overestimate the environmental management effectiveness of companies engaged in greenwashing, making it difficult for the truly polluted and damaged natural environment to receive timely and effective protection and remediation, posing a long-term risk of serious environmental damage. Greenwashing leads the public to believe that regulation is ineffective, resulting in less active support for the implementation of environmental legislation, further weakening the protective power of environmental policies [27].

The insidious practice of greenwashing by companies, encompassing issues such as production capacity imbalances, resource shortages, and natural disasters, inflicts unpredictable damage and losses on the market economy, societal structures, and the natural environment. Furthermore, the exposure of corporate greenwashing triggers a negative chain reaction, impacting public health, the sustainable development of industries, and the rational distribution of societal resources. Consequently, government regulators and environmental organizations must intervene, diverting resources originally dedicated to sustainable development, such as human, material, and financial resources, to combating greenwashing and fake corporate social responsibility, to eradicate the

pervasive trend of pseudo-social responsibility and to forestall any degradation in the comprehensive well-being and developmental metrics of society.

5. Governance and Inhibition of Greenwashing

5.1. Policy Making

In the ESG investment environment, the phenomenon of "greenwashing" has become more and more intense. If this is not suppressed, it will cause endless problems. For governance "greenwashing", the author believes that it is necessary to approach it from politics, market, and enterprise. Through perfecting the legal system, formulating unified standards, strengthening the information disclosure standards, the market transparency, and the enterprise information system, improving the system of information verification, and other means to take governance measures to curb greenwashing behavior. Most of the existing legislation on green finance is based on macro and principled opinions and guidelines, which are difficult to implement in practice. Most legislation does not explicitly regulate possible greenwashing, but only indicates that the supervision and coordination of financial operations and products should be strengthened, the regulatory rules and standards should be unified and improved, the requirements for information disclosure should be strengthened, problems such as excessive leverage, idling of capital and greenwashing of green projects should be avoided. Therefore, a perfect legal system and restraint mechanism, at the present stage, is very important.

In February 2023, the ISSB (International Sustainable Standards Board), initiated by the International Financial Reporting Standards Foundation, made a final decision on the effective date of the two International Sustainable Disclosure Standards (ISDS). And in June officially issued the first ISDS documents I and II: General Requirements for Sustainability-Related Financial Information Disclosure (IFRS S1) and Climate-Related Disclosure (IFRS S2), and took effect in January 2024. The author believes that China can formulate and adjust the information disclosure standards which is not only in line with the international standards, but also more in line with the characteristics of the Chinese market based on this standard and combined with the national conditions and the goal of "double-carbon" [28].

First, led by the authority to establish a professional ESG standardization leading group to legally regulate greenwashing, according to the existing green product classification standard in China, in view of the possible "greenwashing" phenomenon, organize relevant regulatory authorities and industry association unified formulate information disclosure standards for ESG reports. In addition, the author thinks that the SFDR (Sustainable Finance Disclosure Regulation) issued by European Union could be used as a legislative reference. For example, financial products can be divided into mainstream financial products, those that emphasize environmental or social attributes, and those focused on sustainable investment objectives. And when a financial entity offers ESG-related products, it needs to make additional disclosures based on the degree of “green” of the product, such as labeling it as a ordinary products, light green products or dark green products. If the product is not related to ESG, explain why it is not related to sustainability risk.

Furthermore, the punishment mechanism is also essential, which is the traditional regulation means to control environmental pollution [11]. This mandatory pressure can effectively control greenwashing of enterprises to a certain extent. However, when the benefits obtained from the "greenwashing" behavior are higher than the penalties, the effect of this punishment will be greatly reduced. Therefore, the power authorities also need to formulate different degrees of punishment according to different "greenwashing" behaviors, such as the size of the fine, or give warning to the personnel and institutions involved. In order to speed up the policy progress, enterprises can be fully prepared by setting up transition relief and providing related guide tools.

5.2. Market Supervision

At present, the disclosure requirements of ESG reports in China are voluntary disclosure. Because of this non-mandatory system, some enterprises and institutions have an opportunity to take

advantage of it, so as to conceal some information with poor data and appear "greenwashing" behavior. This also brings great inconvenience to the supervision and evaluation of whether enterprises actively implement the relevant national policies. In addition, for enterprises with good social responsibility performance and disclosure, ESG information disclosure is the icing on the cake, which has a positive impact on the long-term competitiveness and stock price performance of enterprises. Therefore, the benefits of strengthening the ESG information disclosure system and even implementing the mandatory ESG information disclosure system are obvious. It can not only let the public know more about the situation of enterprises, improve the transparency of enterprises, but also reduce the occurrence of "greenwashing" phenomenon.

What's more, because the huge benefits brought by "greenwashing are very attractive to enterprises and financial institutions, then the development of the third-party market and improving the objectivity of information disclosure through the independent authentication mechanism is very helpful to restrain the "greenwashing" behavior of enterprise ESG reports. Bring in an independent green verification mechanism for ESG investment products, just like the independent audit of the financial statements of listed companies [29]. Such third-party independent authentication institutions can not only conduct targeted evaluation of enterprise ESG reports, reduce the misinformation caused by false reports, but also help investors avoid risks.

In addition, the social public can also through a variety of news media, such as Facebook, TikTok to supervise listed companies. In the era of big data, through the spread of these media. Any move by company can cause a stir online, a lot of negative or positive comments can bring considerable pressure to enterprises. And the contrast of the difference between enterprises will be amplified. Under the influence of such public opinion, the cost of "greenwashing" by enterprises and financial institutions increases virtually, which achieves the inhibitory effect of "greenwashing" in ESG report. At the same time, it also reduces the supervision cost of the government and other relevant institutions.

5.3. Corporate Governance

In addition to the supervision of the government and the public, the internal governance of enterprises is also an important part of suppressing the greenwashing reported by ESG. Enterprises can organize a separate, sustainability-oriented green department with the goal of “dual carbon” as the core to conduct strict internal monitoring of the company. It can mobilize the enthusiasm of employees through equity incentive mechanism, increase the cohesion of the enterprise, and make the interests of the management and the company consistent, so as to achieve the inhibition of greenwashing. First, a sound evaluation system can be established to regularly evaluate the ability of enterprises to achieve sustainable development, and increase the proportion of directors and management personnel with expertise in environmental protection and green finance. Second, special ESG committees can be set up to improve the ability to evaluate and review important environmental issues. Last, employees can also understand the importance of ESG through regular training and promotion of ESG knowledge for employees at all levels [30]. The above measures not only show the company's positive response to the national green financial policy and the high standard of information disclosure, but also enhance the company's ability of sustainable development, and fundamentally restrain the "greenwashing" behavior.

6. Conclusions

The categories and manifestations of corporate greenwashing behaviors are diverse and complex, specifically characterized by a significant gap between the self-promotion of enterprises in environmental protection and their actual behaviors. Whether the ESG behaviors of enterprises truly have practical significance or contain elements of greenwashing also requires rational identification by the public. The driving factors of greenwashing are multifaceted, with internal factors including economic interests, consumer and investor demands, and external factors including environmental pressures, institutional flaws, and even personal decision-making preferences. Ultimately, it is driven

by the pursuit of interests. Research on the motivations for greenwashing often starts with external and internal factors, with most of the exploration of internal factors still focused on the enterprise. The harm and negative impact of greenwashing are increasingly prominent, mainly reflected in consumers, enterprises, society, and the environment. Greenwashing weakens consumer trust in green practices, leading to reduced corporate profits, operational capabilities, and thwarted development potential in terms of reputation, financial performance, capital market performance, and strategic decision-making. Before greenwashing is exposed, it may have a positive impact, but this is far from compensating for the negative consequences after exposure. The detrimental chain of events triggered by the revelation of corporate greenwashing also impacts public health, the sustainability of industries, and the equitable distribution of societal resources.

Greenwashing by enterprises cannot be governed through the resolution of a single factor; various governance methods provide possibilities for controlling greenwashing. Laws and regulations serve as fundamental constraints through mandatory pressure, and the government's punishment and subsidy mechanisms should be sufficient to regulate corporate behavior. The development of third-party markets and the enhancement of the objectivity of information disclosure through independent certification mechanisms, as well as market transparency and media opinion as non-regulatory means, offer new ideas for governing greenwashing, but further research on specific measures is needed. As the most direct link, enterprises should establish sustainable development-oriented internal departments to improve their ESG performance.

This paper describes in detail the specific manifestations of greenwashing in industries such as energy, high-carbon, consumer goods, and finance, providing a reference for investors to identify greenwashing behaviors. It proposes governance measures for the phenomenon of greenwashing, which have guiding significance for enterprises to improve their environmental performance and the quality of information disclosure. The research findings contribute to the popularization of ESG investment concepts, promote the healthy development of the green financial market, and have important reference value for improving China's green financial system. Although this paper constructs a basic framework for the study of corporate greenwashing, there are still many theoretical and practical issues that need to be further researched. Specifically, future research can be expanded, e.g., in-depth exploration of the motivations behind corporate greenwashing; research on the short-term and long-term impacts of corporate greenwashing and expanding research to the localization and cross-institutional contexts of greenwashing.

Author Contribution

All the authors contributed equally and their names were listed in alphabetical order.

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