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Research on Greenwashing Behavior and Collaborative Governance Path Innovation

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Abstract

With the deepening of sustainable development concepts, corporate greenwashing-the practice of feigning environmental responsibility through "pseudo-green" actions-has emerged as a significant barrier to green transformation. This paper systematically examines the connotation, evolution, and mechanisms of greenwashing, aiming to identify robust governance pathways and propose a systematic solution. The study reveals that greenwashing has dynamically evolved from "selective information disclosure" to "algorithmic greenwashing," driven by institutional pressures, market incentives, and technological empowerment. Its impacts span market trust crises, consumer cognitive distortions, and socio-ecological damage. Existing research exhibits notable controversies in conceptual definitions, governance paradigms, and technological applications, while practical governance faces challenges such as legal ambiguities, certification flaws, and insufficient public participation. To address these issues, this paper proposes a five-dimensional collaborative governance framework: "legal enforcement + market-driven mechanisms + technological empowerment + societal co-governance + financial incentives." This system emphasizes refined legislation, transparent technological oversight, market forces, financial tools, and social mobilization to transition from "greenwashing" to "authentic green." By transcending static analytical frameworks and adopting a dynamic evolutionary perspective, this study contributes to interdisciplinary theoretical integration and collaborative policy design, offering practical insights for advancing green development and achieving China's "3060 Carbon Peak and Carbon Neutrality" goals.

Keywords

Greenwashing; Collaborative Governance; Green Development.

1. Introduction

The rise of sustainable development has heightened global attention to environmental issues. As "green" initiatives become lucrative, greenwashing has proliferated. The term "greenwashing" originated in the 1980s during critiques of corporate false environmental claims (Laufer, 2003), coined by American environmentalist Jay Westerveld in 1986 to describe corporate practices that fabricate eco-friendly images through deceptive marketing (Zhou, 2009; de Freitas Netto et al., 2020). The Oxford English Dictionary defines it as "the dissemination of misleading information by organizations to project an environmentally responsible public image" (Zhu, 2014; Yang, 2012). TerraChoice further characterizes it as "misleading assertions about the environmental benefits of a product or service" (Zhu, 2014). Over time, the concept has expanded beyond marketing to encompass information disclosure, organizational strategies, and multi-dimensional implications.

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2. The Connotation and Research Significance of Greenwashing

2.1. The Connotation and Evolution of Greenwashing

2.1.1. The Connotation of Greenwashing

Greenwashing is defined as a strategic corporate behavior that uses false or exaggerated environmental claims to conceal actual environmental performance. Its manifestations exhibit multidimensional characteristics: Huang Yubo and Lei Yueqiu (2019) proposed that the perceived dimensions of greenwashing in advertising include exaggerated expressions, information concealment, and impure motives. Xie Xuemei et al. (2024) further categorized greenwashing into "communication greenwashing" (false propaganda) and "action greenwashing" (lack of substantive actions), noting its evolutionary trajectory from direct deception to exploiting legal gray areas (Yang Bo, 2014). The "Seven Sins of Greenwashing" (e.g., vague claims, lack of evidence) summarized by TerraChoice (2009) serves as a classic classification framework but has faced criticism for ambiguous categorization (Huang Yubo & Lei Yueqiu, 2021).

2.1.2. Conceptual Evolution

The connotation of greenwashing has evolved through three stages: from early "selective environmental information disclosure" (Delmas & Burbano, 2011) to "symbolic actions decoupled from substantive outcomes" (Walker & Wan, 2012), and further to "algorithmic greenwashing" in the digital age (Zhang et al., 2022). This semantic generalization reflects the strategic upgrading of enterprises in responding to environmental regulations. Key drivers include institutional pressures (contradictions between strengthened environmental regulations and corporate compliance costs, Testa et al., 2018), market mechanisms (capital premium incentives driven by ESG investments, Kim & Lyon, 2015), technological empowerment (lowered thresholds for information disclosure via social media, Lyon & Montgomery, 2015), and consumer cognitive biases (asymmetry between environmental awareness and information verification capabilities, Parguel et al., 2015). The research paradigm has shifted from the "corporate moral failure theory" (Bowen, 2014) to the "institutional complexity response theory" (Seele & Gatti, 2017), with recent focus on "technology-mediated greenwashing" (Torelli et al., 2020) and the "greenwashing-green innovation paradox" (Aravind & Christmann, 2023). However, existing literature predominantly relies on static causal analyses, lacking systematic tracking of the dynamic "latency-outbreak-diffusion" process of greenwashing (Lyon & Montgomery, 2015).

2.2. Research Significance: Academic Value and Practical Necessity of Greenwashing Governance

At the theoretical level, current research exhibits three major disconnects: (1) conceptual disputes over measurement standards, such as the "environmental commitment-execution gap" (Guo et al., 2022) versus "symbolic-substantive actions" (Marquis et al., 2016); (2) insufficient exploration of "second-order effects" (e.g., market chain reactions) in impact mechanism studies (Lyon & Maxwell, 2011); and (3) paradigm conflicts between "techno-governance approaches" (relying on blockchain and machine learning, Seele & Gatti, 2023; Guo et al., 2022) and "institutional restructuring approaches" (emphasizing ESG rating reforms, Aravind & Christmann, 2023).

Practically, greenwashing triggers adverse consequences, including the "lemons problem" in green markets (Torelli et al., 2020), public "green cynicism" (Parguel et al., 2015), and impediments to carbon neutrality progress (Aravind & Christmann, 2023). Policy tools face three critical shortcomings: (1) inadequate lifecycle verification of information disclosure (Delmas & Burbano, 2011); (2) indicator blind spots in ESG ratings (Kim & Lyon, 2015); and (3) the "verification-cost paradox" in new technology applications (Seele & Gatti, 2023). These

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contradictions underscore the urgency of interdisciplinary theoretical integration and systematic policy design.

3. Theoretical Analysis

3.1. Theoretical Boundaries

Early research focused on the marketing domain, emphasizing superficial corporate utilization of environmental claims (Beder, 1997; Li Dayuan et al., 2015). As practices evolved, theoretical boundaries gradually expanded to encompass multidimensional aspects such as information disclosure (Walker & Wan, 2012), organizational strategy (Xiao Fenrong, 2016), selective disclosure (Zhang Yun & Yang Zhenyu, 2024), linguistic embellishment (Wu Hengguang & Xu Yanli, 2024), and the "decoupling of symbolic actions from substantive actions" (Niu Feng et al., 2025). Significant scholarly debates persist regarding the scope of greenwashing: some scholars argue that it is confined to environmental issues (de Freitas Netto et al., 2020), while others extend its conceptual boundaries to social domains through derivative terms like "bluewashing" and "brownwashing" (Wang Fei & Tong Tong, 2020), intersecting with emerging fields such as ESG (Environmental, Social, and Governance; Li Chuanxuan, 2025) and green finance (Li Qianru et al., 2023). These boundaries dynamically shift in response to policy and market developments (Zhang Qia, 2024).

3.2. Analysis of Core Research Dimensions

Greenwashing research unfolds through three perspectives: corporate behavior, market interactions, and policy environments. At the corporate level, core drivers include profit incentives (Li Xuejun, 2010), legitimacy pressures (Huang Rongbing, 2022), and managerial short-term opportunism (Zhou Yan & Lan Hailin, 2024). Operational mechanisms involve regulatory arbitrage (Wang Wei & Liu Chuanhong, 2013), ambiguous promotion (Huang Rongbing, 2022), and green merger camouflage (Zhang Qia, 2024), while enhanced information transparency may expose deceptive practices (Wang Wei & Liu Chuanhong, 2013). In market and consumer dimensions, information asymmetry in green markets (Kollman, 2001; Chen Qi & Duan Yongrui, 2023) leads to adverse selection, eroding consumer trust (Yang Bo, 2012; Wang Fei & Tong Tong, 2020). Institutional investors exhibit a "double-edged sword" effect, potentially curbing (Zhang Yun & Yang Zhenyu, 2024) or exacerbating greenwashing (Wang Nuanxin et al., 2024). At the policy and industry level, low-carbon pilot policies (Ma Lingyuan & Ding Bowen, 2023) and stringent regulatory oversight (Wang Jianxin & Cao Zhiming, 2024; Chen Qi & Duan Yongrui, 2023) heighten greenwashing risks. While big data technologies may mitigate information asymmetry (Sun Jianjun et al., 2024), digital finance could foster new forms of greenwashing (Guo Na et al., 2024).

3.3. Theoretical Debates and Paradigmatic Conflicts

Substantial disagreements exist in defining, measuring, and governing greenwashing. In definition and measurement, TerraChoice's "Seven Sins" framework has been criticized for limited operability (Huang Yubo & Lei Yueqiu, 2021). Measurement methods are categorized into four types, including "action-statement comparison" and "contrast analysis" (Zhang et al., 2023), yet subjective disputes persist (Guo Na et al., 2025). Regarding impact assessments, mainstream studies emphasize greenwashing's role in undermining market trust and hindering low-carbon transitions (Chen Lingfang, 2023), while minority views suggest it may incentivize firms to increase CSR investments (Wu et al., 2020). Governance paradigms clash across three schools: the regulatory reinforcement school advocates legal constraints (Zhou Peiqin, 2009) and environmental judicial reforms (Wu Hengguang & Xu Yanli, 2024); the market-oriented school promotes green finance (Wu Qiusheng & Ren Xiaoshu, 2023) and investor oversight (Zhang Yue et al., 2025); the technology empowerment school emphasizes digital governance

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(Yao Haidong & Li Wei, 2024) but acknowledges risks of technological misuse (Guo Na et al., 2024).

4. Argumentation of Impacts

4.1. Analysis of Greenwashing Impact Mechanisms

Existing research reveals that greenwashing mechanisms exhibit multidimensional and dynamic characteristics. Studies demonstrate that greenwashing behaviors trigger an integrity crisis in the green consumer market through market mechanisms (Zhu, 2014; Liu et al., 2016), simultaneously suppressing clean technology innovation while potentially enhancing short-term corporate financial performance (Zou et al., 2024; Wu et al., 2020). Market responses show a significant positive correlation with environmental performance (Du, 2014). At the consumer level, greenwashing advertisements obscure eco-conscious cognition through immersive communication (Su, 2022), leading to information overload and trust collapse (Nyilasy et al., 2014), thereby forming a transmission chain of "infringement of the right to know – consumer decision-making dilemma – market shift" (Liu, 2016; Wu et al., 2020). In the socio-ecological dimension, greenwashing undermines the foundation of environmental awareness (Liu, 2016), disrupts the advertising industry ecosystem (Su, 2022), and exacerbates government trust deficits (Liu et al., 2016). Such complexity becomes more pronounced in the ESG era, manifesting as the dual-edged effects of financing constraints (Ferreira et al., 2023; Huang et al., 2020) and unique market feedback on environmental responsibility greenwashing (Zou et al., 2024).

4.2. Evolution of Theoretical Analytical Frameworks

The theoretical frameworks have undergone three paradigm shifts. Early studies focused on behavioral feature identification: Laufer (2003) proposed the "confusion-concealment" dual characteristics, while Terrachoice (2008) systematized the "seven-sin" classification system. Mid-term research shifted to impact mechanism analysis: Ramus and Montiel (2005) revealed the divergence between policy commitments and implementation, and Su (2022) constructed a communication theory of rhetorical obfuscation. Current research has entered the phase of ESG governance system construction: Zou et al. (2024) developed a quantitative evaluation framework, and Zhou (2024) redefined information disclosure deviance. Cross-disciplinary perspectives have formed three analytical paradigms: communication studies emphasize advertising rhetoric and cognitive obfuscation (Su, 2022); economics focuses on market responses to signal transmission (Quan et al., 2016); and management science investigates the relationship between reputation mechanisms and corporate performance (Liu et al., 2023).

4.3. Core Research Dimensions

Core research dimensions have deepened across three levels:

4.3.1. Communication Mechanisms

Encompasses symbolic construction in advertising contexts (Su, 2022) and the discrepancy between corporate environmental claims and actions (Ramus & Montiel, 2005).

4.3.2. Information Disclosure:

Studies expose the misleading nature of selective disclosure (Zhou, 2024) and institutional gaps in verification mechanisms (Ramus & Montiel, 2005).

Governance Mechanisms: Scholars identify the mediating role of green technology innovation (Zhou, 2024) and the moderating effects of financing constraints (Zou et al., 2024). These dimensions collectively form a research closed loop of “behavior identification – impact assessment – governance response.”

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4.4. Theoretical Controversies and Paradigm Conflicts

Current theoretical disputes center on three interfaces:

4.4.1. Impact Valence:

Coexistence of market punishment theory (Du, 2014) and short-term profit theory (Solomon et al., 2008), with new debates on the unique positive effects of environmental responsibility greenwashing (Zou et al., 2024).

4.4.2. Governance Paradigms:

Unresolved tensions between mandatory disclosure and voluntary commitment systems (Ramus & Montiel, 2005), coupled with persistent negative spillovers from market-based soft regulation (Huang et al., 2020).

4.4.3. Methodology:

Complementary yet competitive approaches between qualitative content analysis (Ramus & Montiel, 2005) and quantitative evaluation frameworks (Zou et al., 2024). Research gaps persist in dynamic impact mechanism modeling, cross-cultural comparative studies, and digital technology-enabled governance, necessitating an integrative theoretical framework with enhanced explanatory power.

5. Research on Governance Pathways for Greenwashing

5.1. Governance Pathways and Methods

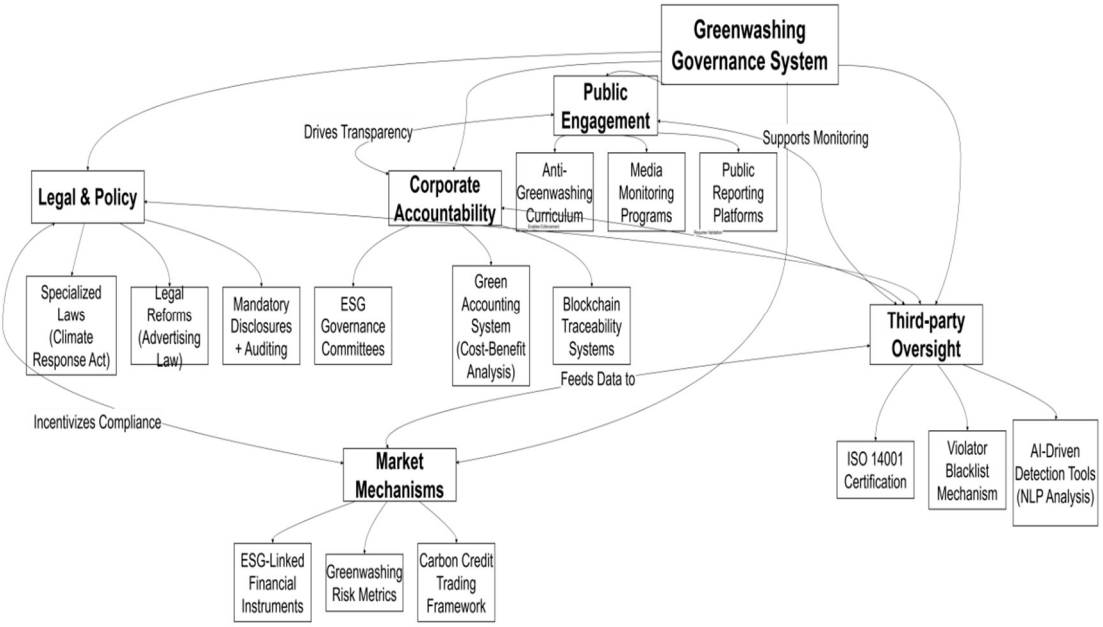

Figure 1. Collaborative Governance Pathways for Greenwashing

The construction of a collaborative governance system hinges on the organic integration and complementary reinforcement of five dimensions. First, legal and policy regulations provide institutional safeguards through mandatory norms and cross-departmental coordination mechanisms, forming rigid constraints for governance. Second, corporate self-discipline and internal governance rely on institutional innovation and technological empowerment, transforming external compliance pressures into endogenous motivation, thereby shifting enterprises from passive compliance to proactive responsibility. Third, third-party supervision and certification establish trust through standardized evaluations and industry-wide collaboration, serving as objective benchmarks for policy implementation and corporate practices. Fourth, social participation and public oversight create a co-governance network via

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public education, media exposure, and accessible reporting mechanisms, amplifying external supervision through reputational impacts and collective action. Finally, financial and market instruments bind environmental performance to economic incentives through resource allocation, leveraging market forces to drive green transformation. These five dimensions form a closed-loop system of "institutional constraints-endogenous drivers-trust-building-social oversight-economic incentives," combining legal and social pressures with corporate self-discipline and market incentives. Under the pivotal role of third-party certification, transparency and dynamic equilibrium are achieved, fostering a resilient greenwashing governance ecosystem. The interrelationships are illustrated in Figure 1.

5.1.1. Legal and Policy Regulations

Governance of greenwashing requires legal and policy frameworks as foundational institutional constraints. First, specialized laws should be formulated to clearly define greenwashing behaviors, penalties, and liable entities, addressing existing legal gaps. Concurrently, existing laws such as the ‘Anti-Unfair Competition Law’ and ‘Advertising Law’ should be revised to refine clauses on "false environmental claims," imposing rigid constraints on enterprises. Second, governmental regulatory functions must be strengthened by clarifying supervisory authorities and establishing cross-departmental enforcement mechanisms to eliminate jurisdictional loopholes. Mandatory environmental disclosure systems should be enforced, requiring enterprises to regularly publish key indicators (e.g., carbon emissions, resource consumption) under audits by certified accounting firms. Lastly, judicial reforms should enhance deterrence, such as imposing dual accountability on both greenwashing firms and their executives.

5.1.2. Corporate Self-Discipline and Governance

Enterprises must transition from passive compliance to proactive accountability. Internally, boards of directors should establish ESG committees alongside existing specialized committees, integrating environmental goals into corporate charters. Green accounting or "carbon accounting" systems should quantify environmental costs and benefits, incorporating green assets into balance sheets. Management incentives should align with long-term environmental performance, such as "green equity incentives" rewarding executives for achieving emission reduction targets. Technologically, investments in clean energy, circular technologies, and blockchain-based supply chain traceability systems should ensure transparency. Additionally, green standards must be enforced across supply chains, fostering closed-loop management.

5.1.3. Third-Party Supervision and Certification

Independent third parties are critical to resolving information asymmetry. Mandatory ESG reporting should require certifications akin to ISO 14001. China could establish similar independent bodies with "whitelist-blacklist" systems to penalize non-compliant certifiers. Industry-specific green standards should be developed by trade associations, ensuring intra-industry consistency and inter-industry differentiation. A "green credit rating" system could reward compliant firms with financing benefits while blacklisting greenwashing entities. Furthermore, research institutions should develop tools to detect false environmental claims.

5.1.4. Social Participation and Public Oversight

The public and media serve as a "third eye" in greenwashing governance. Public awareness campaigns should encourage scrutiny and reporting of greenwashing practices. Media outlets should establish "greenwashing exposure platforms" to amplify reputational risks, prompting market-driven accountability.

5.1.5. Financial and Market Instruments

Financial markets can steer corporate behavior through resource allocation. Banks should integrate ESG performance into credit evaluations via "green credit assessment models,"

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raising financing costs for greenwashing firms. Capital markets could develop "greenwashing risk indices" to guide investor decisions. Tax incentives, such as subsidies for emission-reducing firms, would further reinforce positive behavior.

6. Current Shortcomings in Greenwashing Governance and Directions for Improvement

6.1. Deficiencies in Legislation and Enforcement

Existing laws lack clear definitions of "greenwashing." For instance, the "false advertising" clause in China's *Advertising Law* fails to specify concrete standards for environmental claims, resulting in excessive discretionary power in law enforcement and inconsistent implementation. While the principle of "governing by law" exists in legal texts, it struggles to translate into practice. Additionally, local governments' overemphasis on GDP growth leads to selective neglect of corporate greenwashing, with penalties rarely enforced.

Directions for Improvement: Globally, China, as a key practitioner and advocate of green development, should actively engage in shaping ESG (Environmental, Social, and Governance) rules through international collaboration. Domestically, beyond strengthening law enforcement, technologies such as satellite remote sensing and artificial intelligence (AI) should be leveraged to enhance governance efficacy.

6.2. Flaws in Information Disclosure and Certification

Corporate environmental disclosures predominantly rely on qualitative descriptions, lacking quantifiable metrics. Meanwhile, third-party certification bodies vary widely in quality, with some compromising independence and engaging in unethical practices such as "pay-for-certification."

Directions for Improvement: To curb such malpractices, mandatory disclosure of key environmental indicators should be enforced, and a "public environmental data platform" should be established to enable cross-departmental data sharing. Furthermore, rigorous oversight of certification agencies' quality management systems must be implemented, including regular unannounced inspections. Severe penalties for violations by third-party institutions and personnel should be imposed to ensure professional integrity.

6.3. Technological and Resource Constraints

While large enterprises possess robust internal controls and innovation capabilities, small and medium-sized enterprises (SMEs) often lack digital infrastructure and struggle to afford blockchain traceability systems. Additionally, green technology R&D faces challenges such as long cycles and high risks, discouraging corporate investment.

Directions for Improvement: Governments should establish initiatives like a "Green Technology Transformation Fund" to subsidize SMEs. Encouraging large enterprises to share patent rights with SMEs could foster collaborative technological innovation.

6.4. Insufficient Public Participation

Under the civil litigation principle of "the burden of proof lies with the claimant," consumers face high costs and evidentiary challenges when combating greenwashing. Many victims either remain unaware of their rights or abandon claims due to prohibitive expenses.

Directions for Improvement: A "fast-track collective litigation mechanism," akin to investor protection systems, should be introduced. Consumer associations should be empowered to represent victims in lawsuits against greenwashing entities.

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7. Conclusion

Governance of greenwashing is a systemic endeavor requiring a multidimensional framework integrating "legal enforcement, market incentives, technological empowerment, societal co-governance, and financial mechanisms." Only through dynamic collaboration and optimization can a fundamental shift from "greenwashing" to "genuine sustainability" be achieved.

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