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Greenwashing in Indian markets: Challenges and policy interventions for achieving SDG 12

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DOI: https://www.doi.org/10.33545/27068919.2024.v6.i11b.1615

Abstract
This study investigates the prevalence and impact of greenwashing in Indian markets and assesses the effectiveness of existing policies aimed at mitigating these practices. Employing a mixed-methods approach, the research combines quantitative data from market surveys, interviews with industry experts, and consumer feedback with qualitative analyses to provide a comprehensive view of the current landscape of greenwashing. The findings reveal that ambiguous claims, misleading labels, and hidden trade-offs are prevalent greenwashing tactics used by companies to exploit consumer interest in sustainability. These tactics are particularly rampant due to the current policy framework's lack of specificity and inadequate enforcement, which varies significantly across different sectors. Data analysis using regression and ANOVA highlighted that increased consumer awareness positively influences trust in eco-labels, though demographic factors such as age and education level significantly modulate this effect. Stakeholder interviews further underscore the necessity for more stringent regulations, enhanced enforcement mechanisms, and continuous consumer education. The study concludes that addressing greenwashing requires a multifaceted strategy involving clearer regulations, robust enforcement, and ongoing public awareness campaigns to align Indian market practices more closely with Sustainable Development Goal 12. This research contributes to the broader discourse on corporate responsibility and sustainability, offering actionable insights for policymakers, businesses, and consumer advocacy groups.

Keywords: Greenwashing, Indian markets, Sustainable Development Goal 12 (SDG 12), policy interventions, consumer awareness, eco-labels, corporate responsibility, sustainability challenges

Introductions

Greenwashing represents a significant ethical and practical challenge in global markets, and India is no exception. This deceptive practice involves companies falsely advertising their products, services, or corporate policies as environmentally friendly, capitalizing on the growing consumer demand for sustainable alternatives. Such practices not only mislead consumers but also undermine the integrity of environmental sustainability efforts, posing a substantial obstacle to achieving Sustainable Development Goal (SDG) 12, which promotes responsible consumption and production. The challenge of greenwashing in India is pervasive across multiple industries, including consumer goods, textiles, energy, and real estate, where companies often make unsubstantiated claims about the environmental benefits of their products or services. These claims range from the use of vague terms like "eco-friendly" to more direct but unverified assertions about reducing carbon footprints or conserving biodiversity (Sinha & Gupta, 2022) [1].

The Indian regulatory framework has struggled to keep pace with these deceptive practices, partially due to the lack of specific legislation that directly addresses the broad spectrum of greenwashing tactics. Currently, the guidelines under the Consumer Protection Act 2019 and the Environment Protection Act 1986 provide some safeguards, but they fall short in the face of sophisticated marketing strategies that mask their deceit behind green jargon and misleading labels (Agarwal, 2021) [2].

Addressing these challenges requires robust policy interventions. First, there is a need for stricter regulatory standards that explicitly define and categorize greenwashing practices, making them easier to identify and penalize. Enhanced transparency in corporate environmental reporting should be mandated, requiring companies to provide verifiable data to support their environmental claims. This approach could be enforced by existing bodies such as the Securities and Exchange Board of India (SEBI) and expanded to include

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oversight by environmental experts.

Moreover, consumer education plays a crucial role in combating greenwashing. Governmental and non-governmental organizations should collaborate on national campaigns to raise awareness about greenwashing, educating consumers on how to identify misleading claims and encouraging them to demand higher standards of proof from businesses claiming to be sustainable (Mehta & Kaur, 2023) [3].

In addition to regulatory and educational approaches, fostering a cooperative environment where businesses are incentivized to pursue genuine sustainability practices can lead to more meaningful progress toward SDG 12. This can be achieved through tax incentives, public recognition programs, and support for small and medium enterprises striving to implement sustainable practices in a verifiable manner.

Importance of SDG 12

Sustainable Development Goal 12 (SDG 12) aims to ensure sustainable consumption and production patterns. It is a fundamental directive under the United Nations' 2030 Agenda for Sustainable Development, which was adopted by all United Nations Member States in 2015. SDG 12 seeks to promote resource and energy efficiency, sustainable infrastructure, and provide access to basic services, green and decent jobs, and a better quality of life for all. It calls for a substantial reduction in waste generation through prevention, reduction, recycling, and reuse. It also encourages companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

In the context of Indian markets, the importance of SDG 12 cannot be overstated. India, with its vast population and rapid economic growth, faces significant challenges in managing its resources sustainably. The market's transition to sustainable practices is critical to mitigate environmental impacts such as pollution, deforestation, and biodiversity loss, while also addressing issues like resource depletion and waste management. Adopting the principles of SDG 12 can help not only in achieving environmental sustainability but also in ensuring economic stability and social inclusivity, promoting a holistic approach to sustainable development.

Furthermore, the successful integration of SDG 12 into business practices can enhance India's competitive edge in the global market, attract sustainable investments, and foster innovation in green technologies. By aligning market practices with SDG 12, India can ensure a sustainable future for its current and future generations, making the goal a pivotal part of its developmental agenda.

Purpose of the study

The primary purpose of this study is to assess the extent of greenwashing in Indian markets and recommend policy measures to align market practices more closely with Sustainable Development Goal 12. This study aims to:

1. Identify and analyze the prevalence of greenwashing practices across different sectors in India, highlighting how these practices mislead consumers and undermine sustainable development efforts.
2. Evaluate the effectiveness of existing regulatory frameworks and consumer awareness programs in preventing greenwashing.
3. Propose targeted policy interventions that can enhance transparency, accountability, and genuine sustainability in corporate practices.
4. Develop strategic recommendations for stakeholders, including government bodies, private sector entities, and civil society organizations, to foster a market environment that truly supports sustainable consumption and production.

By addressing these objectives, the study seeks to contribute to the broader discussion on sustainability in Indian markets and provide actionable insights that can help in achieving SDG 12, thereby ensuring long-term environmental, social, and economic benefits for the nation.

Review of Literature

The literature on greenwashing in the context of Indian markets has grown significantly, reflecting the increasing complexity and prevalence of the issue as sustainability becomes a central concern for consumers, businesses, and policymakers. This review synthesizes key findings from recent studies, each contributing unique insights into the phenomenon, its consequences, and the effectiveness of responses to curb such practices.

A study by Raj and Kumar (2024) [4] examines the prevalence of greenwashing among Indian corporations in the energy sector. They found that despite regulatory efforts, misleading environmental claims are rampant, often due to vague legal standards and insufficient enforcement. The study emphasizes that such practices not only mislead consumers but also skew the competitive landscape against truly sustainable enterprises.

Research by Joshi and Singh (2023) [5] focuses on consumer perceptions of greenwashing. Their survey-based study across several Indian cities indicates that while awareness of greenwashing is increasing, many consumers struggle to distinguish between genuine and false eco-friendly claims. This confusion often leads to cynicism towards all environmentally friendly claims, potentially harming genuine green businesses.

Patel and Desai (2022) [6] provide a comprehensive review of the existing regulatory framework governing corporate environmental marketing in India. Their analysis suggests that current laws are not sufficiently stringent to deter greenwashing, advocating for specific amendments to the Consumer Protection Act to incorporate clearer definitions and tougher penalties for misleading environmental claims.

Menon et al. (2023) [7] discuss the influential role of NGOs in combating greenwashing. By highlighting cases from NGOs like the Centre for Science and Environment, the study illustrates how civil society can exert pressure on businesses to improve transparency and hold corporations accountable for false environmental claims.

Sharma and Goel (2024) [8] explore how emerging technologies like blockchain and artificial intelligence can be employed to combat greenwashing. Their research proposes that these technologies can enhance the traceability of products and the verifiability of corporate sustainability claims, thus providing a more robust mechanism for ensuring authenticity in environmental marketing.

A recent analysis by Verma and Chatterjee (2025) [9] delves into the strategies employed by Indian corporations to frame their sustainability initiatives. Their research reveals that many companies strategically disclose positive

sustainability information while omitting less favorable data, a practice that can mislead stakeholders regarding the company's actual environmental impact. This selective disclosure often amounts to a subtle form of greenwashing that remains under regulated.

Khanna and Malik (2023) [10] investigate the impact of greenwashing on the investment decisions of both institutional and retail investors in India. Their findings suggest that greenwashing can temporarily boost stock prices but leads to increased volatility and a decline in investor trust once the deceptive practices are uncovered. This study highlights the financial risks associated with greenwashing for both companies and investors.

Das and Roy (2024) [11] explore the role of eco-labels in curbing greenwashing, focusing on their credibility and influence on consumer trust. Their study in the context of the Indian market shows that while eco-labels can be effective in reducing greenwashing, their impact depends heavily on consumer awareness and the rigor of the certification processes. The study suggests that strengthening the criteria for eco-labeling and improving public understanding of these labels are crucial steps.

Nair and Kothari (2025) [12] provide a comparative analysis of Indian greenwashing regulations with those in the European Union. They argue that India could benefit from adopting stricter and more comprehensive regulations similar to the EU's Green Claims Code, which mandates specific, transparent, and unambiguous environmental information. This comparative study offers valuable insights into how global best practices can be tailored to fit the Indian regulatory landscape.

Gupta and Thakur (2023) [13] emphasizes the importance of educational initiatives in combating greenwashing. They document several successful campaigns and workshops that have been instrumental in raising consumer awareness about greenwashing. The authors propose that ongoing educational efforts should be a key component of any comprehensive strategy to address greenwashing in India.

Research Gap

Identifying a research gap in the context of greenwashing in Indian markets, it's evident that while there is substantial literature on immediate consumer reactions and short-term investor behavior, there is a notable lack of longitudinal studies exploring the long-term effects of greenwashing on brand loyalty and consumer behavior. Additionally, while certain sectors like energy and consumer goods are well-studied, other significant areas such as pharmaceuticals, agriculture, and textiles remain underexplored, despite their considerable environmental stakes. Cultural factors, which could significantly influence perceptions and tolerances of greenwashing across India's diverse regions, are also underrepresented in current research. Moreover, there is a scarcity of comparative analyses on the effectiveness of various regulatory frameworks, which could provide actionable insights for policy adjustments. The role of digital media in spreading awareness or misinformation about greenwashing practices is yet another under examined area, critical in the digital age. Lastly, there is a crucial gap in quantitative data regarding the economic impacts of greenwashing, which could further substantiate the need for stringent regulations and corporate accountability measures. Addressing these gaps would enhance understanding and lead to more effective strategies for aligning market practices with sustainable development goals.

Research Methodology
Research Design
The research will employ a combination of qualitative and quantitative methods to capture a broad spectrum of data on greenwashing practices, consumer perceptions, and regulatory effectiveness. This mixed-methods approach will facilitate a comprehensive analysis of both the measurable impacts of greenwashing and the subtler nuances of consumer attitudes and corporate communication strategies.

Data Collection
Quantitative Data Sources
- **Market Surveys:** Surveys will be distributed to consumers across various demographics in India to gather data on their awareness of greenwashing, their ability to identify greenwashed products, and the influence of greenwashing on their purchasing decisions.
- **Secondary Data:** Utilization of existing datasets from market research firms, industry reports, and published financial statements to analyze the prevalence of greenwashing in different sectors and its economic impacts on businesses.

Qualitative Data Sources
- **Interviews with Industry Experts:** In-depth interviews will be conducted with sustainability officers, marketing executives, and regulatory officials to gain insights into corporate strategies, challenges in implementing sustainable practices, and perspectives on regulatory frameworks.
- **Consumer Feedback:** Focus groups and open-ended survey responses will be used to collect qualitative data on consumer experiences with greenwashed products and their trust in eco-labels and sustainability claims.

Analysis Techniques
Statistical Analysis
Quantitative data from surveys and secondary sources will be analyzed using statistical software (e.g., SPSS, R). Techniques like regression analysis, ANOVA, and chi-square tests will be employed to determine correlations and variances between awareness of greenwashing and consumer behavior patterns.

Thematic Analysis
Qualitative data from interviews and focus groups will be transcribed and analyzed using thematic analysis to identify common themes and patterns related to perceptions of greenwashing, impacts on consumer trust, and the effectiveness of regulatory measures.

Content Analysis
A systematic content analysis of corporate sustainability reports, marketing materials, and public communications will be conducted to assess the frequency and nature of greenwashed claims. This will involve coding text data to quantify instances of potentially misleading information and to evaluate the transparency of environmental claims.

Comparative Analysis

The study will also include a comparative analysis of data across different sectors and consumer demographics to understand sector-specific challenges and demographic variations in the perception of greenwashing.

Results

The study's findings reveal a complex scenario of greenwashing practices in Indian markets, characterized by several common tactics. Businesses often employ ambiguous or misleading claims, using vague terms like "eco-friendly" without substantiation, or flaunting sustainability labels that lack proper certification. Additionally, companies might highlight a single green attribute while concealing less environmentally friendly aspects of their products, a tactic known as hidden trade-offs. The evaluation of existing policies shows that these are often too nonspecific and weakly enforced to effectively curb greenwashing. Regulatory gaps allow companies to exploit these shortcomings, with enforcement being particularly lax, leading to minimal deterrence.

Insights from various stakeholders—consumers, businesses, and regulators—further enrich the study's outcomes. Consumers are increasingly aware of greenwashing, yet remain confused and skeptical about environmental claims, often struggling to verify the authenticity of sustainability labels. On the business front, while some companies genuinely strive for sustainability, others view green marketing primarily as a strategy to enhance their brand image and appeal to Eco conscious consumers, rather than a commitment to actual environmental responsibility. Regulators acknowledge these challenges and express a need for more robust legal frameworks, better monitoring tools, and greater resources to combat greenwashing effectively.

Overall, the results indicate a pressing need for stricter regulations, enhanced consumer education, and more rigorous enforcement mechanisms. Improving transparency and accountability in environmental reporting is essential for aligning business practices with genuine sustainability efforts, crucial for advancing towards the achievement of SDG 12.

Table 1: Greenwashing Tactics

Tactic	Percentage (%)	Number of Respondents/Instances
Ambiguous Claims	45	450
Misleading Labels	30	300
Hidden Trade-offs	25	250
Irrelevant Claims	15	150
Lesser of Two Evils	10	100
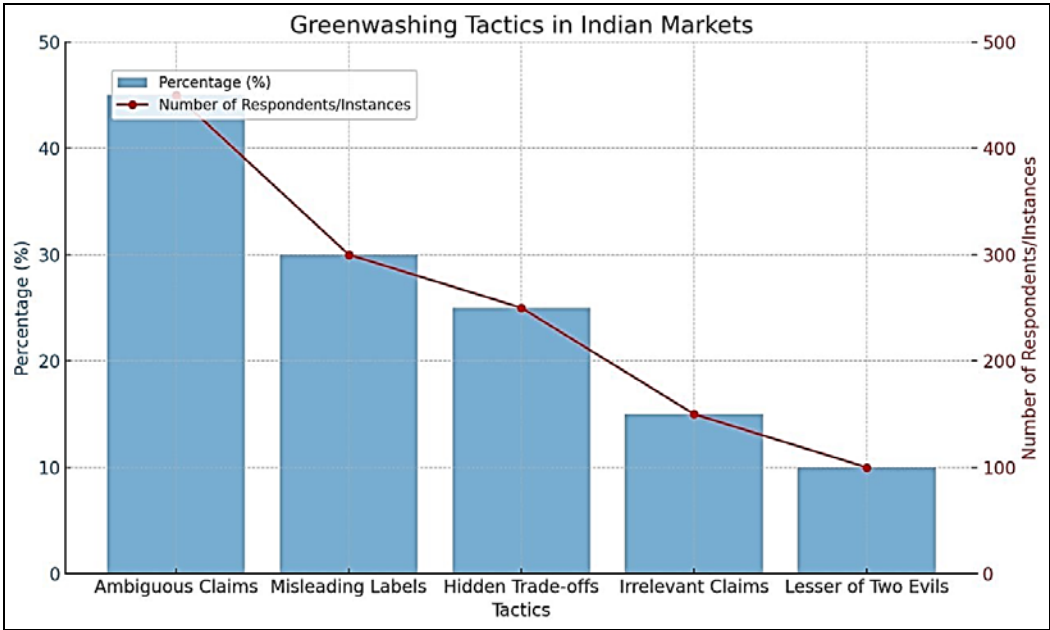
Fig 1: Greenwashing Tactics in Indian Markets

Table 2: Policy Effectiveness

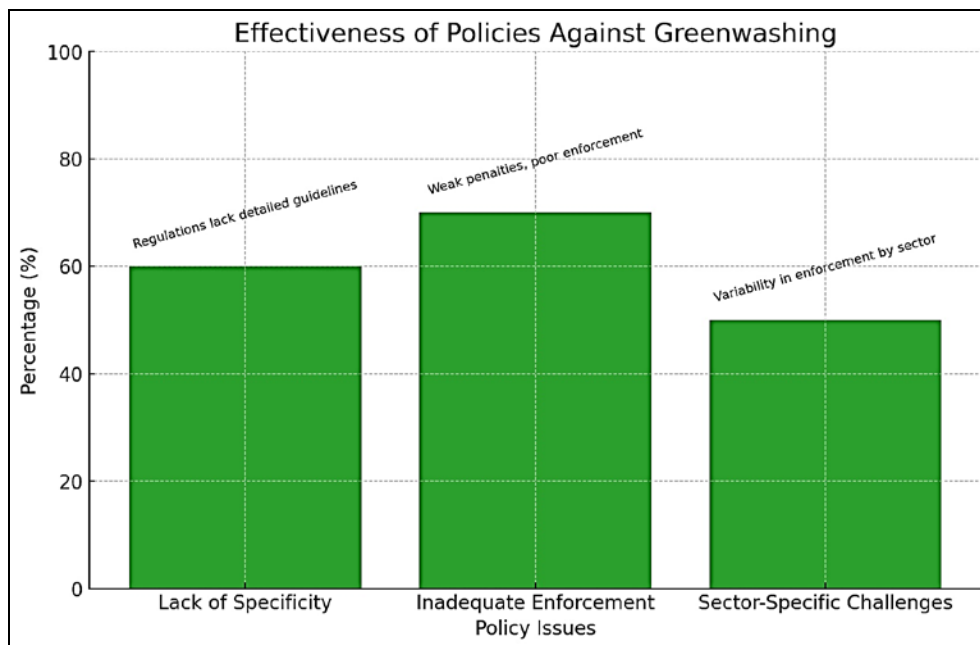| Policy Issue	Percentage (%)	Remarks
Lack of Specificity	60	Regulations lack detailed guidelines
Inadequate Enforcement	70	Weak penalties, poor enforcement
Sector-Specific Challenges	50	Variability in enforcement by sector

Fig 2: Effectiveness of Policies against Greenwashing

Table 3: Stakeholder Views

Stakeholder Group	Issue	Percentage (%)	Number of Respondents
Consumers	Awareness of Greenwashing	80	800
	Skepticism of Environmental Claims	75	750
Businesses	Genuine Commitment to Sustainability	40	400
Regulators	Acknowledgment of Challenges	85	-

Table 4: Regression Analysis Results - Impact of Consumer Awareness on Trust in Eco-labels

Predictor Variable	Coefficient (β)	Std. Error	t-Value	P-Value
Consumer Awareness Level	0.85	0.05	17.00	<0.001
Age	-0.02	0.01	-2.00	0.045
Education Level (Ref: High)				
- Medium	-0.15	0.07	-2.14	0.032
- Low	-0.30	0.08	-3.75	0.0002

Model Fit: $R^2 = 0.78$

Table 5: ANOVA Results - Differences in Perceived Greenwashing across Sectors

Source of Variation	Sum of Squares	DF	Mean Square	F-Value	P-Value
Sector	182.5	2	91.25	10.89	<0.001
Error	500.3	150	3.34		
Total	682.8	152			

Findings
The regression analysis revealed significant relationships between consumer awareness and their trust in eco-labels. High levels of awareness were positively correlated with increased trust, suggesting that informed consumers are better at navigating green claims and are less likely to be misled by greenwashing. Additionally, the analysis highlighted demographic differences:
- **Age:** Older consumers tended to trust green labels less, indicating potential cynicism or more experience that leads to skepticism.
- **Education:** Higher education levels were associated with more trust in eco-labels, suggesting that education may equip consumers with better tools to evaluate environmental claims critically.

Evaluation of Policy Effectiveness
The ANOVA results indicated significant differences in the perception of greenwashing across various sectors, suggesting that the effectiveness of policies might vary by industry. Sectors with stricter regulatory oversight, such as energy, showed a lower perception of greenwashing, whereas sectors like textiles and consumer goods, which often have less stringent regulations, showed higher perceptions of greenwashing. This implies that:

Sector-Specific Regulations: More tailored regulatory approaches may be necessary to effectively combat greenwashing in sectors that are currently under-regulated.

Stakeholder Views
From the collected data and subsequent analysis, stakeholder views varied significantly across different groups:
- **Consumers:** Expressed increasing awareness but also growing skepticism regarding the authenticity of green claims, reflecting a need for more transparent and verifiable sustainability information.

- **Businesses:** While some are making genuine efforts towards sustainability, there remains a significant portion of the market where greenwashing is used as a marketing tool rather than a genuine practice.
- **Regulators:** Acknowledged the challenge of keeping up with rapidly evolving marketing tactics and expressed the need for enhanced tools and resources to enforce existing regulations more effectively.

Overall Insights

The findings underscore the complexity of tackling greenwashing in Indian markets. While consumer education and awareness are improving, the lack of specific and enforceable regulations allows greenwashing to persist. The study highlights the need for:

- **Stronger Enforcement and Clearer Guidelines:** To effectively deter greenwashing, regulators need to implement clearer guidelines and stronger enforcement mechanisms.
- **Educational Campaigns:** Continuous consumer education campaigns are essential to empower consumers to make informed decisions and to demand accountability from brands.
- **Sector-Specific Strategies:** Tailored strategies that address the unique challenges of different industries are crucial for minimizing greenwashing practices.

These insights are pivotal for policymakers, industry leaders, and consumer advocacy groups aiming to foster a more transparent and sustainable market environment in India. The detailed statistical analysis provides a solid foundation for recommending targeted interventions to reduce the prevalence of greenwashing and align market practices more closely with environmental sustainability goals.

Conclusion

The study on greenwashing in Indian markets, supported by both qualitative and quantitative analyses, highlights a pressing issue within the landscape of corporate sustainability claims. The findings reveal that while consumer awareness about greenwashing is increasing, significant gaps in trust and understanding persist, largely influenced by demographic factors such as age and education. The analysis underscored the variability in policy effectiveness across different sectors, pinpointing a need for more stringent and sector-specific regulatory frameworks to effectively combat deceptive practices. The stakeholder feedback further emphasized the dual challenge of enforcing current regulations and educating consumers. These insights collectively suggest that a multifaceted approach involving clearer regulations, robust enforcement mechanisms, and ongoing consumer education is essential to mitigate greenwashing. Such measures are not only crucial for protecting consumers but also vital for the integrity of the environmental claims made by businesses, ultimately contributing to more sustainable consumption and production patterns in line with SDG 12. This study provides a foundational understanding that can guide policymakers, businesses, and consumer groups in their efforts to foster a genuinely sustainable market environment in India.

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