



Exploring Consumers' Emotional and Moral Reactions to Greenwashing in AI-Generated Advertising Systems

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ABSTRACT

Objective: This study examines how authoritative institutional documents portray consumer emotional and moral reactions to greenwashing in AI-generated advertising systems, addressing a critical gap as generative AI increasingly mediates sustainability communication.

Methods: A qualitative document analysis approach with thematic analysis was employed. Fifteen reports and policy documents published between 2021 and 2026 by authoritative international organizations—including the European Union, UNESCO, the OECD, and the World Economic Forum—were systematically analyzed. The coding process yielded 312 initial codes, subsequently organized into 68 basic themes, 20 organizing themes, and 5 global themes.

Results: The analyzed documents consistently frame consumer responses as a sequential cognitive–affective–behavioral process, conceptualized as the SMART framework: Skepticism, Moral Emotions, Attribution of Responsibility, Reputation Damage, and Trust Collapse and Behavioral Withdrawal. Consumer reactions are portrayed as originating from the detection of vague, exaggerated, or insufficiently substantiated environmental claims, subsequently intensified by AI disclosure cues perceived as misleading or manipulative. Brands are depicted as the primary locus of responsibility attribution, while AI is framed as a facilitating tool rather than an accountable moral actor—thereby complicating accountability structures. These dynamics are associated with diminished authenticity perceptions, purchase avoidance, negative word-of-mouth, and heightened demand for regulatory intervention.

Conclusion: This study contributes to the literature by proposing the integrated SMART framework and illuminating the critical interplay between AI disclosure, greenwashing perceptions, and consumer trust in sustainability communication, offering a foundational theoretical model for future empirical investigations.

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Introduction

Generative Artificial Intelligence (AI) has become one of the most transformative technologies of the modern era, reshaping marketing content creation from advertising visuals to highly personalized messaging and sales (He et al., 2025; Latifi & Khani Pordanjani, 2025; Sengar et al., 2025, Aghazadeh et al., 2019). Yet consumers do not always respond positively to such content. Awareness that AI authored a message can reduce perceived authenticity, increase skepticism, and weaken brand trust (Kbaier et al., 2025; Solovjov, 2025, Aghazadeh & Latifi, 2020). In parallel, growing consumer preference for environmentally friendly products has pushed organizations toward green marketing strategies (Latifi et al., 2025; Hamidizadeh et al., 2013). This shift has also created opportunities for greenwashing, where firms make misleading or exaggerated environmental claims. Such practices generate distrust and adverse behaviors such as boycotts and negative word of mouth (Free et al., 2025; de Grefte et al., 2025), and can evoke moral disgust and brand hate that damage reputation and loyalty (Cohen et al., 2025; Weitzl et al., 2026; Latifi et al., 2012). A critical practical problem emerges when AI-generated content and exaggerated green claims appear together in a single advertising system. Consumers can often detect unrealistic environmental claims (Orooje & Latifi, 2021; Hamidizadeh et al., 2012a), and in this dual context they may perceive two layers of potential deception: deception in the message content and uncertainty about the source that produced it (Yoo et al., 2025; Latifi et al., 2025). This dual-deception scenario presents a novel and underexplored managerial challenge. This study draws on a coherent set of theories. The Elaboration Likelihood Model explains how consumers process advertising claims through central and peripheral routes (Latifi et al., 2025). Moral Foundations Theory accounts for moral disgust as an intuitive response to perceived deception. Attribution Theory clarifies to whom consumers attribute exaggerated claims—the brand, the AI, or themselves (Katrandjiev et al., 2025). The Attitude Toward the Ad model and the business model links emotional reactions to evaluations of the ad and brand (Tahmasebi Aghbolaghi et al., 2026; Ghorbani & Latifi, 2023), while the Persuasion Knowledge Model explains how consumers use their knowledge of persuasion tactics to cope with marketing messages (Liu et al., 2025).

Recent empirical literature has increasingly examined the emotional and moral dimensions of consumer responses to both AI-generated advertising and greenwashing, yet these two bodies of work have largely developed in parallel. Studies on AI-generated advertising reveal that awareness of algorithmic authorship triggers affective distrust and a sense of inauthenticity, which in turn reduces attitude toward the ad and weakens brand affect - effects mediated by perceived deception and low source credibility (Isaac et al., 2025). Separately, empirical greenwashing research documents that exposure to unsubstantiated environmental claims elicits discrete negative emotions—including moral outrage, contempt, and guilt - alongside cognitive responses such as skepticism and perceived corporate hypocrisy, with downstream consequences for brand trust and

punitive behavioral intentions (Dong, 2025). Emerging work at the intersection of these domains suggests that when greenwashing claims are embedded within or delivered through AI-generated advertising formats, consumers' emotional and moral reactions are qualitatively intensified: the perceived "double deception" - algorithmic manipulation layered over environmental misrepresentation - appears to amplify moral indignation and affective withdrawal beyond levels explained by either stimulus alone (Trogia, 2025). Nevertheless, empirical studies that directly explore the nature, antecedents, and consequences of consumers' emotional and moral reactions to greenwashing specifically situated within AI-generated advertising systems remain limited, constituting the primary gap the present study addresses.

Research on greenwashing and AI-generated advertising system has evolved independently (Israfilzade, 2026; Latifi et al., 2024). Limited work examines how consumers interpret environmental claims specifically within AI-generated content; existing studies are predominantly quantitative, overlooking subjective emotional and moral experiences; and attributional processes in this dual-deception context remain largely unexamined. To address these gaps, this study adopts a qualitative thematic approach, treating the constructs identified above as "sensitizing concepts" that guide deductive coding while remaining open to emergent themes. The emergent framework posits a sequential chain: exposure to AI-generated green advertising system (stimulus) triggers greenwashing detection via central processing (ELM), activating emotional-moral responses, and culminating in adverse behavioral outcomes—moderated by causal attributions and AI disclosure cues. In doing so, the research enriches understanding of how consumers evaluate environmental claims in an increasingly AI-mediated communication environment. The guiding research question is therefore: How are consumers' emotional and moral reactions to AI-generated green advertising systems portrayed and discussed in official institutional documents, and what patterns of brand perception and behavioral outcomes emerge from this institutional discourse?

1. Greenwashing

Rising environmental awareness has transformed consumption paradigms and pushed firms toward green marketing—designing and promoting offerings that minimize environmental harm (Irfan et al., 2025). However, greenwashing—misleading, exaggerated, or baseless environmental claims—threatens this landscape (Brañes et al., 2025). It constitutes a symbolic-substantive decoupling, where firms display sustainability symbols their actual performance does not support, exploiting cognitive biases through vague claims, false labels, and selective communication (Omara et al., 2026, Hamidizadeh et al., 2012b). Greenwashing systematically erodes trust in the offending brand and in environmental claims as a whole (AlQahtani, 2025), breeding cynicism and creating unfair market competition that weakens the broader sustainability movement (Hammond, 2025). Prominent cases include Volkswagen's "Dieselgate" and H&M's "Conscious Collection".

According to the literature, detection of greenwashing is the starting point for subsequent emotional, attitudinal, and behavioral reactions (Arora et al., 2026).

2. AI-Generated Advertising Systems

Synthetic media—deepfakes, computer-generated graphics, and AI-written text—blurs the line between authentic and artificially generated communication (LeBrun, 2025). This is especially consequential in sustainability contexts, where consumers rely on visual and textual cues to evaluate environmental claims (Baek et al., 2026). The concept of perceived reality—whether consumers view content as authentic or artificial—critically shapes their evaluations (Patel et al., 2025). Because people generally believe machines cannot truly experience emotion (Sallaku et al., 2025), disclosing AI authorship in emotional advertising triggers defensive reactions and an “authenticity gap” (Baryshkov et al., 2026). Generative AI has reshaped content production at scale, spanning text, images, and video (Andriani, 2025). While it offers cost savings, enhanced storytelling, and automated ad generation, these benefits carry perceptual risks (Hemraj, 2025). AI-authored messages are often viewed as lacking a “human touch,” fueling algorithm aversion and pro-human bias (Kirk et al., 2025). Consumers trust algorithms less in subjective, emotional tasks than in objective, analytical ones (Yang et al., 2025). When consumers believe emotional communications were AI-written, positive word of mouth and loyalty decline—the “AI-authorship effect” (Kirk et al., 2025). Table 1 illustrates the key theoretical frameworks for understanding consumer responses to AI-generated green advertising systems.

Table 1. Key Theoretical Frameworks for Understanding Consumer Responses to AI-Generated Green Advertising Systems

Theory	Researcher	Summary of theory
Elaboration Likelihood Model (ELM)	Petty & Cacioppo (1986)	Persuasion occurs via central route (effortful scrutiny) or peripheral route (heuristic cues).
Moral Foundations Theory	Haidt (2001)	Moral disgust is an intuitive judgment signaling violations of care, fairness, and purity.
Attribution Theory	Weiner (1985)	Individuals attribute causes to internal (entity) or external (situational) factors
Attitude Toward the Ad (Aad) Model	Mitchell & Olson (1981)	Attitudes toward the ad mediate the relationship between ad content and brand attitudes.
Persuasion Knowledge Model (PKM)	Friestad & Wright (1994)	Consumers develop knowledge of persuasion tactics and use it to cope with marketing messages.

3. Emotional and Moral Reactions

Moral Reactions in a type of moral disgust is elicited by violations of moral norms; inauthentic or deceptive communication triggers it, and AI authorship amplifies it, mediating reduced positive word of mouth and loyalty (Kirk et al., 2025). Anger and frustration arise when brands violate expectations of honesty and transparency, evoking betrayal central to brand hate (Senan et al., 2025). Doubt in brand authenticity emerges from perceived inconsistencies between claims and

practice. Distrust toward the brand and AI is reinforced by algorithm aversion, which AI disclosure heightens (Alamdari & Mirbagheri, 2026; Esmailzadeh Ashini & Asadolahidehkordi, 2025). Emotional detachment occurs when content feels cold, impersonal, or excessively green, producing information fatigue and disengagement (Zhou & Jiang, 2025).

Table 2 illustrates the Research Background.

Table 2. Research Background

No.	Authors / Published Year	Research results
1	Sajid et al. (2024)	Greenwashing leads to brand hate and brand hypocrite, influencing consumers to avoid brands and engage in negative word-of-mouth. Findings stress the need for authentic, transparent environmental practices in brand communication.
2	Abdolipour & Babrdel (2025)	Fuzzy modeling shows that moderate green advertising costs maximize consumer attention and green behavior. Consumers trust products introduced by reliable sources; credibility and cost interact non-linearly to influence green preferences.
3	Bromideh et al. (2025)	Developed an AI-based model (Random Forest) to detect greenwashing in Persian online marketing content with 88.9% accuracy. Ambiguous environmental keywords and nature-based metaphors are the strongest predictors of greenwashing.
4	Esmailzadeh Ashini & Asadolahidehkordi (2025)	Identified 10 negative implications of AI in digital marketing: privacy violation (top), trust challenges, implementation costs, monopolization, reduced creativity, job displacement, technology dependence, reduced human interaction, discrimination, and reduced transparency.
5	Kirk & Givi (2025)	AI-authored emotional marketing communications reduce positive word of mouth and customer loyalty through reduced perceived authenticity and increased moral disgust.
6	Senan et al. (2025)	Greenwashing positively contributes to brand hate, which in turn significantly influences consumer-brand boycott and consumer-brand sabotage. Environmental concern did not moderate the greenwashing-brand hate relationship.
7	Zhou & Jiang (2025)	Moderate green in AI-generated content enhances pro-environmental perceptions and purchase intention; excessive green content triggers skepticism to greenwashing and reduces purchase intention. Perceived experience and agency moderate these relationships.
8	Alamdari & Mirbagheri (2026)	Disclosing AI identity tends to have a direct negative effect on audience attitudes through five mediating mechanisms: perceived transparency (positive), inferences of manipulative intent, reduced perceived creativity, algorithm aversion, and decreased perceived legitimacy. Audience experience with AI and product type moderate these effects.
9	Baryshkov et al. (2026)	Systematic review of 35 studies: AI disclosure activates persuasion knowledge and erodes trust; perceived authenticity is the central mediator; moral disgust operates as a parallel affective pathway. Content type, AI literacy, and disclosure framing moderate effects.
10	Kaya & Eker İçcioğlu (2026)	AI disclosure in sustainability messages negatively affects brand attitudes and purchase intentions through green scepticism (full mediation). No significant effect on attitude toward the ad was found.

Materials and Methods

This research is applied in purpose and exploratory–descriptive in nature, employing a document analysis strategy. The study aims to understand and expand knowledge about how consumers' emotional and moral reactions to AI-generated green advertising are portrayed and discussed in official documents, with particular attention to how reasonable versus exaggerated environmental claims are articulated across selected reports. Methodologically, this is a qualitative study utilizing thematic analysis (Braun & Clarke, 2006) to examine data extracted from official documents and published reports. No primary data collection (e.g., interviews or surveys) was conducted; instead, the analysis relied entirely on secondary documentary evidence. The research onion model (Saunders et al., 2009) serves as the overarching design framework, with an interpretivist paradigm and an abductive approach integrating deductive (theory-driven) codes derived from the conceptual framework and inductive (data-driven) codes emerging from the document data. The initial search was conducted using academic databases (Scopus and Google Scholar) and the official policy portals of relevant organizations (e.g., EU Law, UNESCO Digital Library, and OECD iLibrary) (Ghorbani et al., 2026). The search strategy employed a combination of keywords including "greenwashing," "AI-generated advertising," "consumer responses," "sustainable communication," "AI disclosure," and "synthetic media." The initial search yielded 67 potentially relevant documents, which were subsequently screened against predefined inclusion and exclusion criteria. Documents were included if they were published in English and directly addressed greenwashing, AI-generated content, sustainability communication, or consumer responses. Documents were excluded if they focused solely on technical AI development without consumer implications or discussed sustainability marketing without reference to AI-generated or synthetic content. Through purposive screening and a maximum variation sampling strategy designed to capture diverse institutional perspectives, 15 official documents and reports published by authoritative international organizations (including the European Union, UNESCO, the OECD, the World Economic Forum, and other reputable institutions) were selected for in-depth analysis. The adequacy of 15 documents was determined through the principle of thematic saturation: as analysis progressed, no substantively new themes emerged in the latter documents, confirming that the corpus had reached informational sufficiency. Furthermore, the maximum variation sampling strategy ensured that documents spanned multiple authoritative institutions and regulatory contexts, maximizing conceptual diversity within a bounded corpus - a methodological approach widely recognized as appropriate for policy-oriented document analysis (Braun & Clarke, 2006). The selected documents met the following criteria: (1) relevance to the research topic, (2) publication by authoritative international bodies, and (3) publication between 2021 and 2026. Adequate thematic coverage was achieved after analyzing all selected documents, as no substantially new themes emerged during the later stages of analysis, indicating that the corpus was sufficient to address the research questions. A document inventory table was also prepared to

provide transparency regarding the selected sources. Document Inventory of Selected Sources for Analysis is illustrated as Table 3.

Table 3. Document Inventory of Selected Sources for Analysis

No.	Organization	Document Title	Year	Type	Focus Area	Relevance to Study
1	European Commission (High-Level Expert Group on AI)	Ethics Guidelines for Trustworthy AI	2019	Policy Document	AI ethics & accountability	Framework for ethical AI deployment in commercial contexts
2	European Parliament & Council	Regulation (EU) 2024/1689 – Artificial Intelligence Act (EU AI Act)	2024	Regulation	AI governance & risk classification	Regulatory obligations for AI systems used in advertising
3	UNESCO	Recommendation on the Ethics of Artificial Intelligence	2021	International Standard	AI ethics, human rights, transparency	Global normative benchmark for ethical AI in communication
4	OECD	Recommendation of the Council on AI (OECD/LEGAL/0449)	2023	Policy Guideline	Responsible AI principles	Trustworthiness and transparency norms in AI systems
5	Federal Trade Commission (FTC) – USA	Guides for the Use of Environmental Marketing Claims (Green Guides, 16 CFR Part 260)	2012	Regulatory Guideline	Greenwashing & consumer protection	Defining deceptive green claims targeting consumers
6	European Commission	Proposal for a Directive on Green Claims (COM/2023/166)	2023	Legislative Proposal	Environmental claims substantiation	Legal standards for credible environmental messaging
7	Competition and Markets Authority (CMA) – UK	Green Claims Code	2021	Regulatory Guideline	Greenwashing prevention	Operational criteria for distinguishing genuine vs. misleading green claims
8	ASA / CAP – UK	Guidance on Environmental Claims in Advertising	2023	Regulatory Guidance	Misleading advertising, green claims	Standards for evaluating deceptive sustainability claims in ads
9	ISO/IEC	ISO/IEC 42001:2023 – AI Management System	2023	International Standard	AI risk management	Governance standard for responsible AI in organizational settings
10	European Commission	Regulation (EU) 2022/2065 – Digital Services Act (DSA)	2022	Regulation	Digital content accountability	Transparency obligations for algorithmic advertising systems

11	Council of Europe	Framework Convention on AI and Human Rights, Democracy and the Rule of Law (CETS No. 225)	2024	Convention	AI & human dignity	Ethical and legal boundaries for AI-generated content
12	UN Environment Programme (UNEP)	Integrity Matters: Net-Zero Commitments by Businesses, Financial Institutions, Cities and Regions	2022	Report	Corporate greenwashing	Defining and identifying misleading sustainability narratives
13	World Economic Forum (WEF)	AI Governance Alliance: Industry Briefing Papers	2023	Industry Report	AI transparency & consumer trust	Industry-level norms for trustworthy AI applications
14	European Advertising Standards Alliance (EASA)	Best Practice Recommendation on Digital Advertising and Sustainability	2023	Industry Standard	Sustainable advertising ethics	Self-regulatory framework for ethical digital advertising
15	IAB Europe	Sustainability and Responsibility in Digital Advertising	2022	Industry Report	Responsible programmatic advertising	Practical guidelines for ethical AI use in ad targeting

The analysis was guided by a conceptual framework derived from the literature, which served as the basis for deductive coding. Simultaneously, to remain open to emergent patterns, an inductive approach was employed, resulting in an abductive analytical process. Thus, existing theoretical concepts and emergent patterns from the documents were allowed to inform and refine one another throughout the analysis. The coding process initially focused on four core areas aligned with the research questions: (1) perceived greenwashing, (2) emotional reactions, (3) moral and cognitive reactions, and (4) behavioral outcomes. However, the analysis was not restricted to these categories, and any new pattern emerging from the documents was coded inductively. The analysis proceeded iteratively, moving back and forth between the data and emerging themes. All 15 documents were read multiple times to ensure familiarity with the content, after which initial codes were generated using both deductive and inductive approaches. Similar codes were clustered into potential themes and subsequently reviewed and refined through several rounds of discussion among the research team. Finally, themes were defined, named, and organized into hierarchical structures (basic, organizing, and global themes). The procedures followed the six-phase thematic analysis framework proposed by Braun and Clarke (2006), as outlined in Table 4. Throughout the process, an audit trail was maintained to document analytical decisions, coding procedures, and theme development. Coding was performed independently by two researchers using NVivo qualitative data analysis software. Initial coding outputs were compared and discussed iteratively to improve consistency and reduce individual interpretive bias. Disagreements were resolved through discussion and consensus-building procedures.

Table 4. Phases of Thematic Analysis

Phase	Step	Description
1	Familiarization with data	Reading selected documents multiple times; initial note-taking of key points
2	Generating initial codes	Identifying and labeling key concepts in the texts.
3	Generating themes	Grouping similar codes and forming themes.
4	Reviewing themes	Examining internal coherence of themes and merging or splitting them as needed.
5	Defining and naming themes	Determining main and sub-themes; writing precise definitions for each theme.
6	Writing up	Analyzing and interpreting themes in connection with research questions.

Source: Braun & Clarke (2006)

To ensure the trustworthiness of the document analysis, four criteria adapted from Lincoln and Guba (1985) were examined: (1) credibility—documents were selected from authoritative international organizations with established expertise in sustainability, AI governance, and consumer protection; (2) dependability—a clear audit trail was maintained to document coding processes, theme development, and interpretive decisions; (3) confirmability—findings were systematically derived from document content rather than researcher assumptions, supported by representative excerpts and independent coding by two researchers; and (4) transferability—multiple documents from diverse institutional sources were analyzed to capture different perspectives and enhance the broader applicability of the findings. Table 5 summarizes the trustworthiness assessment.

Table 5. Trustworthiness Assessment of the Document Analysis

Row	Criterion	Description	Activity
1	Source Credibility	Ensuring documents are from authoritative and credible sources	Selection of documents from recognized international organizations with established expertise in the topic areas
2	Dependability	Recording the steps of the thematic analysis method precisely	Maintaining an audit trail (files, codes, memos); documenting all analytical decisions and their justifications
3	Confirmability	Ensuring findings are derived from document content rather than researcher assumptions	Extensive use of direct quotes from documents in reporting; independent analysis by two researchers with disagreement resolution
4	Authenticity	Ensuring comprehensive coverage of the phenomenon from multiple perspectives	Analysis of diverse documents from multiple institutional sources to capture different perspectives and framings

Source: Research Findings, 2026

Results

In analyzing 15 official documents and reports, 312 initial codes were extracted. After several rounds of review and refinement, these codes were organized into 5 global themes, 20 organizing themes, and 68 basic themes. The distribution of the codes showed that consumers' reactions to AI-generated green advertising are not limited to cognitive detection of greenwashing, but extend across emotional, moral, brand-related, and behavioral domains. The aim of this section is to

answer the main research question: “What are consumers’ emotional and ethical reactions to AI-generated green advertising, and how do these reactions influence brand perception and purchase intention?” Table 6 shows the final result of the code categorization. It should be noted that a number of codes could be placed in more than one theme; for example, the code “Perceived automation of greenwashing tactics through AI tools” was related both to the basic theme “Perceived Automation of Deception” under GT1: Greenwashing Detection and Cognitive Skepticism, and to the basic theme “AI Authorship Widens Authenticity Gap” under GT4: Impact on Brand Perception and Trust. Similarly, the code “AI-generated environmental claims trigger heightened scrutiny” appeared in both “AI Label Increases Scrutiny” under GT1: Greenwashing Detection and Cognitive Skepticism and “Persuasion Knowledge Activation” under GT4: Impact on Brand Perception and Trust. Ultimately, the codes were categorized based on their most dominant meaning in the document data.

Table 6. Thematic Structure of Findings

Global Theme	Organizing Theme	Basic Theme	Initial Code Example	Source
GT1: Skepticism Through Greenwashing Detection and Cognitive Evaluation	OT1.1 Implausibility of Environmental Claims	Recognition of Vague Language	“Generic terms such as ‘eco-friendly’ and ‘natural’ are used without clear, verifiable definitions.”	EU Green Claims Directive Proposal (2023)
		Disbelief in Absolute Claims	“Absolute claims such as ‘climate neutral’ or ‘zero impact’ are frequently unsubstantiated and misleading.”	Directive (EU) 2024/825 – Empowering Consumers for the Green Transition
		Contrast with Specific Claims	“Credible claims rely on specific, measurable, and substantiated metrics rather than broad statements.”	ISO 14021 – Environmental Labels and Declarations
		Prior Knowledge as Detection Tool	“Consumer awareness of greenwashing tactics has risen, enabling critical evaluation of green claims.”	GlobeScan Healthy & Sustainable Living Report (2024)
	OT1.2 Symbolic–Substantive Decoupling	Disconnect Between Imagery and Reality	“Sustainability communication often outpaces actual environmental performance.”	Changing Markets Foundation – Greenwashing Report
		Suspicion of Performance–Claim Gap	“A persistent gap exists between disclosed climate commitments and verified emission reductions.”	CDP Global Climate Disclosure Report (2024)

GT2: Moral Emotions Triggered by Perceived Deception	OT1.3 AI as an Amplifier of Skepticism	Awareness of Selective Communication	“Companies selectively highlight favorable attributes while omitting material impacts.”	GRI Sustainability Reporting Standards
		AI Label Increases Scrutiny	“Disclosure of AI-generated content prompts heightened scrutiny of message credibility.”	WEF AI Governance Alliance Briefing (2024)
		Perceived Automation of Deception	“Generative AI can scale the production of misleading or synthetic persuasive content.”	UNESCO Recommendation on the Ethics of AI (2021)
		Reduced Credibility of Environmental Narrative	“Synthetic media reduces perceived authenticity and trust in communication.”	Ipsos AI Monitor (2024)
		Immediate Contrast Recognition	“Exposure to moderate versus exaggerated claims sharpens detection of overstatement.”	UK CMA Green Claims Code (2021)
	OT1.4 Comparison-Driven Detection	Benchmark Use from Other Brands	“Consumers benchmark claims against category norms and competitor disclosures.”	Kantar Sustainability Sector Index (2024)
		Disgust at Exploiting Environmental Values	“Exploiting environmental concern for commercial gain is widely condemned as deceptive.”	BEUC Greenwashing Report
	OT2.1 Moral Disgust	Disgust Amplified by AI Authorship	“Absence of human authorship intensifies negative moral evaluation of deceptive content.”	UNESCO Recommendation on the Ethics of AI (2021)
		Framing as Ethical Violation	“Environmental deception is framed as a breach of shared ethical standards.”	OECD Guidelines for Multinational Enterprises (2023)
		Strong Negative Affective Response	“Perceived corporate dishonesty triggers strong negative consumer sentiment.”	Edelman Trust Barometer (2025)
	OT2.2 Anger and Betrayal	Anger at Brand Dishonesty	“Perceived dishonesty in green claims drives strong negative sentiment.”	NielsenIQ Sustainability Report
		Betrayal of Environmental Expectation	“Unmet sustainability expectations generate a sense of betrayal among value-driven consumers.”	GlobeScan Healthy & Sustainable Living Report (2024)
		Frustration at Repetition of Patterns	“The recurrence of misleading claims across	Changing Markets Foundation – Greenwashing Report

GT3: Attribution of Responsibility and Ethical Judgment	OT2.3 Emotional Detachment		brands fuels frustration and fatigue.”	
		Anger as Motivation for Action	“Negative emotional reactions translate into willingness to penalize brands.”	Edelman Trust Barometer (2025)
		Information Fatigue	“Overexposure to sustainability messaging produces consumer fatigue and disengagement.”	Euromonitor Global Consumer Trends (2025)
		Disengagement from Exaggerated Imagery	“Exaggerated or unrealistic visuals diminish message engagement.”	Kantar Sustainability Sector Index (2024)
		Cold Perception of AI Content	“AI-generated content is perceived as lacking emotional authenticity.”	Ipsos AI Monitor (2024)
		Withdrawal of Emotional Investment	“Eroded trust reduces emotional attachment to brands.”	Edelman Trust Barometer (2025)
	OT2.4 Anxiety and Uncertainty	Uncertainty About What Is Real	“Synthetic media blurs the line between authentic and fabricated content.”	WEF Global Risks Report (2025)
		Anxiety About Inability to Verify	“Consumers face difficulty independently verifying environmental claims.”	EU Green Claims Directive Proposal (2023)
		Concern About AI-Mediated Reality	“Proliferation of AI-generated content raises concerns about misinformation.”	WEF Global Risks Report (2025)
	OT3.1 Attribution of Responsibility	Brand as Primary Moral Agent	“Companies bear primary responsibility for the accuracy of their environmental claims.”	OECD Guidelines for Multinational Enterprises (2023)
		Ambiguity of AI Accountability	“Accountability for AI-generated outputs remains legally and ethically ambiguous.”	UNESCO Recommendation on the Ethics of AI (2021)
		Regulatory Permissiveness Blamed	“Weak enforcement has allowed unsubstantiated green claims to proliferate.”	EU Green Claims Directive Proposal (2023)
		Regret Over Previous Trust	“Consumers express regret over prior trust in misleading sustainable brands.”	GlobeScan Healthy & Sustainable Living Report (2024)
		OT3.2 Perceived Ethical Violations	Dishonesty as a Core Violation	“Misleading consumers constitutes an unfair commercial practice.”

GT4: Reputation Damage and Brand Perception Erosion		Exploitation of Environmental Consciousness	“Leveraging environmental concern through false claims abuses consumer trust.”	BEUC Greenwashing Report
		Fairness Violation Toward Honest Competitors	“Greenwashing distorts competition and disadvantages genuinely sustainable firms.”	EU Green Claims Directive Proposal (2023)
		Harm to Collective Environmental Progress	“Misleading claims undermine the credibility of legitimate climate action.”	UNEP Emissions Gap Report (2024)
	OT3.3 Moral Judgment of AI Use	AI Use Perceived as Ethically Inappropriate	“Use of AI to generate persuasive content raises concerns about manipulation.”	UNESCO Recommendation on the Ethics of AI (2021)
		Lack of Human Intentionality Judged Negatively	“Absence of human accountability complicates ethical evaluation of AI systems.”	OECD AI Principles (updated 2024)
		AI Disclosure Insufficient as Mitigation	“Labeling alone does not eliminate the risk of deception from synthetic content.”	WEF AI Governance Alliance Briefing (2024)
	OT3.4 Social Norm Violation	Violation of Sustainability Social Contract	“Sustainability has become a normative expectation of corporate conduct.”	OECD Guidelines for Multinational Enterprises (2023)
		Perceived Contempt for Consumer Intelligence	“Misleading claims signal disregard for consumer rights and intelligence.”	UK CMA Green Claims Code (2021)
		Normalization of Deception as Social Risk	“Widespread greenwashing risks normalizing deceptive communication.”	Changing Markets Foundation – Greenwashing Report
	OT4.1 Erosion of Brand Authenticity	Doubt About Genuine Commitment	“Inconsistent claims erode perceptions of authentic environmental commitment.”	Kantar Sustainability Sector Index (2024)
		AI Authorship Widens Authenticity Gap	“AI-generated messaging is perceived as less authentic than human-created content.”	Ipsos AI Monitor (2024)
		Loss of Brand Personality	“Automated content can dilute distinctive brand identity and voice.”	Euromonitor Global Consumer Trends (2025)
	OT4.2 Collapse of Brand Trust	Generalization of Distrust to All Claims	“A single instance of greenwashing can undermine trust in all brand communications.”	Edelman Trust Barometer (2025)

GT5: Trust Collapse and Behavioral Withdrawal	OT4.3 Negative Brand Image Formation	Algorithm Aversion Reinforcing Distrust	"Skepticism toward AI compounds distrust in AI-mediated claims."	Ipsos AI Monitor (2024)
		Distrust as a Stable Attitude	"Lost trust is difficult and slow to rebuild."	Edelman Trust Barometer (2025)
		Distrust Spreading to Brand Category	"Greenwashing erodes trust across entire product categories and sectors."	NielsenIQ Sustainability Report
		Brand Labeled as Opportunistic	"Brands perceived as exploiting sustainability trends acquire opportunistic reputations."	GlobeScan Healthy & Sustainable Living Report (2024)
		AI Use Coded as Insincerity	"Reliance on AI content may be read as cost-cutting at the expense of sincerity."	Euromonitor Global Consumer Trends (2025)
	OT4.4 Attitude Toward the Ad Deterioration	Association with Reputational Risk	"Greenwashing associates brands with reputational and regulatory risk."	WEF Global Risks Report (2025)
		Ad Evaluated as Manipulative	"Exaggerated green appeals are perceived as manipulative persuasion attempts."	UK CMA Green Claims Code (2021)
		Persuasion Knowledge Activation	"Consumers increasingly recognize and resist persuasion tactics in green advertising."	GlobeScan Healthy & Sustainable Living Report (2024)
		Negative Affect Transfer to Brand	"Negative ad evaluations transfer to overall brand attitudes."	Kantar Sustainability Sector Index (2024)
		Explicit Refusal to Purchase	"Consumers report willingness to avoid brands engaged in greenwashing."	NielsenIQ Sustainability Report
	OT5.1 Purchase Avoidance	Search for Verified Alternatives	"Demand grows for credibly certified sustainable products."	GlobeScan Healthy & Sustainable Living Report (2024)
		Willingness to Pay More for Honest Brands	"A segment of consumers pays a premium for genuinely sustainable products."	NielsenIQ Sustainability Report
		Long-Term Boycott Intention	"Perceived deception can trigger sustained brand boycotts."	Edelman Trust Barometer (2025)
	OT5.2 Negative Word of Mouth	Intention to Warn Others	"Dissatisfied consumers share negative experiences to warn others."	Edelman Trust Barometer (2025)

OT5.3 Active Information Seeking	Social Media Sharing of Criticism	“Social media amplifies consumer criticism of misleading claims.”	Euromonitor Global Consumer Trends (2025)
	Community Mobilization	“Online communities coordinate scrutiny of corporate greenwashing.”	Changing Markets Foundation – Greenwashing Report
	Independent Research Triggered	“Skeptical consumers seek independent verification of green claims.”	EU Green Claims Directive Proposal (2023)
	Reliance on Certification Labels	“Third-party certification and ecolabels guide trustworthy choices.”	ISO 14021 – Environmental Labels and Declarations
	Increased AI Literacy Motivation	“Media and AI literacy are essential to navigate synthetic content.”	UNESCO Recommendation on the Ethics of AI (2021)
OT5.4 Regulatory and Advocacy Expectations	Demand for Stricter Advertising Regulation	“Stronger rules are needed to substantiate and enforce green claims.”	EU Green Claims Directive Proposal (2023)
	Support for Mandatory AI Disclosure	“Transparency requirements for AI-generated content are increasingly mandated.”	EU AI Act – Regulation (EU) 2024/1689
	Expectation of Corporate Accountability	“Companies are expected to be held accountable for environmental performance claims.”	OECD Guidelines for Multinational Enterprises (2023)
	Call for Independent Verification Bodies	“Independent verification strengthens the credibility of environmental claims.”	Directive (EU) 2024/825

Discussion

As shown in Table 6 above, the thematic structure reveals that cognitive detection of greenwashing (GT1) acts as the entry point to consumer response. Once implausible claims are identified -particularly when amplified by AI labeling—emotional reactions emerge (GT2), dominated by moral disgust, anger, and detachment. These affective responses activate moral and ethical judgment processes (GT3), in which consumers attribute responsibility primarily to the brand, evaluate the ethical appropriateness of AI use in sustainability communication, and perceive violations of emerging social norms around corporate environmental accountability. The erosion of authenticity and trust (GT4) follows as a direct consequence, with AI authorship further widening the authenticity gap and triggering algorithm aversion. Finally, these attitudinal shifts translate into behavioral intentions (GT5), including purchase avoidance, negative word of mouth, active information seeking, and demand for regulatory intervention. Taken together, the findings

suggest that consumers' reactions to AI-generated green advertising can be represented as a sequential cognitive-affective-behavioral response framework, illustrated in Figure 1.

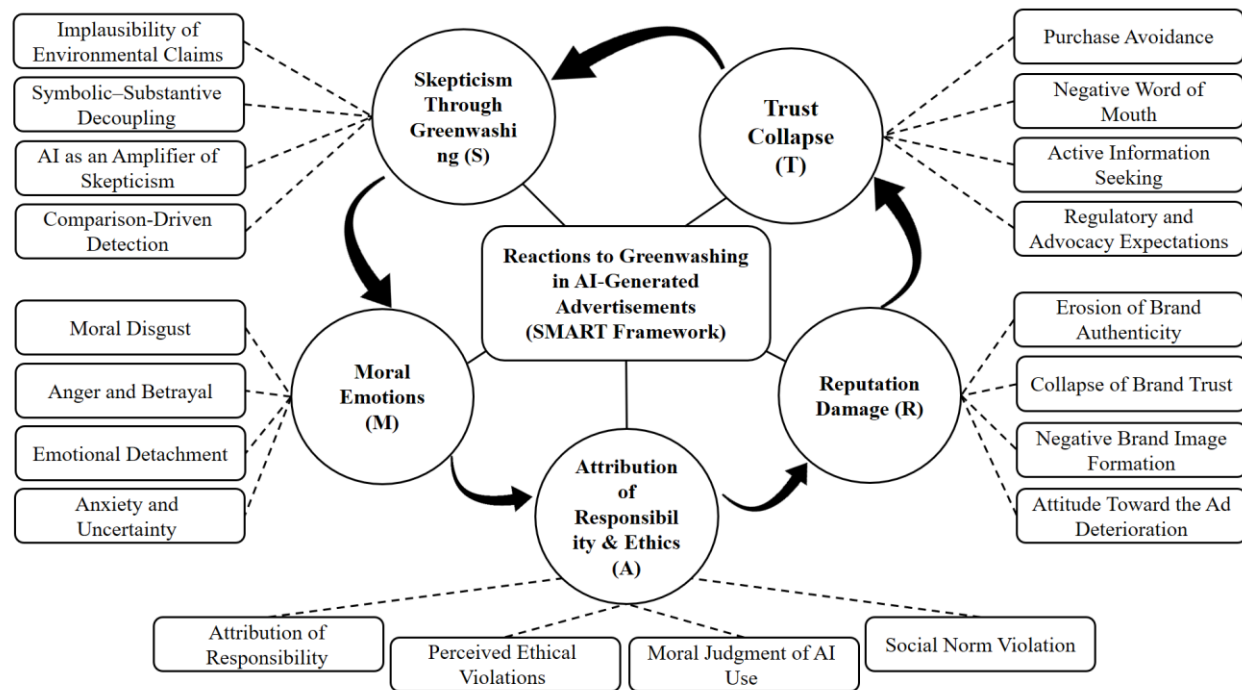


Figure 1. Reactions to Greenwashing in AI-Generated Advertising Systems (SMART Framework)

Conclusion

This study analyzed 15 official documents from the European Union, UNESCO, the OECD, and the World Economic Forum to examine how these institutions portray consumers' emotional and moral reactions to greenwashing in AI-generated advertising systems. Thematic analysis yielded 312 initial codes, organized into 5 global themes, 20 organizing themes, and 68 basic themes. The findings indicate that the analyzed documents consistently frame consumer responses as a sequential cognitive-affective-behavioral process, conceptualized in the SMART framework (Skepticism, Moral Emotions, Attribution of Responsibility, Reputation Damage, and Trust Collapse and Behavioral Withdrawal). Unlike prior studies that have examined greenwashing detection and AI disclosure effects separately, the SMART framework integrates these elements into a unified process model. First, it positions cognitive detection of greenwashing as the entry point of the response process. Second, it highlights attribution of responsibility as a distinct intervening stage linking emotional reactions to downstream outcomes. Third, it suggests that the combination of AI authorship and exaggerated environmental claims may create a dual-deception context that intensifies consumer scrutiny. Taken together, these elements provide an integrated conceptual account of how institutional discourse frames consumer reactions to AI-generated green advertising systems.

The five components of the SMART framework are not theoretically independent; rather, they represent an integrated cascade in which distinct theoretical mechanisms interact and amplify one another across sequential stages. At the entry point, the Persuasion Knowledge Model (Friestad & Wright, 1994) and Cognitive Appraisal Theory (Lazarus, 1991) jointly explain how consumers activate skepticism (S) upon detecting incongruence between AI-generated environmental claims and prior knowledge, thereby initiating a critical evaluation process. This cognitive activation, in turn, serves as the triggering condition for Moral Foundations Theory (Haidt, 2001) and Affective Events Theory (Weiss & Cropanzano, 1996), which together account for the emergence of moral emotions such as moral outrage and disgust (M), insofar as detected deception is appraised as a violation of fairness and care norms. The transition from emotional response to ethical judgment (A) is governed by Weiner's Attribution Theory (1985), which explains how consumers assign causal responsibility to the brand, the AI system, or both — a process moderated by the perceived intentionality of the deceptive act. These attribution judgments then interface with Signaling Theory (Spence, 1973) and Corporate Reputation Theory (Fombrun, 1996) to explain how a single deceptive signal degrades the cumulative informational value of the brand's communication portfolio, resulting in reputation erosion. Finally, McKnight and Chervany's Trust Theory (2001) and the Theory of Planned Behavior (Ajzen, 1991) converge to explain how accumulated cognitive, affective, and reputational losses culminate in trust collapse and behavioral withdrawal (T). Critically, the dual-deception context - wherein AI authorship compounds the perceived manipulation of green claims - functions as a cross-cutting moderator that intensifies the magnitude of each theoretical mechanism along the entire SMART chain, rendering the framework distinctively applicable to AI-mediated advertising environments.

A comparison of the documentary findings with prior empirical research reveals both convergences and novel extensions. Consistent with studies emphasizing the central role of perceived authenticity erosion and moral disgust in consumer responses to AI-generated content, the analyzed documents similarly portray these mechanisms as the primary pathways through which AI-generated green advertising system negatively affects consumer evaluations (Kirk & Givi, 2025; Baryshkov et al., 2026). Likewise, in line with research identifying AI disclosure as a skepticism amplifier, the documents consistently highlight that awareness of AI involvement in sustainability messaging intensifies consumer skepticism, particularly when claims are perceived as exaggerated (Kaya & Eker İşçioğlu, 2026). However, our findings extend the existing literature in three significant ways. First, while prior studies have treated AI disclosure and greenwashing as separate phenomena, the SMART framework reveals that their combination creates a dual-deception context that may amplify consumer scrutiny beyond what either factor alone would produce (Zhou & Jiang, 2025). Second, whereas existing research has primarily focused on direct effects of AI disclosure on trust and purchase intention, our analysis identifies attribution of responsibility as a critical intervening mechanism—consumers do not simply distrust AI-generated

green ads; they actively assign blame to the brand while viewing AI as a passive tool devoid of accountability (Alamdari & Mirbagheri, 2026; Esmaeilzadeh Ashini & Asadolahidehkordi, 2025). Third, unlike studies that have measured isolated outcomes such as purchase intention or word-of-mouth, the documentary evidence portrays consumer responses as a dynamic, multi-stage process rather than a set of discrete reactions (Sajid et al., 2024; Senan et al., 2025). This processual view aligns with the theoretical predictions of the Elaboration Likelihood Model (Petty & Cacioppo, 1986) and the Persuasion Knowledge Model (Friestad & Wright, 1994), while extending them to the novel context of AI-mediated green advertising system. In doing so, the SMART framework not only synthesizes existing empirical findings but also offers a more nuanced understanding of how and why consumers react to the convergence of AI technology and environmental marketing claims.

Based on the SMART framework and the documentary evidence, the following recommendations are organized into three priority tiers addressing distinct stakeholder responsibilities and implementation timescales.

- **Tier 1 - Immediate Actions for Brand Managers**

1. Replace vague environmental claims with specific, measurable, and verifiable statements. Rather than relying on generic expressions such as “eco-friendly,” “green,” or “completely sustainable,” organizations should communicate concrete environmental achievements supported by quantifiable evidence and publicly accessible documentation. Providing clear metrics and transparent substantiation can reduce consumer skepticism at the initial stage of the SMART framework and decrease the likelihood that sustainability claims are perceived as greenwashing.
2. Strengthen the credibility of sustainability communication through independent verification mechanisms. Environmental claims should be supported by reputable third-party certifications, external audits, and easily accessible verification evidence. Integrating certification details, audit reports, or verification links into sustainability communications can enhance perceived authenticity, reinforce consumer trust, and help prevent the progression from skepticism to negative behavioral responses.
3. Implement AI disclosure as a transparency mechanism rather than a promotional feature. The findings suggest that AI involvement becomes problematic primarily when environmental claims appear exaggerated or insufficiently substantiated. Organizations should therefore accompany AI-generated sustainability content with robust supporting evidence, clear human oversight procedures, and transparent review processes. Where appropriate, AI-assisted content may be presented as reviewed by human experts, provided that full transparency regarding AI involvement is maintained.

4. Establish formal internal review processes for sustainability-related advertising content before publication. Sustainability claims generated or supported by AI systems should undergo evaluation by multidisciplinary teams involving marketing managers, sustainability specialists, and legal experts. Such review mechanisms can ensure factual accuracy, regulatory compliance, and consistency between advertised environmental commitments and actual organizational practices, thereby reducing reputational risk.

- **Tier 2 - Medium-Term Policy Interventions**

5. Strengthen substantiation requirements and enforcement mechanisms for environmental advertising claims. Regulatory frameworks should require organizations to maintain verifiable evidence supporting sustainability claims and make such evidence available for inspection when necessary. Stronger monitoring systems, periodic audits, and meaningful penalties for misleading environmental communication can discourage greenwashing practices and improve overall market transparency.
6. Develop accessible public verification platforms for environmental claims. Governments, industry associations, and certification bodies should collaborate to establish public databases containing independently verified sustainability information, enabling consumers to evaluate the credibility of environmental claims more effectively. Such mechanisms can reduce information asymmetry, strengthen consumer confidence, and facilitate informed decision-making in markets increasingly influenced by AI-generated communication.

- **Tier 3 - Long-Term Industry and Technology Development**

7. Incorporate safeguards into generative AI systems that prevent the generation of exaggerated or unsupported environmental claims. Generative AI systems deployed in marketing communication should include fact-checking mechanisms, evidence-validation protocols, and explainability features that provide transparency regarding the basis of sustainability-related statements. Embedding such safeguards at the architectural level can reduce the risk of AI-enabled greenwashing and contribute to the development of more trustworthy and responsible advertising ecosystems.

- **Limitations**

This study has five key limitations. First, reliance on secondary documentary sources excludes direct consumer voices; future research should incorporate qualitative methods such as interviews or focus groups. Second, the selected institutional documents - including EU, OECD, UNESCO, and WEF sources – may carry inherent regulatory and ideological biases that favor governance-based solutions over structural interventions, potentially shaping the SMART framework's assumptions. Third, the geographic scope is limited to Western regulatory contexts, constraining generalizability to emerging markets and non-Western cultural settings where AI governance, environmental attitudes, and consumer trust operate differently. Fourth, the 2021–2026 timeframe

may not capture rapidly evolving consumer attitudes toward AI normalization. Fifth, interpretive thematic analysis introduces subjectivity despite mitigation through independent coding.

- **Future Directions**

Future research should test five hypotheses derived from these gaps: (H1) AI-generated content amplifies greenwashing skepticism beyond human-authored equivalents; (H2) AI awareness moderates moral outrage; (H3) intentionality attribution mediates trust erosion; (H4) SMART pathways vary across cultural dimensions; (H5) repeated AI exposure normalizes greenwashing responses over time.

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Conflict of interest

The authors declare no conflict of interest.

Ethical considerations

The authors avoided data fabrication, falsification, and plagiarism, and any form of misconduct.

Data availability statement

Not applicable

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