

Do Consumers Believe Green Claims? A Scopus-Based Bibliometric Review of Corporate Environmental Claims, Psychological Drivers and Green Scepticism

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Abstract

Purpose – This study maps research on whether consumers believe corporate environmental claims, linking claim characteristics, psychological drivers, green scepticism, and transparency and authenticity.

Design/methodology/approach – Scopus records (n = 1,621) were retrieved on 2 October 2026. After excluding 26 pre-2000 records, 1,595 English-language articles and reviews published between 2000 and 2025 were analysed in Bibliometrix/Biblioshiny through performance analysis, co-citation, keyword co-occurrence, thematic mapping, trend topics and bibliographic coupling, supplemented by dictionary-based content tagging.

Findings – Output grew by 15.97% a year, and 72.9% of documents appeared in 2020–2025. Sustainability (Switzerland) is the most productive source and the Journal of Business Ethics the most cited. Co-citation reveals three foundations: measurement and attitude–behaviour research, advertising scepticism and greenwashing, and sustainable consumption and eco-labels. Of four research fronts, greenwashing–green scepticism–purchase intention is the most central and influential. Trust appears in 42.0% of documents; the shares addressing transparency and authenticity doubled after 2020, yet both remain detached from the scepticism core. Surveys and structural equation modelling dominate, while persuasion-knowledge and attribution theories are rarely used.

Research limitations/implications – The study relies on one database and English-language journal records. A TCCM agenda calls for experimental, longitudinal and cross-market designs.

Practical implications – Firms should replace vague claims with specific, verifiable ones backed by third-party evidence; regulators can target the claim features that trigger distrust.

Originality/value – This is the first Scopus-based bibliometric review to integrate claim characteristics, psychological drivers, green scepticism, and transparency and authenticity in one map of the field.

Keywords: green advertising; environmental claims; green scepticism; greenwashing; consumer trust; transparency; authenticity; bibliometric analysis

1. Introduction

Environmental claims have become a routine part of corporate communication, yet their persuasive value depends on a fragile condition: consumers must believe them. Early content analyses showed that many environmental advertising claims were vague, omitted key information or were potentially misleading (Carlson et al., 1993; Polonsky et al., 1998). Three decades later, the same problem has scaled up. Firms face market and regulatory pressure to communicate sustainability, while many lack the environmental performance to substantiate what they say (Delmas & Burbano, 2011; Testa et al., 2018). The resulting gap between "green talk" and "green walk" sits at the centre of consumer distrust (Nyilasy et al., 2014; Orazi & Chan, 2020).

Consumer research has responded with a large and fast-growing body of work. Studies show that greenwashing erodes green trust through consumer confusion and perceived risk (Chen & Chang, 2013). Green scepticism mediates the effect of greenwashing on purchase intention (Nguyen et al., 2019) and weakens green purchase behaviour (Goh & Balaji, 2016). Scepticism itself has identifiable causes and consequences (Leonidou & Skarmas, 2015), and it coexists with, rather than opposes, green consumerism (Matthes & Wonneberger, 2014). Experimental work further shows that executional cues such as nature imagery can create green impressions

without substantive claims (Parguel et al., 2015; Schmuck et al., 2018). More recently, attention has shifted towards what makes claims credible: specificity, comprehension, information transparency and perceived authenticity (Iovino et al., 2024; Olk, 2021; Polonsky et al., 2025; Wu et al., 2020).

Regulators have moved in the same direction. The European Union's Directive (EU) 2024/825 restricts generic environmental claims that cannot be substantiated (European Parliament & Council of the European Union, 2024). India's Central Consumer Protection Authority (2024) issued guidelines on greenwashing and misleading environmental claims. These rules make the consumer-side question practical: which claim features, consumer characteristics and credibility cues determine whether a green claim is believed?

Prior reviews only partly answer this question. Agarwal and Kumar (2020) reviewed three decades of green advertising research, and Ktisti et al. (2022) synthesised green advertising on social media. Sharma (2021) reviewed green marketing and purchase behaviour, and Persakis et al. (2025) mapped greenwashing in marketing through a combined systematic and bibliometric review. Each review covers part of the territory. None maps, within one dataset, how corporate claim characteristics, the psychological drivers of the receiver, green scepticism, and transparency and authenticity connect and evolve as a field. Without that integrated view, it is difficult to see which links are well established, which are fragmented and where the next wave of research should go.

This study addresses that gap through a Scopus-based bibliometric review of 1,595 documents published between 2000 and 2025. Bibliometric analysis suits this purpose because it uses citation and keyword relationships to reveal a field's performance, intellectual structure and thematic evolution at a scale that manual reviews cannot match (Donthu et al., 2021; Zupic & Čater, 2015).

1.1 Research objectives and questions

The study pursues five objectives, each tied to a research question (RQ) and an analytical technique (Table 1).

Table 1. Research objectives, questions and analytical techniques

Objective	Research question	Analytical technique
RO1: Assess the growth, productivity and impact of research on consumer belief in green claims	RQ1: How has the field grown, and which sources, authors, institutions, countries and documents drive it?	Performance analysis
RO2: Identify the field's intellectual foundations	RQ2: Which works and research streams form the knowledge base of the field?	Co-citation analysis
RO3: Map the conceptual structure and evolution of claims, psychological drivers and green scepticism	RQ3: What themes structure the field, and how have they evolved?	Keyword co-occurrence, thematic map, trend topics
RO4: Examine how transparency and authenticity are positioned as credibility mechanisms	RQ4: What are the current research fronts, and where do transparency and authenticity sit within them?	Bibliographic coupling, content tagging
RO5: Propose an agenda for future research and practice	RQ5: Which theories, contexts, characteristics and methods should future research prioritise?	TCCM synthesis

Source: Authors' synthesis.

1.2 Contributions and structure

The study makes three contributions. First, it provides an updated performance profile of the field through 2025, a year that alone accounts for a quarter of all documents. Second, it shows that the field's knowledge base rests on three distinct foundations, and that the greenwashing–scepticism front has become its most central and influential area. Third, it identifies transparency and authenticity as fast-rising but still loosely integrated constructs, and it turns these findings into a TCCM research agenda and practical guidance for marketers and regulators.

The paper proceeds as follows. Section 2 sets out the conceptual background. Section 3 explains the methodology. Sections 4 and 5 report the performance and science-mapping results. Section 6 discusses the findings against the research questions, Section 7 presents the research agenda, Section 8 outlines implications, Section 9 notes limitations, and Section 10 concludes.

2. Conceptual background

Whether consumers believe a green claim is a credibility judgement. That judgement depends on what the firm says, who receives the message, how sceptically it is processed, and which cues signal that the claim is genuine. This section outlines each element and the framework that organises the review.

2.1 Corporate environmental claims

Environmental claims range from substantive statements about a product's attributes or a firm's processes to image-oriented and executional appeals. Carlson et al. (1993) classified advertising claims by type and found many to be misleading or deceptive. Later work refined these distinctions. Green claims framed around product gains can change brand attitude (Olsen et al., 2014). Nature-evoking imagery can mislead even without an explicit claim, a pattern termed executional greenwashing (Parguel et al., 2015). Claim specificity matters when claims are later disconfirmed, because specific claims raise expectations that firms can be held to (Orazi & Chan, 2020). Consumers also struggle to understand what many claims mean (Iovino et al., 2024), and meaningless claims can shape perceptions alongside substantive ones (Polonsky et al., 2025). Social media has multiplied these claims, and content analyses now track the slide from green advertising to greenwashing across global brands (Kwon et al., 2024).

2.2 Psychological drivers of belief

Consumer responses to claims are shaped by stable dispositions and situational states. The theory of planned behaviour remains the dominant lens for linking attitudes, norms and perceived control to green intentions (Ajzen, 1991). Environmental knowledge and eco-label knowledge improve understanding and trust (Taufique et al., 2017; Thøgersen, 2000). Emotions also matter: guilt and pride convince consumers that sustainable choices make a difference (Antonetti & Maklan, 2014), and ambivalence about going green alters how green advertising is processed (Chang, 2011). Involvement and affect moderate how greenwashed messages are evaluated (Schmuck et al., 2018). On the negative side, greenwashing raises consumer confusion and perceived risk, which in turn reduce green trust (Chen & Chang, 2013).

2.3 Green scepticism

Scepticism toward advertising is a general tendency to disbelieve its informational claims (Obermiller & Spangenberg, 1998). Mohr et al. (1998) developed a dedicated measure of scepticism toward environmental claims. The persuasion knowledge model explains why: consumers who recognise persuasive intent become more critical of the message (Friestad & Wright, 1994). Green scepticism has identifiable antecedents and consequences (Leonidou & Skarmeas, 2015), lowers green purchase behaviour (Goh & Balaji, 2016) and mediates the effect of greenwashing on purchase intention (Nguyen et al., 2019). It is not confined to non-green consumers, since green consumers can be sceptical too (Matthes & Wonneberger, 2014). Gender and the motives consumers attribute to firms shape these responses (Yu, 2020), and scepticism carries over to social media advertising (Luo et al., 2020).

2.4 Transparency and authenticity as credibility cues

Transparency and authenticity are increasingly treated as the remedies for scepticism. Information transparency changes how greenwashing affects firms and consumers (Wu et al., 2020), and transparency shapes consumer responses to upcycled food products (Peschel & Aschemann-Witzel, 2020). Third-party certification and label credibility strengthen eco-label use and brand evaluations (Darnall et al., 2018; Kumar et al., 2021). Perceived authenticity works through a related route. Brand authenticity mediates the effects of green appeals on social media (Pittman et al., 2022), self-congruence raises the perceived authenticity of green claims and lowers perceived greenwashing (Olk, 2021), and authentic green communication supports purchase decisions (Fang, 2024).

2.5 Organising framework

Figure 1 integrates these elements. Claim characteristics act as stimuli. Psychological drivers shape how consumers process them. Green scepticism, trust and perceived greenwashing form the credibility judgement, which drives attitudinal and behavioural outcomes. Transparency and authenticity cues moderate the path from claim to belief. The framework guides the interpretation of the bibliometric results and the research agenda in Section 7.

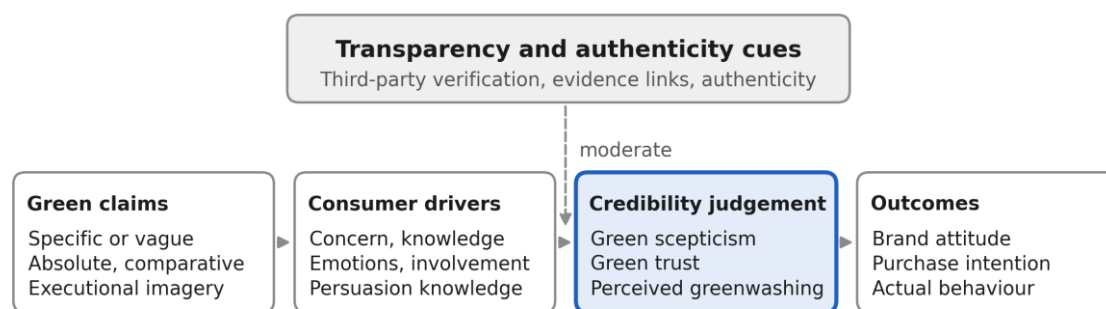


Figure 1. Organising framework of consumer belief in green claims. Source: Authors' synthesis.

3. Methodology

3.1 Research design

The study follows the bibliometric procedure set out by Donthu et al. (2021): define the aims and scope, choose the techniques, collect the data, run the analysis and report the findings. Reporting of the identification and screening stages follows the PRISMA 2020 statement (Page et al., 2021). Bibliometric analysis was preferred over a purely narrative review because the dataset exceeds 1,500 documents and the research questions concern the structure and evolution of the field, which citation and co-word networks capture directly (Zupic & Čater, 2015).

3.2 Database and search strategy

Scopus was selected as the sole database because it offers broad coverage of peer-reviewed business, social science and environmental journals together with the citation and reference data that bibliometric software requires (Mongeon & Paul-Hus, 2016). The search string was built around the three parts of the title: corporate environmental claims, consumers, and belief or scepticism. A proximity operator (W/3) linked environmental terms with claim, advertising, message and label terms to exclude general sustainability studies. Both British and American spellings of scepticism were included. Table 2 summarises the protocol.

Table 2. Search protocol

Element	Specification
Database	Scopus (Elsevier)
Date of search	2 October 2026
Search fields	Title, abstract, keywords (TITLE-ABS-KEY)
Block 1: environmental claims	("green" OR "environmental*" OR "eco-friendly" OR "ecological" OR "sustainab*" OR "climate neutral*" OR "climate friendly" OR "carbon neutral*" OR "recyclab*") W/3 ("claim*" OR "advert*" OR "ad" OR "ads" OR "message*" OR "communicat*" OR "marketing" OR "label*"), OR "greenwash*" OR "eco-label*" OR "ecolabel*" OR "green sceptic*" OR "green skeptic"
Block 2: consumers	"consumer*" OR "customer*" OR "shopper*" OR "buyer*" OR "audience"
Block 3: belief and scepticism	"sceptic*" OR "skeptic*" OR "credib*" OR "believab*" OR "belie*" OR "trust*" OR "distrust*" OR "mistrust*" OR "authentic*" OR "transparen*" OR "decepti*" OR "mislead*" OR "perceived greenwash"
Filters	Publication year < 2026; source type: journal; publication stage: final; document type: article or review; language: English
Records retrieved	1,621
Records analysed	1,595 (2000–2025)

Source: Authors' synthesis.

3.3 Screening and final dataset

The search returned 1,621 records. The earliest record dates from 1988, but only 26 records were published before 2000, and annual output stayed in single digits until the mid-2000s. These 26 records were excluded so that the analysis covers a continuous period of comparable activity, 2000–2025. The final dataset contains 1,595 documents: 1,494 articles and 101 reviews from 696 sources (Figure 2). Foundational pre-2000 works, such as Carlson et al. (1993) and Mohr et al. (1998), still enter the analysis through the reference lists used in co-citation analysis.

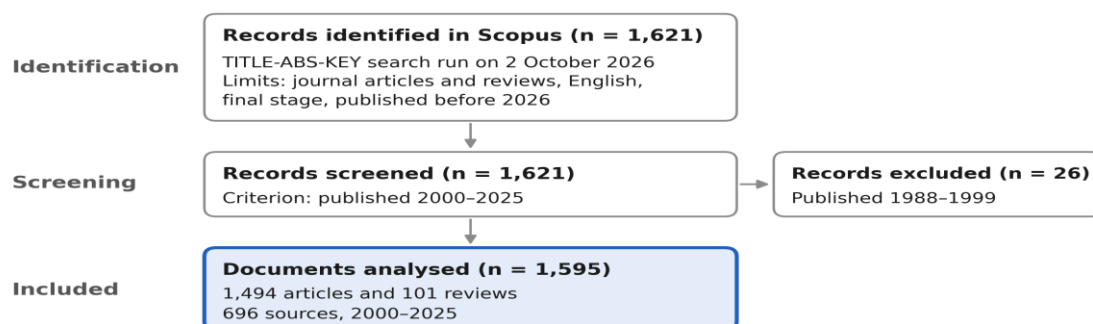


Figure 2. PRISMA flow diagram of record identification, screening and inclusion. Source: Authors' elaboration based on Page et al. (2021).

3.4 Analytical procedure

The Scopus records were exported in CSV format with full bibliographic information, abstracts, keywords and cited references. They were analysed with Biblioshiny, the web interface of the Bibliometrix R package (Aria & Cuccurullo, 2017). Table 3 lists the techniques and their settings.

Table 3. Bibliometric techniques and parameters

Technique	Unit of analysis	Key parameters	Purpose
Performance analysis	Documents, sources, authors, affiliations, countries	Total and average citations; local h-index within the dataset	RQ1: productivity and impact
Co-citation analysis	Cited references	50 most co-cited nodes; network clustering	RQ2: intellectual foundations
Keyword co-occurrence and treemap	Author keywords and Keywords Plus (merged)	Top terms by frequency	RQ3: conceptual structure
Strategic thematic map	Merged keywords	250 terms; minimum cluster frequency 7; Louvain clustering; Callon centrality and density	RQ3: theme maturity and relevance
Trend topics	Merged keywords	Year quartiles (Q1, median, Q3) per term	RQ3: thematic evolution
Bibliographic coupling	Documents, coupled through cited references	250 documents; minimum frequency 7; walktrap clustering; labels from author keywords; impact from local citations	RQ4: research fronts
Content tagging	Titles, abstracts and keywords	Dictionary of method, theory and construct terms; non-exclusive counts	RQ4–RQ5: constructs, theories and methods

Source: Authors' synthesis.

The strategic map positions each theme by Callon centrality, which reflects its links to other themes, and density, which reflects its internal development (Callon et al., 1991; Cobo et al., 2011). Bibliographic coupling groups documents that cite the same references and therefore reveals current research fronts, while co-citation reveals the older knowledge base (Zupic & Čater, 2015). Content tagging complements these networks. It counts the documents whose title, abstract or keywords contain dictionary terms for research methods, theories and psychological constructs. A document can carry several tags, so the counts are indicative and not mutually exclusive.

4. Results: performance analysis**4.1 Main information**

The dataset describes a large, collaborative and highly cited field. Its 1,595 documents average 44.42 citations each and draw on 162,124 cited references (Table 4).

Table 4. Main information about the dataset

Indicator	Value
Timespan	2000–2025
Sources (journals)	696
Documents	1,595 (1,494 articles; 101 reviews)
Annual growth rate	15.97%
Average document age	5.34 years
Average citations per document	44.42
Cited references	162,124
Keywords Plus / author keywords	2,886 / 4,268
Authors	4,457
Single-authored documents	206
Co-authors per document	3.19
International co-authorship	27.52%

Source: Authors' synthesis.

4.2 Annual scientific production and citation impact

Output grew from 10 documents in 2000 to 406 in 2025, and the growth falls into three phases (Figure 3). In the nascent phase (2000–2009), the field produced 82 documents, often on green electricity, eco-labels and organic food. The consolidation phase (2010–2019) added 351 documents as greenwashing and green trust research took shape. The expansion phase (2020–2025) produced 1,162 documents, or 72.9% of the total; 2025 alone accounts for 25.5%. Mean citations per article peaked for documents published in 2011 (217.76) and 2010 (185.80), which matches the publication of the most influential greenwashing and green trust studies. Lower averages after 2020 mainly reflect shorter citation windows.

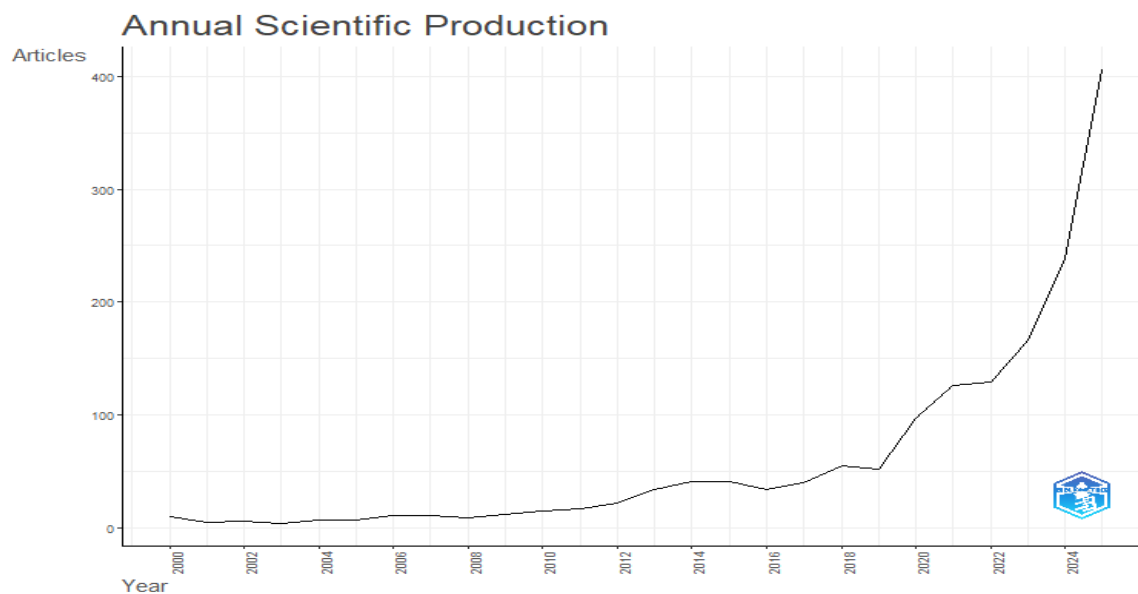


Figure 3. Annual scientific production, 2000–2025. Source: Biblioshiny output based on Scopus data.

4.3 Most relevant sources

The field is concentrated in sustainability and business journals, but citation impact sits in marketing and ethics outlets (Table 5). Sustainability (Switzerland) published 174 documents, 10.9% of the dataset. The Journal of Business Ethics published only 15 documents yet holds the highest citation count (6,251), because it hosts several of the most cited studies on greenwashing and green trust. Specialist advertising journals, notably the International Journal of Advertising and the Journal of Advertising, contribute fewer documents but anchor the experimental work on claims and scepticism.

Table 5. Ten most productive sources

Source	Documents	Total citations	Local index	h-index	First year in dataset
Sustainability (Switzerland)	174	5,822	41		2014
Journal of Cleaner Production	39	3,192	28		2014
Business Strategy and the Environment	29	2,358	22		2001
Journal of Business Research	16	1,258	15		2016
Journal of Retailing and Consumer Services	16	1,102	14		2016
Environmental Communication	16	696	13		2012
Journal of Business Ethics	15	6,251	14		2010
International Journal of Advertising	14	960	11		2000
Journal of Consumer Marketing	13	2,029	12		2005
Frontiers in Psychology	13	324	11		2020

Note: Citations are Scopus citation counts at the date of extraction; the local h-index is computed within the dataset. Source: Authors' synthesis.

4.4 Authors, affiliations and cited authors

Authorship is broad and dispersed: 4,457 authors contributed, and the most productive author published only 7 documents. Matthes (7 documents) leads, followed by Thøgersen, Quoquab and Kumar (6 each), and Chen, Neureiter, Iraldo, Nguyen-Viet and Bhaduri (5 each). Matthes and Neureiter form a coherent stream on greenwashing claims in advertising (Neureiter & Matthes, 2023; Schmuck et al., 2018), while Chen's work anchors the green trust stream (Chen, 2010; Chen & Chang, 2013). Aarhus University (14 documents) is the most productive affiliation, followed by Amity University, Khon Kaen University, the University of Amsterdam and Yonsei University (10 each).

The most frequently cited authors in the reference lists reveal what the field builds on. Ajzen is cited 389 times, followed by Sarstedt (263), Thøgersen (223), Verbeke (213) and Larcker (194). This mix of attitude theory, structural equation modelling and sustainable consumption research foreshadows the co-citation clusters in Section 5.

4.5 Countries and collaboration

The USA leads with 183 documents by corresponding authors (11.5%), followed by China (155; 9.7%) and India (107; 6.7%), as Figure 4 shows. Collaboration patterns differ sharply. Only 18.6% of US and 12.1% of Indian documents involve multiple countries, compared with 34.2% for China, 35.5% for the United Kingdom and 54.5%

for Malaysia. Korea, Indonesia and Malaysia rank among the top producers alongside the European core of Italy, the United Kingdom, Germany and Spain. The collaboration map (Figure 5) shows that the strongest ties link the USA with Korea (27 co-authored links) and China (19), followed by China–Malaysia and Malaysia–Indonesia (14 each). India's strongest partner is Saudi Arabia (7), which suggests that Indian research remains comparatively under-connected to the European and North American core.

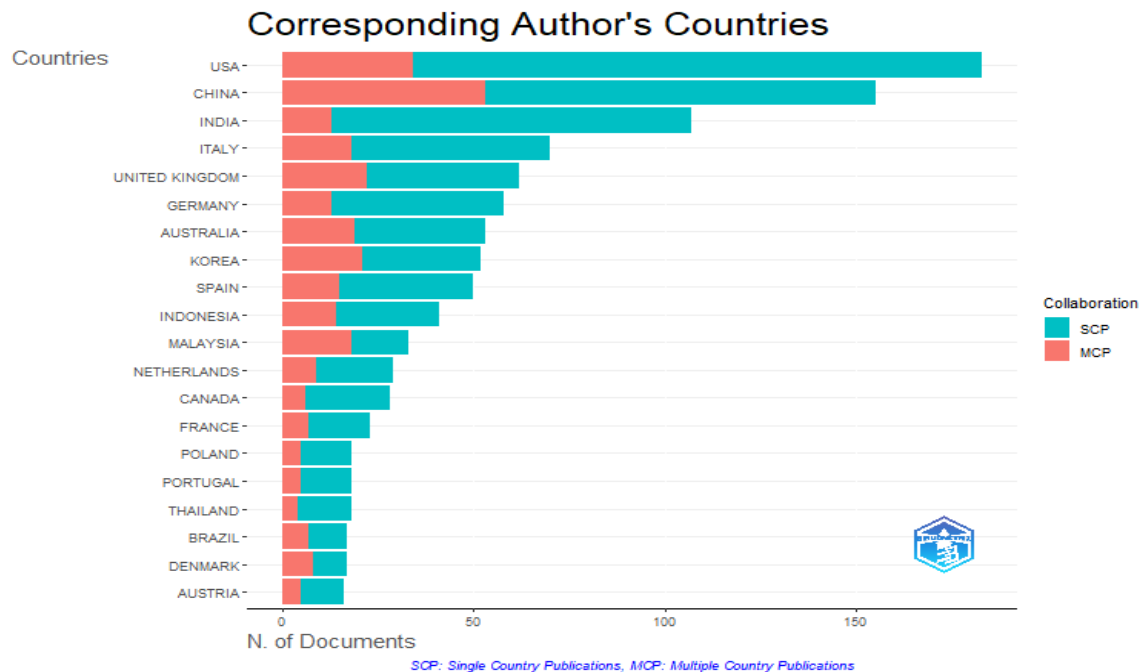


Figure 4. Corresponding authors' countries, single-country (SCP) and multiple-country (MCP) publications. Source: Biblioshiny output based on Scopus data.

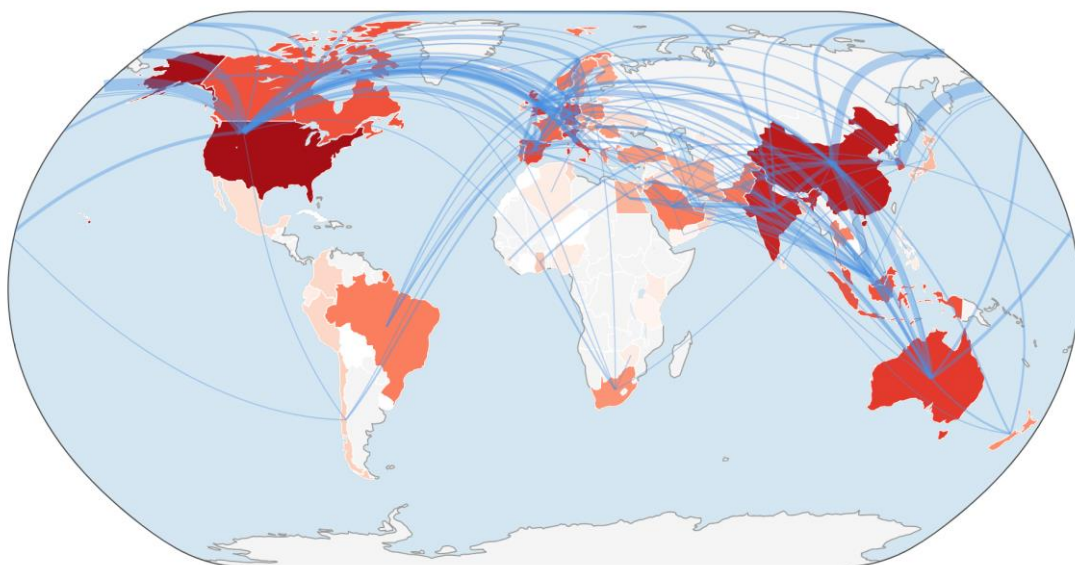


Figure 5. Country collaboration map. Source: Biblioshiny output based on Scopus data.

4.6 Most influential documents

The ten most cited documents show that the field's influence comes from three directions: the organisational causes of greenwashing, the consumer consequences of greenwashing for trust, and early green marketing work (Table 6). Delmas and Burbano (2011) dominate with 2,716 citations. Szabo and Webster (2021) stand out for recency, averaging 119.2 citations a year.

Table 6. Ten most globally cited documents

Rank	Document	Source	Focus	Total citations	Citations per year
1	Delmas & Burbano (2011)	California Management Review	Drivers of greenwashing	2,716	169.8
2	Chen (2010)	Journal of Business Ethics	Green brand equity and green trust	1,260	74.1
3	Chen & Chang (2013)	Journal of Business Ethics	Greenwash, confusion, risk and green trust	1,030	73.6
4	Pickett-Baker & Ozaki (2008)	Journal of Consumer Marketing	Marketing influence on green purchase	740	38.9
5	Szabo & Webster (2021)	Journal of Business Ethics	Perceived greenwashing	715	119.2
6	Nyilasy et al. (2014)	Journal of Business Ethics	Green advertising and corporate performance	652	50.2
7	Testa et al. (2018)	Journal of Business Ethics	Stakeholder pressure and greenwashing	594	66.0
8	Ottman et al. (2006)	Environment	Green marketing myopia	573	27.3
9	Leonidou & Skarmeas (2015)	Journal of Business Ethics	Causes and consequences of green scepticism	519	43.3
10	Wu et al. (2020)	Management Science	Greenwashing and information transparency	506	72.3

Source: Authors' synthesis.

5. Results: science mapping**5.1 Intellectual structure: co-citation analysis**

The co-citation network of the 50 most co-cited references splits into three clusters (Figure 6; Table 7). The field therefore rests on three distinct knowledge bases rather than a single theory of green claim credibility.

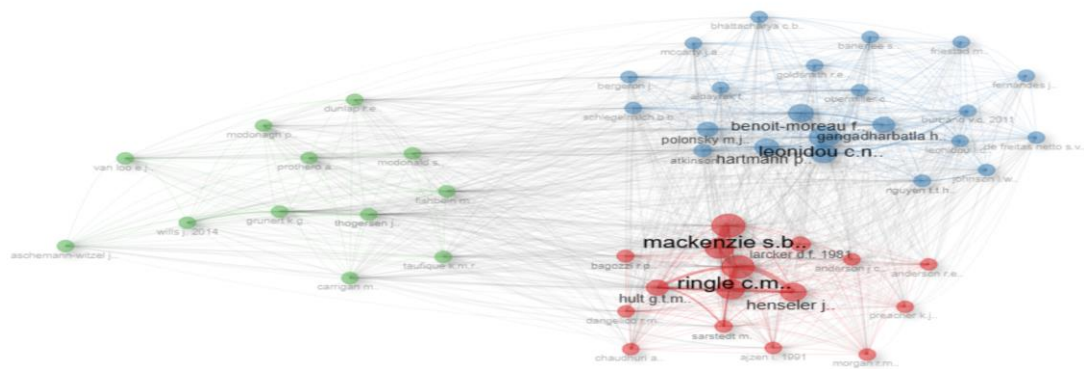


Figure 6. Co-citation network of the 50 most co-cited references. Source: Biblioshiny output based on Scopus data.

Table 7. Co-citation clusters

Cluster	Nodes	Representative co-cited authors	Interpretation
1 (red): Measurement and attitude-behaviour foundations	16	Ringle; Sarstedt; Henseler; MacKenzie; Podsakoff; Fornell & Larcker (1981); Anderson & Gerbing; Ajzen (1991); Bagozzi; Preacher; Morgan & Hunt; Chaudhuri; Dangelico	Structural equation modelling, common-method bias, mediation and trust-commitment theory used to test survey models
2 (blue): Green advertising, scepticism and greenwashing	22	Leonidou C. N.; Hartmann; Benoit-Moreau; Delmas & Burbano (2011); Polonsky; Gangadharbatla; Obermiller; Friestad; Atkinson; Schlegelmilch; Nguyen T. T. H.; Goldsmith	Claim types, advertising scepticism, persuasion knowledge and greenwashing effects
3 (green): Sustainable consumption and eco-labels	12	Thøgersen; Grunert; Fishbein; Dunlap; McDonald; Taufique; Van Loo; Prothero; Carrigan; Aschemann-Witzel	Values, environmental concern, the attitude-behaviour gap and eco-label use

Source: Authors' synthesis.

Cluster 1 reflects how the field tests its ideas. MacKenzie has the highest betweenness centrality in the network (70.5), and Ringle has the highest PageRank (0.042). These positions show that methodological references on partial least squares, measurement validity and common-method bias connect otherwise separate topical streams. The presence of Ajzen (1991) confirms that the theory of planned behaviour is the default behavioural model.

Cluster 2 is the substantive core of the topic. Leonidou C. N. has the highest betweenness (25.1) and PageRank (0.038) in this cluster, which reflects the central role of research on green scepticism (Leonidou & Skarmas, 2015). Obermiller's scepticism scale and Friestad's persuasion knowledge model provide the cluster's theoretical roots, and Delmas and Burbano (2011) link consumer scepticism to the organisational drivers of greenwashing.

Cluster 3 is anchored in sustainable consumption and eco-label research. Fishbein (11.9), Taufique (10.6) and Carrigan (10.6) carry the highest betweenness in this cluster, connecting value-based models, eco-label knowledge and the attitude-behaviour gap (Taufique et al., 2017; Thøgersen, 2000).

5.2 Conceptual structure: keyword analysis

The most frequent keywords place sustainability, green marketing and greenwashing at the centre of the field (Table 8). Constructs directly tied to belief appear further down but are clearly established: trust (73), green trust (65), green advertising (47), green scepticism (35), environmental concern (32), consumer trust (26) and the theory of planned behaviour (25).

Table 8. Twenty most frequent keywords (author keywords and Keywords Plus merged)

Rank	Keyword	Occurrences	Rank	Keyword	Occurrences
1	sustainability	337	11	trust	73
2	marketing	190	12	purchase intention	66
3	green marketing	185	13	green trust	65
4	greenwashing	180	14	environmental impact	61
5	consumption behavior	167	15	communication	57
6	sustainable development	149	16	social media	57
7	perception	126	17	corporate social responsibility	54
8	consumer behavior	121	18	advertising	51
9	ecolabeling	76	19	decision making	50
10	sustainable consumption	73	20	certification	49

Note: Generic indexing terms ("human", "humans", "article", "consumer") were omitted.

Source: Authors' synthesis.

The keyword co-occurrence network (Figure 7) shows three communities that match the thematic map below: a green marketing and greenwashing community, a consumer behaviour and trust community, and a sustainable development and eco-label community.

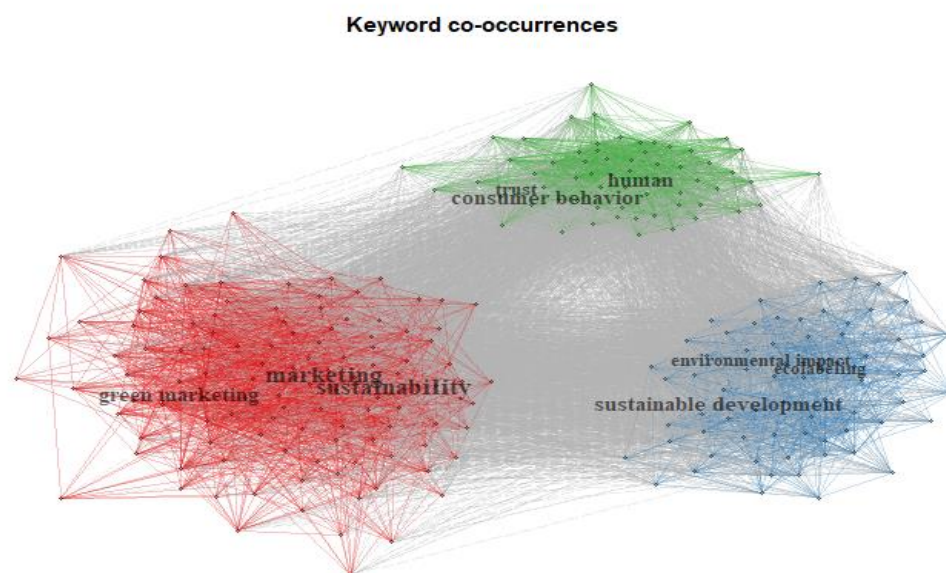


Figure 7. Keyword co-occurrence network.

Source: Biblioshiny output based on Scopus data.

5.3 Strategic thematic map

The strategic thematic map classifies themes by centrality and density (Figure 8; Table 9). Consumer behaviour and trust form the motor theme: the only cluster that is both central and well developed. The sustainability cluster, which holds green marketing, greenwashing, green advertising and green scepticism, is broad but loosely knit. The sustainable development cluster, which holds eco-labels, certification and transparency, is the least connected to the rest of the field.

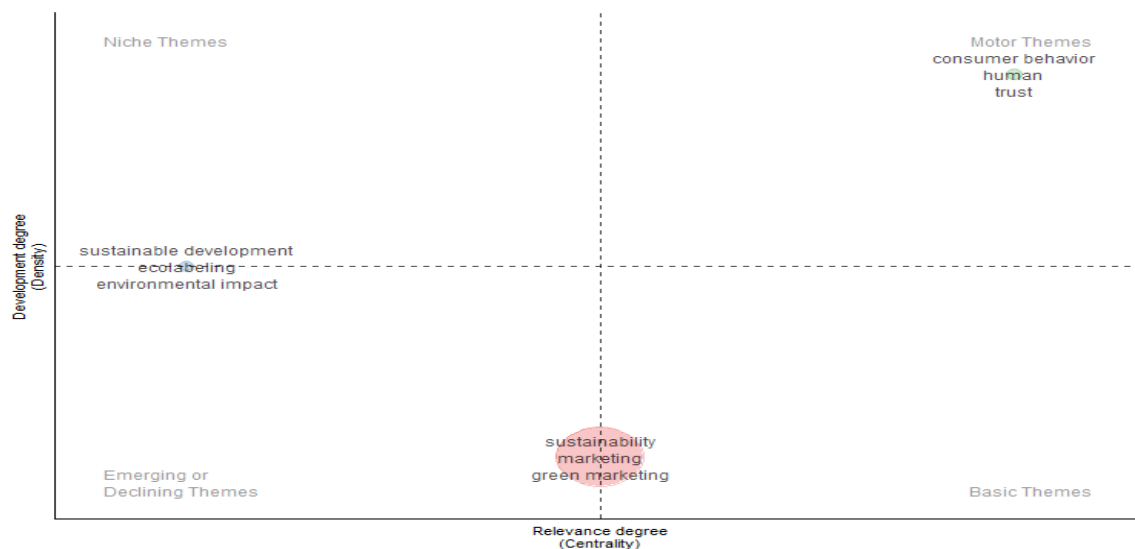


Figure 8. Strategic thematic map. Source: Biblioshiny output based on Scopus data.

Table 9. Thematic clusters

Theme	Terms	Callon centrality	Callon density	Position	Representative terms
Consumer behaviour	64	5.15	24.72	Motor theme (high centrality, high density)	consumer behavior, trust, decision making, consumer attitude, intention, structural equation modeling, organic food
Sustainability	114	4.88	12.43	Basic and transversal theme (median centrality, lowest density)	green marketing, greenwashing, perception, purchase intention, green trust, social media, green advertising, green skepticism, environmental concern, theory of planned behavior
Sustainable development	71	4.57	13.79	Peripheral theme (lowest centrality, low density)	ecolabeling, certification, willingness to pay, transparency, climate change, circular economy, life cycle assessment, packaging

Source: Authors' synthesis.

Two findings stand out. First, green scepticism and green advertising are embedded in a large, low-density theme, which means they are widely referenced but not yet organised into a tightly integrated research stream. Second, transparency sits in the peripheral eco-label and certification theme rather than in the core advertising theme, which suggests that work on verification and work on advertising persuasion have developed largely apart.

5.4 Thematic evolution: trend topics

Trend-topic analysis tracks when each keyword was most used (Figure 9). Three waves emerge. Until about 2014, median-year terms centred on green electricity, energy markets, forestry and risk communication. Between 2015 and 2019, attention moved to green perceived risk, eco-labelling, social responsibility and environmental management. From 2020 onward, the median years shift to trust and green trust (2022), consumption behaviour and marketing (2023), greenwashing, consumer behaviour and sustainable consumption (2024), and consumer trust and the theory of planned behaviour (2025). The field has therefore moved from product-category questions towards the psychology of trust and greenwashing.

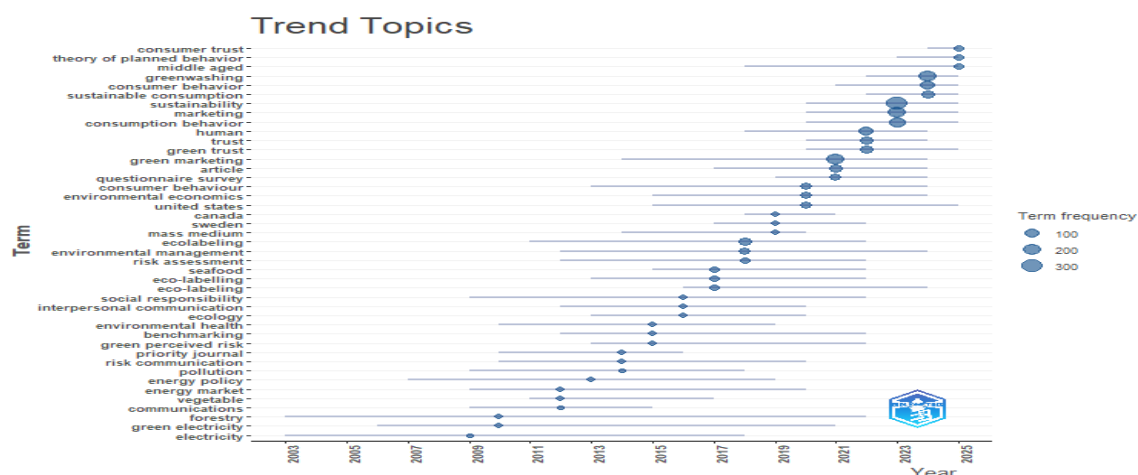


Figure 9. Trend topics by year (median, with first and third quartiles). Source: Biblioshiny output based on Scopus data.

5.5 Research fronts: bibliographic coupling

Bibliographic coupling of the 250 most locally cited documents yields four research fronts (Figure 10; Table 10). The greenwashing–green scepticism–purchase intention front has the highest centrality (0.47) and impact (4.51), which makes it the motor of current research.

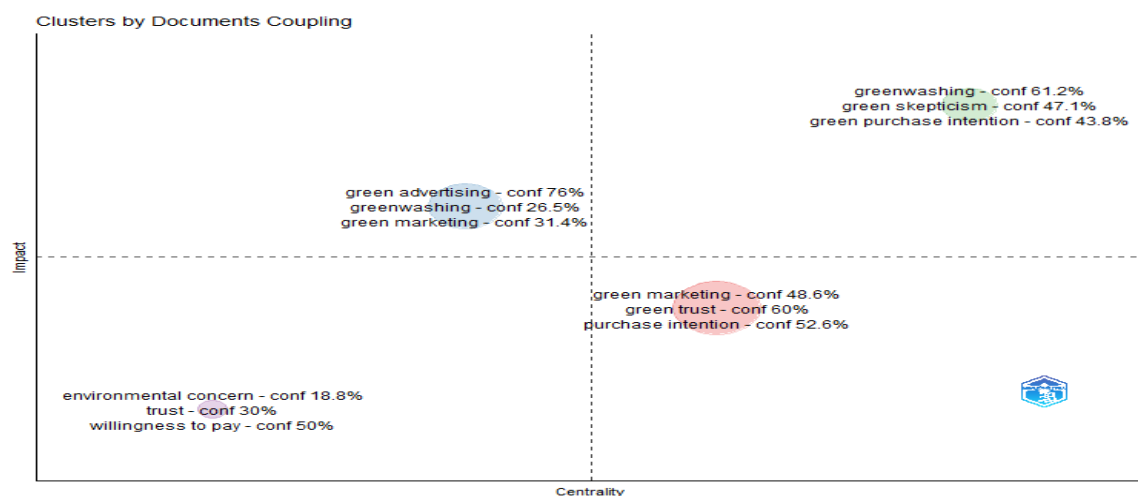


Figure 10. Clusters by bibliographic coupling of documents. Source: Biblioshiny output based on Scopus data.

Table 10. Research fronts from bibliographic coupling

Front	Documents	Centrality	Impact	Position	Representative documents
F1: Green marketing, green trust and purchase intention	108	0.40	2.95	Basic front	Chen & Chang (2013); Nguyen et al. (2019); Kumar et al. (2021)
F2: Green advertising appeals and greenwashing perceptions	75	0.38	3.96	Niche, high-impact front	Nyilasy et al. (2014); Leonidou & Skarmeas (2015); Parguel et al. (2015); Goh & Balaji (2016); Akturan (2018); Luo et al. (2020); Neureiter & Matthes (2023); Kwon et al. (2024)
F3: Greenwashing, green scepticism and purchase behaviour	45	0.47	4.51	Motor front	Ahmad & Zhang (2020); Guerreiro & Pacheco (2021); Hameed et al. (2021); Qayyum et al. (2023); Rahman & Nguyen-Viet (2023)
F4: Environmental concern, eco-label trust and willingness to pay	22	0.31	2.83	Emerging or declining front	Taufique et al. (2017); Darnall et al. (2018); Li et al. (2021)

Note: Cluster labels in Biblioshiny are generated from author keywords; centrality and impact are computed on local citations. Source: Authors' synthesis.

F1 is the largest front. It studies how green marketing builds green trust and purchase intention, usually through survey-based mediation models. F2 is smaller but highly cited; it holds the experimental and content-analytic work on claims, imagery and perceived greenwashing. F3 is the youngest and most connected front: all 45 of its documents were published in 2020 or later, with a median year of 2025. It tests greenwashing as an antecedent of scepticism, confusion and reduced purchase intention, often in emerging markets. F4 links environmental concern and eco-label trust to willingness to pay, and its low centrality suggests that label-based credibility has become detached from the advertising-centred debate.

5.6 Constructs, theories and methods

Content tagging of titles, abstracts and keywords shows which psychological constructs, theories and methods the field relies on (Table 11). Trust dominates, appearing in 42.0% of documents. Greenwashing (20.1%), transparency (19.6%), credibility (16.7%) and scepticism (14.3%) follow. Authenticity appears in 9.5% of documents. Among theories, the theory of planned behaviour (5.1%) leads, while the persuasion knowledge model (0.6%) and elaboration likelihood model (0.8%) are rarely invoked despite their direct relevance to claim processing. Methodologically, surveys (34.4%) and structural equation modelling (19.5%) prevail over experiments (15.7%), and eye-tracking, neuroscientific and machine-learning approaches together appear in about 2% of documents.

Table 11. Constructs, theories and methods identified by content tagging (N = 1,595)

Category	Item	Documents	Share
Credibility constructs	Trust	670	42.0%
Credibility constructs	Greenwashing	320	20.1%
Credibility constructs	Transparency	312	19.6%
Credibility constructs	Credibility	267	16.7%
Credibility constructs	Scepticism	228	14.3%
Credibility constructs	Authenticity	151	9.5%
Psychological drivers	Values and norms	193	12.1%
Psychological drivers	Environmental concern	118	7.4%
Psychological drivers	Emotions (guilt, pride, affect)	118	7.4%
Psychological drivers	Involvement	58	3.6%
Psychological drivers	Environmental or eco-label knowledge	57	3.6%
Psychological drivers	Self-congruence and identity	37	2.3%
Psychological drivers	Consumer confusion	33	2.1%
Psychological drivers	Perceived risk	29	1.8%
Psychological drivers	Perceived consumer effectiveness	21	1.3%
Theories	Theory of planned behaviour	82	5.1%
Theories	Attribution theory	49	3.1%
Theories	Stimulus–organism–response	36	2.3%
Theories	Value–belief–norm and norm activation	34	2.1%
Theories	Signalling theory	22	1.4%
Theories	Elaboration likelihood model	12	0.8%
Theories	Persuasion knowledge model	10	0.6%
Methods	Survey or questionnaire	549	34.4%
Methods	Structural equation modelling (incl. PLS-SEM)	311	19.5%
Methods	Experiment	250	15.7%
Methods	Qualitative (interviews, focus groups)	217	13.6%

Category	Item	Documents	Share
Methods	Content analysis	39	2.4%
Methods	Machine learning or text mining	20	1.3%
Methods	Eye-tracking or neuroscientific	12	0.8%

Note: A document may carry several tags. Counts come from dictionary matching and are indicative. Source: Authors' synthesis.

The credibility constructs have not grown evenly. Figure 11 compares the share of documents mentioning each construct across four periods. Greenwashing, transparency and authenticity roughly doubled their shares after 2020, while scepticism held steady at about 15%. Transparency and authenticity have therefore become the fastest-rising credibility mechanisms in the field, even though the thematic map shows that they are not yet integrated with the scepticism core.

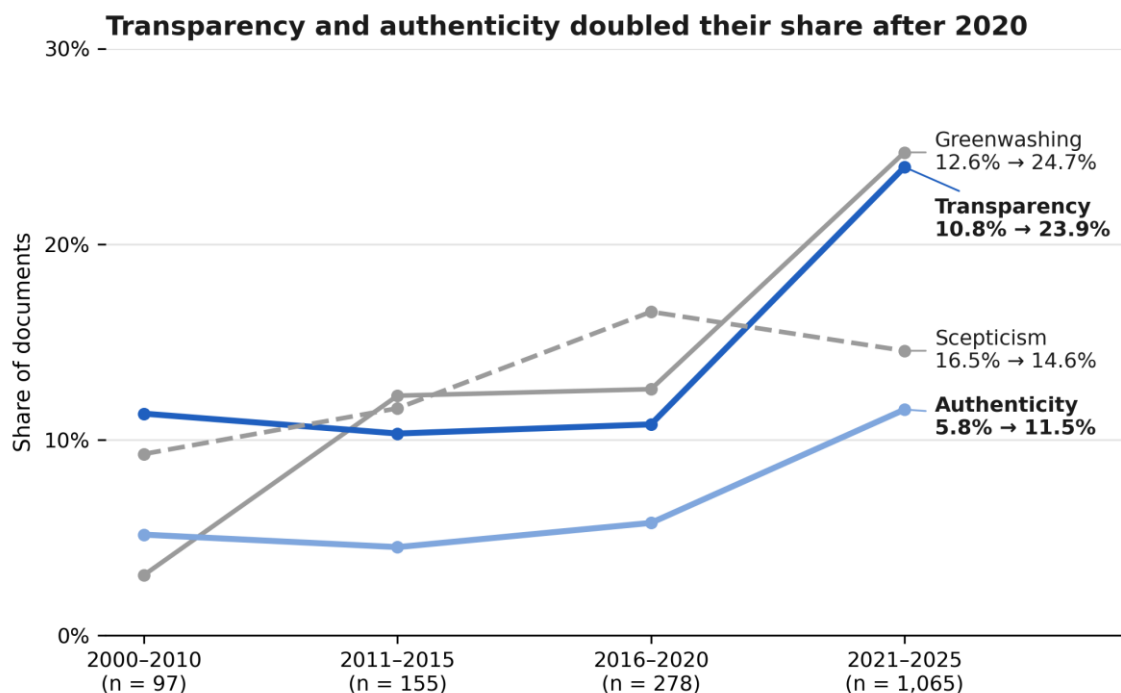


Figure 11. Share of documents mentioning each credibility construct, by period. End labels compare 2016–2020 with 2021–2025. Source: Authors' content tagging of the Scopus dataset.

6. Discussion

6.1 Growth, productivity and impact (RQ1)

The field has moved from a niche topic to a mainstream research area within five years. Nearly three-quarters of all documents appeared between 2020 and 2025, which coincides with the rise of social media green advertising, mounting greenwashing controversies and the regulatory activity that followed (Central Consumer Protection Authority, 2024; European Parliament & Council of the European Union, 2024). Growth has not been matched by a proportional rise in influence. Production is concentrated in Sustainability (Switzerland), whereas citation impact remains concentrated in a small number of established journals, above all the Journal of Business Ethics. The field is therefore expanding faster in volume than in conceptual depth.

The geography of the field is also shifting. China, India, Indonesia and Malaysia now rank among the leading producers, so evidence on green claim credibility increasingly comes from emerging markets, including Indian work linking greenwashing understanding to green consumption (Jog & Singhal, 2024). Yet India's low share of internationally co-authored work (12.1%) limits the visibility of this evidence and the scope for cross-country comparison. International collaboration is an untapped route to more generalisable findings.

6.2 Intellectual foundations (RQ2)

The co-citation structure shows that the field borrows its foundations from three neighbouring traditions rather than building a theory of its own. The first is methodological: partial least squares, measurement validity and the theory of planned behaviour provide the default toolkit. The central position of these references shows that many studies share an analytical template, which favours replication of survey models over theoretical development.

The second foundation, rooted in advertising research, carries the field's substantive theory. Scepticism toward advertising (Obermiller & Spangenberg, 1998), persuasion knowledge (Friestad & Wright, 1994) and the drivers of greenwashing (Delmas & Burbano, 2011) explain why consumers discount claims. The third foundation, rooted in sustainable consumption, explains why consumers care about environmental attributes at all and how they use eco-labels (Thøgersen, 2000; Taufique et al., 2017). The weak ties between the second and third foundations suggest that research on how consumers process advertising claims and research on how they use labels still speak different languages.

6.3 Conceptual structure and evolution (RQ3)

Consumer behaviour and trust form the field's motor theme, and the trend-topic analysis shows a clear move from product categories, such as green electricity and seafood, towards the psychology of trust and greenwashing. Green scepticism, however, sits inside a broad, low-density theme alongside green marketing and purchase intention. Scepticism is frequently measured but rarely theorised as a construct in its own right. Studies usually treat it as a mediator between greenwashing and purchase intention (Nguyen et al., 2019) rather than examining when and why it forms.

The renewed prominence of the theory of planned behaviour in 2025 reinforces this pattern. Attitude-based models explain intention well, but they say little about how a consumer evaluates the truthfulness of a specific claim. Theories that address claim processing directly, such as the persuasion knowledge model, attribution theory and the elaboration likelihood model, appear in less than 5% of documents combined.

6.4 Research fronts, transparency and authenticity (RQ4)

The greenwashing–green scepticism–purchase intention front is now the field's most central and influential area. All its documents were published in 2020 or later, showing that consumer responses to greenwashing have become the organising question of current research. The green advertising front is smaller but highly cited, because it contains much of the experimental evidence on claims and imagery (Parguel et al., 2015; Schmuck et al., 2018).

Transparency and authenticity have risen fastest of all credibility constructs. Their shares of documents roughly doubled after 2020. Yet the thematic map places transparency in the peripheral eco-label and certification theme, and authenticity research is spread across social media and brand studies (Bulmer et al., 2024; Pittman et al., 2022). These constructs are being studied as remedies for scepticism, but they have not yet been integrated into the scepticism and greenwashing front where they would matter most.

6.5 Do consumers believe green claims?

Taken together, the evidence suggests that consumers believe green claims conditionally, not by default. Belief depends on the fit between what a firm says and what consumers know or infer about its conduct. Perceived greenwashing rises when green advertising is paired with weak corporate environmental performance (Nyilasy et al., 2014). Specific claims raise expectations and invite closer scrutiny if they are disconfirmed (Orazi & Chan, 2020). Many consumers do not understand what common claims mean (Iovino et al., 2024). Scepticism is not limited to uninterested consumers, since green consumers can be sceptical of advertising too (Matthes & Wonneberger, 2014).

Green scepticism is therefore better understood as a reasoned response to a credibility problem than as a fixed consumer trait. This reading shifts the managerial question from "how do we persuade sceptical consumers?" to "how do we make claims that deserve belief?". It also explains why transparency and authenticity have become the field's fastest-rising themes.

7. Future research agenda (RQ5)

The bibliometric gaps translate into a research agenda organised with the theory–context–characteristics–methodology (TCCM) framework (Paul & Rosado-Serrano, 2019). Table 12 links each gap to the evidence from this review and to concrete directions for future research.

Table 12. TCCM research agenda

Dimension	Gap identified in this review	Future research directions
Theory	The theory of planned behaviour dominates (5.1%), while the persuasion knowledge model (0.6%), elaboration likelihood model (0.8%) and attribution theory (3.1%) are rarely used	Use persuasion knowledge, attribution and signalling theories to explain how consumers judge claim truthfulness; model scepticism as an outcome of claim processing rather than only as a mediator
Theory	Scepticism research and eco-label research rest on separate foundations	Develop integrated models in which certification and verification cues interact with advertising scepticism
Context	Production is concentrated in the USA, China and India, with low international collaboration in several emerging markets	Run multi-country studies comparing claim credibility across regulatory regimes, such as markets before and after green claims regulation in the EU and India
Context	Social media is a frequent keyword, but influencer, AI-generated and virtual-influencer claims are new	Test how influencer disclosure, virtual influencers and AI-generated green content shape perceived authenticity and greenwashing (Jiang et al., 2024; Pittman & Abell, 2021)
Context	Food, energy and fashion dominate; services, finance and B2B are rarely studied	Examine claims for green financial products, carbon-neutral services and B2B sustainability positioning
Characteristics	Claim types are seldom compared systematically	Compare vague, specific, absolute, comparative, compensation and future-oriented claims (Neureiter & Matthes, 2023; Polonsky et al., 2025)
Characteristics	Transparency and authenticity are rising but sit outside the scepticism core	Test transparency and authenticity cues, such as evidence links, QR-code traceability and third-party verification, as moderators of the claim–scepticism path
Characteristics	Psychological drivers such as confusion (2.1%), perceived risk (1.8%) and knowledge (3.6%) are under-studied	Examine claim literacy, confusion and cognitive effort as drivers of belief, and test literacy interventions

Dimension	Gap identified in this review	Future research directions
Methodology	Surveys (34.4%) and SEM (19.5%) dominate, mostly cross-sectional	Use field experiments, longitudinal panels and actual purchase data to establish causality and persistence of scepticism
Methodology	Eye-tracking, neuroscientific and machine-learning methods appear in about 2% of documents	Apply eye-tracking to label and claim attention, and use text mining of social media to track real-time scepticism toward brands

From these gaps, five research questions deserve priority:

1. Under what conditions does a specific, verifiable claim reduce scepticism, and when does it backfire by inviting scrutiny?
2. How do transparency and authenticity cues interact with persuasion knowledge in shaping belief in green claims?
3. Does green claims regulation change consumer scepticism, and do effects differ between developed and emerging markets?
4. How do consumers judge the credibility of green claims made by influencers, virtual influencers and AI-generated content?
5. How long does scepticism triggered by a greenwashing incident persist, and can it be repaired?

8. Implications

8.1 Theoretical implications

This review reframes green claim credibility as a field built on three foundations that have not yet converged: methodological and attitude–behaviour research, advertising scepticism, and sustainable consumption. It shows that green scepticism, though widely measured, remains under-theorised and is mostly modelled as a mediator. The organising framework in Figure 1 offers a basis for integration. It positions claim characteristics as stimuli, psychological drivers as processing conditions, scepticism and trust as the credibility judgement, and transparency and authenticity as moderators. Future theory-building should test these links jointly rather than in isolation.

8.2 Managerial implications

The evidence offers four lessons for marketers:

- **Replace vague and absolute claims with specific, verifiable ones.** Consumers struggle to interpret broad environmental terms, and specificity improves credibility when firms can deliver on it (Iovino et al., 2024; Orazi & Chan, 2020).
- **Align communication with performance.** Green advertising that is not backed by environmental performance increases perceived greenwashing (Nyilasy et al., 2014), so communication should follow operational change rather than precede it.
- **Use credible verification.** Third-party certification and credible labels strengthen consumer responses (Darnall et al., 2018; Kumar et al., 2021).
- **Build authenticity through consistency.** Authenticity perceptions depend on fit between the brand, the claim and the consumer (Olk, 2021; Pittman et al., 2022). Avoid relying on nature imagery that implies more than the evidence supports (Parguel et al., 2015).

8.3 Policy implications

The findings support regulatory approaches that require claims to be specific and substantiated, such as Directive (EU) 2024/825 and India's 2024 guidelines on greenwashing (Central Consumer Protection Authority, 2024; European Parliament & Council of the European Union, 2024). Regulators can draw on consumer research to prioritise the claim features that most often mislead, notably generic terms, absolute claims and executional cues. The low share of studies on claim literacy suggests that consumer education programmes, alongside enforcement, remain an under-used policy lever (Eng et al., 2021).

9. Limitations

The findings should be read in light of six limitations. First, the review relies on Scopus alone; Web of Science, Dimensions or Google Scholar might add relevant documents. Second, the restriction to English-language journal articles and reviews excludes books, conference papers and non-English research, which may under-represent work from Latin America, Europe and Asia. Third, apart from the exclusion of records published before 2000, no manual title and abstract screening was applied. Some off-topic records, for example on environmental health risk communication, therefore remain in the dataset; their low frequency limits, but does not remove, their influence on keyword and coupling results. Fourth, author-level counts are affected by name ambiguity, especially for common surnames such as Li, Wang and Zhang. Fifth, citation-based indicators favour older documents, so the influence of the many studies published in 2024 and 2025 is not yet visible. Sixth, the content tagging is dictionary-based; it indicates the presence of terms, not the depth with which constructs or theories are used.

10. Conclusion

This study asked whether consumers believe green claims and examined how research has addressed that question across 1,595 Scopus documents published between 2000 and 2025. The field has grown rapidly, especially since 2020, and its centre of gravity has moved from green product categories to the psychology of trust, greenwashing and scepticism. Its knowledge base rests on three foundations: methodological and attitude–behaviour research, advertising scepticism, and sustainable consumption. The greenwashing–green scepticism–purchase intention front now leads the field.

The central answer is that consumers believe green claims conditionally. Belief depends on whether claims are specific, verifiable and consistent with a firm's conduct. Transparency and authenticity are the fastest-rising mechanisms for earning that belief, but they are not yet integrated with research on scepticism. Bringing these streams together through stronger theory, experimental and longitudinal designs, and cross-market comparisons offers the clearest path for advancing both scholarship and responsible green marketing practice.

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