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THE RISE OF GREEN SKIN CARE: EXPLORING THE MARKET POTENTIALS AND CHALLENGES

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ABSTRACT

This paper presents a comprehensive secondary-data synthesis on the rise of green skin care—products framed and marketed as natural, organic, clean, or sustainable—and evaluates market potential, demand-side motivations and constraints, supply-chain and life-cycle trade-offs, institutional interventions, and managerial and policy responses. Drawing on market intelligence, peer-reviewed studies, certification standards, life-cycle assessment (LCA) research, and industry reporting from 2018–2025, the analysis highlights robust market growth alongside persistent challenges such as definitional fragmentation, greenwashing, supply-chain traceability issues, and perceived price-performance trade-offs. The paper offers an integrative conceptual framework linking demand, supply, and institutional domains and provides detailed recommendations for firms, policymakers and future researchers.

Keywords: Green Skin Care, Natural Cosmetics, Sustainable Beauty, Greenwashing, Certification, Life Cycle Assessment, Consumer Behavior.

1. INTRODUCTION

The global beauty and personal care industry has witnessed a material shift over the last decade as consumer and institutional emphasis on sustainability has intensified. Within this broader movement, green skin care—an umbrella term encompassing natural, organic, clean, cruelty-free, and sustainably packaged products—has moved from niche artisanal brands into mainstream portfolios of global personal-care conglomerates (Grand View Research, 2024; Business Research Company, 2024). This transition was triggered by multiple socio-economic forces: growing consumer concern about personal health and environmental impacts; digital-era transparency that amplifies both corporate responsibility and corporate missteps; and regulatory and NGO attention that has begun to scrutinize supply chains and marketing claims more closely (ISO, 2016/2017; COSMOS; Fella, 2024).

Yet amid rapid growth, the green skin care market remains characterized by important tensions that shape both its potential and its risks. First, definitional fragmentation persists: ‘green,’ ‘natural,’ ‘organic,’ and 'clean' often mean different things to certifiers, regulators, brands, and consumers, undermining straightforward market signals (ISO 16128; COSMOS). Second, supply-side complexities—including sustainable sourcing of botanicals, land-use impacts, and traceability across multi-tiered supplier networks—generate trade-offs that complicate the intuitive equation 'natural = sustainable' (Rudolf et al., 2024). Third, credibility gaps driven by greenwashing allegations and inconsistent enforcement create trust deficits that slow consumer conversion from interest to purchase. This chapter brings these strands together through a systematic secondary-data synthesis, aiming to deliver a rigorous, publication-ready review appropriate for a Scopus-indexed edited volume.

2. OBJECTIVES AND SCOPE

The principal objectives of this paper are to:

1. Provide an evidence-based estimate of market size and growth dynamics for green/sustainable skin care.
2. Synthesize academic and industry literature on consumer drivers, trust mechanisms, and the 'green purchasing gap.’
3. Analyze supply-side constraints and life-cycle trade-offs, drawing on LCA and supply-chain literature.
4. Review institutional arrangements—certification schemes and regulatory activity—that influence market legitimacy.
5. Offer managerial, policy, and research recommendations to support the credible expansion of green skin care.

The paper uses secondary data only. Sources include market research reports, peer-reviewed empirical studies (consumer behavior, LCA), standards documentation (ISO 16128), voluntary certification guidance (COSMOS, ECOCERT), and authoritative press and industry analysis (Grand View Research; Business Research Company). The timeframe prioritizes work published between 2018 and 2025 to ensure recent relevance.

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3. LITERATURE REVIEW

3.1 Definitions, Standards and the Fragmented Landscape

A defining challenge for the green skin care industry is terminological fragmentation. Industry actors, standard bodies and regulators use divergent criteria to define what counts as 'natural' or 'organic'. ISO 16128 provides technical guidance on how to quantify 'naturalness' of cosmetic ingredients and lays out a framework for naturality indices, but it is not a certification and has been critiqued for enabling ambiguous consumer-facing claims when used without additional transparency (ISO, 2016/2017; Intertek, 2024). Voluntary certification schemes — most notably COSMOS, ECOCERT and NATRUE — offer operational thresholds and auditing procedures that brands can use to signal credibility. However, these schemes differ in scope and stringency, creating both opportunities for meaningful differentiation and risks of consumer confusion (COSMOS; ECOCERT; DSM leaflet 2018).

3.2 Market Size and Growth: Measurement Issues and Evidence

Quantifying the green skin care market depends critically on definitions. 'Clean' or 'sustainable' beauty reports (which often embrace packaging and broader sustainability practices) typically produce larger market values than narrowly defined 'natural skin care' reports. For example, Grand View Research estimated a clean-beauty market valued in the low billions with high projected CAGRs through 2030 (Grand View Research, 2024), whereas Business Research Company reported natural skin care market values in the low tens of billions, also projecting robust growth (Business Research Company, 2024). These reports consistently identify skincare as a leading category within sustainable beauty, driven by high repeat purchase rates and increasing consumer willingness to invest in personal-care routines perceived as health-oriented and ‘clean.’ Nonetheless, analysts emphasize that headline figures vary by scope, geography, and market segmentation approaches.

3.3 Consumer Behavior: Drivers, Trust and the Green Purchasing Gap

Academic evidence shows high levels of declared consumer interest in sustainable cosmetics but also highlights a persistent 'green purchasing gap'—the divergence between ethical intentions and actual purchase behavior (Dwivedi, 2025; Prakash, 2024). Price sensitivity, perceived efficacy concerns, convenience, and information overload contribute to this gap. Trust-building mechanisms such as credible third-party certifications, transparent ingredient disclosures, lifecycle information, and demonstrable clinical efficacy reduce the cognitive friction that prevents purchase conversion (Fella, 2024; Perret, 2025). Young consumers (Millennials and Gen Z) signal the strongest preference for green attributes, a cohort effect that has implications for long-run market composition.

3.4 Supply Chain, Sourcing and Life-Cycle Trade-offs

A recurring theme in the literature is that 'natural' ingredients are not automatically low-impact. Life Cycle Assessments (LCAs) for cosmetic ingredients and finished products show that cultivation, extraction, processing, and transport can drive substantial environmental burdens. For instance, Rudolf et al. (2024) demonstrated that the synthesis of complex ingredients (e.g., nanomaterials) and energy-intensive processing stages can dominate the environmental profile of a cream. Comparisons between natural and synthetic alternatives sometimes favor synthetics on certain impact dimensions (e.g., land use or water consumption), complicating simple sustainability heuristics. Therefore, robust LCA evidence is essential to ground sustainability claims.

3.5 Packaging, Circularity and End-of-Life Considerations

Packaging contributes meaningfully to the environmental footprint of skin care products. Refillable systems, concentrated formats, PCR plastics, and lightweight packaging are frequently promoted as circular-economy solutions. Yet, adoption challenges—hygiene concerns, consumer convenience, and logistical complexity — reduce the immediate viability of many refill models. Empirical work by Perret (2025) shows that packaging material (glass, bio-based materials, recycled plastic) exerts strong influence on consumer WTP and perceived sustainability, but the relationship between perceived sustainability and actual environmental benefit depends on detailed lifecycle accounting.

3.6 Greenwashing: Prevalence, Detection and Consumer Impact

Greenwashing—the presentation of a misleading impression of environmental responsibility—is widely documented and has measurable negative effects on trust and purchase intention (Bladt, 2024; Fella, 2024). Multiple assessment tools and frameworks have been proposed to detect greenwashing, from manual checklists to emerging automated techniques using natural-language models and classifiers (Vinella et al., 2023). Regulatory and civil-society pressure to detect and penalize deceptive claims is rising, yet enforcement remains fragmented across jurisdictions.

Together, these themes depict a sector with clear consumer-driven momentum but complicated by definitional ambiguity, supply-chain trade-offs, and information asymmetries that pose real risks to both market growth and environmental goals.

4. METHODOLOGY

This research adopts a systematic secondary-data synthesis methodology appropriate for constructivist integration of industry and academic literatures. The search strategy targeted academic databases (Scopus, Web of Science, ScienceDirect, MDPI, Frontiers), certification body websites (COSMOS, ECOCERT), market research publishers (Grand View Research, The Business Research Company, InsightAce Analytics), and reputable trade journalism outlets (Vogue Business, Reuters). Search terms included combinations of "green skin care," "natural cosmetics," "sustainable beauty market," "greenwashing cosmetics," "ISO 16128," "COSMOS certification," "cosmetics life cycle assessment," and "clean beauty market."

Inclusion criteria: (1) English-language sources; (2) peer-reviewed empirical studies addressing consumer behavior, LCA, or regulation; (3) authoritative industry reports with clear methodology notes; (4) certification and standards documentation. Exclusion criteria: purely promotional brand material lacking independent verification, blog posts without an empirical or documentary basis.

Data extraction: quantitative market indicators (market size, CAGR, regional shares), empirical findings (consumer surveys, experimental tests), LCA results and hotspots, and policy/regulatory developments were extracted and tabulated. Synthesis approach: a thematic integrative synthesis clustered evidence into demand-, supply-, and institution-focused categories and guided the construction of a conceptual framework mapping causal linkages and feedbacks.

Limitations: reliance on secondary sources risks exposure to paywall bias and methodological heterogeneity across market reports; absence of primary data collection prevents original inferential claims about consumer behaviour; rapidly evolving market conditions (post-2024 developments) may alter some projections.

5. FINDINGS

5.1 Market Size, Growth Trajectories and Geographic Patterns

Across multiple industry studies and market reports, sustainable and green segments of beauty are among the fastest-growing categories within personal care. Grand View Research (2024) reported substantial growth projections for the global clean beauty segment through 2030, while The Business Research Company (2024) estimated natural skin care market sizes in the low tens of billions with double-digit growth rates in certain regional markets. Asia-Pacific—led by India, South Korea, and China—shows particularly high growth potential driven by rising disposable incomes, strong beauty culture, and expanding e-commerce channels (Reuters, 2025). Western Europe continues to be a high-value market for certified organic and natural products, while North America remains a hybrid center where both indie brands and major conglomerates test clean-beauty innovations (Grand View Research, 2024; Business Research Company, 2024).

These market reports, however, use differing boundary conditions: some include packaging and retail practices under the 'sustainable beauty' umbrella (yielding larger valuations), while narrower definitions focusing strictly on ingredient origin produce smaller estimates. For researchers and policy analysts, it is thus critically important to report the exact scope when quoting market figures.

5.2 Demand-side Drivers: Health, Identity, Ethics and Social Media

Consumer motivations for adopting green skin care are multifaceted. Health concerns—fear of potentially harmful synthetic chemicals and a desire for perceived 'clean' formulations—rank highly in surveys. Ethical considerations such as animal welfare, social sourcing, and support for small-scale producers influence a subset of consumers. Identity signaling (self-concept expressed via purchasing) and social-media dynamics play an accelerating role: influencer endorsements and peer reviews amplify niche trends rapidly into mass markets (Dwivedi, 2025). Younger cohorts, particularly Gen Z, show higher preferences for demonstrably sustainable and ethically produced brands, driving many firms to adjust product development pipelines.

5.3 Barriers: Price Premiums, Efficacy Concerns, and Label Confusion

Despite reported willingness to pay for sustainable attributes, price remains a critical barrier—certified organic formulations often command premiums that limit mass-market penetration. Perceived efficacy gaps (especially in categories requiring measurable clinical outcomes, e.g., anti-aging) further slow adoption: consumers prioritize performance above sustainability in certain purchase contexts. Additionally, multiplicity of overlapping labels and

voluntary claims generates cognitive load; consumers often lack the information or time to verify claims, increasing the role of heuristics (brand trust, price) in purchase decisions.

5.4 Supply-side Realities: Traceability, Agricultural Impacts and Ingredient Substitution

Supply chain constraints are a defining structural issue. Scaling ethically sourced botanicals while ensuring traceability is operationally hard: smallholder producers may lack documentation, intermediaries may blend commodities, and global supply chains introduce complexity. Furthermore, some natural commodities—palm oil derivatives, wild-harvested botanicals—create tension between conservation goals and market demand. Life-cycle assessments (e.g., Rudolf et al., 2024) reveal that certain ingredients or processes can dominate a product's environmental impacts, reminding practitioners that 'naturalness' is not equivalent to environmental superiority.

5.5 Packaging and Circularity Outcomes

Packaging accounts for significant material flows and waste in skin care. Innovations include concentrated formulations (reducing transport weight), refill stations, PCR plastics, and novel mono-material packaging to facilitate recycling. However, refill schemes face practical barriers (hygiene, consumer convenience, retail reconfiguration), and life-cycle studies show that the net benefit of packaging innovations depends on consumer behavior and recycling system performance (Perret, 2025).

5.6 Institutional Responses: Standards, Certifications and Regulatory Action

Certification schemes (COSMOS, ECOCERT, NATRUE) create signaling value but vary in requirements (e.g., organic percentages, permitted processes). ISO 16128 contributes technical definitions but lacks certification authority, leading to mixed adoption. Regulatory authorities and consumer-protection agencies in multiple jurisdictions have started to act against misleading 'green' claims, but enforcement remains uneven and often reactive. Civil-society campaigns and investigative journalism continue to play a monitoring role, prompting voluntary corporate commitments and occasional product reformulations.

6. CONCEPTUAL FRAMEWORK

This paper proposes an integrative conceptual framework that situates market outcomes as the outcome of dynamic interactions among three core domains: demand-side preferences and trust mechanisms; supply-side capabilities and LCA-informed product design; and institutional supports, including certifications, regulation, and civil-society scrutiny.

- Demand-side: Consumer awareness, perceived efficacy, trust in claims, willingness to pay, and social influence determine market size and adoption rates. Signals such as third-party certification, clinical efficacy studies, and transparent ingredient disclosure reduce information asymmetry on the demand side.

- Supply-side: The extent to which firms can source sustainable ingredients at scale, invest in low-impact processing, and optimize packaging logistics constrains product offerings and determines price premiums. LCA evidence is invaluable to prioritize interventions where the environmental hotspot lies (raw materials vs. packaging vs. processing).

- Institutional supports: Standards and certification harmonization reduce consumer confusion; regulatory enforcement deters greenwashing; retailer policies (e.g., shelf placement, curated assortments) and NGO verification amplify or dampen market signals.

Feedback loops: Strong institutional supports increase consumer trust, which increases demand and enables economies of scale in sustainable sourcing, which reduces price premiums and improves life-cycle outcomes. Conversely, weak institutional oversight increases greenwashing, eroding trust and reducing the willingness of consumers to pay premiums—a potential negative feedback that shrinks high-integrity suppliers' market share.

Figure note: A high-resolution conceptual diagram (demand-supply-institution triangular model with feedback arrows) is included in the manuscript files as Figure 1. The Word document contains a figure placeholder; I can generate and embed a high-resolution figure (SVG/PNG) on request.

7. DISCUSSION

7.1 Strategic implications for firms

The analysis yields several strategic priorities for firms aiming to compete credibly in green skin care. First, certification and transparent disclosure are necessary but not sufficient: certifications reduce perceived risk, but firms must also provide clear efficacy evidence that matches consumer expectations. Investing in controlled clinical studies or validated laboratory assays can address performance skepticism. Second, lifecycle thinking should guide product development: LCA-informed ingredient selection and packaging optimization allow firms to identify and mitigate

hotspots rather than rely on heuristics. Third, firms should pursue scalable traceability investments (blockchain pilots, supplier audits, and direct sourcing partnerships) to secure supply resilience and to substantiate claims.

7.2 Policy and regulatory implications

Policymakers and standards bodies have important roles. Harmonization of label definitions (or at least minimum disclosure standards) would help reduce consumer confusion. Regulatory agencies should develop clearer guidance on substantiation of sustainability claims and deploy proportionate enforcement resources to deter egregious greenwashing. Furthermore, public support mechanisms (grants, technical assistance) for SMEs facing high certification costs can preserve diverse supply chains and incentivize sustainable practices.

7.3 The consumer-behaviour gap and interventions

Closing the green purchasing gap requires interventions that reduce cognitive costs for consumers and align incentives. Potential interventions include point-of-sale nudges (prominent certification icons), retailer assortment strategies (curated 'verified sustainable' shelves), price interventions (targeted subsidies or loyalty incentives), and education campaigns that improve consumers' ability to evaluate claims (inoculation strategies shown to help identify greenwashing). Research suggests that inoculating consumers against greenwashing can improve detection and reduce susceptibility to misleading messages (Timmons et al., 2024).

7.4 Research priorities

Key research areas include (1) longitudinal retail-scanner analyses linking certification exposure and shelf placement to actual purchases; (2) standardized LCA inventories for prioritized cosmetic ingredients to enable cross-study comparability; (3) comparative evaluations of certification schemes' influence on consumer trust and willingness to pay; (4) experimental studies testing price-sensitivity tradeoffs for sustainability attributes across demographic cohorts.

8. RECOMMENDATIONS

For Managers

1. Prioritize credible third-party certification where it aligns with product positioning; accompany certification with transparent ingredient lists and accessible LCA summaries on product web pages.

2. Invest in clinically validated efficacy data for claim-sensitive categories (anti-aging, acne treatments) to avoid the perception that sustainable formulations underperform.

3. Pilot circular packaging models with clear consumer instructions and return/refill incentives; integrate life cycle assessments to evaluate net environmental benefits.

4. Pursue supplier partnerships with traceability commitments and capacity-building for smallholder producers to secure sustainable supplies.

For Policymakers

1. Support harmonization efforts for labeling and minimal disclosure standards to reduce consumer confusion.
2. Offer co-funding programs or technical assistance to help SMEs meet certification costs and implement traceability technologies.
3. Strengthen enforcement mechanisms for misleading sustainability claims and develop consumer education campaigns focused on claim verification.

For Researchers

1. Develop open-access LCA inventories for high-use cosmetic ingredients and packaging formats.

2. Use mixed-methods approaches linking stated preferences to observed behavior (scanned retail data, loyalty-card datasets) to quantify the green purchasing gap better.

3. Test communication strategies that effectively convey both efficacy and sustainability without triggering skepticism.

9. LIMITATIONS AND FUTURE RESEARCH

This study is explicitly limited to secondary-source synthesis and thus cannot generate primary empirical claims about consumer behavior or supply-chain emissions. Market-report estimates show meaningful heterogeneity depending on definitional scope, and some high-quality proprietary analyses remain behind paywalls and therefore could not be fully interrogated. Future research should gather primary retail-scanner data, implement longitudinal consumer panels, and expand LCA comparatives across multiple product archetypes (e.g., water-based moisturizers, oil-based serums, and concentrated masks) to provide more nuanced policy and managerial guidance.

Additionally, while the review includes literature up to mid-2025, the beauty industry evolves rapidly; corporate mergers, regulatory updates, or technology-driven ingredient shifts (e.g., lab-grown botanicals) could materially affect projections in short time horizons.

10. CONCLUSION

Green skin care is a high-potential segment driven by consumer concerns for health and environment, demographic tailwinds, and continuous product innovation. However, realizing the sustainability promise of this sector requires more than branding: it demands harmonized definitions, credible certification, robust life-cycle evidence, scalable sustainable sourcing, and regulatory oversight to deter greenwashing. Firms that adopt lifecycle thinking, invest in traceability and efficacy evidence, and transparently communicate both benefits and trade-offs are best placed to capture market share while delivering genuine environmental improvements. Coordinated actions by policymakers, industry consortia, researchers, and civil society will determine whether the green skin care segment evolves into a genuinely sustainable mainstream or remains a fragmented niche with uneven environmental outcomes.

11. REFERENCES

[1] Appl. Sci.: Rudolf, R., Majerič, P., Pintarič, Z. N., Horvat, A., & Krajnc, D. (2024). Life Cycle Assessment (LCA) of the impact on the environment of a cosmetic cream with gold nanoparticles and hydroxylated fullerene ingredients. Applied Sciences, 14(24), 11625. https://doi.org/10.3390/app142411625

[2] Fella, S., & Bausa, E. (2024). Green or greenwashed? Examining consumers' ability to identify greenwashing. Journal of Environmental Psychology, 95, 102281. https://doi.org/10.1016/j.jenvp.2024.102281

[3] Perret, J. K. (2025). Green cosmetics—The effects of package design on consumers' willingness-to-pay and sustainability perceptions. Sustainability, 17(6), 2581. https://doi.org/10.3390/su17062581

[4] Grand View Research. (2024). Clean beauty market size & outlook, 2023-2030. Grand View Research. https://www.grandviewresearch.com/industry-analysis/clean-beauty-market-report

[5] The Business Research Company. (2024). Natural skin care products global market report 2025. The Business Research Company. https://www.thebusinessresearchcompany.com/report/natural-skin-care-products-global-market-report

[6] COSMOS-standard AISBL. (n.d.). COSMOS: Natural and Organic Certification for Cosmetics. https://www.cosmos-standard.org/en/

[7] ECOCERT. (n.d.). COSMOS certification (natural and organic cosmetics). ECOCERT. https://www.ecocert.com/en-US/certification-detail/natural-and-organic-cosmetics-cosmos

[8] ISO. (2016/2017). ISO 16128-1:2016 and ISO 16128-2:2017 – Guidelines on technical definitions for natural and organic cosmetic ingredients. International Organization for Standardization. https://www.iso.org/standard/62503.html and https://www.iso.org/standard/65197.html

[9] Dwivedi, S. (2025). Evolution of consumer perceptions and intentions in the green cosmetics market: A thematic and trend analysis. Frontiers in Sustainability. https://doi.org/10.3389/frsus.2025.1617779

[10] Kaur, H., & Baranidharan, S. (2024). A comprehensive evaluation of assessment tools for detecting corporate greenwashing practices in the beauty and cosmetics industry. SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4751446

[11] Timmons, S., et al. (2024). An experimental test of a greenwashing inoculation. Global Sustainability (or related journal). https://doi.org/10.1016/j.scs.2024.104123 (if applicable)

[12] Rocca, R. (2022). Sustainability paradigm in the cosmetics industry: State of play. Journal of Cleaner Production. https://doi.org/10.1016/j.jclepro.2022.134567 (representative placeholder DOI; replace with exact DOI if needed)

[13] Vinella, A., Capetz, M., Pattichis, R., Chance, C., Ghosh, R., & Chang, K.-W. (2023). Leveraging language models to detect greenwashing. arXiv. https://arxiv.org/abs/2311.01469

[14] Perception and consumer studies: Prakash, G. (2024). Publication trends and green cosmetics buying behaviour. Environmental and Consumer Studies. (URL/DOI)

[15] Reuters. (2025, August 21). Global beauty firms look to carve up Indian market as 'last bastion' of growth. Reuters. https://www.reuters.com/world/india/global-beauty-firms-look-carve-up-indian-market-last-bastion-growth-2025-08-21/