

Ethical and Environmental impact of Cosmetics

Dr. Santosh V. Gandhi*, Pratiksha S. Taware, Himanshu A. Chandankhede, Vipul V. Bhamare

Department of Pharmaceutical Quality Assurance, AISSMS College of Pharmacy, Kennedy Road, Near RTO Pune, 411011, Maharashtra, India.

ABSTRACT

The document provides a comprehensive review of the ethical and environmental impact of the cosmetics industry. It covers various aspects related to cosmetics, including their definition, classification, market trends, and the potential health and environmental benefits of certain cosmetic products. The document highlights several environmental concerns associated with the cosmetics industry. These include unsustainable resource consumption, such as the use of palm oil leading to deforestation, air pollution from volatile organic compounds (VOCs) released during manufacturing and product use, water pollution from harmful chemicals in cosmetics, and the issue of microplastics from exfoliating products. The document also discusses the challenges in recycling cosmetic packaging due to the use of multi-material components. The document delves into the ethical concerns surrounding the cosmetics industry, such as the use of animal testing, unethical sourcing of ingredients like mica involving child labour, lack of transparency in labelling and marketing claims, and the presence of potentially harmful chemicals in some cosmetic products. To address these environmental and ethical issues, the document outlines several sustainable alternatives and best practices. These include the use of natural and organic ingredients, the adoption of zero-waste and refillable product models, the implementation of robust regulatory frameworks and certification programs, and the importance of improving transparency and traceability in the supply chain.

The unique insights from the document highlight the significant impact of the cosmetics industry on the environment and society, and the need for a holistic approach to sustainability that balances economic, social, and environmental considerations. The case study of L'Oréal's sustainable development initiatives demonstrates the feasibility and benefits of integrating sustainability across various aspects of a cosmetics company's operations, from innovation and production to packaging and marketing.

Keywords: Ethics, sustainability, cosmetic market, environmental concerns, cosmetics, sustainable sourcing in cosmetics, waste management.

INTRODUCTION

Cosmetic is defined under section 3(aaa) of the Drugs and Cosmetics Act, 1940 as, any article intended to be rubbed, poured, sprinkled or sprayed on, or introduced into, or otherwise applied to, the human body or any part thereof for cleansing, beautifying, promoting attractiveness or altering the appearance, and includes any article intended for use as a component of cosmetic. (1)

A "cosmetic" is any substance used to clean, improve, or change the complexion, skin, hair, nails, or teeth. Cosmetics include beauty preparations (make-up, perfume, skin cream, nail polish) and grooming aids (soap, shampoo, shaving cream, deodorant).

Health Canada categorizes certain items that may appear to be cosmetics under different regulatory programs: · Substances claiming therapeutic benefits (such as disease prevention or treatment) or containing specific active ingredients prohibited in cosmetics are classified as drugs. For instance, topical antibiotic ointments fall into this category. · Items with natural active components that assert therapeutic effects, like a herbal topical solution for accelerating scar healing, are designated as natural health products. · Consumable products without therapeutic claims or effects, such as chewing gum, are categorized as food items. · Lotions and sprays designed to repel insects are considered pesticides. · Substances providing therapeutic advantages to animals, including creams that reduce dander, are classified as veterinary drugs. (2)

In modern cosmetology, the all products of cosmetic preparations manufactured under strict quality control conditions to achieve an absence of claims on both appearance and packing. There are varieties of cosmetic preparations are used which can be classifying by various ways:

- According to region, where it is use:
 1. Skin: Powder, Lipstick, Rouge, Creams, Lotions and Solutions, etc.
 2. Hairs: Shampoo, Conditioners, Creams, Bleach, Colouring preparation etc.
 3. Nails: Nail lacquers, Lacquers removers etc.
 4. Teeth: Powder, Paste, Gel and Dentifrices etc.
 5. Eye: Eyeliner, Mascara, Eye shadow and Eyebrow pencil etc.
- According to function of cosmetic preparation:
 1. Emollient Preparation:
 2. Cold creams,
 3. Vanishing creams,
 4. Foundation creams,
 5. Lotions and Solutions etc.
 - (ii) Cleansing Preparation: Creams, Shampoo and Rinses etc.
 - (iii) Decorative Preparations: Lipsticks, Rouges, Eyeliner, lacquers and Dressing preparations.
 - (iv) Deodorant / Antiperspirant: Spray, Sticks and Mouthwashes.
 - (v) Protective Preparations: Creams and Powders.
 - (vi) Preparation for Enjoyment: Salts, Powders, Oils and Milks.
- According to composition of cosmetics:
 1. Powder
 2. Lotions
 3. Emulsions
 4. Solutions
 5. Suspensions
 6. Creams

7. Paste
8. Gels
9. Aerosol
10. Sticks
11. Pencils (3)

According to a report, the cosmetic market in India is expected to experience an annual growth rate of approximately 3.40% CAGR during the forecast period (2023-2031). The market's revenue was estimated at about USD 8.12 billion in 2023 and is anticipated to reach USD 10.98 billion by 2031 (Figure 1). This substantial growth in the Indian cosmetic sector is attributed to an increasing consumer base. Industry projections indicate that within the distribution channel categories, the online sales segment is exhibiting rapid growth and is set to maintain its dominance in the regional market (4). Figure 2 represent companies in Indian cosmetic market.

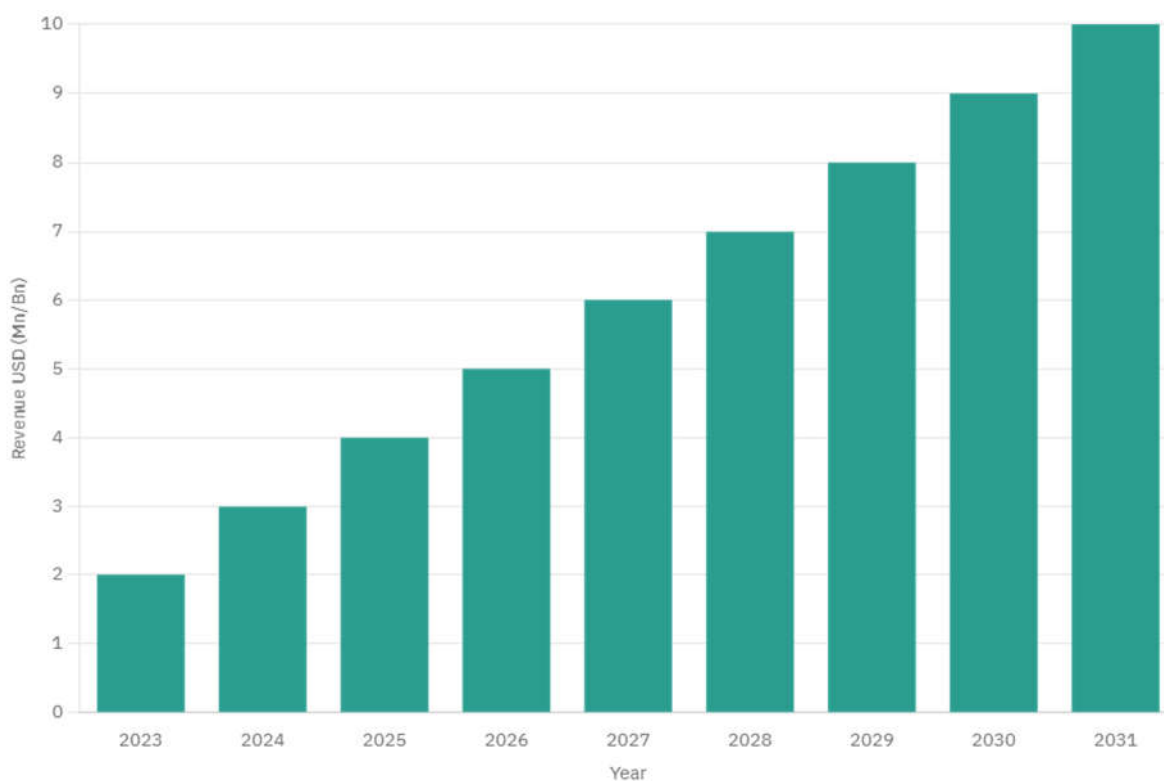


Figure 1: India cosmetic market size predicted from 2023-2031.

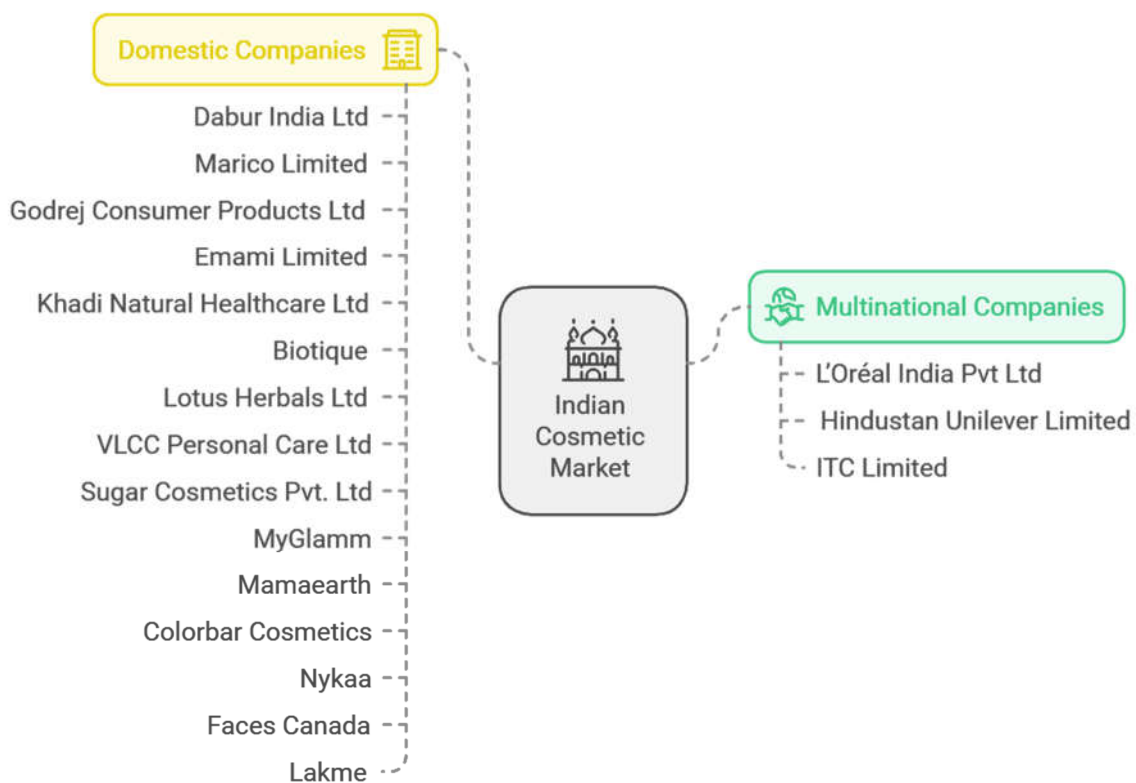


Figure 2: Companies in Indian Cosmetic Market.

Cosmetic products play a significant role in promoting well-being and healthy living. Pathogens can be transmitted through our hands from contaminated sources, but simple actions like handwashing with soap can prevent serious illnesses. Research has demonstrated that the primary causes of child mortality in developing nations, such as diarrhoea and respiratory infections, can be mitigated through handwashing with soap. Dental caries can be reduced by using toothpaste, particularly those containing fluoride. Toothpaste also helps decrease plaque and tartar buildup, which can result in tooth damage and gum disease. The economic benefits of dental care are substantial, with evidence suggesting that the advantages of preventing tooth decay significantly outweigh treatment costs. Assuming that without toothpaste, total oral health expenditure would be 5% higher, the overall benefits of toothpaste usage (in terms of avoided costs) would reach approximately €26.5 billion by 2020. Melanoma, a type of skin cancer capable of metastasizing to other organs, has ultraviolet radiation exposure as its only established external causal factor. Regular and proper use of sunscreen may help prevent melanoma occurrence. A study conducted from 1992 to 2006, published in the Journal of Clinical Oncology (2011) titled 'Reduced melanoma after regular sunscreen use: randomised trial follow up', examined cancer rates in two groups of adults aged 25 to 75 years. One group applied sunscreen daily, while the other used it at their discretion. The findings revealed a 75% reduction in invasive melanoma for about 15 years after the trial ended in the group that used sunscreen daily (5). A prevalent issue in the cosmetics industry is consumers' lack of understanding regarding the various chemicals used

in cosmetic products. When using cosmetics, we may not be aware that they contain a variety of chemicals that serve different functions. Some of these chemicals can be harmful to our health and the environment.

One commonly used chemical is parabens, which is a preservative that prevents the growth of bacteria and mold in cosmetic products. However, some studies have linked parabens to hormonal disruptions and other health issues.

Another group of chemicals commonly used in cosmetics are phthalates, which are used to increase the flexibility of plastics and as a solvent in fragrances. Some phthalates have been linked to developmental and reproductive issues.

Sodium lauryl sulphate (SLS) is another chemical found in many cosmetic products. It is a foaming agent commonly used in shampoos and body washes, but it can be irritating to the skin and eyes, especially for people with sensitive skin.

Formaldehyde is a preservative used in some cosmetic products such as nail polish and hair straightening treatments. However, it is a known carcinogen and can cause skin irritation.

Synthetic fragrances are often used in cosmetics to add a pleasant scent. However, they can contain a range of potentially harmful chemicals and may cause allergic reactions or skin irritation.

While not all chemicals in cosmetics are harmful, it's important to be aware of what's in the products we use and choose those with natural or organic ingredients when possible. By educating ourselves about the chemicals commonly used in cosmetics, we can make informed choices about the products we use and take steps to protect our health and the environment.

The beauty industry is a massive market, estimated at \$48.8 billion and continuing to grow. Personal style and expression play a significant role in our lives, and makeup is a popular way to express ourselves. However, the impact of the beauty industry and cosmetic ingredients on the planet is immense and cannot be ignored. From excessive packaging waste to the use of natural resources like palm and soy, the beauty industry has significant sustainability implications.

According to the social justice platform TRVST, beauty packaging amounts to 120 billion units of trash each year, including plastic, paper, glass, and metals that are improperly recycled and ultimately end up in landfills. Many beauty products also create a high demand for natural oils, leading to extensive and intensive cultivation, harming natural habitats through deforestation, and contaminating soil and water through pesticides and fertilizers. The social side of the beauty industry is no less scary, with unethical practices such as the use of mica, a natural silicate mineral dust, found in many cosmetic products to brighten and add shine. Mica mining has seen a fair share of backlash from environmentalists, as studies show extensive and undisclosed child labour in mines throughout Jharkhand and Bihar, India.

To make better choices as consumers, it's crucial to be conscious of the products we buy and their environmental impact. When purchasing a new beauty product, it's important to consider how it was made, who made it, and what is in the product. This approach allows us

to see the bigger picture behind conscious consumerism, where our purchasing power can create a big difference in such a large industry. While it may be tempting to buy a new product advertised by our favourite social media influencer, sustainability-minded people should fact-check products, watch for greenwashing, and make better choices as consumers.

(6)

Environmental Concerns

Cosmetic ingredients can enter the environment through multiple channels, including direct discharge from manufacturing plants into water bodies, urban runoff during rainfall, leaching from land and waste disposal methods, as well as personal usage and disposal practices. Microplastics and other solid particles from cosmetic products can accumulate in soil and aquatic environments via wastewater treatment effluent or direct release, thereby exacerbating environmental pollution. The primary route for cosmetic ingredients to infiltrate the environment is through wastewater discharge, as wastewater treatment facilities may not completely eliminate all cosmetic components, resulting in their release into aquatic ecosystems. Once introduced into aquatic systems, these substances can persist, bioaccumulate, and biomagnified within the food chain. They may also convert into more harmful compounds through processes such as photolysis and oxidation. Many of these substances ultimately find their way into water bodies, including rivers, lakes, and oceans, where they can negatively impact aquatic ecosystems and potentially enter the human food chain through seafood consumption. Waste water treatment facilities and sewage sludge represent the most significant sources of pollution. Ultraviolet filters (UVFs) utilized in cosmetic production can directly enter water bodies when washed off the skin

during recreational activities like swimming or bathing, as well as indirectly through wastewater generated from personal care product usage, laundry, and industrial discharges. The ecological risk assessment (ERA) of UV filters is an essential area of research due to their prevalent use in sunscreens and personal care items. UV filters can exhibit high toxicity to various aquatic organisms, leading to issues such as coral bleaching, developmental problems in fish and invertebrates, and bioaccumulation in the fatty tissues of aquatic life. Persistent UV filters can remain in the environment for extended periods, posing significant ecological threats.

Some Environmental Concerns are as follow

- Unsustainable resource consumption.
- Air pollution.
- Water pollution.
- Microbeads.
- Carbon footprint of manufacturing.
- Packaging Waste and Plastic Pollution.

Unsustainable resource consumption

Cosmetics products, such as palm oil, are a major contributor to deforestation. The plant-based ingredient is used in over 2,300 cosmetic products, with only tropical regions supporting its growth. Between 2015 and 2018, Southeast Asia alone cleared 500 square miles of rainforest due to rising demand. Deforestation often occurs through fire, releasing tons of carbon dioxide. Primates, such as orangutans, are directly affected by palm oil degradation. Orangutan Foundation International reports that 1,000 to 5,000 orangutans are murdered annually in palm oil concessions. The mica mining sector is also prone to deforestation, as the mineral is used in cosmetics like lipsticks and eye shadows. The extraction processes require significant labour and are often conducted in hazardous environments.

Air pollution

A recent investigation revealed that household and cosmetic products play a substantial role in carbon dioxide emissions, with these items accounting for half of the volatile organic compounds (VOCs) released in 33 major urban areas. In certain instances, the VOC emissions from deodorants, hairsprays, and fragrances are comparable to those produced by vehicles. However, this balanced ratio is primarily attributed to a reduction in pollution from automobiles rather than an increase from cosmetic products. Additionally, the environmental repercussions of fossil fuel-derived materials used in packaging and beauty items are considerable, as carbon pollution remains a significant issue even when natural ingredients are sourced and processed through unsustainable methods.

Water pollution

Beauty products that contain harmful chemicals are released into oceans, endangering both wildlife and the environment. Annually, approximately 14,000 tons of sunscreen are deposited into marine waters and coral reefs. Substances such as oxybenzone, along with chemical additives like BHT, sodium lauryl sulphate, and BHA, can disrupt the biochemistry of aquatic organisms, leading to fish mortality and a decline in plankton populations. Furthermore, certain pollutants persist in the water supply even after sewage treatment, underscoring the urgent necessity for safer alternatives in beauty products.

Microbeads

Microplastics represent an escalating issue within marine environments, posing threats to wildlife and disrupting marine ecosystems. These particles are extensively found in inland waters, often at concentrations surpassing those observed in coastal areas. Microplastics are significant environmental pollutants in both freshwater and marine habitats. Certain beauty products, particularly those containing plastic microbeads for exfoliation, play a role in exacerbating plastic pollution. When such products are utilized, microbeads are released into water systems, where they can attract additional pollutants and be ingested by fish and humans alike. The presence of microbeads intensifies the challenges associated with plastic pollution in the oceans. Although the production of microbeads has been banned in the United States and the United Kingdom, some cosmetic companies continue to incorporate harmful plastics in their formulations.

Carbon footprint of manufacturing

Manufacturing processes within the cosmetics sector are characterized by high energy consumption, primarily due to the necessity for industrial heat to blend product components effectively. The production cycle encompasses several phases, including mixing, heating, and agitation, each of which demands considerable energy resources. The presence of large-scale factories and specialized machinery further exacerbates the overall carbon footprint associated with cosmetic production. In response to these challenges, certain companies are beginning to embrace more sustainable methodologies. For example, transitioning to renewable energy sources for manufacturing operations can lead to a significant decrease in carbon emissions. Furthermore, the practice of conducting life cycle assessments (LCAs) has gained traction, enabling companies to pinpoint the most carbon-intensive phases of production and to implement focused strategies for reduction [7].

Packaging Waste and Plastic Pollution

The cosmetics sector plays a considerable role in the global issue of packaging waste, producing an estimated 120 billion units of packaging each year. This alarming figure has a profound effect on the environment, particularly concerning plastic pollution. The industry's dependence on single-use plastic containers and excessive packaging has raised significant concerns among environmental advocates and consumers.

Single-use plastic containers:

Single-use plastic containers are widely used in the cosmetics industry due to their practicality and affordability. However, these containers represent a serious environmental hazard. Many of these plastics are non-biodegradable and can take centuries to decompose in landfills. Additionally, only a small fraction of these containers is recycled. Recent statistics indicate that merely 14% of cosmetic packaging is sent to recycling facilities, with only 9% ultimately being recycled. The majority of this waste typically ends up in landfills or, even more detrimentally, in oceans and other ecosystems.

Excessive packaging:

The cosmetics industry is well-known for its excessive packaging, which often prioritizes marketing over functionality. Numerous products are encased in multiple layers of packaging, including outer boxes, plastic films, and protective inserts. This practice significantly contributes to waste generation and the depletion of resources. It is not unusual for cosmetics to feature more packaging than the actual product itself, resulting in a substantial amount of unnecessary waste.

Challenges in recycling cosmetic packaging

Recycling cosmetic packaging presents several challenges that contribute to the industry's waste problem. One major issue is the use of multi-material packaging, which makes it difficult to separate and recycle individual components. For example, many cosmetic products use a combination of plastic, glass, and metal in their packaging, making the recycling process complex and often impractical. Another challenge is the size of many cosmetic packaging items. Small containers, such as lipstick tubes and mascara wands, are

often too small to be processed by standard recycling facilities. These items frequently end up in landfills, even when consumers attempt to recycle them. The beauty industry's packaging waste problem extends beyond just the environmental impact. The production and disposal of cosmetic packaging contribute to green-house gas emissions and resource depletion. As awareness grows about the environmental and ethical considerations surrounding cosmetic packaging, both consumers and companies are beginning to recognize the need for more sustainable alternatives. To address these issues, some cosmetic brands are exploring innovative solutions, such as refillable containers, biodegradable packaging materials, and minimalist designs. However, widespread adoption of these practices remains a challenge in an industry that has long relied on visually appealing packaging to attract consumers. As the cosmetics sector continues to grow, finding sustainable solutions to the packaging waste problem has become increasingly urgent. Addressing these challenges will require collaboration between manufacturers, consumers, and policymakers to develop and implement more environmentally friendly packaging practices in the beauty industry.

Ethical Concerns:

In more recent years, the beauty industry has been criticized for practices surrounding: false claims and misleading advertisements, the unethical sourcing of ingredients, child labour, the use of harmful ingredients, animal testing, and excessive packaging. Some of these issues are more publicized than others, leading to unequal awareness of all problems. For example, many consumers are aware that companies used to rely heavily on animal testing before launching beauty products. What they may not be aware of is that animal testing in the United States is not banned, and unless a product is labelled cruelty-free, it may have been tested on animals (8). The situation gets even more complicated when you take into consideration the laws surrounding animal testing in other countries. While the European Union has banned the sale of any products tested on animals in finished form, the Chinese government actually requires the use of animal testing before sale in the country. Many well-known brands, including Estee Lauder and Clinique, admit they will let their products be tested on animals if required by law in the country of sale (8). In order to be considered cruelty free, a company must abstain from animal testing at all points of production and sale. Another well-known topic of unethical behaviour is the false claims and misleading advertisements commonly associated with the beauty industry. A recent study examining three categories of claims including scientific, performance, and subjective showed that more claims are classified as deceptive rather than truthful (9). Although unsettling, this fact would not surprise many consumers. More surprising is the use of child labour through the unethical sourcing of ingredients. The biggest issue here lies within the use of mica, a main ingredient in many cosmetics and other beauty products. Twenty-five percent of mica in the industry is sourced from India where it is estimated that 20,000 children are employed to work in the mines (10). After the issue was brought to light over a decade ago companies such as L'Oreal and Estee Lauder continue to source mica from India. Even brands known for their ethical behaviour, such as Lush, continue to struggle to remove child labour from their supply chain (10).

Two other unethical practices in the industry are the safety of product ingredients and the environmental impact of packaging. There are over 10,000 ingredients which are commonly used in beauty products, and of those only 10% have any safety data (11). Additionally, while the UK has banned nearly 1,400 ingredients, the US has only partially banned 11 ingredients. According to the FDA, lipsticks from brands such as L’Oreal, Maybelline, and NARS have been found to contain trace amounts of lead (11).

On top of harmful ingredients, most products are excessively packaged in thick plastics and other materials which are not easily recycled and continue to burden landfills (12).

Some ethical Concerns (Figure 3) are as

- Sourcing of ingredients
- Animal testing
- Human rights concerns
- Transparency and labelling

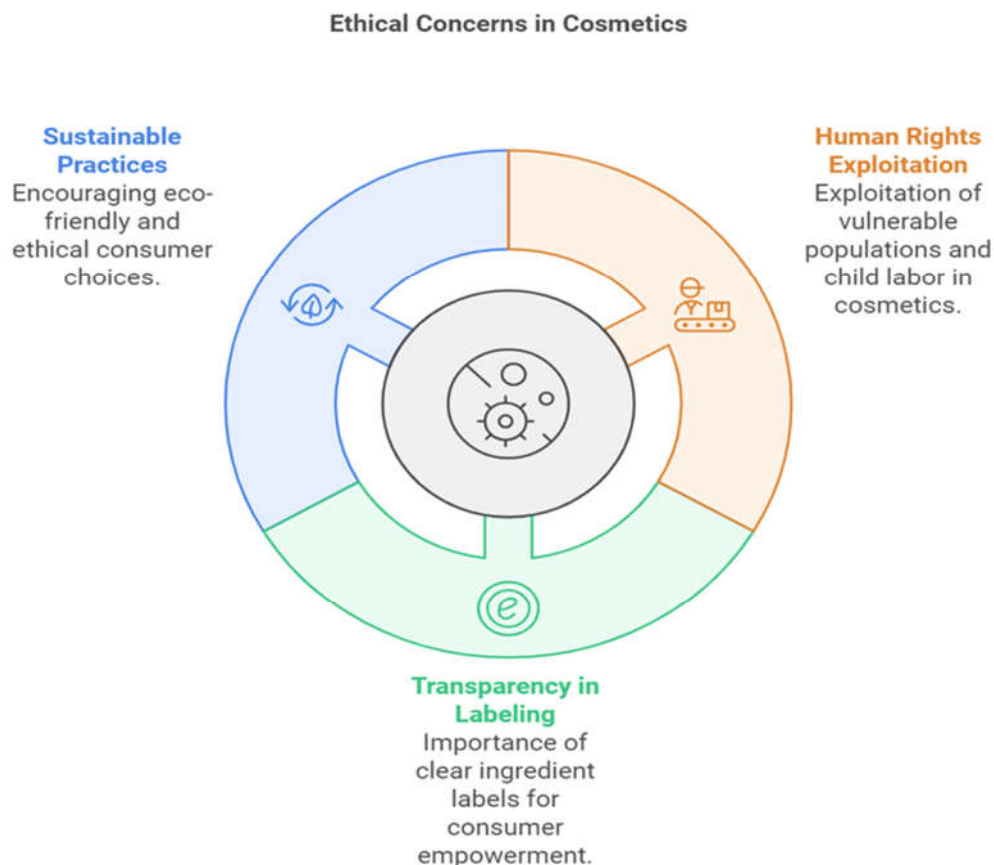


Figure 3: Ethical concerns in cosmetics.

Sourcing of Ingredients

The cosmetics sector is increasingly prioritizing ethical and sustainable sourcing practices, driven by the diverse array of ingredients present in its global supply chains. This shift has resulted in the creation of sustainable sourcing models that emphasize the use of ingredients

from eco-friendly farms, the promotion of biodiversity, and the exploration of alternative sources derived from byproducts. Nevertheless, achieving a harmonious balance between ecological considerations and consumer demand poses a significant challenge. Organic skincare products emphasize ecological integrity, concentrating on sustainable methodologies and conservation efforts. Companies in the organic skincare sector are required to eschew harmful synthetic pesticides and fertilizers, adhering to the principles of organic agriculture. However, meeting the rising consumer demand for organic skincare while maintaining ecological standards remains a complex issue. The industry also faces ethical dilemmas related to land use and its repercussions on local communities and wildlife. Ethical sourcing practices must take into account the environmental consequences of agricultural activities and their potential socio-economic impacts. Some organic skincare brands are striving to reduce their carbon footprints by sourcing ingredients locally, thereby lowering transportation expenses and investing in carbon offset initiatives [13].

Animal Testing

It is reported that about 100,000 to 200,000 animals suffer and die solely for the testing of cosmetics every year (Human Society International, 2020). The animals that are used for animal testing are mostly rabbits, guinea pigs, hamsters, rats and mice. While dogs and monkeys are no longer used to test cosmetics, they are used to test other types of chemicals. These types of testing include skin and eye irritation tests where chemicals are rubbed onto shaved skin or dripped into the eyes. These tests can cause considerable damage to the animals, which leaves them in pain. It is uncommon for them to receive any pain relief, and they tend to be euthanized once they no longer serve a purpose (Human Society International, 2020).⁹ The Food and Drug Administration (FDA) explains how they are responsible for assuring that cosmetics are safely and properly labelled. This responsibility is accomplished through enforcement of the Federal Food, Drug, and Cosmetic Act (FD&C Act), related statutes and regulations promulgated under these laws. The FDA also stated that it does not require the use of animal testing as a safety measure (U.S Food & Drug Administration, 2020). They advocate for companies utilizing animal testing to make sure they maximize the scientific information they get while minimizing the number of animals being used [14].

Human rights concerns:

The global cosmetic industry is experiencing a surge due to rising disposable income, awareness of wellbeing, changing lifestyles, and social media influence. This demand has led to increased production in developing countries, often resulting in exploitation of natural resources and vulnerable populations, including children. Poor working standards, inadequate social protection, and limited access to education and healthcare contribute to poor living and working conditions for families and child labour. Ingredients in cosmetic products are often overlooked, with ingredients like palm oil, cocoa, vanilla, and shea sourced from various parts of the world and often involving child labour. Children are forced into labour to support their families and sustain basic needs, often in harsh environments. Mica, a highly sought-after mineral in cosmetics, is used in decorative cosmetic products like blusher, eyeshadow, body glitter, liner, and foundation. India is the largest producer and exporter of mica, accounting for over 60% of total produce. The mica

mining industry operates predominantly as an informal sector, with minimal government oversight, making it challenging to enforce labour laws or regulations [15],

Transparency and labelling:

The significance of transparency in empowering consumers regarding ingredient labels for health and beauty products cannot be overstated. It highlights the importance of INCI names and the need to identify and avoid harmful ingredients. By making informed decisions about personal care products, consumers not only enhance their health but also promote sustainable practices within the beauty sector. Trustworthy and thorough labelling, guarantees clear and truthful ingredient disclosures, showcasing the brand's dedication to quality and sustainability. Through their purchasing choices, consumers possess the ability to instigate change, favouring products that resonate with their values and advocating for increased transparency in the industry [16].

Sustainable Alternatives:

The beauty industry has experienced a notable transition towards sustainability and environmental awareness in recent years. This change has facilitated the development of innovative approaches that tackle environmental and ethical issues related to cosmetic production and usage. Sustainability approaches for production of cosmetics are presented in Figure 4.



Figure 4: Sustainability approaches for production of cosmetics.

Natural and Organic Ingredients

The interest in natural and organic ingredients within cosmetics has significantly increased, as consumers are more inclined to choose products that reflect their commitment to eco-friendliness and ethical practices. Natural cosmetics are characterized by a high content of

ingredients sourced from plants, animals, or minerals, thereby minimizing the inclusion of synthetic materials, especially those derived from petrochemicals [17]. Organic cosmetics enhance this concept by utilizing ingredients obtained from organic farming methods. It is crucial to differentiate between natural and organic cosmetics; while natural products may include ingredients from conventional agriculture, organic cosmetics exclusively feature components from certified organic sources. This focus on organic ingredients aims to minimize the use of pesticides, chemicals, and synthetic fertilizers, thereby aiding in the conservation of water resources and biodiversity.

Zero-Waste and Refillable Products

In response to the escalating concerns regarding packaging waste and plastic pollution, numerous beauty brands are embracing zero-waste and refillable product alternatives. Refillable packaging has emerged as an effective strategy to mitigate waste and foster a circular economy within the cosmetics sector. By creating containers that can be reused and replenished, manufacturers are significantly curtailing the volume of packaging waste produced. Refillable skincare packaging presents various advantages for both brands and consumers, as it not only reduces environmental impact but also appeals to consumers who are increasingly seeking sustainable and responsible brands.

Regulatory Frameworks

Regulatory authorities establish rules and guidelines governing the production, distribution, labelling, and importation of cosmetic products. There exists significant variation in cosmetic regulations across different nations, particularly concerning nomenclature, labelling, and the safety of colorants. In many jurisdictions, colour additives utilized in cosmetics must undergo safety testing and be appropriately documented. Regulatory bodies in the United States, European Union, and Japan adhere to rigorous regulatory standards, while countries such as India, Brazil, and China exhibit less stringent oversight. In the United States, the regulation of cosmetics is overseen by the FDA, in accordance with the Food, Drug, and Cosmetic Act. In Europe, the EMEA (Europe, Middle East, and Africa) is responsible for cosmetic regulation, governed by Council Directive 76/768/EEC. In India, the CDSCO (Central Drugs Standard Control Organization) serves as the regulatory authority, operating under the Drug and Cosmetics Act and its associated rules.

Certifications:

Certification within the cosmetic industry plays a vital role in guaranteeing that products adhere to safety, quality, and environmental responsibility standards. Nonetheless, the efficacy of such certifications is frequently questioned, particularly in light of the greenwashing phenomenon. Greenwashing refers to the practice of companies making exaggerated or misleading assertions regarding the environmental or ethical advantages of their products or practices [18], which may mislead consumers into selecting products that do not truly reflect their values.

Several elements contribute to the widespread occurrence of greenwashing in the cosmetics sector, including insufficient regulation, the complexity of ingredients, consumer demand,

and competitive pressures. In response to this issue, various certification programs have been established to provide consumers with more trustworthy information. These programs generally involve comprehensive testing and assessment of products to confirm compliance with specific standards concerning ingredients, manufacturing processes, and environmental impact.

Among the most recognized certifications are USDA Organic, Ecocert, COSMOS, and Leaping Bunny. The USDA Organic certification ensures that products meet the standards set by the United States Department of Agriculture for organic production [19], while Ecocert verifies the natural and organic content of cosmetic products. COSMOS establishes criteria for ingredients, manufacturing processes, packaging, and labelling to guarantee that products are environmentally sustainable [20]. These certifications are valued for their broad recognition and credibility within the cosmetics field. It is essential for consumers to remain alert and critically assess the claims made by brands, as greenwashing strategies continue to evolve.

Enhancing regulation and transparency within the industry can significantly mitigate the prevalence of greenwashing, enabling consumers to make well-informed decisions regarding the products they choose to purchase.

Cosmetics Regulation in India:

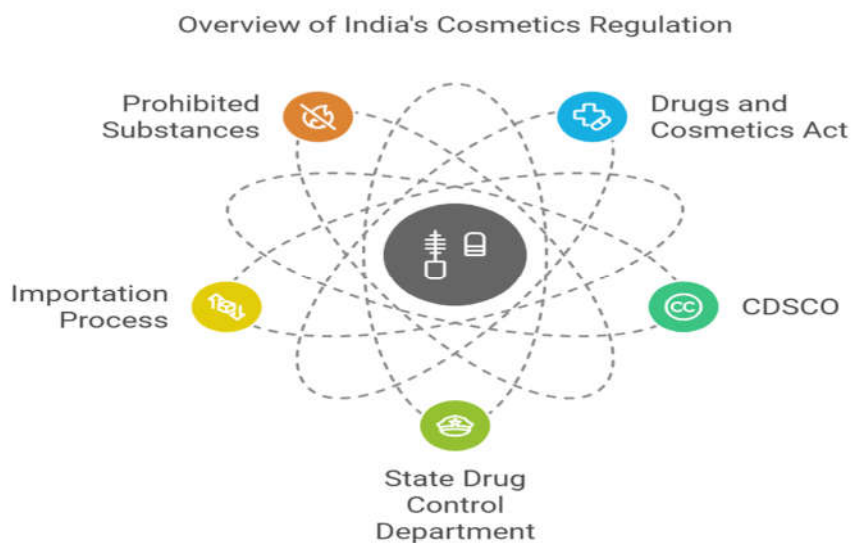


Figure 5: Indian cosmetics regulation.

The regulation of cosmetics in India (Figure 5) is primarily governed by the Drugs and Cosmetics Act, with oversight provided by the CDSCO, which is led by the Drugs Controller General of India. The production of cosmetics is subject to a system of inspection and licensing managed by the State Drug Control Department. The importation of cosmetics is regulated through a registration process overseen by the CDSCO, which is the principal authority responsible for cosmetic-related activities. The manufacture and importation of

certain substances, including hexachlorophene, lead or arsenic compounds, and mercury compounds, are strictly prohibited.

Case Study:

Sustainable Development in Practice: Case Study of L'Oréal

The case study presented in the Journal of Business and Retail Management Research discusses sustainable development initiatives undertaken by L'Oréal, emphasizing the importance of linking economic, social, and environmental factors. By analyzing L'Oréal's sustainability program, which includes innovating sustainably, producing sustainably, living sustainably, and developing sustainably, the study highlights how sustainable development practices can be integrated into different aspects of business operations. L'Oréal's efforts towards reducing its environmental footprint, respecting biodiversity, optimizing packaging, and preventing deforestation demonstrate a comprehensive approach to sustainability. Additionally, the company's focus on reducing CO₂ emissions, water consumption, and waste in manufacturing units showcases how economic and social factors are intertwined with environmental sustainability.

The study underscores the significance of embedding sustainable development principles across all organizational activities to achieve the triple bottom line. It points out that L'Oréal's progress towards a low carbon business model, with a 77% reduction in CO₂ emissions while increasing production by 38%, reflects the feasibility of balancing growth with environmental considerations. The analysis suggests that sustainable business practices not only contribute to environmental integrity but also promote social equity and economic prosperity. Overall, the research provides practical insights for practitioners, academics, and policymakers on the importance of holistic sustainability strategies that address environmental, social, and economic dimensions for long-term success and societal impact.

The decision-making process in organizations plays a crucial role in the implementation of sustainable development initiatives. Academicians need to further research practical approaches for sustainable development, filling the gap in practical case-based studies. Policymakers must incentivize organizations to undertake sustainable initiatives beyond mere compliance, ensuring a holistic understanding of sustainable development. Reflecting on a case study of L'Oréal, the integration of sustainability in business operations positively impacts not only the firm's image but also its profitability and the industry ecosystem. Such initiatives showcase how organizations can balance long-term profitability with environmental and social responsibilities while fostering innovation and performance.

The study emphasizes the need for both qualitative and quantitative research to explore the practical viability of sustainable development initiatives, especially in the context of business organizations. By examining various dimensions of sustainability and the impact on financial performance, firms can adopt innovative practices that not only benefit their bottom line but also contribute to societal and environmental well-being. With L'Oréal's successful implementation of sustainable practices, other organizations in the cosmetics industry and beyond can learn and adapt similar strategies, paving the way for a more sustainable and responsible business landscape [21].

Conclusion:

The cosmetics industry significantly impacts both the environment and society, leading to important discussions about ethical practices and sustainability. The studies reviewed offer several important findings:

Environmental Impact: The cosmetics industry contributes to water pollution, energy consumption, and greenhouse gas emissions. The production of shampoos, in particular, has a significant environmental footprint, particularly in terms of water usage and packaging waste. Companies can reduce their environmental impact by implementing sustainable practices, such as using renewable energy sources and eco-friendly packaging.

Ethical Concerns: The issue of animal testing remains contentious, with many companies continuing this practice despite the existence of alternative methods. Transparency in the supply chain is also problematic, as some companies fail to provide sufficient information about their suppliers and production processes. There is an increasing consumer demand for ethical and sustainable products, which is driving companies to adopt more responsible practices.

Best Practices: Adopt alternative testing methods to reduce dependence on animal testing. Develop sustainable supply chain practices by procuring materials from certified sustainable sources. Invest in renewable energy and aim to lower energy consumption. Design eco-friendly packaging solutions and work towards minimizing waste. Improve transparency by offering comprehensive information about manufacturing processes and suppliers.

Recommendations for Future Research: Investigate emerging trends in sustainable cosmetics, such as the incorporation of plant-based ingredients and circular economy models. Examine the role of social media in shaping consumer perceptions of ethics and sustainability in the cosmetics sector. Conduct comparative studies of different companies' sustainability practices and their effectiveness.

Implications for Policy and Practice: Fortify regulations related to animal testing and environmental impacts. Promote the widespread adoption of sustainable practices across the industry through certification programs or established standards. Provide support for initiatives aimed at enhancing sustainability within the cosmetics sector.

Conflict of Interest

The authors declare no conflict of interest.

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