

## The beauty industry, climate change, and biodiversity loss.

Can humanity have “stories of kindness” for an environment-healing culture?

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**Keywords:** beauty industry; biodiversity conservation; climate crisis; corporate social responsibility; eco-surplus culture.

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**Abstract.** *Many people now recognize that the challenges of climate change and biodiversity loss are rooted in how and to what extent humans consume goods in the Anthropocene era. Consumerism has driven natural resource exploitation to its peak, and resource depletion is becoming more common. The beauty and personal care industry has an enormous market and substantial profitability, particularly in the high-income category. However, this benefit*

*comes with the risk of being scrutinized, investigated, and criticized by civil society groups, environmental activists, and consumers. More than anyone else, the industry is aware of the risks of negative society appraisals, notably the consequences of consumer-led boycott activities. In this paper, we suggest that, given the current situation, global beauty firms need to play a proactive role in directing resources toward the development of sustainable uses of biodiversity and agriculture methods. This includes advocating for the wider use of environmentally conscious sourcing of raw materials, avoiding excessive and wasteful packaging, and devoting resources to research and innovation in environmentally friendly manufacturing procedures. The proactiveness would allow them to demonstrate their environmental commitment and actively give customers persuasive evidence of their social responsibility through emission reduction and biodiversity protection actions, gradually building an environmental-healing culture in the beauty industry.*

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## **1. The origin and expansion of the beauty industry**

The world is now facing existential threats from climate change induced by anthropogenic greenhouse gas (GHG) emissions. The Global Tipping Points Report released at COP28 suggests that five major tipping points are in danger of being crossed at the current warming level, and three more will be at risk in the 2030s if the globe surpasses 1.5°C of global warming (Lenton et al., 2023). However, climate change is just one front in the current battle against environmental degradation (UNDP, 2023). Recent evidence indicates that biosphere integrity, another core planetary boundary besides climate change, has been transgressed (Richardson et al., 2023). Specific losses driven by anthropogenic impacts and climate change have and will continue to be updated, increasing in scale and scope, extending beyond insects, penguins, dolphins, whales, or corals, which are already quite familiar (Baumhardt, 2023; Chow, 2023; Fretwell, Boutet, & Ratcliffe, 2023; The Associated Press, 2023; Vuong & Nguyen, 2023; Wudu, Abegaz, Ayele, & Ybabe, 2023).

With the increasing volume of specialized scientific knowledge and widespread public information on climate change and biodiversity loss, many people have

realized that the issue lies in how and to what extent humans consume products for their lives in the Anthropocene era. Consumerism has pushed natural resource exploitation to its peak, and the depletion of resources is becoming increasingly prevalent.

As part of endeavours to change human trajectories in all fields of consumption, the battle against climate change and biodiversity loss is also spreading to the beauty industry, which benefits from natural resources and biodiversity greatly for innovation and contributes between 0.5% to 1.5% of global GHG emissions (Escobedo & Lojenga, 2013; MacCarthy et al., 2020; Rocca, Acerbi, Fumagalli, & Taisch, 2022). Before delving into the contribution of the beauty industry to the current climate and biodiversity crisis and how it should change to address the issues, it is worth looking back at drivers that have led to the rapid development of the industry.

The use of beauty products did not emerge in the last few centuries but can rather be traced back thousands of years ago and linked to many cultures and societies, including Ancient Egypt, the Persian Empire, China, the Ancient Greeks, and the Roman Empire. However, access to beauty in past cultures and societies was primarily limited to elites who had sufficient income and leisure. Only until the 19<sup>th</sup> century did cosmetic products start to be used by a wider number of people due to mass production capability, advances in transportation, and increasing income brought by industrialization (Jones, 2011). One of the major barriers to the development and expansion of the beauty industry at the time was the hazardous ingredients. Thus, the invention of safer products, like Henry Tetlow's discovery of zinc oxide for face powder and Eugène Schueller's invention of modern synthetic hair dye, also helped disseminate cosmetics to more people (Jones, 2010; L'Oréal Groupe, n.d.).

Apart from the advancements in production and distribution, the social transition toward a higher consciousness of personal image was also a vital factor driving society's rising demand for cosmetics products (Jones, 2010). The technological advancements of mirror production, commercial photography, marketing, and the advent of electricity in homes and public spaces improved people's self-awareness of their personal appearance. Moreover, through the influence of ballet and theatre stars as well as the film industry in Hollywood, make-up became fashionable in the United States and Europe in the early 20<sup>th</sup> century. Taking the opportunities, entrepreneurs established many famous cosmetic firms in the present day during this period, such as L'Oréal, Elizabeth Arden, Helena Rubinstein, and Max Factor (Jones, 2023).

The enduring presence of cosmetics throughout history underscores their perceived benefits and society's ongoing demand for them (e.g., desire for attraction, reproduction, happiness, freedom, and feminine self-presentation) (Jones, 2023; Peiss, 1999). A survey conducted by the trade association Cosmetics Europe in 2022 revealed that 72% of European consumers viewed cosmetics as important or very important in their lives. This sentiment was even higher among 25-54 year-olds, with 74% considering cosmetics essential, and it peaked at 80% among women (Cosmetics Europe, 2022).

Despite the perceived benefits of beauty products, it cannot be denied that such a large number of people considering cosmetics important is largely driven by the industry's substantial investment in marketing with the aim to create additional demands for their products. In 2022, businesses in the beauty and personal luxury category spent \$7.7 billion on advertising, representing approximately 1% of the total global advertising expenditure (Faria, 2023). Much of the advertising is used to generate the "unreal needs" and "conspicuous consumption" of luxurious fragrances, skincare products, and color cosmetics, which are often distinguished by intricate packaging (Galbraith, 1998; Jones, 2023).

Story-telling is a primary marketing strategy of the industry to exaggerate and create fanciful claims about the benefits of beauty products. Typically, since its beginning, the industry has continuously stereotyped beauty (e.g., global homogenization of "whiteness" as a beauty standard) and created fear over the natural processes of aging (Jones, 2010, 2023; Krozer & Gómez, 2023). Through doing so, the industry makes people, especially women, increasingly concerned about their appearance, stimulates their demand for solutions, and sells "hopes" (Tedlow, 2009). For that reason, the products promoted to address the aging and gender roles have not significantly changed in the last century, whereas marketing has continually evolved through a relentless process of linguistic innovation, constantly adapting to generational shifts (Hess, 2017). In particular, by the 1970s, language in beauty marketing had taken on a more inspirational and combative tone, using terms like "combat," "fight against," or "defy" age. In recent years, the focus has shifted, with "youthful" being replaced by words such as "renewing" and "radiant," and products are now often promoted as wellness-enhancing and environmentally friendly (Hess, 2017). Such a strategy was even heavily criticized by Anita Roddick, the founder of The Body Shop beauty retailer, in her autobiography *Body and Soul* (Roddick, 1991): "It is a monster industry selling unattainable dreams. It lies. It cheats. It exploits women. By preying on women's fears – of lost youth, diminishing appeal, and fading beauty

– the false hopes offered by the cosmetics industry can only result in misery, demoralization, and a deep-rooted sense of inadequacy” (p.9).

As “hopes” seem to have no boundaries, the success of this strategy is evident in the continued growth of the beauty market despite “little sign of either humility or even honesty in relation to customers” (Jones, 2023, p.119). By 2023, the industry had had a large market and high profits, especially in the high-income segment, with an estimated global market value of 460 billion USD and a projected annual growth rate of 6% until 2027 (The Business of Fashion & McKinsey & Company, 2023). However, given its detrimental impacts on the environment, more growth also means a higher risk of facing scrutiny, investigations, and criticism from civil society organizations, environmental activists, and consumers. More than anyone else, the industry is vulnerable to the perils of unfavourable societal assessments, particularly the repercussions of consumer-led boycott actions. The latest and future developments will only increase the pressure on businesses with products related to emissions and environmental damage, specifically biodiversity loss due to deforestation and long-term agricultural cultivation.

## **2. Detrimental impacts on the environment of the beauty industry**

In contrast to the exaggerated and fanciful claims of the beauty industry, which are hard to validate, its various negative impacts on the environment are apparent with abundant evidence. The most obvious one is the generated waste due to extensive and wasteful packaging. Packaging is a crucial element in the business as it helps prevent the contamination of the product’s ingredients, ensure the product’s functionality and that the product is sealed and brand new, protect the product during transportation, etc. Since François Coty replaced pharmaceutical-style bottles with elegant new bottles characterizing artistic designs for selling perfumes, packaging has become much more important, even surpassing the ingredients across beauty categories as it has become a fundamental component in the industry’s marketing strategies (Jones, 2010). Packaging is a way for the industry to attract buyers, associate the brand image with the quality of a product, and communicate the brand identity to consumers (Laurea, 2019). Most recent statistics suggest that by 2020, the industry produced around 120 billion units of beauty packaging annually, many of which were made from materials not easily biodegradable or recyclable, like plastic and glass, and ended up as waste. It is also estimated that 70% of the industry’s waste comes from packaging (British Beauty Council, 2020).

As a result, the industry substantially exacerbates the global waste disposal crisis, especially the plastic pollution that adversely affects multiple geophysical processes and properties (e.g., global carbon cycle, nutrient cycle, soil properties, etc.) and worsens biological integrity (MacLeod, Arp, Tekman, & Jahnke, 2021). Specifically, ingestion of macroplastic debris has been recorded for 701 species, accounting for more than 76% of 914 studied marine megafaunal species (including birds, mammals, turtles, fish, and invertebrate species) (Kühn & Van Franeker, 2020). Another study by Gall and Thompson (2015) indicated that 17% of species affected by marine debris were listed on the International Union for Conservation of Nature Red List. Besides macroplastics, microbeads (types of microplastics) contained in some personal care and cosmetic products, like facial scrubs, body scrubs, toothpaste, etc., are also washed down drains into water sources, ultimately ending up inside marine life and humans (Okafor, 2021). The ingestion of microplastics has been reported to cause various harmful effects, including physical injuries, physiological changes, and impaired feeding, growth, reproduction, and oxygen consumption rates among aquatic species (Issac & Kandasubramanian, 2021; MacLeod et al., 2021). The pollution has reached a critical level when microplastics are now detected in cloud water at mountain summits ranging from 1300 to 3776 meters in altitude (Wang et al., 2023).

Sourcing raw materials for cosmetics production is also directly associated with biodiversity loss and GHG emissions. Palm oil is an exemplary ingredient used extensively in the cosmetics industry. Around 70% of beauty and personal care products include at least one palm oil derivative (Warn, 2021). However, its cultivation is a typical example of deforestation and an agricultural production method that disrupts the ecological balance, disturbs stable carbon reserves, and causes large-scale emissions (Qaim, Sibhatu, Siregar, & Grass, 2020; Vijay, Pimm, Jenkins, & Smith, 2016).

Due to the growing demand for palm oil-related products, oil palm plantations expanded by 0.7 million hectares annually during the 2008-2017 period (Erik Meijaard et al., 2020). A remote sensing assessment indicated that the total areas of oil palm plantations reached 19.6 million hectares by 2019, with Southeast Asia, specifically Indonesia, Malaysia, and Thailand, accounting for approximately 90% (Descals et al., 2020). The expansion of oil palm plantations resulted in widespread deforestation in Southeast Asia's tropical forests. Between 1972 and 2015, about half of new plantations encroached upon forests, while the rest replaced croplands, pasturelands, scrublands (including areas of secondary forest regrowth), and other types of land use (E. Meijaard et al., 2018).

Deforestation even happens in Borneo rainforest, one of the oldest rainforests in the world (around 140 million years old) that contains many endemic species of plants and animals, including critically endangered Bornean orangutan and Bornean rhinoceros (Leeder et al., 2016). Specifically, between 2000 and 2017, Borneo's old-growth forest declined by 6.04 million hectares (14% of the total area), primarily due to conversion to oil palm industrial plantations (Gaveau et al., 2019).

As forests are cleared, the species they contain are also negatively affected. According to Meijaard, at least 321 species listed in the International Union for the Conservation of Nature (IUCN) Red List are reported to be threatened by oil palm plantings, which is significantly higher than those affected by other oil crops. Some notable threatened species are orangutans *Pongo* spp., gibbons *Hylobates* spp., and the tiger *Panthera tigris* (Erik Meijaard et al., 2020). The species diversity and abundance for most taxonomic groups in oil palm plantations are also found to be substantially lower when compared with natural forests (W. A. Foster et al., 2011; Savilaakso et al., 2014). In certain plantations, plant diversity is less than 1% of the diversity found in natural forests. Meanwhile, mammal diversity in plantations is recorded to be 47–90% lower than in natural forests, with the level of diversity heavily influenced by the proximity to natural forests (Erik Meijaard et al., 2020; Pardo et al., 2019; Wearn, Carbone, Rowcliffe, Bernard, & Ewers, 2016). Oil palm plantations typically exclude forest specialist species, which are usually the species most important for conservation, like forest-dependent gibbons (Erik Meijaard et al., 2020).

In addition to negative impacts on biodiversity loss, oil palm plantations can lead to a predominantly negative net effect on ecosystem functions as compared to primary, selectively logged, or secondary forests. The loss of some ecosystem functions is potentially irreversible when the forests are cleared for new plantations, such as reductions in gas and climate regulation, habitat and nursery functions, genetic resources, medicinal resources, and information functions (i.e., cultural, aesthetic, and educational values of ecosystems) (Dislich et al., 2017). Xu et al. (2022), using high-resolution satellite maps, discovered that the oil palm expansion in Indonesia and Malaysia alone caused the loss of around 50.2 million metric tons per year during 2001–2015. They also observed the encroachment of oil palm plantations from low to high-biomass-density forests after 2007. In 2015, 0.12 million hectares of 395 protected areas (over 405 protected areas in Indonesia and Malaysia) were encroached by oil palm plantations.

The deforestation and drainage of peatlands for oil palm cultivation release significant amounts of carbon dioxide (Wijedasa et al., 2017). Although oil palm

trees can capture high levels of carbon and their oil can be used as a renewable energy source, the carbon emissions from deforestation and peatland drainage cannot be offset by biofuel production in the short to medium term (less than 100 years) (Erik Meijaard et al., 2020; Searchinger, Wiersenius, Beringer, & Dumas, 2018). Despite the detrimental impacts of sourcing raw materials, its contribution to the beauty industry's GHG emissions is only ranked second with 30%. The majority of emissions in the beauty industry (59%) derive from consumer use of products, according to Carbon Trust's analysis (N. Foster & Retallack, 2023). Other GHG emission sources in the industry include end-of-life treatment of products (5%), transportation and distribution (5%), and manufacturing (1%).

Besides the aforementioned adverse impacts, the beauty industry is also involved in other socio-environmental problems, like poor working conditions, water pollution, animal cruelty, etc. However, the study will not delve into these aspects as its focus is on biodiversity loss and climate change, the two core planetary boundaries (Steffen et al., 2015).

### **3. The need for an environment-healing culture**

As humanity is approaching the climate tipping points and planetary boundaries, people are increasingly more conscious of anthropogenic activities' adverse impacts on the environment and their consequences on human well-being. Such a consciousness is driving the social transitions toward a society that prioritizes sustainability. As a result, environmental protection and the reduction of negative impacts on the environment are gradually becoming standards reflecting ethical and humanistic values (Vuong & Nguyen, 2024a, 2024b).

Although beauty is hard to define, it is generally accepted by philosophers that for something – an event, a person, a behavior, an object – to be considered beautiful, it needs to attain the unity-in-diversity principle. The principle means that the diverse elements need to be organized and integrated into a meaningful whole (Diessner, Pohling, Stacy, & Güsewell, 2018). For someone's beauty to be appreciated, not only their image, actions, and values but also other information related to that person (including the personal care and cosmetic products they use) also need to be acknowledged by themselves or other people (Güsewell & Ruch, 2012; Haidt & Keltner, 2004; Vuong, 2023). Suppose consumers know that the products used for maintaining their beauty are contributors to climate change, biodiversity loss, environmental degradation, animal cruelty, and the suffering of other people. In that case, they would gradually begin to have

multiple questions: whether their “beauty,” which is the integration of multiple destructive elements, is true beauty; whether they still want such a beauty; and whether it is worth compromising their moral values for “hopes” and unattainable dreams of forever young. Indeed, the analysis of *The Business of Fashion* and McKinsey & Company (2023) indicates that the absence of ingredients that harm the environment and cruelty-free production is considered the most crucial aspect of sustainability by beauty consumers.

Besides social transitions, structural transformations also occur to restrict businesses, which causes harmful effects on the environment. In 2022, 196 countries signed an agreement to prevent and reverse biodiversity loss under the leadership of the United Nations. The Kunming-Montreal Global Biodiversity Framework is currently encouraging raw material suppliers to source plant-based materials that comply with environmental ethics and laws (Convention on Biological Diversity, 2022), for example, based on Union for Ethical Biobased Trade (UEBT), International Standard for Sustainable Wild Collection of Medicinal and Aromatic Plants (ISSC-MAP), FairWild Standard, Rainforest Alliance, Forest Stewardship Council (FSC), etc. Increasing pressure and legislation trends will gradually occur in countries across the globe, making it mandatory. For instance, if a product uses natural raw materials that violate the European Union’s forest deforestation regulations (EUDR), that product will be banned or subject to heavy penalties. The compulsory implementation of traceability measures, which enable the identification of the geographical origins and production conditions of commodities, is increasingly prevalent.

Thus, businesses that capitalize on agricultural and wild-harvested ingredients are currently under scrutiny concerning their capacity to guarantee that these ingredients are ethically and environmentally friendly sourced. Ecovia Intelligence, a research, consulting, and training company specializing in global ethical product industries, anticipates a forthcoming surge in the adoption of sustainable regulations and strategies by beauty and personal care firms. One notable facet of this transition involves selecting raw materials that adhere to established environmental ethics criteria (Doolan, 2023). The company also assesses that this shift is no longer a prediction but has become a pressing necessity!

Some exemplary commitments can be seen so far:

- Davines Group, an Italian hair and skincare product company, partnered with the Rodale Institute to establish the European Organic Regenerative

Center in Parma in 2021. The company cultivates cosmetic ingredients using regenerative agriculture in a 17-hectare area.

- The multinational L'Occitane Group is committed to producing 100% of raw materials through regenerative and sustainable agriculture by 2025.
- Weleda, a pioneering organic skincare company worldwide, has established medicinal plant gardens with over 1,000 plant species and over 80% of plant ingredients grown according to organic farming processes.

Given the current circumstances, multinational beauty corporations must take a proactive role in allocating resources towards the development of sustainable agriculture practices. This entails not only advocating for the widespread adoption of environmentally conscious production methods but also dedicating efforts towards conducting research and innovation in the area of nature-friendly manufacturing techniques. There is a worldwide demand for a substantial proportion of profits to be reinvested into the cultivation of soil fertility, carbon sequestration, and active engagement in a collective effort to safeguard biodiversity within the Earth's ecosystem (Nguyen & Jones, 2022; Vuong, 2021). Such reinvestments can be made through schemes like Payment for Ecosystem Services, offsets, etc. (Escobedo & Lojenga, 2013).

Although the trend of transitioning from materials of fossil origin (such as oil) to renewable materials, adapting to climate change, and coexisting in harmony with nature has been theoretically determined, execution is still referred to as “a complex ecosystem of challenges” (Doolan, 2023). The main reason is that any change can entail a whole chain of consequences, which can be assessed by the complexity of the current supply chain in the industry. Moreover, greenwashing, inadequate environmental information disclosure, and lack of external verification and certification of ecological commitments hinder the industry's sustainability transformation (N. Foster & Retallack, 2023; Sangal, 2023; Tiscini, Martiniello, & Lombardi, 2022).

#### 4. Conclusions

Despite the numerous obstacles, a consensus on the change in packaging and material sourcing is critical for the sustainability transformation within the industry. Leading brands are increasingly required to demonstrate their commitment to the environment and actively provide convincing evidence to consumers of their social responsibility through emission reduction and biodiversity conservation practices. Therefore, beauty firms' proactiveness in

developing an environment-healing culture (i.e., eco-surplus culture) and subsequently educating their consumers is more ethically and responsibly sound than being forced by consumers and more aligned with the “healing beauty” message that they are trying to persuade their consumers to believe in (Vuong, 2023). This approach will also be more effective as beauty firms have better control over the transformation process (e.g., the resources, human resources, and technologies)<sup>1</sup> (Vuong, 2021).

Humanity has transcended the era in which the wealthy dressed themselves with the pelts of wild animals. Humanity is also leaving behind products that bring ecological destruction, albeit indirectly. Ecological destruction is also the destruction of the living environment of fellow human beings, those who may not have the resources to beautify themselves. Therefore, this type of destructive beauty can also be understood as a source of suffering for fellow human beings, not just in nature.

We end by quoting Karl Marx, as cited in the 1987 documentary film “The Story of Kindness” by director Tran Van Thuy (Wilson, 2015; Thuy, 1985):

Only animals can turn their backs on the suffering of fellow beings and care only for their own fur (59:38)

Both the capitalist owners of beauty brands and their consumers have gradually come to understand this very well.

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<sup>1</sup> Even though the majority of emission in the beauty industry derives from consumer use of products (59%), the beauty products’ usages were designed by the firms.

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