



Sustainable packaging alternatives in mass-market cosmetics

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Abstract:

In recent years, mass production has damaged the environment and generated excessive waste. The mass-market cosmetics industry has been a contributor to these issues. This study has aimed to dissect the root causes of environmental problems stemming from mass-market cosmetics production and has explored the innovative solutions that companies have adopted to move towards sustainability. This study has particularly delved into the realm of sustainable packaging solutions within the cosmetic industry. It has sought to shed light on the challenges, advancements, and crucial role of sustainable packaging in mitigating the environmental impact of an industry known for its substantial waste footprint. To achieve this, sustainability reports published by companies have been analysed, providing valuable insights into their efforts and strategies for achieving sustainability in the mass-market cosmetics sector. Through the utilisation of qualitative research methods including document reviews, this study has determined that sustainable materials offer numerous benefits. However, it also reveals that there is still potential for enhancement. Notably, recycled plastic and bio-based plastic are two of the foremost choices for environmentally friendly cosmetic packaging due to their exceptional product-preserving qualities, which are vital in the cosmetics industry.

Keywords:

Mass-market cosmetics, sustainable packaging, circular economy

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1 INTRODUCTION

The mass-market cosmetics industry is an ever-expanding sector that in some way affects everyone. This industry encompasses not only makeup but also a wide range of products related to personal hygiene, including hair care, skincare, and fragrances, which shape our daily routines and self-care rituals.

According to the study “*The beauty market in 2023: A special State of Fashion report*” by McKinsey (2023), the beauty industry generated around USD 430 billion in revenue last year, and most of it consisted of mass-market cosmetics products. According to the same study, the revenue is about to increase up to as much as USD 550+ billion by the year 2027, growing by 6% per year.

Manufacturing order quantities and consumption volumes within the mass-market cosmetics industry are significant. However, a consequential issue faced in this industry is considerable product wastage. Cosmetics, being perishable items, become unsalable if they exceed their shelf life. Furthermore, packaging typically consists of non-biodegradable materials, such as plastic. According to the United Nations Environment Programme’s (UNEP) report titled “*Plastic in Cosmetics: Are we polluting the environment through our personal care?*” (2015) plastic materials have become widespread in cosmetics and personal care formulations, replacing natural alternatives, since its introduction into the cosmetics industry 50 years ago. In other words, plastic is not the only useful packaging material. There are other alternatives, which are more environmentally friendly.

There is a growing emphasis on sustainability within the mass-market cosmetics industry particularly in the realm of packaging. Many organisations and businesses of today have acknowledged the problems with waste and overuse of the world’s resources and realised that work for a sustainable society is needed (Hellström & Olsson, 2017, p. 17). As consumers and manufacturers become more conscious of environmental impact, sustainable packaging methods have emerged as a key aspect of cosmetic logistics and supply chain management. From eco-friendly materials to innovative packaging designs aimed at reducing waste, sustainability has become an integral part of how cosmetics products are produced, distributed, and consumed.

1.1 Problem statement

The prevalent issue in today's mass-market cosmetics industry revolves around the excessive generation of waste, primarily stemming from the extensive use of plastic as the predominant material for product packaging. While it certainly has its advantages, unfortunately, the disadvantages outweigh the benefits when it comes to the environment. The Plastic Soup Foundation, in their discussion on the "*Cause of plastic pollution*" (n.d.), highlights a fundamental difference between natural waste and plastic. In nature, there is no waste that does not decompose. Unlike natural waste, which decomposes over time in nature, plastic remains persistently "unnatural" in the environment due to its unique properties.

The United Nations Environment Programme (UNEP), in their report on "*Plastic Pollution*" (n.d.), paints a stark picture of the issue, revealing that the world's oceans, rivers, and lakes receive the equivalent of 2000 garbage trucks loaded with plastic every day. It's a staggering volume of waste, and unfortunately, once plastic finds its way into the sea, cleaning it up becomes an almost insurmountable challenge, as emphasised by The Plastic Soup Foundation in their discussion on "*Plastic Waste*" (n.d.).

In an industry as large as the mass-market cosmetics industry, it therefore has a significant role in which material is used in packaging and how the packaging is handled after use. Companies such as Lush and The Body Shop, have already taken the problem of waste into consideration and made changes regarding packaging and their supply chain. According to Lush, "*Our environmental policy*" (n.d.), the total recycled content in all their packaging is 89%, which means that for every tonne of material bought, 900 kilograms comes from recycled sources. Both of the companies have to some extent replaced their use of fossil-based plastic in packaging with more durable materials, and encourage their customers to recycle product packaging. In 2019, The Body Shop launched its *Recycle. Repeat scheme*, which lets customers return all their empty packages in store for them to recycle and repurpose. By encouraging customers to recycle the packaging, the company can save both energy and resources within the supply chain and thus the environment.

1.2 Aim of the study

The aim of this study is to investigate the alternatives to virgin plastic that companies employ, along with an exploration of their future plans regarding replacing virgin plastic within packaging.

This is not a case study done for a specific company. However, this study is primarily written for companies in the cosmetics industry, both small and medium-sized enterprises, and start-ups, to help them get an insight into what they can do in practice to move towards a more sustainable and circular supply chain. This study may be helpful when the choice of packaging material is relevant. Additionally, it offers an overview of the future goals of the studied companies, serving as inspiration for businesses to establish their own sustainability goals and develop corresponding strategies for achievement.

1.2.1 Research questions

The findings of this research thesis should be able to answer the following question:

- *What alternatives to virgin plastic do companies use, and what are their future plans?*

1.3 Demarcation

Cosmetics is a large industry, by limiting this study as follows allows for more detailed results. Sustainable development is very relevant in today's situation and improvements in the supply chain are most urgent in the mass-market industries (United Nations, n.d.). This study centres on the examination of four companies, comprising two domestic, Lumene and Four Reasons (part of Transmeri group), and two global enterprises, L'Oréal Paris and The Body Shop. The inclusion of both domestic and global entities serves the overarching goal of constructing a comprehensive and interconnected framework for the study. Additionally, this study focuses on the mass-market cosmetics industry. High-end luxury cosmetics are excluded. Furthermore, this study focuses only on primary packaging.

Importantly, the choice of these companies was strategic. Lumene and Four Reasons, as prominent Finnish companies, provide insight into the local industry landscape, while L'Oréal

Paris, being a global market leader, and The Body Shop, with its sustainable practices, offer diverse perspectives.

1.4 Definitions

The key concepts of the study are the following:

Mass-market cosmetics refers to cosmetic products, skincare, and hair care (McKinsey, 2022), which are manufactured in large quantities usually at a favourable price.

Sustainable packaging refers to packaging created for achieving sustainable development that impacts the economy, environment, and social well-being of any society. Sustainable packaging is designed with the goal of minimising its environmental impact (Auras and Selke, 2022, p. 29).

A *circular economy* is defined as “a regenerative system in which resource input and waste, emission, and energy leakage are minimised by slowing, closing, and narrowing material and energy loops. This can be achieved through long-lasting design, maintenance, repair, reuse, remanufacturing, refurbishing, and recycling” (Auras and Selke, 2022, p. 25).

2 THEORY

In this chapter, the complex world of plastic is discussed. One of the most widely used packaging materials in the cosmetics industry (Sahota, 2014, p. 6), often accompanied by concerns about its environmental impact. The advantages and disadvantages of plastic packaging while addressing pressing issues related to waste management and costs are discussed. Furthermore, in this chapter, alternatives to plastic are presented.

The European Union has taken remarkable steps towards fostering sustainability within the packaging industry. Initiatives such as the Waste Framework Directive, and the EU Producer Responsibility serve as noteworthy examples of the EU’s commitment to steering Europe towards climate neutrality (European Commission, 2020). As Finland is a member state of the EU, it is inevitably influenced by these regulations. However, Finland has also taken its own sustainability initiatives.

Packaging is a broad term, and there is much more to think about regarding the choice of material than you might imagine. This chapter, provides a deeper understanding of various topics, including the principles of circular economy, waste and the challenges associated with plastic, EU and Finnish legislation, and the different levels of packaging often referred to as the packaging hierarchy (European Commission, n.d.), the function of packaging, the importance of material selection, as well as the broader aspects of packaging and sustainability.

2.1 Packaging

Packaging is something that we interact with on a daily basis. Most of the time we do not even notice it, since packaging is fully integrated into our lives and personal use, as well as the product inside. Packaging ensures that the products of the world reach the customers of the world (Hellström & Olsson, 2016, p. 7). Packaging can be divided into three categories: primary, secondary, and tertiary packaging (Emblem A. & Emblem H., 2012, p. 6). The reason why these categories exist is because the different stages within the supply chain have different requirements and the packaging must be tailored to suit these specific purposes and procedures. The hierarchies of packaging are explained one by one in the following sections, as well as the function of packaging and the importance of the material selection.

2.1.1 Primary packaging

Primary packaging, often referred to as “consumer packaging”, is the packaging ultimately received by the end consumer. It is also the packaging that directly interacts with the product. For instance, when purchasing mascara, it typically comes in a small cardboard box, however, the mascara (the actual product) is enclosed in a plastic container. Both of these types of packaging fall within the primary packaging category (Emblem A. & Emblem H., 2012, p. 6).

2.1.2 Secondary packaging

Secondary packaging, often referred to as “retail packaging”, is the packaging of primary packaging. The purpose of secondary packaging is to transport and store primary packaging. This form of packaging also occurs in stores. Continuing with the mascara example in *Section*

2.1.1, the secondary packaging encompasses the cardboard boxes used for the transportation and storage of the primary mascara boxes (Emblem A. & Emblem H., 2012, p. 6).

2.1.3 Tertiary packaging

Tertiary packaging, also known as “transport packaging”, serves the crucial role of conveying secondary packaging. Its primary objective is to facilitate the transportation of products from point A to point B. An instance of tertiary packaging involves plastic-wrapped pallets that enclose a number of cardboard boxes (secondary packaging). This level of packaging also finds utility in storage, such as within warehouses, for instance (Emblem A. & Emblem H., 2012, p. 7).

2.1.4 The function of packaging

In general terms, in the context of the supply chain, the primary focus is typically the product itself, with packaging serving the crucial role of safely transporting the product through the supply chain and delivering it to the customer’s home (Emblem A. & Emblem H., 2012, p. 10). However, it is important to recognise that packaging serves a broader range of functions. In this section, its multifaced role is explored.

The main purpose of packaging is to protect the product it contains from physical, chemical, and biological strains. Different products have different requirements; therefore, the choice of which packaging is used is very important and carefully selected. Packaging is designed to preserve the integrity of the contents and ensure that it remains in its original state from the moment of packaging until it reach its final destination. In addition to its primary role of product protection, packaging also serves as a means to provide important information (Emblem A. & Emblem H., 2012, p. 24).

Packaging has a communication function from two perspectives. Firstly, it plays a pivotal role in facilitating the logistical tracking and tracing of products. Through the use of labels incorporating barcodes, radio-frequency identification (RFID), or other identification technologies during the manufacturing process, crucial data such as product location, timestamp, temperature, and more can be recorded and accessed at various stages of the supply

chain, including warehouses, ports, transportation, and retail stores. Secondly, packaging serves as a means of communication with consumers. It aids consumers in identifying products through elements, such as branding, design, shape, and labelling. Additionally, packaging serves as a valuable source of product information, including details about nutritional content and the manufacturing process employed in producing the item (Pålsson, 2018, p. 12).

Out of the six primary functions of packaging (Pålsson, 2018, p. 12), three have already been discussed: protection, containment, and communication. The remaining functions encompass apportionment, unitisation, and convenience.

Packaging plays a crucial role in dividing products into appropriate portions. To illustrate this concept more clearly, let's consider an example from the cosmetics industry: single-use eyeshadows and eyeshadow palettes. Apportionment helps to reduce waste and ensure that products are used efficiently (Pålsson, 2018, p. 12).

Unitisation refers to the efficient handling of material to streamline the transportation process by, for example, combining various types of packaging. For instance, during transport, primary packaging is often consolidated within secondary packaging, and secondary packaging may be grouped and enclosed in tertiary packaging to optimise the transportation process. This practice enhances the overall efficiency of product distribution and logistics (Pålsson, 2018, p. 12). Additionally, packaging should offer user-friendly features, making it simple to open, close, and handle, ultimately providing convenience for users.

2.1.5 The importance of the material choice

Packaging materials vary based on the specific needs of the product. Here are examples of some of the most commonly traditionally used packaging materials (Europen, 2021):

- *Plastics*
- *Paper*
- *Cardboard*
- *Metal*
- *Glass*

Due to the ongoing focus on sustainable development, there has been significant progress in transitioning from conventional materials to more environmentally friendly and reusable materials. The consideration of materials in packaging design significantly influences the advancement of sustainability. The use of different packaging materials has received much attention from industries that produce packaging and from the authorities and consumer organisations. Material is needed in all packages and the selection of material in packaging design has a clear, direct impact on both the planet and profit pillars of sustainable development. This has made packaging material one of the most common ways of dealing with sustainability (Hellström & Olsson, 2017, p. 72).

Selecting the right packaging material involves considering numerous factors. It is not as simple as picking a material that sounds sustainable at first glance. In certain situations, even a traditional material, often considered unsustainable, can have a lower environmental impact compared to a material classified as environmentally friendly. This hinges on carbon dioxide emissions. A heavier package demands more energy during transportation, resulting in higher emissions. Another thing worth considering is overpacking. In many cases, an unnecessary amount of material is used (Hellström & Olsson, 2017, p. 23).

When selecting packaging in sustainable ways, it has to be done with care to ensure that it is efficiently used, while at the same time providing sufficient functionality to fulfil its tasks with the lowest required environmental impact for the entire system (Hellström & Olsson, 2017, p. 73).

2.2 EU packaging legislation

The European Union's packaging regulations apply to all categories of packaging and packaging waste placed on the European market. This includes packaging materials used in industrial, commercial, household, and other sectors. These regulations define the permissible types of packaging that can be made available on the EU market and also establish guidelines for the management of packaging waste and measures to prevent such waste. All packaging introduced into the EU market must meet essential criteria related to its manufacturing, composition, and potential for reuse or recovery. (European Commission, n.d.). Below, some

packaging priorities and requirements are outlined. Note that these are only a couple of many priorities and requirements.

Priorities, according to chapter 3.3. Packaging, in “*A new Circular Economy Plan: For a cleaner and more competitive Europe*” published in 2020 by the European Commission:

- *Minimising excessive packaging and addressing packaging waste*
- *Promote packaging designs that encourage reuse and recyclability*
- *Exploring ways to simplify packaging materials, including reducing the variety of materials and polymers employed.*

Requirements, as outlined in ANNEX II: of the European Parliament and Council Directive 94/62/EC of 20 December 1994 on packaging and packaging waste:

- *Packaging shall be designed, produced, and commercialised in such a way as to permit its reuse or recovery, including recycling, in line with the waste hierarchy, and to minimise its impact on the environment when packaging waste or residues from packaging waste management operations are disposed of.*
- *Packaging must be manufactured in such a way as to enable the recycling of a certain percentage by weight of the materials used in the manufacture of marketable products, in compliance with current standards in the Community. The establishment of this percentage may vary, depending on the type of material of which the packaging is composed.*

Finland, being an EU member state, is obligated to adhere to EU regulations. Nevertheless, Finland has proactively implemented its own initiatives, often aligned with EU legislation but occasionally imposing more stringent standards and limits compared to those applicable across the entire EU (Ministry of the Environment, n.d.).

2.2.1 EU and packaging waste

In November 2022, the European Commission put forth proposals for new rules governing packaging across the EU. The primary objective is to address the escalating issues of waste generation. Notably, the average European generates nearly 180 kg of packaging waste annually. The significance of packaging in consuming virgin materials is evident, with 40% of plastics and 50% of paper utilised in the EU designed for packaging purposes (European Commission, 2022).

The three main objectives outlined by the European Commission (2022) are as follows:

- *Prevent the generation of packaging waste*

Efforts are directed at reducing, restricting unnecessary packaging, and promoting **reusable** and **refillable** solutions to curtail the generation of packaging waste. According to the European Commission (2022), companies will have to offer a certain percentage of their products to consumers in reusable or refillable packaging.

- *Boost high quality recycling*

Aiming for all EU market packaging to be economically recyclable by 2030, standardisation and clear labelling for reusable packaging is emphasised to enhance recycling practices.

- *Reduce the need for primary natural resources and create a well-functioning market for secondary raw materials*

Mandatory targets seek to cut reliance on primary resources, foster a market for recycled plastics, and align with EU sustainability goals.

2.2.2 EU – Waste Framework Directive

According to the publication “*A new Circular Economy Action Plan: For a cleaner and more competitive Europe*” published by the European Commission in 2020, there is a persistent increase in the quantity of materials used for packaging. In 2017, the volume of packaging

waste in Europe reached an all-time high, with each inhabitant generating 173 kilograms, marking a record level. In other words, the waste levels are high.

EU has taken this into account and in alignment with the Waste Framework Directive, which establishes fundamental concepts and definitions related to waste management, established a so-called waste hierarchy. The waste hierarchy consists of five levels; prevention, preparing for re-use, recycling, recovery, and disposal. The waste hierarchy is structured like an inverted pyramid, with waste prevention at the top, followed by preparing for re-use, recycling, recovery, and, as the least preferred option, disposal at the base, as shown in Fig. 1 below.



Figure 1: Waste hierarchy

It establishes an order of preference for managing and disposing of waste. The preferred choice is waste prevention, with landfill disposal being the last-resort option (European Commission, n.d.).

2.2.3 EU - Producer Responsibility

ERP, short for “Extended Producer Responsibility”, stands for an environmental policy approach in which a producer’s responsibility for a product is extended to encompass the post-consumer phase of a product’s life cycle (Monier, Hestin, Cavé, Laureysens, Watkins, Reisinger & Porsch, 2014, p. 6).

In practical terms, ERP means that producers take on the task of collecting or reclaiming used products and managing their sorting and treatment for eventual recycling. When a company adopts ERP, it reflects its dedication to shouldering responsibility for its products, extending beyond the consumer's use, and frequently involving recycling initiatives. ERP is considered to be a valuable tool to facilitate the application of the European Waste Hierarchy, which was mentioned in the previous *Section 2.2.2*, with a primary focus on promoting, in order of priority: prevention, reuse, and recycling (Monier, Hestin, Cavé, Laureysens, Watkins, Reisinger & Porsch, 2014, p. 10).

2.3 Circular economy principles

In this section, the main principles of the circular economy, as well as the concept of the model, are presented. As defined by the Ellen MacArthur Foundation in their publication "Circular economy introduction", the circular economy is a system in which materials are never discarded as waste, and the natural environment is regenerated. In a circular economy, products and materials are kept in circulation, continually reused, thus contributing to sustainability and reduced waste. The circular economy is based on three main principles: 1. Eliminate waste and pollution, 2. Circulate products and materials, and 3. Regenerate nature. These principles form the foundation of the circular economy concept, which aims to create a sustainable and environmentally friendly economic model (Ellen MacArthur Foundation, n.d.).

In alignment with the *EU Waste Hierarchy* presented in *Section 2.2.2*, "Practical Circular Economy" by Modak (2021), highlights the importance of the twelve R's of the circular economy, which include concepts such as Re-Design, Rethink, Refuse, Reduce, Reuse, Return, Recycle, Recover, Remanufacture, Repair, Refurbish, and Renovate. It is emphasised that a comprehensive approach to the circular economy involves recognising that no single "R" can effectively cover all aspects. Optimal outcomes are attained through collaborative endeavors that bring together various "R's" (Modak, 2021, p. 16). The following definitions provide clarity on the key concepts commonly used in everyday conversation.

Reduce

The concept of reduction aims to decrease consumption and minimise the size, quantity, toxicity, or intensity of material and energy usage in the product. This strategy focuses on minimising the environmental impact by using fewer resources and producing goods with lower resource and energy requirements (Modak, 2021, p. 16).

Reuse

”Reusing” entails utilising an object for its original purpose once more. It involves using a product again without the need for substantial repair or modifications to the item (Modak, 2021, p. 16).

Recycle

In the process of recycling, we transform an item into raw materials that can be repurposed, often for an entirely new manufacturing process or product. This approach contributes to resource conservation and reduces waste in the production cycle (Modak, 2021, p. 16).

2.4 Plastic

Conventional fossil-based plastics, also known as traditional or virgin plastics, are a type of synthetic polymer that is derived primarily from petrochemical sources, such as crude oil and natural gas. Plastic, or synthetic polymers, have only been mass-produced for about 70 years, but have outgrown most man-made materials (Letcher, 2020, p. 9). These plastics are the most commonly used materials for packaging, manufacturing, and various consumer products due to their versatility, durability, and low cost (Sahota, 2014, p. 6). Plastic is an effective packaging material thanks to its advantages; however, a disadvantage is that when plastic ends up in nature, it stays there forever.

2.4.1 Disadvantages of plastic

Within the mass-market cosmetic industry, a lot of plastic is used. The majority of product packaging is composed of plastic, which poses a significant problem. One major issue arising from this extensive use of plastic is its carbon footprint. Carbon serves as the fundamental element upon which all plastic packaging relies, making the sustainable and environmentally

responsible management of carbon a critical priority (Sahota, 2014, p. 130). Specifically, the manufacturing process of plastic results in significant carbon dioxide emissions.

Notably, the manufacturing process of plastic releases large amounts of carbon dioxide emissions into the environment. According to a report by the Center for International Environmental Law (CIEL), titled “*Plastic & Climate: The Hidden Costs of a Plastic Planet*” (2019), approximately 108 million metric tons of carbon dioxide emissions per year are attributed to plastic production. The increase in carbon dioxide emissions from carbon-based products, including packaging made of plastic, is closely linked to the contemporary issues of global warming and climate change (Sahota, 2014, p. 130).

In addition to its carbon footprint, plastic presents other disadvantages. It is made out of harmful chemicals and is non-biodegradable, which means that it can not be degraded by living organisms. It cannot be easily managed like biodegradable waste, nor can it be broken down or eliminated by natural processes (Cubas, Bianchenet, dos Reis & Gouveia, 2022). Well-designed recycling systems play a crucial role in waste reduction. In the upcoming section, how much plastic waste really is in practice is discussed.

2.4.2 Plastic waste

Of the seven billion tonnes of plastic waste generated so far, less than 10% has been recycled (European Commission, 2023). Enormous amounts of plastic waste end up in the environment, leading to ocean pollution, harm to wildlife, and disruptions to ecosystems. Today over 300 million tonnes of plastic are produced each year, of which 8 million end up in the ocean (Letcher, 2020, p. 8). According to the Ellen MacArthur Foundation’s article titled “*Designing out Plastic Pollution*” (n.d.), if we do not act now, by 2050, the amount of plastic in our ocean could surpass the amount of fish.

2.4.3 Advantages of plastic

Why is plastic still widely used despite its environmental drawbacks? According to a study titled “*The Benefits of Using Plastic Packaging*” published by the British Plastic Federation (n.d.), plastic is a favored choice for its effectiveness, particularly within industries where

products are in liquid form, e.g. the cosmetic industry, and require a waterproof material. Plastic is a cost-effective alternative when it comes to packaging production, which explains its widespread use in the mass-market cosmetics industry. Additionally, manufacturing new plastic is often more economical than recycling existing plastic. According to a study by BBC Capital titled “*What’s the real price of getting rid of plastic packaging*” (2018), the production cost of a plastic box is only half the price of a paper box. Plastic is also lightweight, which can lead to reduced transportation costs, as less fuel is required to ship plastic packaging. Plastic offers additional advantages, including its malleability in various shapes and ease of cleaning (British Plastic Federation, n.d.). However, despite the benefits of plastic, it is crucial to bear in mind the significant environmental harm it can cause.

2.4.4 Alternatives to plastic

Given the growing awareness of the environmental impact of plastic, there’s a continuous effort to explore alternative solutions that are more environmentally friendly. This section introduces two alternatives to conventional plastics: bio-based- and recycled plastics. Sustainable plastics are characterised by reduced energy consumption, a smaller carbon footprint, decreased waste, and lower pollution levels compared to conventional plastics (Greene, 2022, p. 115).

Bio-based plastics

Bio-based plastics are derived from natural or organic sources, including materials like starch sourced from crops like corn, potato, tapioca, rice, and wheat, as well as oils produced from palm seeds, linseeds, soybeans, etc. (Greene, 2022, p. 75). Bio-based materials are frequently associated with biodegradability, however, it is important to note that bio-based plastics are distinct from biodegradable plastics. The term “biodegradable” pertains to the post-use behaviour of a material, signifying its ability to naturally break down in the environment. To clarify, within the category of bio-based plastics, there are those that exhibit biodegradability and others that do not undergo natural decomposition processes (Greene, 2022, p. 95).

Manufacturing most bio-based plastics generally emits less carbon dioxide than traditional methods. However, there are concerns that a widespread transition to bio-based plastics for a global bio-economy might lead to issues like increased soil erosion and deforestation, with

potentially adverse effects on water supplies. These concerns could impact the accessibility and quality of water resources. (Bhatnagar, 2019, p. 9).

Recycled plastics

Recycled plastics refer to materials sourced from previously used plastic packaging, carefully sorted in accordance with recycling instructions. This approach not only keeps materials in circulation but also fosters a circular economy, preventing unnecessary waste.

In the manufacturing process of recycled plastics, the initial step involves collecting and sorting plastic materials based on their recycling codes. These codes play a crucial role in segregating recycled plastics according to their specific plastic types. Subsequently, waste management companies are tasked with efficiently sorting the plastics into designated bins for each type of recycled plastic (Greene, 2022, p. 112).

Similar to bio-based plastics, recycled plastics boast eco-friendly attributes that contribute to environmental sustainability. Greene (2022) emphasises that utilising recycled plastics brings environmental benefits, particularly in terms of reduced energy consumption and diminished greenhouse gas emissions compared to the production of virgin plastics. However, it's important to note that the recycling process of plastics involves increased water usage and generates augmented solid waste compared to the manufacturing process of virgin plastics.

3 METHOD

This chapter presents the chosen research methodology for this study, explaining why it was selected and how it contributed to achieving the study's objectives.

To determine the appropriate research methodology for the study, it is essential to have a well-defined research question and a clear objective. The effectiveness of the study relies on the data collected being capable of addressing the research question (Hennink, Hutter and Bailey, 2020, p. 18). There are primarily two research methods to choose from: qualitative research and quantitative research.

While *quantitative* research focuses on measurable structured and statistical data such as numbers, *qualitative* research is a type of research that explores and provides deeper insights into real-world problems (Tenny, Brannan and Brannan, 2023). It is used to understand and explore non-numeric aspects, such as attitudes, behaviours, and experiences. The choice to use a qualitative research method was clear and obvious. This study aims to present sustainable packaging alternatives used by the chosen companies. Additionally, it aims to investigate companies' future initiatives and strategies concerning packaging and sustainability.

3.1 Choice of method

In this study, the research question is as follows: “*What alternatives to virgin plastic do companies use, and what are their future plans?*” The chosen research approach for addressing the question was qualitative research. In this section, the rationale for employing document reviews as the method for this study is explored, providing a detailed explanation and an overview of the method.

3.1.1 Document review

A document review was conducted to address the research question. A document refers to any item that can be stored in a digital file on a computer (Myers, 2019, p. 27). While there are various types of documents, the primary focus in this study has been on the evaluation of public reports, such as company annual reports. Through document reviews, a comprehensive understanding of the choice of sustainable packaging materials, and companies' behaviours in relation to this subject was attained, including insights into their future strategies.

3.2 Data sources

According to Mayes, data can be analysed to four key criteria: authenticity, credibility, representativeness, and meaning. This approach aimed to ensure the validity and reliability of the secondary data collected through document research.

First, *authenticity* is considered, which involves verifying if the data is real and originates from a trustworthy source. Second, *credibility* ensures that the data is free from errors and distortions, thereby establishing its accuracy. Next, the evaluate *representativeness* examines

whether the data is a typical example of its kind, with any variations understood. Lastly, the assessment of *meaning* is carried out to guarantee that the data is clear and comprehensible. These four criteria contribute to maintaining the quality and trustworthiness of the data in the research (Mayes, 2019, p. 27).

The documents listed below have been thoughtfully selected and primarily sourced from the companies' official websites. This study exclusively encompasses documents dating from 2021 onwards, ensuring the currency and accuracy of the data. Below, in Tab. 1 of the analysed documents, details about the source and the reasons for their relevance to this research topic are presented.

Table 1: Data sources

| # | Document name | Type of document | Author | Relevance | Retrieved from |
|---|--|-----------------------|---------------|---|---|
| 1 | Sustainability report Lumene Group 2022 | Sustainability report | Lumene Group | A prominent Finnish cosmetics brand in the mass market sector | https://www.lumenegroup.com/wp-content/uploads/2023/08/LUMENE_GRI_REPORT_2022.pdf |
| 2 | Four Reasons Sustainability Report 2022 | Sustainability report | Four Reasons | A prominent Finnish brand primarily focused on offering budget friendly hair care products to the mass market | https://issuu.com/fourreasons/docs/four_reasons_sustainability_report_2022_hq |
| 3 | L'Oréal - For the future | Sustainability report | L'Oréal Paris | A global leader in the mass-market cosmetic industry. | https://www.loreal-paris.nl/-/media/project/loreal/brand-sites/oap/emea/bx/brand-section/for-the-future/pr-loreal-paris-2021.pdf?rev=524de426ed8f4328b9687d02b25d3124 |
| 4 | The Body Shop Sustainability report 2022 | Sustainability report | The Body Shop | Due to its notable sustainability efforts in packaging. | https://thebodyshop.a.bigcontent.io/v1/static/The-Body-Shop-Sustainability-Report-2022 |

3.3 Research approach

The data was primarily collected from internet sources. Data selection was conducted with care and critical consideration to ensure the validity and reliability of this study. Following the document research, all data relevant to the study's objectives and research was gathered and organised into a table. This table comprised information about companies, their implemented circular economy strategies, packaging material preferences, and prospective solutions. This structured presentation facilitated the identification of prevalent sustainable strategies within company supply chains and enabled a coherent analysis and comparison of sustainability patterns in the packaging domain across diverse organisations.

3.4 Analysis of the data

A qualitative thematic analysis of the documents was conducted. The thematic analysis serves as a research approach employed to systematically organise and analyse intricate datasets. This method involves identifying themes that effectively encapsulate the narrative present within the provided data sets (Dr. Saraswati Dwadi, 2020, p. 62). As a support for the thematic analysis, a document known as a code template was developed. This template served as a structured framework for the coding process, facilitating the organisation and categorisation of data. In essence, the code template provided a predefined set of codes and categories, acting as a guide for systematically analysing and interpreting the collected data.

Enclosed below, Tab. 2 provides details on the sustainable practices of these companies, focusing on alternative materials, implementation, and future plans.

Table 2: Sustainable practices focusing on alternative materials, implementation, and future plans

| # | Company | Alternative materials | Implementation | Future plans |
|---|---------------|--|--|---|
| 1 | Lumene | "Currently, 90% of all plastic materials are recyclable " 35% renewable materials, 21% recycled materials (plastic, glass, corrugated, metal) | " Circularity is emphasised in our packaging choices" "95% of our products have labels on them" "The Lumene Group packaging development has a guidance of five Rs: reduce, reuse , recyclable , recycled, and renewable" | "Make strategic skincare packaging 100% recyclable by 2025" "Refill packaging solutions will become more prevalent in the future and we want to be active in this area" "We keep investing the suitability of various innovative materials and technologies for cosmetic packaging on a long-term basis with our partners." |
| 2 | Four Reasons | "Since the start of our packaging renewal 2018, we have moved on to using recycled plastic, bio-based plastic or other non-virgin materials whenever possible." "We use recycled plastic, aluminium and bio-based materials in our packaging." | "Promote the circular economy by drawing up recycling instructions for all our products." "The recycling labels on our packaging are kept up to date, and the recycling instructions are available on our website." "100% of our packaging can be recycled when empty." | "We will continue to look into new more sustainable packaging material options and plan the transition carefully to avoid unnecessary waste." |
| 3 | L'Oréal Paris | "In 2021, 77% of the PET plastics is made of recycled plastic." | "In 2021, 43% of our plastic packaging is refillable, reusable , recyclable or compostable" "Product impact labelling " | "By 2025, 100% of our plastic packaging will be refillable, recyclable, reusable or compostable." "We are transforming the product life cycle, with major scientific innovations in formulation and packaging." "We aim to reduce by half our CO2 emissions per unit sold by 2023." |
| 4 | The Body Shop | "90% recyclable packaging" | "In 2022 we surpassed our recycled plastic target and 90% of our packaging was recyclable ." "In 2022 we also made our packaging labelling more transparent to help our customers recycle it correctly." | "The Body Shop has committed to 100% of all our packaging materials being reusable, recyclable or compostable by 2030 , and 50% of all plastic we use (by weight) to be recycled by that date." "Devise a detailed plan to deliver a 42% reduction in our carbon footprint by 2030 compared to 2020, to make significant progress towards achieving net zero status." |

3.5 Validity and reliability

As always, when reading something online, it is crucial to be critical of the source. In document research, establishing validity and reliability is of significant importance to the study. This

section explains the meaning of these concepts and how this study fulfils the requirements for them.

Validity ensures the accuracy of a research report or description. In essence, to claim that research findings are valid means that they are true and reliable. “True” here signifies that your findings accurately represent the phenomenon in question and are supported by evidence. In qualitative research, the aim of validity is to provide research with a guarantee that the report or description is correct (Eriksson and Kovalainen, 2015, p. 32).

Reliability evaluates the consistency of results across repeated trials. Reliability is about making sure that when you do something multiple times, you get consistent results. It measures how often a method or tool gives you the same outcome in different attempts. This idea of reliability is all about making research consistent, so if another researcher repeats your study, they should get the same results as you did (Eriksson and Kovalainen, 2015, p. 32)

To meet these requirements, the collected secondary data has been selected extremely carefully and only from original sources, i.e., reports published by the companies themselves. Additionally, the four main criteria mentioned in *Section 3.2* have been considered to ensure the validity and reliability of this study.

3.6 Ethics

Research ethics encompasses the entire research process, from how research is conducted and reported to tackling more intricate issues like research bias, appropriate citation of other authors and researchers, and even addressing concerns related to potentially silencing other researchers in their own work (Eriksson and Kovalainen, 2015, p. 13).

In this context, research ethics starts with the relationship between the researcher and the subject of the study, extending through the process of data collection, analysis, and culmination in the comprehensive writing and publication of the research report.

It is essential to note that this study was conducted independently, and none of the companies whose strategies were analysed exerted any influence on the outcomes of the study. The study

does not focus on comparing strategies to establish the superiority of one company’s approach over another.

4 RESULTS

This chapter addresses the research question “*What alternatives to virgin plastic do companies use, and what are their future plans?*”. In other words, the findings of the study are presented. The following sections initiate the presentation of the compiled data, offering a comprehensive overview of the existing circular packaging solutions and the various packaging materials employed by the companies under examination. Subsequently, the chapter culminates in the presentation of the companies’ future goals and strategies.

4.1 Recyclable and reusable packaging

Across these companies, a distinct commonality emerges – a shared dedication to sustainability. In Tab. 3 below, the companies recycling initiatives and refillable solutions are presented.

Table 3: Recycling and refillable solutions

| Company | Recycling Initiatives | Refillable Solutions |
|---------------|---|--|
| Lumene | Refill system for select products, 72% less material than standard products. Aim to make all packaging 100% recyclable by 2025. | Introduction of a refill system with 72% less material. |
| Four Reasons | All product packaging is fully recyclable once empty. | No specific mention of refillable solutions. |
| L’Oréal Paris | Introduction of recyclable pouch using 75% less plastic. | Emphasis on refillable packaging as part of the dual approach to sustainable practices. |
| The Body Shop | 90% of packaging is recyclable. - "Return Recycle Repeat" scheme: allows customers to return used packaging for reuse. | No specific mention of refillable solutions, but actively involves customers in recycling through a circular system. |

Lumene has introduced a refill system for select products, designed with 72% less material compared to standard “new” products, emphasising a commitment to waste reduction. The Lumene Group’s Sustainability report (2022) underscores the substantial contribution of these refill packs to the company’s overarching circular packaging initiatives.

Four Reasons affirms in its sustainability report (2022) that all product packaging is fully recyclable once empty. Lumene, with a diverse product range, aims to make all its product packaging 100% recyclable by 2025, aligning with its dedication to sustainable practices.

Prominent players in the industry, L'Oréal Paris and The Body Shop, similarly underscore their commitment to circular packaging. In 2021, L'Oréal Paris, launched their sustainability program: "*L'Oréal for the future, because our planet is worth it*". As a part of the initiative, L'Oréal Paris is actively transforming its value chain and calling on teams, suppliers, retailers, and consumers to join in making the beauty industry more planet-friendly. By enhancing awareness through social media and the website, the focus is on transparency in practices. The introduction of product impact labelling, as well as information regarding recycling, aims to guide consumers towards sustainable choices with clear information for eco-conscious decisions. In addition to this, L'Oréal Paris, with a focus on minimising materials, has introduced a recyclable pouch using 75% less plastic than equivalent bottles (L'Oréal Paris, 2021).

L'Oréal Paris not only focuses on reducing plastic usage but also places emphasis on refillable packaging. This dual approach aligns with their commitment to sustainable practices. Their innovative recyclable pouch utilises 75% less plastic than equivalent bottles.

The Body Shop exceeds recycled plastics targets, with 90% of its packaging being recyclable. Active schemes like Return Recycle Repeat in specific regions further demonstrate The Body Shop's commitment to circular practices. The *Return Recycle Repeat scheme* is a circular system that allows customers to return their used packaging to certain selected stores so that it can then be reused and made into new packaging (The Body Shop, 2022).

As emphasised in *Section 2.1.4.* regarding the function of packaging, these companies acknowledge the crucial role packaging plays in conveying essential information to customers. Clear guidance on recycling packaging materials is equally important, and to simplify the recycling process, all four companies label their products based on their recyclability.

4.2 Composition of packaging materials

In this section, the selection of packaging materials at these companies is presented. It is crucial to note that cosmetic products, being delicate, require careful consideration in selecting packaging materials to minimise the risk of product quality deterioration. All companies express a shared commitment to transitioning from virgin plastics to more sustainable materials. While all companies express a collective dedication to shifting away from virgin plastics towards more sustainable alternatives, specific numerical data is not provided by all four companies.

Table 4: Sustainable initiatives and practices regarding packaging materials

| Company | Virgin Plastics Reduction (2022 vs Previous Year) | Composition of Packaging Materials (2022) | Sustainable Materials Embraced |
|---------------|---|--|--|
| Lumene | 19% decrease | 65% non-renewable, 35% renewable, 21% recycled materials | Recycled materials, Finnish solution - Sulapac |
| Four Reasons | 17% decrease | 41% bio-based or recycled plastic | Bio-based and recycled plastics |
| The Body Shop | Not specified | 52% PCR (<i>Post-Consumer-Recycled</i>) in plastic packaging, 90% recyclable packaging, 27% plastic, 33% glass, 36% wood/fibre, and 3% metal | PCR plastic, glass, wood/fibre, metal |
| L'Oréal | Specific data not provided | In 2021, 77% of the PET plastic utilized in their packaging was sourced from recycled plastic. | Recycled plastic |

As presented in Tab. 4 above, Lumene reports a reduction in the use of virgin plastics, marking a 19% decrease in 2022 compared to the previous year. Their product packaging composition in 2022 reflects a mix: of 65% non-renewable, 35% renewable, and 21% recycled materials (Lumene Group, 2022). Notably, Lumene showcases a commitment to sustainability by not only incorporating recycled materials but also embracing Finnish solutions, such as Sulapac. Sulapac, primarily consist of biodegradable biopolymers and sustainable filler like wood side-streams and natural clay minerals (Sulapac, n.d.).

For Four Reasons in 2022, there was a 17% reduction in the use of virgin plastics. Assertively, 41% of their packaging was made from either bio-based or recycled plastic (Four Reasons, 2022).

The Body Shop’s approach to sustainable packaging includes a diverse mix of materials in 2022. While specific data on virgin plastics reduction is not provided, their packaging composition features 52% PCR (*Post-Consumer-Recycled*) in plastic packaging. Furthermore, 90% of their packaging is designed to be recyclable, incorporating materials such as 27% plastic, 33% glass, 36% wood/fibre, and 3% metal.

According to L’Oréal Paris’s sustainable report, 77% of the PET plastic utilised in their packaging is sourced from recycled materials (L’Oréal Paris, 2021). No data regarding the use of virgin plastic is provided.

4.3 Future plans

Looking ahead, companies set targets and plans for the evolution of their sustainable packaging practices. Below in Fig. 2, the shared objectives that the companies aim to achieve are visualised.

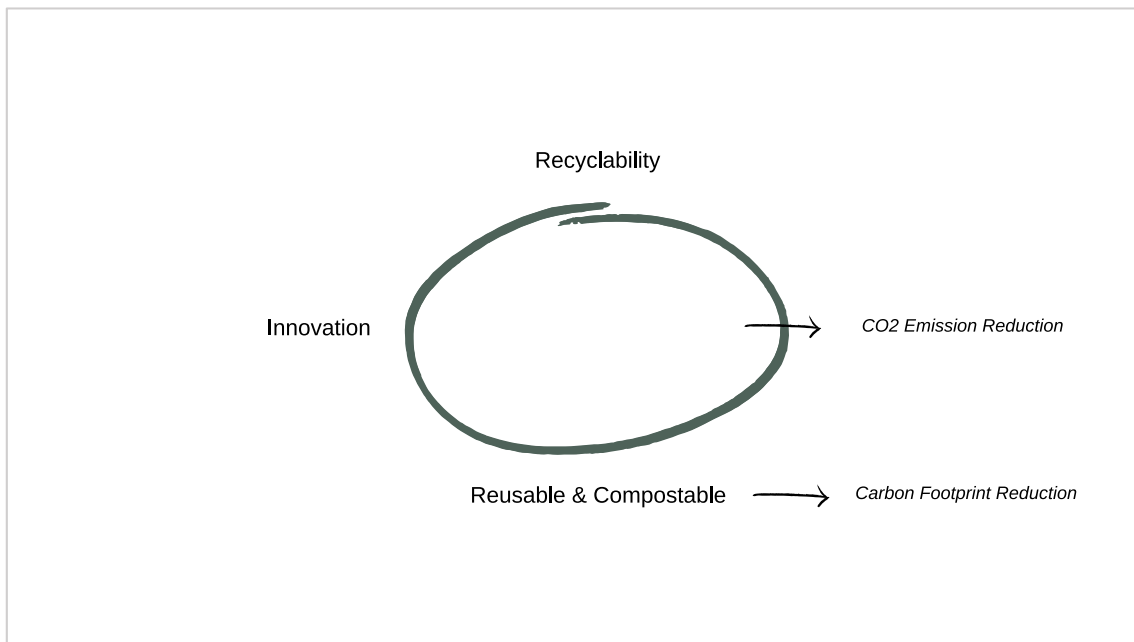


Figure 2: Shared Goals in Cosmetic Packaging

Lumene aims to achieve 100% recyclability in strategic skincare packaging by 2025, with 80% of plastic packaging derived from recycled or renewable raw materials.

Four Reasons is committed to an ongoing exploration of new, sustainable packaging materials, ensuring a thoughtful transition to avoid unnecessary waste. This forward-thinking approach aligns with their strategy to continuously innovate in the realm of sustainable packaging.

L'Oréal Paris envisions a future where CO₂ emissions per unit sold are reduced by half by 2023. According to L'Oréal, the company, their emphasis on a transformative product life cycle includes major innovation in formulation and packaging. L'Oréal Paris is actively working towards making all plastic packaging recycled, recyclable, reusable, or refilled by 2025.

The Body Shop sets forth a goal for 100% reusable, recyclable, or compostable packaging materials by 2030. Complemented by a plan for a 42% reduction in their carbon footprint by the same year. According to The Body Shop, their commitment aligns with the broader industry shift toward sustainability and circular packaging practices.

5 DISCUSSION

In this chapter, the findings are discussed and related to the discussion on plastic and the packaging goals expressed by the EU. This chapter also includes an assessment of the methods employed in the study. It explores the effectiveness of these specific methods, as well as whether alternative methods might have been more suitable.

5.1 Discussion of results

While the dedication to sustainability by Lumene, Four Reasons, L'Oréal Paris, and The Body Shop aligns with the principles of the circular economy (Ellen MacArthur Foundation, 2013), it's crucial to note the importance of transparent communication, as emphasized by the European Commission (2022). For instance, L'Oréal Paris indicates that 77% of their PET plastic in packaging is sourced from recycled materials (L'Oréal Paris, 2021). However, the absence of information on the overall proportion of PET plastic in their packaging hinders a comprehensive assessment of the significance of this claim, highlighting a need for greater transparency in reporting. Lumene's refill system and The Body Shop's Return Recycle Repeat scheme exemplify proactive steps toward waste reduction and product lifecycle extension.

The emphasis on clear product labelling and information on recycling, particularly by L'Oréal Paris, echoes the significance of transparent communication highlighted by the European Commission (2022). Such practices not only guide consumers towards eco-conscious decisions but also contribute to building trust in the brand.

The commitment of these companies to shift away from virgin plastics and embrace sustainable materials corresponds to the theoretical framework emphasising the importance of material choice (Hellström & Olsson, 2017). As discussed in the theory chapter (Hellström & Olsson, 2017), in the cosmetics industry, substituting packaging materials is challenging due to stringent quality standards. The most widely adopted sustainable materials, as revealed by the study, are recycled plastic and bio-based plastic. Recycled plastic often closely resembles traditional plastic, given its composition from existing plastic materials. In contrast, bio-based plastic offers greater variability in its composition. Despite their differences, both materials contribute significantly to sustainable practices in the cosmetics industry.

To further enhance sustainability efforts, companies are actively exploring alternative materials beyond recycled and bio-based plastics. This signals a proactive approach to diversifying materials and reducing reliance on fossil-based plastics. This aligns with the circular economy concept, emphasising the importance of concepts like Re-Design, Rethink, and Refuse (Modak, 2021), showcasing a commitment to innovative solutions and a departure from conventional practices. Lumene's use of Sulapac is laudable and showcases a comprehensive approach considering both material sustainability and local innovation. However, a more in-depth discussion on the strategies behind adopting innovative materials, ensuring their availability, and scaling up their usage is needed.

The companies' position on fossil-based plastic remains unclear. A comprehensive representation of the extent of virgin plastic utilisation is notably absent. Instead, the companies opt for a favorable portrayal, selectively offering information solely on the reduction in virgin plastic usage, some even without specific numerical details. The lack of specific numerical data on virgin plastic reduction from The Body Shop and L'Oréal Paris hinders a thorough evaluation of the magnitude of their efforts. Transparent reporting, as advocated by the EU Waste Framework Directive (European Parliament & Council, 2008), is essential for stakeholders to assess the actual impact of these initiatives.

The goals outlined in *Fig. 2* reflect a collective commitment to continuous improvement and align with the circular economy principles of regenerating nature and minimising waste (Ellen MacArthur Foundation, 2013). However, the feasibility and ambition of these goals demand scrutiny. The companies adeptly highlight their sustainability goals; however, the strategies to achieve these goals lack clarity.

L'Oréal Paris's vision for a 50% reduction in CO₂ emission by 2023 and The Body Shop's goal for 100% reusable, recyclable, or compostable packaging materials by 2030 should be evaluated against the realistic timeframe and the complications involved in such transformative changes.

The positive shift towards sustainable packaging practices within the cosmetic industry is evident. However, a critical evaluation of these initiatives is imperative, considering transparency, collaboration, and adherence to regulatory frameworks for a meaningful and lasting impact. To enhance transparency in reporting, companies should clearly outline a road map detailing how they plan to achieve their goals. The reports analysed currently lack a clear strategy plan; they mainly provide targets, rendering them less reliable.

5.2 Discussion of method

In this study, qualitative research methods, including document analysis and thematic analysis, were employed. Originally, the intention was to conduct interviews with logistics professionals at various companies, but this approach had to be altered due to companies' unwillingness to participate. While interviews could have potentially added more depth to the study by providing real comments and insights from individuals within the specific area of analysis, crucial information required for the study was successfully gathered.

The reports from the selected companies, which serve as the primary data of my research, were visually appealing and well-organised, featuring a variety of visuals. The documents analysed were self-published by the companies themselves in 2021/2022. However, the content lacked clarity in outlining specific strategies for achieving the stated sustainability goals. The documentation did not provide a clear roadmap or detailed plans for how the companies intended to accomplish their commitments. It would have been advantageous if the companies had outlined clear roadmaps and set specific targets for example, five-year periods, specifying

the quantities of virgin plastic, bio-based plastic, and other materials they tend to use in 2025, 2030, 2035, and beyond.

Given the lack of detailed roadmaps outlined in the documents, it becomes imperative to address the importance of validity and reliability in the study. Validity ensures the accuracy of a research report or description. In qualitative research, the aim of validity is to provide assurance that the report or description is correct (Eriksson and Kovalainen, 2015, p. 32). Without explicit strategies, the risk of misinterpretation or incomplete understanding of the companies' sustainability efforts is heightened.

Reliability, which evaluates the consistency of results across repeated trials, is equally critical. The absence of clear, consistent strategies in the report raises questions about the reliability of the information provided. The study's findings rely heavily on these self-published documents, and without explicit strategies, the consistency and credibility of the information become a point of concern.

6 CONCLUSIONS

This study has provided a more comprehensive understanding of packaging in the cosmetics industry. The primary focus has been on primary packaging within the mass-market cosmetics industry. The overarching objective of this study has been to address the research question: *“What alternatives to virgin plastic do companies use, and what are their future plans?”*.

Packaging within the cosmetics industry is a multifaceted topic due to the diverse array of products it encompasses. Each product comes with distinct quality demands, presenting challenges in the adaptation of sustainable packaging materials. In other words, the complexity of the matter should not be underestimated. As indicated by the findings of this study, there are numerous factors that need careful consideration.

Looking ahead, the companies in focus demonstrate a commitment to sustainability. Lumene aims for fully recyclable strategic skincare packaging by 2025, incorporating a substantial portion of recycled or renewable materials. Four Reasons maintains an ongoing commitment to exploring sustainable packaging materials through continuous innovation.

L'Oréal Paris targets a significant reduction in CO2 emissions and a transformative product life cycle by 2023, actively working to make all plastic packaging recycled, recyclable, reusable, or refilled by 2025. The Body Shop sets ambitious goals for 100% reusable, recyclable, or compostable packaging materials by 2030, coupled with a substantial reduction in their carbon footprint by the same year.

As outlined in the study findings, recycled and bio-based plastics emerge as the top two prevalent sustainable materials. While there are numerous advantages, as with any aspect, there are also drawbacks. Nevertheless, the utilisation of these two materials plays a pivotal role in fostering a circular economy – a foundation for a more sustainable cosmetics industry and supply chain.

In moving forward, it is essential for the cosmetics industry to navigate the complexities of sustainability, weighing the advantages and disadvantages of each sustainable packaging material. The path to a more sustainable future requires a delicate balance between environmental responsibility and operational feasibility. As the industry continues to evolve, embracing innovative solutions and collaborative efforts can be instrumental in fostering a circular economy and minimising the environmental impact of packaging materials in the cosmetics sector.

6.1 Limitations of the study

This study's results are based exclusively on the analysis of four companies' sustainability reports. While this approach provides valuable insights into the sustainable practices of these specific companies, it is essential to acknowledge that the findings may not be fully representative of the broader industry. Another crucial factor to consider is that all companies analysed in this study fall under the category of "mass-market" brands. It's worth noting that the outcomes might differ if the study was based on sustainability reports from luxury cosmetics brands.

The study is impacted by the limited depth of information in the companies' reports, particularly in terms of detail. This limitation hinders obtaining a clear answer to the research question, especially concerning future plans. The absence of clear roadmaps from the

companies prevents a comprehensive understanding of their long-term sustainability strategies and goals.

6.2 Suggestions for further studies

The cosmetic industry is extensive, offering numerous avenues for future research. To enhance the depth of this kind of study, the inclusion of interviews would be beneficial. Engaging with key stakeholders can provide profound insight, providing valuable comments and perspectives on the sustainability operations of the selected companies. This approach would contribute to a more comprehensive understanding of the strategies, challenges, and successes in implementing sustainable practices, adding a human dimension to the analysis.

Additionally, exploring consumer perceptions and behaviours concerning sustainable cosmetics could provide valuable information for future research, investigating how consumers respond to sustainable initiatives by companies.

References

Andersen, I. (n.d.). *Plastic Pollution*. United Nations Environment Programme. Retrieved from <https://www.unep.org/plastic-pollution>

Auras, R. and Selke, S. (2022) *Life Cycle of Sustainable Packaging*. 1st edn. Wiley. Retrieved from <https://www.perlego.com/book/3724766/life-cycle-of-sustainable-packaging-from-design-to-endoflife-pdf>

Berg, A., Hudson, S., Klitsch Weaver, K., Lesko Pacchia, M., & Amed, I. (2023). *The beauty market in 2023: A special State of Fashion report*. McKinsey & Company. Retrieved from <https://www.mckinsey.com/industries/retail/our-insights/the-beauty-market-in-2023-a-special-state-of-fashion-report#/>

Bhatnagar, N. (2019). *Bio-Based Plastics*. Arcler Press. Retrieved from <https://www.perlego.com/book/2041429/biobased-plastics-materials-and-applications-pdf>

British Plastic Federation. (n.d.). *The Benefits of Using Plastic Packaging*. Retrieved from https://www.bpf.co.uk/plastipedia/applications/about_plastics_packaging.aspx

Cubas, A., Bianchet, R., dos Reis, I., and Gouveia, I. (2022). *Plastics and Microplastics in the Cosmetic Industry: Aggregating Sustainable Actions Aimed at Alignment and Interaction with UN Sustainable Development Goals*. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9657586/>

Dr. Saraswati Dawadi. (2020). *Thematic Analysis Approach: A Step by Step Guide for ELT Research Practitioners*. Retrieved from <https://files.eric.ed.gov/fulltext/ED612353.pdf>

Ellen MacArthur Foundation. (n.d.) *Designing out plastic pollution*. Retrieved from <https://ellenmacarthurfoundation.org/topics/plastics/overview>

Ellen MacArthur Foundation. (n.d.). *What is a circular economy?* Retrieved from <https://ellenmacarthurfoundation.org/topics/circular-economy-introduction/overview>

Emblem, A., & Emblem, H. (2014). *Packaging technology: Fundamentals, materials and processes*. Sawston, Cambridge: Woodhead Publishing Limited.

Eriksson, P. and Kovalainen, A. (2015) *Qualitative Methods in Business Research*. 2nd edn. SAGE Publications. Retrieved from <https://www.perlego.com/book/1431601/qualitative-methods-in-business-research-a-practical-guide-to-social-research-pdf>

European Commission. (2019). *The European Green Deal sets out how to make Europe the first climate-neutral continent by 2050, boosting the economy, improving people's health and quality of life, caring for nature, and leaving no one behind*. Retrieved from https://ec.europa.eu/commission/presscorner/detail/en/ip_19_6691

European Commission. (2020). *A new Circular Economy Action Plan: For a cleaner and more competitive Europe*. Brussels. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1583933814386&uri=COM:2020:98:FIN>

European Commission. (2023). *EU calls for agreement on global rules to end plastic pollution*. Retrieved from https://environment.ec.europa.eu/news/eu-calls-agreement-global-rules-end-plastic-pollution-2023-05-26_en

European Commission. (n.d.). *Packaging waste: EU rules on packaging and packaging waste, including design and waste management*. Retrieved from https://environment.ec.europa.eu/topics/waste-and-recycling/packaging-waste_en

European Commission. (n.d.). *Waste Framework Directive*. Retrieved from https://environment.ec.europa.eu/topics/waste-and-recycling/waste-framework-directive_en

European Parliament and Council Directive 94/62/EC. (1994). *Official Journal of the European Communities*, L365, 10-23. Retrieved from <https://eur-lex.europa.eu/eli/dir/1994/62/2018-07-04>

Europen. (2021). *Europen – Europen in numbers*. Retrieved from <https://www.europen-packaging.eu>

Four Reasons. (2022). *Four Reasons Sustainability Report 2022*. Retrieved from <https://en.fourreasons.fi/sustainability/>

Gray, R. (2018). *What's the real price of getting rid of plastic packaging?* BBC. Retrieved from <https://www.bbc.com/worklife/article/20180705-whats-the-real-price-of-getting-rid-of-plastic-packaging>

Greene, J. (2022). *Sustainable Plastics*. 2nd edn. Wiley. Retrieved from <https://www.perlego.com/book/3756050/sustainable-plastics-environmental-assessments-of-biobased-biodegradable-and-recycled-plastics-pdf>

Hamilton, L.A., & Feit, S. (2019). *Plastic & Climate: The Hidden Costs of a Plastic Planet*. CIEL. Retrieved from <https://www.ciel.org/wp-content/uploads/2019/05/Plastic-and-Climate-FINAL-2019.pdf>

Hellström, D., & Olsson, A. (2017). *Managing Packaging Design for Sustainable Development: A Compass for Strategic Directions*. Chichester, West Sussex: John Wiley & Sons, Ltd.

Hennink, M., Hutter, I. and Bailey, A. (2020). *Qualitative Research Methods*. 2nd edn. SAGE Publications. Retrieved from <https://www.perlego.com/book/3013435/qualitative-research-methods-pdf>

L'Oréal Paris. (2021). *L'Oréal - For the future*. Retrieved from <https://www.loreal-paris.nl/-/media/project/loreal/brand-sites/oap/emea/bx/brand-section/for-the-future/pr-loreal-paris-2021.pdf?rev=524de426ed8f4328b9687d02b25d3124>

Leslie, H.A. (2015). *Plastic in Cosmetic: Are we polluting the environment through our personal care?* United Nations Environment Programme (UNEP). Retrieved from <https://wedocs.unep.org/bitstream/handle/20.500.11822/9664/->

Plastic in cosmetics Are we polluting the environment through our personal care - 2015Plas.pdf?sequence=3&isAllowed=y

Letcher, T. (2020). *Plastic Waste and Recycling*. Elsevier Science. Retrieved from https://ereader.perlego.com/1/book/1814414/8?element_originalid=B9780128178805000013

Lumene Group. (2022). *Sustainability report Lumene Group 2022*. Retrieved from https://www.lumenegroup.com/wp-content/uploads/2023/08/LUMENE_GRI_REPORT_2022.pdf

Lush Retail Ltd. (n.d.). *Our environmental policy*. Retrieved from <https://www.lush.com/uk/en/a/our-environmental-policy>

Ministry of the Environment. (n.d.) *Waste legislation*. Retrieved from <https://ym.fi/en/waste-legislation>

Modak, P. (2021). *Practicing Circular Economy*. 1st edn. CRC Press. Retrieved from <https://www.perlego.com/book/2555380/practicing-circular-economy-pdf>

Monier, V., Hestin, M., Cavé, J., Laureysens, I., Watkins, E., Reisinger, H. and Porsch, L. (2014). *Development of Guidance on Extended Producer Responsibility (EPR)*. Retrieved from https://ec.europa.eu/environment/pdf/waste/target_review/Guidance%20on%20EPR%20-%20Final%20Report.pdf

Myers, M. (2019) *Qualitative Research in Business and Management*. 3rd edn. SAGE Publications. Retrieved from <https://www.perlego.com/book/1431616/qualitative-research-in-business-and-management-pdf>

Pålsson, H. (2018) *Packaging Logistics*. 1st edn. Kogan Page. Retrieved from https://ereader.perlego.com/1/book/1589458/12?element_originalid=ch01lev1sec2

Plastic Soup Foundation. (n.d). *Cause of Plastic Pollution*. Retrieved from <https://www.plasticsoupfoundation.org/en/plastic-problem/plastic-soup/cause-plastic-pollution/>

Plastic Soup Foundation. (n.d). *Plastic Waste*. Retrieved from <https://www.plasticsoupfoundation.org/en/what-we-do/plastic-waste/>

Sahota, A. (2014). *Sustainability: How the Cosmetics Industry Is Greening Up*. Chichester, West Sussex: John Wiley & Sons, Ltd.

Sulapak. (n.d). *Faq – 1. What is Sulapac made of?* Retrieved from <https://www.sulapac.com/faq/>

Tenny, S., Brannan, J.M. and Brannan, G.D. (2023). *Qualitative Study*. Treasure Island, Florida: StatPearls Publishing. Retrieved from <https://www.ncbi.nlm.nih.gov/books/NBK470395/>

The Body Shop. (2022). *The Body Shop Sustainability report 2022*. Retrieved from <https://thebodyshop.a.bigcontent.io/v1/static/The-Body-Shop-Sustainability-Report-2022>

The Body Shop. (n.d.). *Our Packaging*. Retrieved from <https://www.thebodyshop.com/en-us/about-us/brand-values/sustainability/sustainable-packaging/a/a00012>

United Nations. (n.d.). *Sustainable Development Goals: Ensure sustainable consumption and production patterns*. Retrieved from <https://www.un.org/sustainabledevelopment/sustainable-consumption-production/>