thinkstep

Sustainability in the European Cosmetics Industry

Use of cosmetics

Cosmetic products are substances applied to external parts of the human body and teeth to clean, change the appearance of, protect and/or keep in good condition.

Some cosmetics are used to maintain hygiene and help prevent diseases, as with sunscreens, which help prevent skin cancer. Cosmetics are also used to enhance personal appearance and build positive self-esteem.

The European cosmetics market

In 2016, the European cosmetics market was valued at 77 billion Euros, making Europe, with a market share of 19%, the third largest cosmetics market in the world after Asia Pacific (37%) and North America (25%) (L'Oréal, 2016). The European cosmetics industry creates 2 million jobs, with a majority (80%) working indirectly in the value chain (Cosmetics Europe, 2017). Seven global players dominate the cosmetics market, managing 182 cosmetic brands worldwide.

With increasing demand for sustainable products, cosmetic companies know they need to act and report on their sustainability activities. Furthermore, sustainability is increasingly perceived as a competitive advantage, bringing new business opportunities.

Research conducted

This white paper provides an overview of environmental sustainability trends in the European cosmetics industry.

It is based on research conducted in collaboration with the Stuttgart Technology University of Applied Sciences (Fischer, 2017), which completed a comprehensive study of the European cosmetics sector, including a detailed analysis of publications and (when possible) interviews with the following companies:

- Beiersdorf
- Estée Lauder
- Johnson & Johnson
- L'Oréal
- Procter & Gamble
- Unilever
- Weleda
- Wala Heilmittel GmbH

Key findings

Environmental aspects associated with cosmetics industry activities include resource depletion, climate change, biodiversity loss and degradation of ecosystems.

The European cosmetics industry is using different sustainability approaches to address these challenges. Some fields apply great effort, for example in microplastics, palm oil, waste recovery and greenhouse gas emissions. Other fields still have gaps, such as with biodegradable ingredients, thermal renewable energy shares, Scope 3 emission reporting and sustainable procurement guidelines for non-renewables.

For the industry to improve its communication, it is now important to increase transparency and the availability and quality of information, and to frame communication around appropriate strategic business goals. Such information should be grounded in evidence-based methodologies, such as life-cycle assessment, focusing primarily on quantitatively robust data. Cosmetics companies should use this information to continuously improve processes and products, allowing for eco-design.

In this way, the cosmetics industry can communicate critical information necessary for consumers to make informed decisions, including clearly defined KPIs and sustainability targets.

Strategic level

Sustainability Communication

8

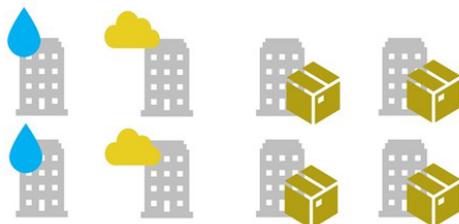companies publish annual sustainability reports

7 of them report according to GRI

Product level

Environmental assessment

8

companies conduct LCA

- 2 companies evaluate their products' water footprint
- 2 companies evaluate their products' carbon footprint
- 4 companies evaluate their packaging

Ingredients and formulation

8

Companies eliminate microplastics

- 2 of them are NOC certified
- 3 of them increase the share of biodegradable ingredients
- 5 of them ban chemicals of concern
- 5 of them increase the share of plant-based ingredients

Packaging

8

companies reduce the amount of packaging materials

8

companies increase the share of PCR materials

- 5 companies increase the share of recyclable materials
- 7 companies increase the share of bioplastics

Corporate level
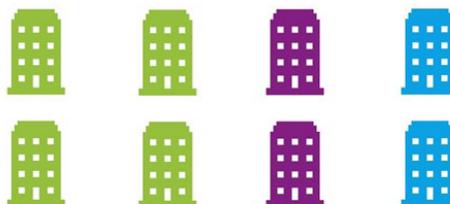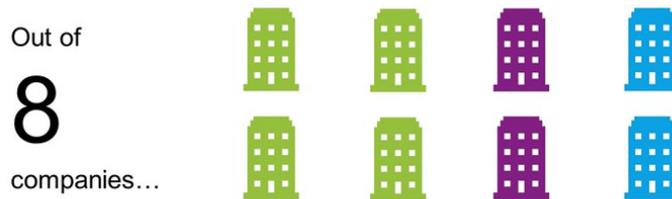
Environmental management system

8

companies established an EMS

4 companies are certified according to ISO 14001

2 companies are certified according to ISO 14001 & EMAS

2 companies are not certified

Energy and greenhouse gas emissions

Out of

8

companies…

4 companies report scope 1 & 2 emissions

2 companies report scope 1, 2 & 3 emissions

2 companies do not report emissions

8

companies reduce their GHG emissions

8

companies increase the share of renewable energy

7 companies reduce energy consumption

Waste production and treatment

8

companies commit to reduce post-industrial waste

8

companies commit to increase post-industrial waste recycling

0 4 of them commit to send zero waste to landfills

7 of them commit to reduce post-consumer waste

Sustainable procurement

8

companies implement sustainable procurement policies

8

companies purchase FSC and PEFC certified pulp

5 companies eliminate deforestation in their supply chain

7 companies purchase RSPO certified palm oil

Sustainability approaches

Cosmetic companies in Europe must comply with legal requirements from the European Commission. In addition, they can move beyond compliance by voluntarily implementing additional sustainability approaches to tackle further environmental aspects of their activities. Figure 1 summarizes the main sustainability topics at the strategic, product and corporate levels.
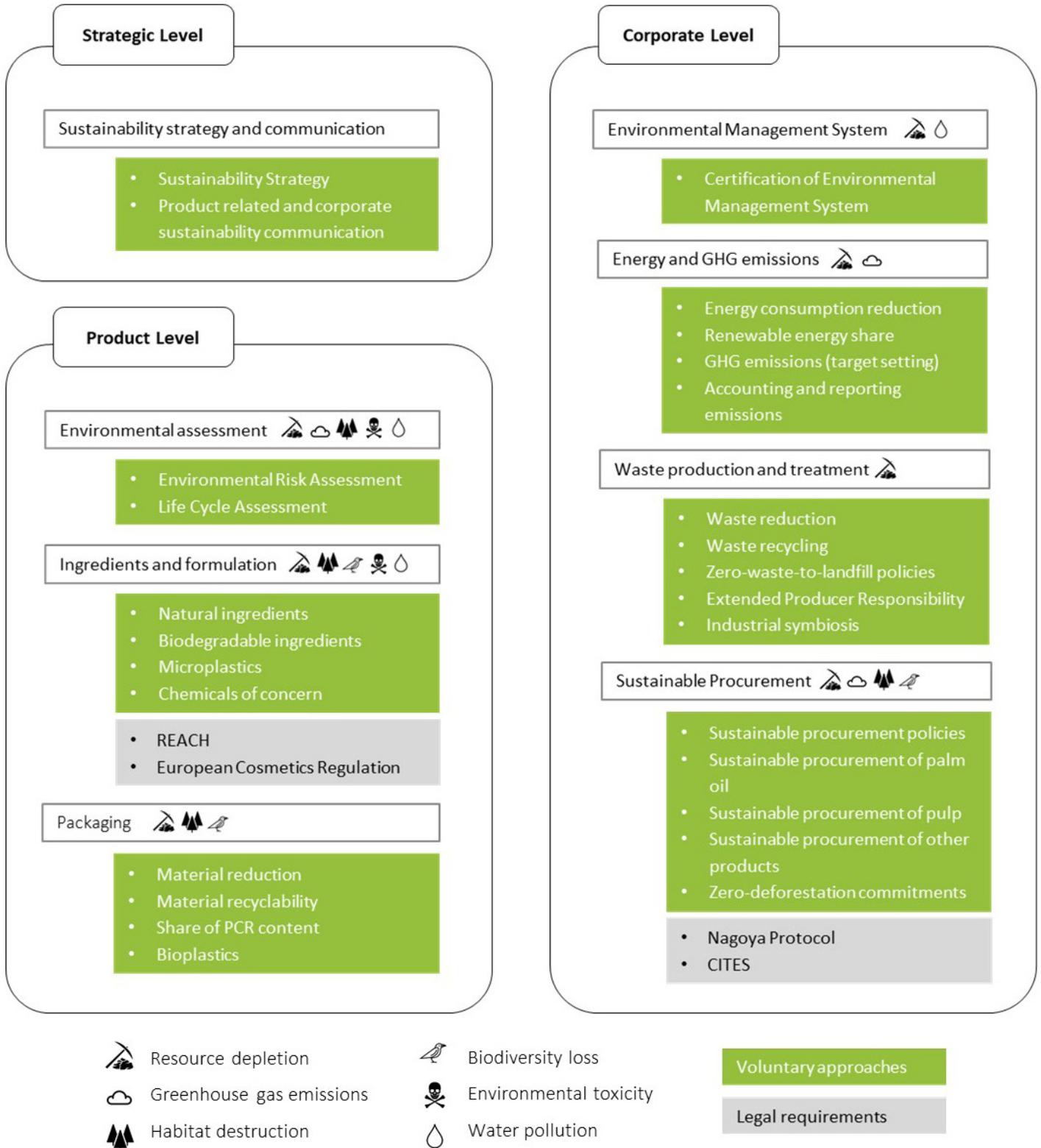

Strategic Level

Sustainability strategy and communication
- Sustainability Strategy
- Product related and corporate sustainability communication

Product Level

Environmental assessment
- Environmental Risk Assessment
- Life Cycle Assessment

Ingredients and formulation
- Natural ingredients
- Biodegradable ingredients
- Microplastics
- Chemicals of concern
- REACH
- European Cosmetics Regulation

Packaging
- Material reduction
- Material recyclability
- Share of PCR content
- Bioplastics

Corporate Level

Environmental Management System
- Certification of Environmental Management System

Energy and GHG emissions
- Energy consumption reduction
- Renewable energy share
- GHG emissions (target setting)
- Accounting and reporting emissions

Waste production and treatment
- Waste reduction
- Waste recycling
- Zero-waste-to-landfill policies
- Extended Producer Responsibility
- Industrial symbiosis

Sustainable Procurement
- Sustainable procurement policies
- Sustainable procurement of palm oil
- Sustainable procurement of pulp
- Sustainable procurement of other products
- Zero-deforestation commitments
- Nagoya Protocol
- CITES

Resource depletion | Biodiversity loss

Greenhouse gas emissions | Environmental toxicity

Habitat destruction | Water pollution

Voluntary approaches

Legal requirements

Figure 1: Legal requirements and voluntary sustainability approaches and their relation to environmental issues

1. Strategic level: sustainability strategy and communication

1.1 Sustainability strategy

Developing and integrating a sustainability vision into corporate-level strategic planning helps identify environmental issues and goals and raises awareness of the measures that will make businesses more sustainable. Conducting a Materiality Assessment helps companies gather insights into the relative importance of specific environmental, social and governance issues for external and internal stakeholders.

In this study, all participating cosmetic companies had a sustainability strategy in place, their main topics summarized in Table 1.

Table 1: Main strategic topics mentioned by the companies

Topics	Mentioned by
Materials & Ingredients	5 companies
Packaging	4 companies
Energy	4 companies
Water	4 companies
Wastes	4 companies
Supply chain management	4 companies
Biodiversity	4 companies
Climate change	2 companies
Deforestation	2 companies
Animal welfare & testing	2 companies

1.2 Sustainability communication

1.2.1 Environmental product performance

Sustainability communication at the product level supports consumers in identifying products with lower environmental impacts, allowing for informed purchasing decisions. There are three types of voluntary product-declarations defined by the ISO 14020 standards – see Figure 2.
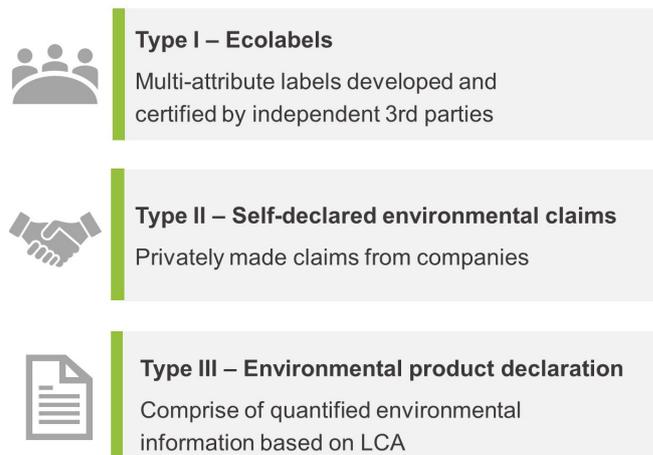
Type I – Ecolabels
Multi-attribute labels developed and certified by independent 3rd parties

Type II – Self-declared environmental claims
Privately made claims from companies

Type III – Environmental product declaration
Comprise of quantified environmental information based on LCA

Figure 2: Types of environmental product declarations

Even though some companies assess the environmental performance of their products, using the advantages of incorporating sustainability on their design, this is frequently not communicated externally. Only one of the companies mentioned having available environmental profiles for their entire product portfolio.

1.2.2 Corporate sustainability communication

Corporate sustainability reporting helps companies to measure, understand and communicate their performance, set goals and manage change more effectively. Standards, such as the Global Reporting Initiative (GRI), provide frameworks for consistent sustainability reporting. Companies can also report to the Carbon Disclosure Project (CDP), including data on climate change, deforestation and water security.

This study revealed that the cosmetics industry is strongly active in corporate sustainability communication. All participating companies publish annual sustainability reports, with all except one writing their reports according to the GRI standard.

2.1 Environmental Risk Assessment

Environmental Risk Assessment (ERA) focuses on product ingredients and provides an evaluation of their safety for humans and the environment. It focuses mainly on risks related to the use phase and the disposal of products.

About half of the studied cosmetic companies implement Environmental Risk Assessments to evaluate the environmental profile of their ingredients. This includes the evaluation on persistency, bioaccumulation and toxicity (PBT) and on very persistent and very bio-accumulative (vPvB) properties.

2.2 Life Cycle Assessment

Environmental impacts occur throughout the life-cycle of a cosmetic product. For example, greenhouse gases are emitted during the sourcing of materials and ingredients, the manufacturing of the cosmetic product, its distribution, during the use phase and the post-consumer phase.

Life Cycle Assessment (LCA) is a structured, internationally standardized concept for quantifying the environmental impacts of a product or service over its entire lifecycle, providing a holistic impact assessment of a product or service.

All companies stated that they conduct Life Cycle Assessment. Two companies evaluated the water footprint of their products and claimed that the main impacts in terms of water quality and consumption are generated during the use phase of the products considered.

Two other companies conducted carbon footprint analysis for their cosmetic products. They claimed that the use phase accounts for most of the greenhouse gas emissions across the life cycle of the products considered. This was especially the case for product sub-categories that require heated water during their use, such as shampoos and body washes.

Four companies also evaluated the environmental profile of their packaging using Life Cycle Assessment methodology.
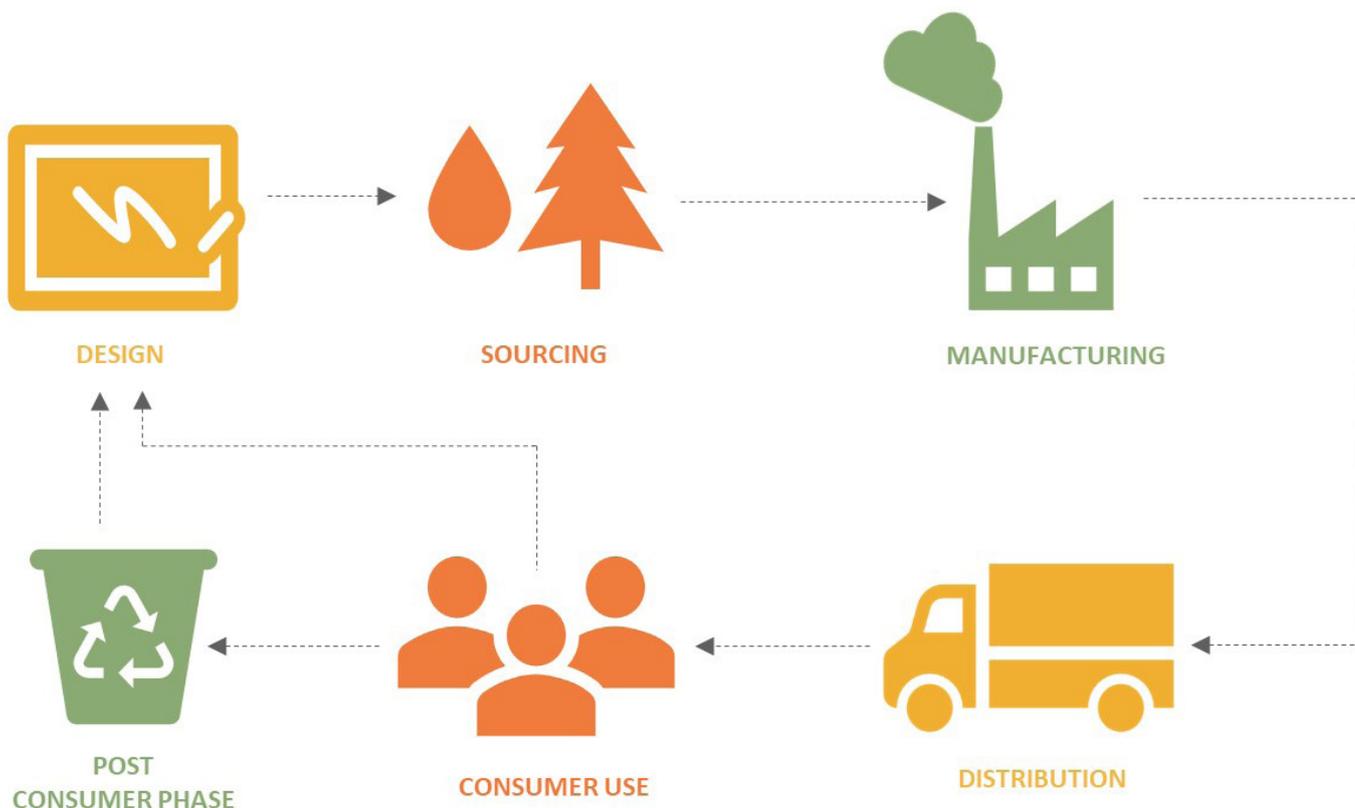

Figure 3: Cosmetic product life cycle

3.1 Natural ingredients

There is no legal definition for "natural ingredients." However, a commonly accepted definition classifies natural ingredients as substances of botanic, inorganic-mineral or animal origin that have been used to process a chemical identifiable in the original source material. This definition excludes organic mineral ingredients, such as petrochemicals.

By replacing petroleum-based ingredients with plant-based ones, cosmetic companies can help to preserve resources and reduce environmental impacts in some cases. However, there are cases in which the environmental performance of synthetic materials is better than the natural ones.

As mentioned by one of the companies, Life Cycle Assessment methodology is key in supporting decision making when it comes to the selection of materials. Another aspect to consider is that, in some cases, the functional performance of natural materials does not fully match the conventional ingredients: for example, preservation of natural ingredients is frequently insufficient to achieve the shelf life that companies need to attain.

Within this study, there were two natural cosmetic companies using 100% natural ingredients in their products. The remaining companies aimed to increase the share of natural ingredients, but did not mention targets. Some reported the shares of plant-based ingredients purchased, usually at around 50%.

Table 2: Overview of commitments, targets and achievements for ingredient-related topics

	Commitment set	Target set	Communication achievement
Natural ingredients: increase plant-based share	5 companies	–	3 companies
Biodegradable ingredients: increase share	3 companies	–	–
Microplastics: eliminate from product / formulation	8 companies	4 companies	8 companies

In Europe there are about 20 different private standards providing third-party certification, with NATRUE and COSMOS standards being the most popular ones.

Natural and organic certification was mentioned by the two natural cosmetic companies, which are certified according to NATRUE. Other mentioned certifications included COSMOS (including Ecocert and Cosmebio) and the American USDA organic standard. One company highlighted that having too many labels in the market has the potential to confuse consumers.

3.2 Biodegradable ingredients

Persistent chemicals can travel long distances, reaching remote areas and leading to accumulation in the environment. Cosmetic companies can select degradable ingredients to avoid the persistence of substances in the environment.

Table 2 shows that only three out of eight companies mentioned having ongoing initiatives to increase the share of biodegradable ingredients in their products. One company stated that the average biodegradability of its shampoos ranges around 91% (according to ready biodegradability tests). One of the natural cosmetic companies mentioned that all its natural ingredients are likely to be fully biodegradable.

3.3 Microplastics

The cosmetics industry has started to remove or replace microplastics contained in their products. For cosmetic purposes, there are alternative options available, for example: beeswax, jojoba waxes, apricot kernels, walnut shells, cellulose and other natural compounds. However, these materials have been mentioned as having allergenic potential and could potentially decrease the shelf life of products. The companies are working to overcome these challenges.

As presented in Table 2, the elimination of microplastics is a hotspot for action and commitment within the industry. The two natural cosmetic companies do not use microplastics in their cosmetic products, as the NATRUE standard requires the products to be free of petrochemical substances. The remaining companies are committed to ban the use of microplastics. However, the majority only communicated banning a specific kind of microplastic (mostly PE) and/or about certain products that will be affected by microplastics elimination.

3.4 Chemicals of concern

All cosmetic chemicals in Europe are regulated by REACH and the Cosmetics Regulation to ensure the highest level of safety to the consumer and the environment. Over 1,300 substances are banned by Cosmetics Regulation and even more chemicals are regulated and restricted to levels that ensure no harmful effects on human health. However, there are other substances that are not banned, but whose safety has been questioned by society, so companies also need to keep track of the latest scientific research on the safety of cosmetic chemicals. Five companies mentioned banning substances from their products in addition to those that are regulated, such as formaldehydes, formaldehyde-releasing substances, siloxane D4, butylparaben, triclosan, nitro musks and polycyclic musks.

Two other companies stated that they are not applying the precautionary principle for their products, as compliance with regulatory requirements is regarded to be sufficient to guarantee the safety of cosmetic products.

4 Product level: packaging

Packaging plays an essential role in almost every industry and has become a key topic for many companies to reduce the environmental impacts of their products. Discussions about environmental impacts most frequently refer to primary packaging. However, secondary packaging also accounts for environmental impacts.

4.1 Material reduction

As displayed in Table 3, all investigated companies optimize their product packaging to minimize material use, as this also lowers material expenditures.

Most of them reported packaging achievements. Reported packaging material reductions range between 3% and 15%.

These reductions can be achieved by different means, including incorporation of light-weight materials, design optimization, development of concentrated products and elimination of unnecessary elements.

In one example, a company developed a packaging technology that uses gas injection in the middle layer of the bottle wall, reducing the plastic volume by 15%.

4.2 Material recyclability

"The most environmentally sensitive packaging can be designed, but if there's no system to collect and recycle it at the end of its lifetime, the packaging is not sustainable" (Sahota, 2014). To ensure the recycling of their packaging, cosmetic companies can take responsibility for the packaging they release into the markets, debating about and informing people of collection systems, as well as recyclers, to ensure that their materials are treated using the most efficient processes. Most companies studied committed to increase the share of recyclable materials. in the packaging of their products – see Table 3.

Table 3: Overview of commitments, targets and achievements for packaging related-topics

	Commitment set	Target set	Communication achievement
Packaging material: reduction	8 companies	2 companies	5 companies
Recyclability of materials: increase	5 companies	3 companies	3 companies
PCR content: increase the share	8 companies	1 company	4 companies
Bioplastics: increase the share	7 companies	–	1 company

4.3 Share of post-consumer recycled (PCR) content

The cosmetics industry is generally committed to increase the share of post-consumer recycled (PCR) materials in their packaging and all the examined companies mentioned such commitments. Two companies reported on the progress for their overall packaging materials. One of them attained a PCR share of 49% in its packaging. The other one reported having incorporated 7,000 tons of PCR. The remaining companies mainly referred to individual packaging material types, such as paper or plastics.

Several companies mentioned that the incorporation of PCR packaging materials can be challenging—especially when it comes to primary product packaging in direct contact with the cosmetics formula—due to the possibility of contamination during the recycling process. To avoid contamination, PCR materials are often located between two layers of virgin material. However, there are already technologies available that allow production of "virgin like" post-consumer recycled plastic materials, which could help companies incorporate more PCR plastics in the packaging of their products.

4.4 Bioplastics

Plastic materials are defined as bioplastics if they are either bio-based, biodegradable or both, making the communication of this topic challenging.

All companies, except for one, aim to increase the share of bio-sourced plastic materials in their packaging. Some companies already use bioplastics in their packaging, while others are currently in the process of researching suitable bioplastics. Bio-polyethylene (PE) is currently the most frequently mentioned bio-sourced plastic. Some cosmetic manufacturers specifically mentioned the need for bioplastics to meet certain criteria, such as:

- better environmental performance over their life-cycle compared to petrochemical plastics;

- no competition with food;

- suitable barrier functions to ensure the protection of the cosmetic formula;

- no negative influences on the recycling infrastructure through contamination of traditional materials.

One of these companies stated that no bioplastics currently meeting these criteria are available on the market except a few materials in development.

5 Corporate level: environmental management system

An Environmental Management System (EMS) is a framework that helps companies achieve their environmental goals through consistent review and evaluation. Companies can get their EMS certified by external parties to ensure that they meet international, industry-specific environmental standards, giving them higher credibility among stakeholders. Two popular standards are ISO 14001 and EMAS. The EMAS standard sets stricter requirements on the measurement and evaluation of environmental performance and requires continuous improvement.

The study showed that all companies act to reduce their environmental impacts and increase their operating efficiency by establishing an Environmental Management System. Figure 4 shows the number of the participating companies with third party EMS certification. The two non-certified companies mentioned that their Environmental Management Systems meet the intent of ISO 14001 standard, even though not formally certified. One of them mentioned that EMS certification does not add value to its existing system.
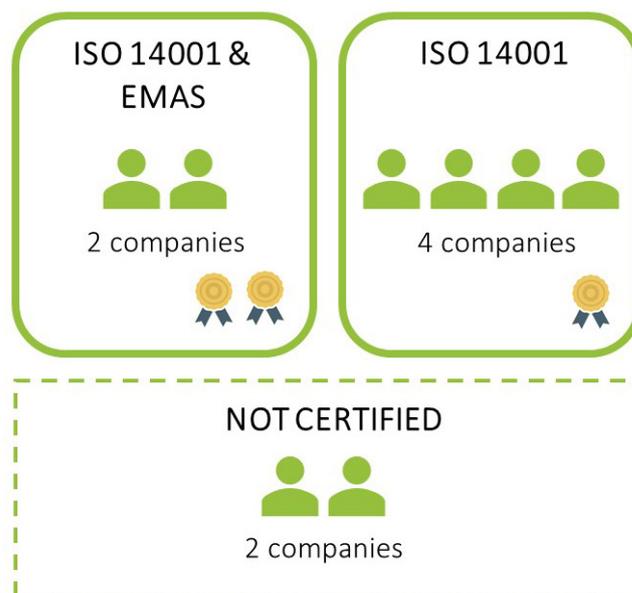

Figure 4: Number of companies with EMS certification

6 Corporate level: energy and greenhouse gas emissions

6.1 Energy consumption reduction

Energy efficiency helps reduce consumption and related greenhouse gas emissions. Investments in energy efficiency reduce operational costs in the long term – see Table 4.

Companies often relate consumption and emissions to products manufactured or the revenue generated, allowing calculation of productivity. GHG emissions and energy consumption decreased for most companies in the study.

Table 4: Overview of commitments, targets and achievements for energy related topics

	Commitment set	Target set	Communication achievement
Energy consumption: reduction	7 companies	1 company	8 companies
Renewable energy share: increase	8 companies	5 companies	8 companies
GHG emissions: reduction	8 companies	6 companies	8 companies

6.2 Renewable energy share

All participating companies committed to increase their share of renewable energy (see Table 4), focusing mainly on the definition of targets for total energy consumption.

6.3 GHG emissions (target setting)

Companies can define science-based CO_2 emission reduction targets in line with the level of decarbonization required to keep the global temperatures below 2°C compared to pre-industrial levels. The Carbon Disclosure Project (CDP) included science-based targets in its climate scoring, promoting their use in corporate reporting practices.

All participating companies committed to reduce their greenhouse gas emissions and reported on their progress – see Table 4. The targets established vary between 20% and 100% reductions within the next 5-10 years. Three out of eight companies align their GHG emission reduction targets with science-based targets.
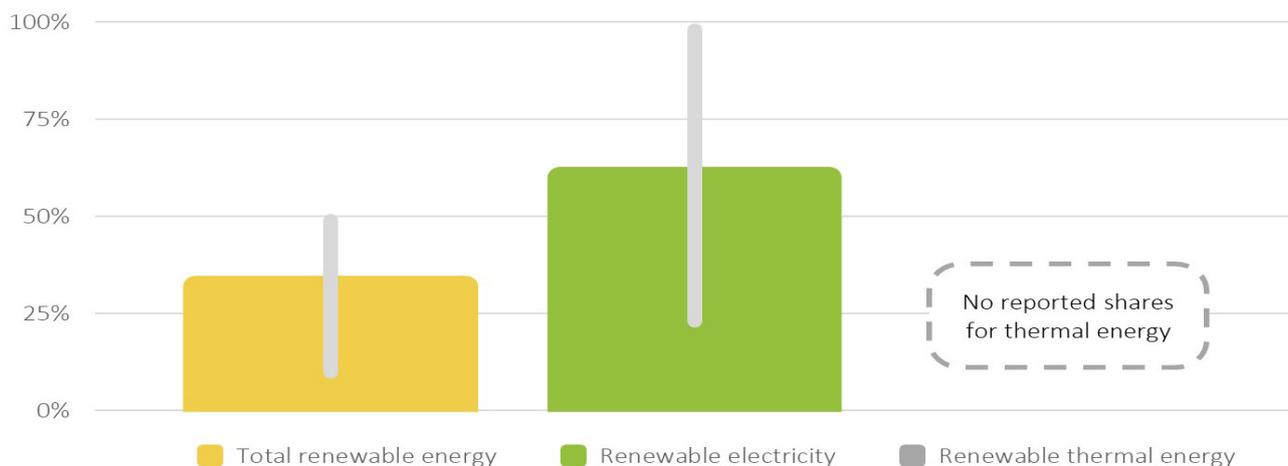

Figure 5: The companies' reported shares of renewable energy consumption in 2016

6.4 Accounting and reporting emissions

The GHG Protocol Standard and the GHG Protocol for Project Accounting are the most commonly used standards for reporting and quantifying GHG emissions and reductions. Applying these standards increases consistency and transparency in GHG accounting and reporting. Companies are required to assign the sources of their emissions to three different scopes:

- Scope 1: direct GHG emissions from sources companies own or control

- Scope 2: GHG emissions from the generation of purchased electricity consumed by the company

- Scope 3: indirect GHG emissions in the company's supply chain

Figure 6: Number of companies reporting their Scope 1, 2 & 3 emissions

7. Coporate level: waste production

7.1 Waste reduction

7.1.1 Post-industrial waste

Typical post-industrial wastes resulting from manufacturing cosmetic products include packaging for ingredients and consumer containers. All companies committed to reduce their post-industrial waste—see Table 5.

They reported their waste reductions in different units, making comparisons impossible. Nevertheless, absolute waste quantities and intensities decreased over the years. Waste intensity (waste produced per unit of product or revenue) decreased between 25% and 38%. One company increased its waste intensity by about 6%, because even though total waste quantities declined, production volumes declined as well.

7.1.2 Post-consumer waste

Half of the companies addressed post-consumer waste, committing to reduce it. Only one company defined a target and reported its achievements.

7.2 Waste recycling

The cosmetics industry is putting effort into recycling its post-industrial waste, with all companies committing to increase recycling rates, which range between 50% and 85%, showing the industry's efforts. Total waste recovery rates, including recycling, re-use and incineration for energy recovery, range between 70% and 100%. Recycling rates are usually higher than incineration rates.

Table 5: Overview of commitments, targets and achievements for waste related topics

	Commitment set	Target set	Communication achievement
Post-industrial waste: reduction	8 companies	3 companies	7 companies
Post-consumer waste: reduction	4 companies	1 company	1 company
Post-industrial waste: increase recycling	8 companies	2 companies	7 companies
Zero waste to landfill	7 companies	3 companies	7 companies

While cosmetic companies can directly influence the waste treated on their premises, for post-consumer waste their influence is limited, as it depends on consumer behavior and local waste treatment collection systems and infrastructure.

Most cosmetic companies communicate and cooperate with recyclers and governments to finance recycling projects. One of the companies is a founding member of *Green Dot*. Another company developed a technology to recycle polypropylene to virgin-like quality.

The inclusion of post-consumer recycled (PCR) materials in the packaging of the products is a clear trend in the industry.

7.3 Zero-waste-to-landfill policies

The zero-waste-to-landfill principle aims to divert all waste from landfills, using waste in material recycling or energy recovery processes. The cosmetics industry is committed to eliminate post-industrial waste in landfills, so waste volume sent to landfills is usually low.

7.4 Extended Producer Responsibility

Extended Producer Responsibility (EPR) is an approach making producers financially responsible for their waste. Voluntary take-back programs encourage consumers to send their waste back to the producers, but few companies have these programs in place due to the often-difficult logistics involved. Producers can also collaborate with recycling organizations: for example, one of the companies analyzed ran a program to collect deodorant cans in Germany and used them to produce bicycles to donate to charities; another company encourages consumers to send back old make-up components, which are then used to produce pencil sharpeners.

7.5 Industrial symbiosis

Industrial symbiosis is the association of two or more companies in which the waste of one is used as a resource for another.

More than half of the companies communicate their industrial synergies. For example, plastic waste is turned into roofing sheets, waste water sludge is transformed into bricks and landfill waste is turned into fertilizer.

8 Corporate level: sustainable procurement

8.1 Sustainable procurement policies

Corporate sustainable procurement policies ensure that environmental, social and economic standards are considered in purchasing decisions for specific commodities.

All participating companies have sustainable procurement policies in place. The most frequently applied standards mentioned are: RSPO for palm products, FSC and PEFC for pulp products. Two companies also mentioned soy, both following the Brazilian Round Table of Responsible Soy. The communicated procurement policies clearly focused on plant-based products. Only one company mentioned procurement guidelines for non-renewable raw materials of mineral or fossil origin.

8.2 Sustainable procurement of palm oil

The Roundtable on Sustainable Palm Oil (RSPO) is the most popular sustainable certification for palm oil. RSPO developed the Supply Chain Certification Standard, establishing four models – see Figure 8.

Seven cosmetic companies purchased all or a a part of their palm oil from RSPO certified sources – see Figure 7.

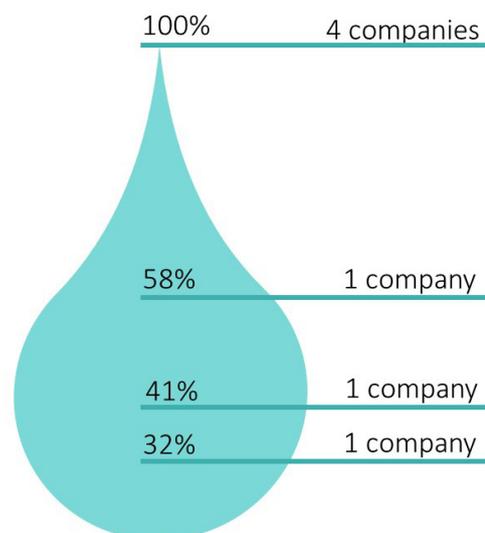Figure 9 displays the distribution of the purchased palm oil by the model used.

100% 4 companies

58% 1 company

41% 1 company

32% 1 company

Figure 7: Shares of sustainable palm oil purchased

Most companies purchase their palm oil via the Mass Balance and Book & Claim model, meaning that most of the palm oil purchased originates from mixed sources. The companies committed to eliminate procurement via Book & Claim certification within the next decade. The industry makes efforts to trace back the palm oil to its origin to identify the production conditions at plantations, mills and refineries. Many cosmetic companies mentioned that tracking palm oil products is challenging, especially for derivatives, as they move through multiple refining steps with multiple suppliers.
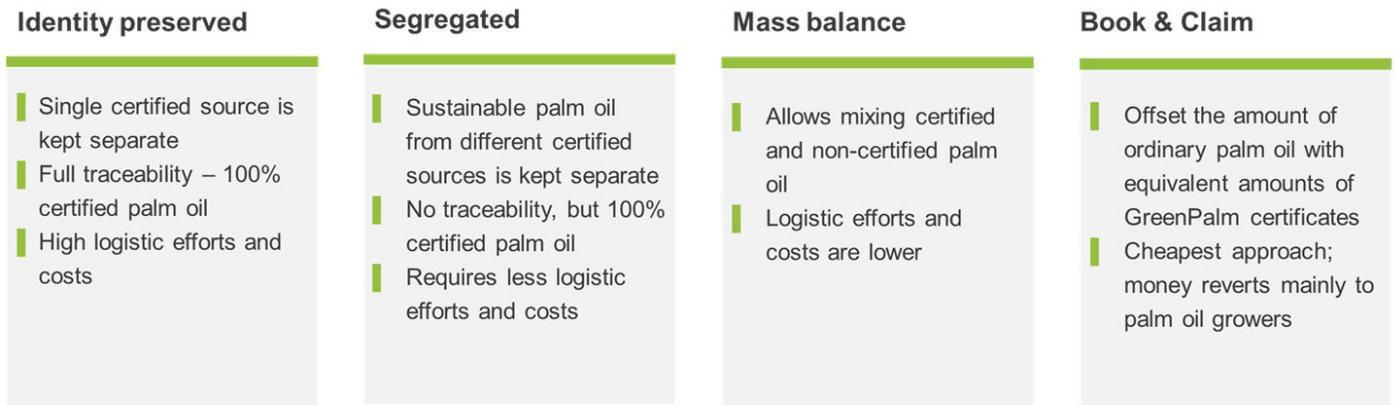
Identity preserved

- Single certified source is kept separate
- Full traceability – 100% certified palm oil
- High logistic efforts and costs

Segregated

- Sustainable palm oil from different certified sources is kept separate
- No traceability, but 100% certified palm oil
- Requires less logistic efforts and costs

Mass balance

- Allows mixing certified and non-certified palm oil
- Logistic efforts and costs are lower

Book & Claim

- Offset the amount of ordinary palm oil with equivalent amounts of GreenPalm certificates
- Cheapest approach; money reverts mainly to palm oil growers

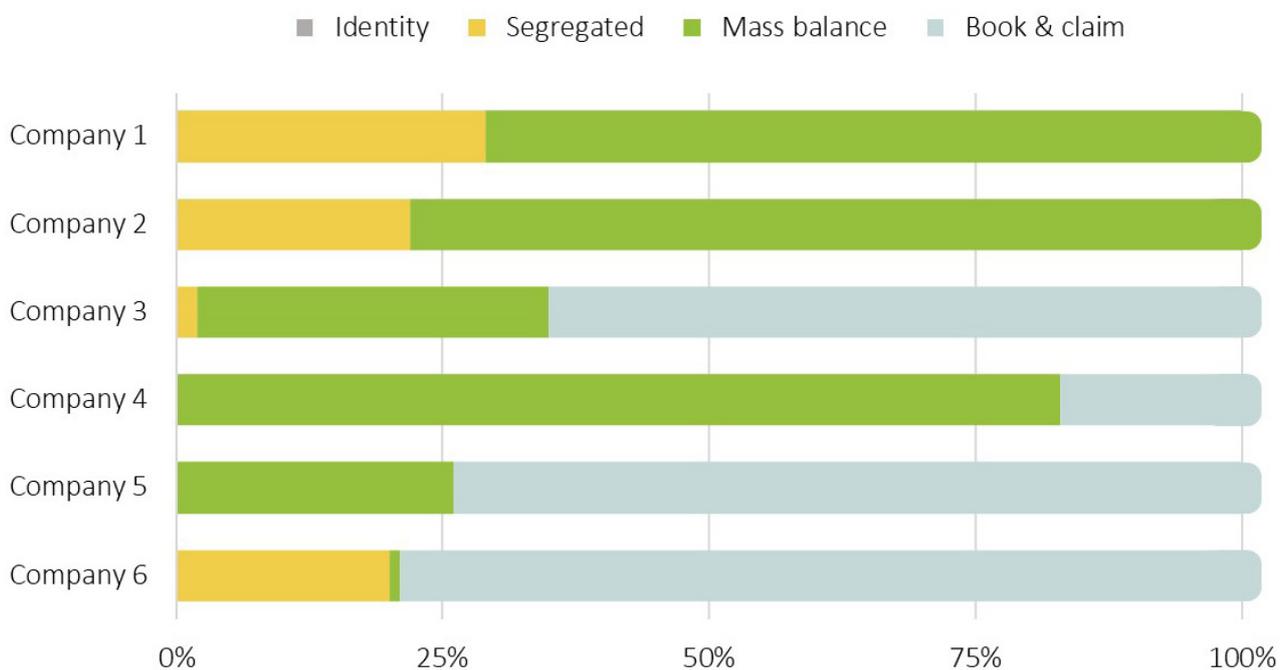*Figure 8: RSPO supply chain models*

Figure 9: RSPO supply chain models

8.3 Sustainable procurement of pulp

All companies stated to purchase sustainable wood-fiber products from FSC and PEFC certification, showing that this is an important topic for the industry.

Two global forest certification schemes are the Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification Schemes (PEFC). Only two companies reported the certified wood-fiber material share of total paper packaging used, ranging between 86% and 99%.

8.4 Sustainable procurement of other products

Half of the examined companies said they purchased other certified agricultural raw materials, but most did not specify which materials or standards. Only two companies mentioned buying soy with RTRS certification. This indicates that communication of sustainable procurement of other raw materials seems of less importance to the cosmetics industry.

8.5 Zero deforestation commitments

The sourcing of palm oil, wood and soy are among the biggest drivers for deforestation of tropical forests. Companies can commit to end deforestation in their supply chains by following either zero-gross or zero-net deforestation principle (see Figure 10).

Most of the cosmetic companies have made commodity -specific, zero-deforestation pledges. Palm oil was the commodity most frequently addressed, followed by paper and soy. There is a lack of communication about which principle the companies should apply to their zero-deforestation policies and about time-specific targets.

Zero-gross deforestation

Does not allow converting existing primary forests and therefore prohibits any expansion of infrastructure or agricultural production in native forest areas

Zero-net deforestation

Allows the conversion of primary forests, but requires that an equivalent area of secondary forests is planted to compensate the loss

Figure 10: Main models for zero-deforestation commitments

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