

Shiseido Climate/Nature-Related Financial Disclosure Report June 28, 2024

Background

"Give a human face to the global market."

The philosophy of the ESG investment called for by then UN Secretary-General Kofi Annan in his 1999 speech at the Davos Forum is changing the values of the global economy. Nonfinancial information is now being used to judge a company's future value, as well as financial information by investors, and companies are increasingly required to transparently disclose their goals and performance in sustainability-related initiatives, including climate change. The TCFD¹⁻³⁾ and the TNFD4) have demonstrated to corporate managers the importance of considering and addressing climate change and biodiversity issues as one of the business priority issues by providing a simple framework, including governance, strategy, risk management, and metrics and targets. The International Sustainability Standards Board (ISSB) of the IFRS Foundation published IFRS S1 (General Sustainability Disclosure Requirements) and IFRS S2 (Climate-related Disclosures) in 2023, building upon the recommendations of the TCFD. The importance of non-financial information disclosure is increasingly being recognized.

In the *Global Risks Report 2024* ⁵⁾, the World Economic Forum warned that extreme weather events, critical change to earth systems, biodiversity loss and ecosystem collapse, and natural resource shortages are the greatest long-term risk factors to the global economy. It is important to accurately analyze climate-related or nature-related risks and opportunities and to respond to those issues in advance in order to ensure sustainable business growth considering the recent severe damage caused by disasters.

For example, many cosmetic raw materials are made from agricultural products, such as oil palms. Stable climate conditions, including rain and temperatures, are essential for continuous business growth. If the weather conditions change because of climate change, it will cause water shortages and serious disasters, which will have significant impacts

on society, as well as our value chain, including procurement, production, logistics, and sales activities. Therefore, we disclosed the science-based target along the 1.5° C trajectory in addition to analyzing sustainability-related risks and opportunities to mitigate climate change and its risks. We also committed to accelerating and to analyzing risks and opportunities climate-related and integrating them into company-wide actions. Furthermore, we will switch to RSPO-certified raw materials by 2026 for all cosmetic raw materials derived from oil palms in order to minimize supply chain risks and biodiversity loss as much as possible.

In this report, we present the results of our analysis of the climate-related and the nature-related risks and opportunities based on scientific and statistical evidence as comprehensively as possible in line with the TCFD framework of *governance*, *strategy*, *risk management*, and *metrics and targets*.

The analysis of global environmental issues, such as climate change, assumes a much longer time scale than that of normal business planning and risk management, and it is impossible to forecast all the various changes in society and markets that may occur as a result of environmental issues. Hence, the results contain a great deal of uncertainty and indeterminacy.

Governance

At Shiseido, we work to promote sustainability across the entire company, including our brands and regional businesses. Sustainability Committee meetings are held regularly to ensure timely management decisions related to sustainability efforts and their proper implementation across the Group, the committee was held regularly in 2023. The committee decides on Group-wide sustainability strategies, policies, and discusses specific topics such as disclosure contents of TCFD/TNFD and actions for human rights, as well as monitors the progress of medium-to-long-term goals. The committee consists of the Group COO and executive officers in charge of R&D, Supply Network, Corporate Communications,

and our brands, as well as other executive officers from different fields to ensure discussions of a range of issues from different perspectives. In case of requiring decisions on important matters in the execution of business, it is proposed or reported to the Global Strategy Committee or the Board of Directors. In addition, the Chief Operating Officer, who is the chair of the Sustainability Committee, receives regular updates on the latest information from the Sustainability Strategy Acceleration Department to ensure that the appropriate skills and competencies are secured to oversee the strategy.

In order to ensure executing and promoting sustainability actions, a Sustainability TASKFORCE has been set up under the Sustainability Committee, consisting of the heads of key relevant departments. At the TASKFOECE, practical approaches to achieve our long term target are discussed with relevant departments, regional headquarters, and local subsidiaries as necessary.



Figure 1: Governance structure of Shiseido

The Company regards the remuneration policy for Directors and Corporate Executive Officers as an important matter for corporate governance. Based on the above basic philosophy, the Compensation Committee has resolved its policy on decisions regarding remuneration of individual Directors and Corporate Executive Officers. Regarding evaluation indicators for long-term the incentive-type remuneration in fiscal year 2024, as an indicator for economic value of corporate value, the Company has set the compound average growth rate (CAGR) of consolidated net sales from fiscal year 2023 to fiscal year 2026 and the consolidated core operating profit margin for fiscal year 2026. Furthermore, the Company has adopted the multiple internal and external indicators pertaining to the environment, society and corporate governance (ESG) as benchmarks on creation of social value to ensure the structure to support the increase of the corporate value in terms of both economic value and social value.

Strategy

1. What is Risk?

ISO 31000 defines risk as the "effect of uncertainty on objectives," and the magnitude of a risk is determined by the balance between the likelihood of its occurrence and its potential outcome (its hazard). For example, in the assessment of flood risk discussed later, the potential damage in the event of a flood represents the potential result of the event, while the probability of the flood occurring now or in the future is the probability of occurrence. When analyzing risks related to nature and the climate, it is necessary to predict how the severity of events such as the scale of floods and the recurrence interval or probability of occurrence of major floods may change due to rising temperatures and the loss of biodiversity, and it is necessary to assess the damage resulting from these changes. Therefore, it is crucial that we understand the relationship between climate change and biodiversity loss, and specific risk factors such as floods and water scarcity.

However, it is important to note that floods and water shortages were occurring around the world even before the industrial revolution, before anthropomorphic climate change began, and to note that we cannot eliminate these risks even if we are able to eliminate the effects of climate change. Naturally, not all future anticipated risks are due to climate change.

The IPCC's Sixth Assessment Report presents global predictions regarding floods, heatwaves and changes in meteorological conditions in line with multiple climate scenarios. ranging from Representative Concentration Pathway (RCP) 1.9/Shared Socioeconomic Pathways (SSP) 1 to RCP 8.5/SSP5. Regarding biodiversity, a challenge that is faced is that there is no clear relationship between the extent of the loss of biodiversity and individual social and economic activities, and it is difficult to establish convincing scenarios that state changes in probability. Furthermore, it is currently challenging to assess the risk mitigation effects of the introduction of organisms to an area or the relocation of areas of economic activity to replace the ecosystem services previously provided by diverse biological resources. Therefore, this report uses the results of the hazard assessments in the extreme scenarios as a substitute for biodiversity risk assessments while looking forward to the emergence of science-based universally applicable future prediction scenarios.

2. Hot spot impact analysis

To gain a comprehensive and quantitative understanding of the magnitude of business activities' impact on the environment, climate and nature, a LIME 37-15) organizational life cycle assessment (LCA) was carried out based on data about the Shiseido Group's activities in 2023, including information about their direct activities and activities upstream and downstream in the value chain. LIME 3 includes damage factors for each country and region where a company may have an impact on the environment. However, regarding cosmetic ingredients derived from processed agricultural products, such as fatty acids and surfactants, the land transformation and occupation associated with agriculture and the water resource consumption do not align with the procurement regions but occur in activities that are upstream in the supply chain. Therefore, based on the results of supplier interviews, FAOSTAT¹⁶⁾ (agricultural statistics), and the market prices of crops, we have mapped the main agricultural products that are the raw materials for the procured ingredients by production country or region in 2023. We have calculated the area of land transformed, land occupied, and water resources consumed in agricultural association with production. By supplementing the elementary flow with this data in our LCA analysis, we have attempted to clarify the environmental impact of upstream activities in the supply chain taking regional characteristics into account. To avoid underestimation, we have not deducted the inventory of the corresponding elementary flows from the life cycle inventory data applied for the raw materials derived from the crops. Regarding the analysis conditions, considering the reality that GHG emissions have not been reduced in developing countries, the SSP2/RCP4.5 scenario was used, and a 1% discount rate for future damage has been used.

LIME 3, which uses mammals, birds, amphibians, reptiles, fish, and vascular plants as model organisms, uses the expected increase in the



number of extinct species per 1000 species per 1000

years to assess the endpoint impact of biodiversity loss.

Figure 2: Environmental impacts of Shiseido's activities indicated by the LIME3

The LCA results indicated that the hotspot for biodiversity impact is in the procurement stage, and that most of the impact is due to land transformation associated with the cultivation of material crops, such as oilseeds and grains used in raw material production. It suggests the importance of collecting and analyzing more detailed information regarding the impact of agriculture in raw materials procurement to understand the impact of biodiversity loss. As a result of the integrated analysis using the G20's populationweighted average willingness-to-pay, the costs externalized due to the environmental impact of our business activities during one year were estimated to be about 30 billion yen, converted at 135 yen to the US dollar. Of this, 8.4 billion ven was external costs related to GHG emissions and 470 million yen was related to water resource consumption. Endpoint damage to human health was evaluated to be 4.4 billion yen. The endpoint damage to biodiversity was 3.2 billion yen, the damage to social assets was 9.8 billion yen and the damage regarding the inhibition of

primary production was 12.6 billion yen. The integrated indicators provided by LIME 3 can be interpreted as the financial impact of the impact aspect that is a required disclosure under the TNFD recommendations, as it represents the implicit societal agreement to avoid the damage caused by our environmental impact. Furthermore, the ability to identify the magnitude of the impact in terms of endpoint damage, including biodiversity loss, by factor can also be considered to be an advantage of LCA.

3. Screening of factors related to risks and opportunities

In considering factors related to climate change, we conducted a scenario analysis for both the transitional and the physical risks and opportunities in terms of the $1.5/2^{\circ}$ C and 4° C scenarios, respectively, based on the RCPs and SSPs. A variety of factors and relationships among them are assumed to contribute to climate-related risks and opportunities.

Area	Key Risk	Procurement	Manufacturing	Distribution
Europe	 (1) Coastal and inland flooding (2) Increasing temperatures and heat extremes (3) Ecosystem disruptions (4) Water scarcity (5) Losses in crop production 	\$	\$	1
North America	 (1) Mental health and mortality (2) Increasing temperatures and heat extremes (3) Ecosystem disruptions (4) Water scarcity and quality (5) Losses in crop production (6) Sea level rising 	\$	1	✓
Central and South America	 (1) Water scarcity (2) Infectious diseases (3) Coral ecosystem disruptions (4) Food security (5) Floods (6) Sea level rising 	\$		✓
Asia	 Human health Floods Ecosystem disruptions Sea level rising Water scarcity Food security 	~	1	~
Australasia	 (1) Ecosystem disruptions in ocean or alpine area (2) Sea level rising (3) Losses in crop production (4) Increasing temperatures (5) Wildfire 	\$		~
Africa	 (1) Ecosystem disruptions (2) Food security (3) Human mortality (Heat and infections) (4) Economic growth and poverty (5) Water scarcity 	1		

Table 1: Key risk factors reported by IPCC and Shiseido's activity area

Regarding transitional risk, the elements associated with the transition to a decarbonized society, such as the policy, regulation, technology, market, and consumer perceptions were considered. Since factors that pose climate-related risks and opportunities are influenced by a variety of events and relationships, we comprehensively identified key physical risk factors based on the IPCC *Sixth Assessment Report* and the Shiseido Group's areas of activity.

In the following sections, the results of the qualitative and quantitative analysis of financial impacts as of 2030 are described. The analysis was conducted based on scientific and statistical data by

selecting items with significant impacts from among the individual risk and opportunity factors presented in the IPCC *Sixth Assessment Report*, considering the sustainability and uncertainty of the business and assets, and the lifetime of the business and facilities.

4. Carbon tax

The financial impact of a carbon pricing scheme is a concern in the transition to a decarbonized society. Various carbon pricing schemes are being discussed, including a carbon tax, a border carbon tax on the movement of goods from countries and regions with weak carbon regulations to those with strong carbon regulations, Cap & Trade, and an emissions trading system.

Currently, carbon tax prices are set at US\$20–140 per ton of GHG emissions in European countries¹⁷⁾. Since the carbon tax is used to secure the budget for implementing mitigation, adaptation measures, and compensation for climate disasters, the carbon tax price is expected to be determined based on the social cost of carbon in the near future. The International Energy Agency (IEA) has projected a carbon price of US\$120 in the Announced Pledges Scenario to US\$130 in the Net Zero Emissions by 2050 Scenario per ton of GHG emissions in 2030, which includes the cost of implementing climate-related policies. With France and Iceland announcing carbon taxes of €100 and CA\$170 in 2030, the trend toward higher carbon tax prices is likely to continue.

In recent years, a series of studies on the social cost of carbon have been published, and some reports suggest the appropriate future carbon price at \$500– 1,500^{18,19)}. As the carbon tax becomes more expensive, the transaction price in the ETS market is expected to follow the carbon tax price. With this current situation regarding carbon pricing as background, we analyzed the financial burden of the carbon tax in 2025 as a short-term impact, adopting the current level in France, where we have a factory, and the annual burden as of 2030 using the IEA AP and NZE scenarios for the medium- to long-term impact. Based on the projections for GHG emissions of Scope 1 and Scope 2, we considered the financial impact of the border carbon tax as well, according to the following formula with the assumption that a border carbon tax with the same level is introduced in Europe in 2030 or in all countries and regions where our factories are located.

- Carbon tax impact = $GHG_{in} * CT_{in} + GHG_{out} * CT_{out}$ + $GHG_{out} * (CT_{in} - CT_{out}) * S_{in}/(S_{in} + S_{out})$
- GHG_{in}: GHG emissions in countries and regions with a border carbon tax
- GHG_{out}: GHG emissions in countries and regions without a border carbon tax
- CT_{in}: Carbon tax price in countries and regions with a border carbon tax
- CT_{out}: Carbon tax price in countries and regions without a border carbon tax
- S_{in}: Sales volume to countries and regions with a border carbon tax
- S_{out}: Sales volume to countries and regions without a border carbon tax

	Period	Tax price	Region	Impact
1	2025	\$52	France	¥12 mil.
2	2030	\$130	EU	¥53 mil.
3	2030	\$130	All	¥0.87 bil.
4	2030	\$130	All	¥2.2 bil.

Table 2: Projected financial impact from carbon tax

As a result, it was estimated that the financial impact over the short term would be small (Scenario 1). However, for the medium to long term, if a carbon tax is introduced only within the EU, the annual impact would be approximately 53 million yen in 2030 (Scenario 2), and if the same level was applied globally, the annual impact would be approximately 0.87 billion yen per year (Scenario 3). If the level of

renewable energy deployment in 2030 were to remain at the same level as in 2020, the annual carbon tax burden would be approximately 2.2 billion yen (Scenario 4).

At COP27, it was agreed to establish a fund to compensate for losses and damages caused by climate change. According to the *Sharm el-Sheikh Implementation Plan*²⁰⁾, it is reported that US\$5.8 trillion to US\$5.9 trillion will be needed until 2030 to support such developing countries. Assuming that these losses and damages will be financed by a carbon tax in the future, we estimate that the annual burden would be approximately 250 million yen to 840 million yen under the 1.5° C scenario and 360 million yen to 1.2 billion yen under the 4° C scenario even if we had reduced our Scope 1 and Scope 2 GHG emissions by 95% in 2050.

The carbon tax would affect procurement costs. If only GHG emissions at Tier 1 suppliers were subject to a carbon tax, additional costs would be incurred for raw material procurement in proportion to the ratio of GHG emissions from electricity and fuel consumption of GHG emissions from raw material procurement, but in practice, it should be assumed that electricity and fuel consumption, especially at upstream suppliers located in countries and regions that have introduced carbon taxes, would also be considered. The share of GHG emissions that would be subject to a carbon tax if all upstream suppliers were covered is calculated as the sum of the following infinite sequence of numbers.

Carbon tax coverage
$$= \sum_{n=1}^{\infty} \{ (1-x)^{n-1} * x \}$$

x: Ratio of GHG emissions from electricity and fuel consumption of GHG emissions from raw material procurement

For 0 < x < 1, this infinite series converges to 1. If a carbon tax were introduced globally, a carbon tax would be imposed on all GHG emissions from raw material procurement, but discussions at the Conference of the Parties to the United Nations Framework Convention on Climate Change often call for restrictions only on developed countries. Therefore, we calculated the impact of the carbon tax on raw material procurement costs under the IEA NZE scenario with a conservative approach, assuming that up to the tier 3 suppliers operate in countries and regions subject to the tax. The share of GHG emissions from procurement of cosmetic raw materials and packaging materials, which are emitted through electricity and fuel consumption at suppliers, was estimated based on our raw material procurement results using an analysis based on IDEA, a life cycle inventory database.

Carbon tax impact =
$$(\sum_{n=1}^{3} \{(1 - x_m)^{n-1} * x_m\} * GHG_{C1m}$$

+ $\sum_{n=1}^{3} \{(1 - x_p)^{n-1} * x_p\} * GHG_{C1p}) * CT$

- *x_m*: Ratio of GHG emissions from electricity and fuel consumption of GHG emissions from cosmetic raw material procurement
- x_p: Ratio of GHG emissions from electricity and fuel consumption of GHG emissions from packaging material procurement
- GHG_{C1m}: GHG emissions from cosmetic raw material procurement
- GHG_{C1p}: GHG emissions from packaging material procurement
- CT: Carbon tax price

As a result, an additional burden of approximately 3.5 billion yen per year was expected, suggesting the importance of working with direct and indirect suppliers to decarbonize the supply chain.

5. Floods

The impact of large-scale floods due to the temperature increase was evaluated. For the flood frequency in future, we used the return period of large-scale floods in the RCP2.6, RCP4.5, RCP6.0 and the RCP8.5 scenario reported by Hirabayashi *et*

*al.*²¹⁾ As for the current frequency, we adopted the average number of floods per unit area by country and region for the decade from 2000 to 2019 based on the *Emergency Events Database*²²⁾ published by the Universite Catholique de Louvain. The inverse of the number of return period in 2100 is taken as the probability of flooding per year. The sum of the probability of flood occurrence at present and one third of the difference between the current probability and the probability in 2100 was adopted as the probability of flooding in 2030.

The amount of damage was calculated for all domestic and overseas factories. Assuming that 50% of the facilities are to be replaced at the factories located in areas where flooding is predicted to be greater than 50 cm, according to hazard maps published by local governments and other sources, the financial impact was the total amount of loss if shipments were suspended with the assumption that production activities at the affected factories would be halted for one month. And for the factories whose hazard maps predicted inundation of 50 cm or less, the financial impact was calculated as the impact of a three-day suspension of production activities due to disruption of surrounding logistics and difficulty in commuting for employees, assuming no damage to facilities caused by the inundation.

The reported data are evaluated at a spatial resolution of 0.25 degrees in latitude and longitude. Therefore, the results may differ significantly due to slight differences in location information. For this reason, we calculated the average score for each river basin and used them in this analysis. An impact assessment was conducted for all factories, and the total was calculated as the impact of the flooding on the Shiseido Group as a whole.

$$f(F_{2030}) = FR_0 * FF_{2030} * (S + C)$$

Flood impact = $\Sigma f(F_{2030})$

FR₀: Initial value of flood risk FF₂₀₃₀: Probability of large-scale flooding in 2030 S: Hypothetical sales amount suspended by flooding C: Value of facility of the target factory

As a result, the potential impact of flooding in 2030 under the RCP8.5 (4 $^{\circ}$ C scenario) was estimated to be about 870 million yen per year of which 150 million yen is attributable to climate change under the RCP 8.5. Especially in Japan, where factories are concentrated, the impact of flooding is expected to increase toward the end of this century; therefore, the importance of taking such measures as developing a business continuity plan and predicting flooding from a long-term perspective was pointed out. Regarding the super long-term impacts, the effects of climate change are predicted to significantly increase, with the potential risk in 2100 estimated to be several times higher than in 2030. However, there is considerable uncertainty in all aspects of the business environment, including socioeconomic and addition technological aspects, in to the environmental situation, so the value of the results as a realistic prediction of risk is limited.

Such extreme weather events have a significant impact not only on shipping from our factories but also on logistics. Therefore, we started to investigate the flood risk of important distribution centers. First, we carried out an analysis based on the same methodology for our distribution centers in Japan and confirmed that the flood risk was low according to the hazard maps published by the local governments. In some countries and regions other than Japan, as detailed hazard maps are not provided by local governments, a detailed method of analysis based on topographical and other information is under consideration for overseas factories and distribution centers.

6. Drought and water shortage

Shiseido has 11 factories in Japan, France, the United States, China, and Taiwan that use approximately 0.88 million m³ of water resources annually.

The baseline water stress indicators are generally used to assess the scarcity of water resources and physical risks related to water, but various problems have been identified. The baseline water stress indicators are based on the ratio of the amount of water used to the amount of water available, regardless of the size of the river, and do not consider the amount of water required by the aquatic ecosystem. We evaluated the water environment of the watershed where the factory is located using the AWARE (Available Water Remaining per area in a watershed)²³⁾ characterization factors which were developed with the support of the UNEP/SETAC Life Cycle Initiative to address these issues regarding the baseline water stress indicator. AWARE indicates the relative amount of water available after meeting the needs of aquatic ecosystems and society. An AWARE of 1 signifies the global average for terrestrial areas, and it was determined that our Beijing factory in China is located in a region where water scarcity is greater than the global average.

	Country and	Withdrawal
AWARL	region	(m ³)
1<	Japan France US Taiwan China (Shanghai)	641,105
≧1	China (Beijin)	24,199

Table 3: Water usage at factories in 2023

On the other hand, even if water resources are abundant at present, rainfall in some areas is expected to decrease in the future due to climate change. In this section, the result of the analysis of how access to freshwater resources may change because of reduced rainfall associated with climate change and demographics and how the operations of production factories may be affected by these changes will be described.

According to the report Current Status of Water

Resources in Japan²⁴⁾ published by the Ministry of Land, Infrastructure, Transport and Tourism, a survey of approximately 170 sites throughout Japan showed that water supply restrictions were implemented 590 times during the 30 years from 1991 to 2020 due to drought. Long-term water supply restrictions were imposed 40 times for 2,865 days. This means that per year, water supply restrictions are in place for 96 days. Short-term water supply restrictions are in place for 128 days per year based on the assumption of 7 days for each short-term restriction. When assuming that the percentage of factory production capacity lost due to short-term and long-term water supply restrictions is 10% and 100%, respectively, the potential drought risk for factories in Japan today can be set at 0.041% of production capacity lost. For the factories located in countries and regions other than Japan, the initial value of the drought risk in Japan was used as the standard value, and the value weighted by the Water Unavailability Factor $(f_{wua})^{25}$ for surface water was adopted as the initial risk. The f_{wua} is a characterization factor that weights the scarcity of water resources by the size of the land area required to collect 1 m³ of rainwater, surface water, and groundwater, respectively.

Rainfall projections were based on the relative precipitation change from 2011 to 2040 under the RCP2.6, 4.5, 6.0, and 8.5 scenario, reported by Hanasaki et al.²⁶⁾ The reported data are evaluated at a spatial resolution of 0.5 degrees in latitude and longitude. Therefore, the results might differ significantly due to slight differences in location information. For this reason, we calculated the average score for each river basin and used them in this analysis. The amount of damage was calculated based on the assumption that factory operations would be suspended depending on the severity of the water shortage. In addition, the demographic change of the country or region where the factory was located was adopted as one of the explanatory variables based on the medium scenario of the United Nations demographic projections²⁷⁾ because access to water

resources is also affected by the population. The effect of demographic change is weighted 1/9 compared to the effect of precipitation change.

The financial impact due to suspended factory operation was calculated for all domestic and oversea factories by the risk function with a sinusoidal curve in response to the risk factors of rainfall reduction or population increase between the thresholds where the impact becomes apparent and where the impact is maximized because the effect of the fluctuation and the buffer effect of water storage infrastructure should be taken into consideration.

The reciprocal of the standard deviation $\sigma_{\rm N}$ of the rainfall variability from the average rainfall in the years without long-term water supply restrictions over the past 30 years was used as the threshold at which the impact begins to become apparent. The standard deviation $\sigma_{\rm L}$ of the rainfall variability from the average rainfall in the year when long-term water supply restrictions were implemented is taken, and the threshold at which the impact is maximized is the amount of rainfall that decreases by an amount equivalent to 3 $\sigma_{\rm L}$. The following formula was used to model the relative change in drought risk to initial risk, and the amount of damage caused by the suspension of manufacturing operations for each domestic and overseas factory was evaluated as the financial impact. And the sum of these was calculated as the impact of water shortages for the entire Shiseido Group.

 $f(P) = (sin ((T_{Pmin} - P)/(T_{Pmin} - T_{Pmax}) * \pi - \pi / 2) + 1)/2$ $f(D) = (sin ((T_{Dmin} - D)/(T_{Dmin} - T_{Dmax}) * \pi - \pi / 2) + 1)/2$ Drought impact = $\Sigma \{R_0 * (0.9 * f(P) + 0.1 * f(D))\} * S$

- P: Relative change in rainfall from 2011 to 2040
- D: Population growth rate from 2011 to 2040
- R₀: Initial risk magnitude
- TP_{min}: Threshold for the rate of rainfall decrease at which impacts begin to become apparent
- TP_{max}: Threshold of the rate of rainfall decrease at which the impact is maximized
- TD_{min}: Threshold for the rate of population growth at which the impact begins to become apparent

- TD_{max}: Threshold of population growth rate at which the impact is maximized
- S: Sales of products shipped from the target factory

As a result, the potential financial impact of water shortages in 2030 under the RCP8.5 (4° C scenario) was projected to be about 3.2 billion yen of which the risk was assessed to be about 10 million yen less due to climate change. This is because the competition for water resources in Japan, the center of production, is expected to ease as rainfall tends to increase toward the end of the century and the population is expected to decline. On the other hand, the potential risks in China, which is currently experiencing high water stress, and in Europe, where rainfall is expected to continue to decline toward the end of the century, were rated as high, and attention should be paid to water risk management, especially in these regions. In order to manage water risk from a long-term perspective, we selected "water consumption at our business sites per net sales" as the metric and set the target as a reduction by 40% per unit of sales by 2026. We will work to mitigate the risk and reduce the impact on the watershed environment by reducing water consumption through the introduction of water-saving and reclaimed water facilities, especially at factories that use a lot of water. Regarding the super long-term impacts, it is predicted that the effects of climate change will significantly increase, the same as for flooding, with the potential risk in 2100 estimated to be double the risk in 2030. However, there is considerable uncertainty in all aspects of the business environment, including socioeconomic and technology aspects, in addition to the environmental situation, so the value of the results as a realistic prediction of risk is limited.

We have begun the pioneering water stewardship initiative of surveying the overall water environment of the Nasu-no-gahara area where the Nasu factory is located. In the 2023 survey, we conducted on-site investigations of the surrounding rivers and computer simulations of the flow of surface water and groundwater in the Nasu-no-gahara area based on geological and statistical information. It revealed that the Nasu-no-gahara area is a fan-shaped area composed of sand and gravel with high water permeability where most precipitation infiltrates the ground, making it difficult to obtain surface water. Historically, this geological feature made agriculture difficult until the establishment of modern water infrastructure. It was also found that the amount of groundwater drawn by the factory is about 0.02% of the total groundwater in the watershed and the factory's wastewater is about 1% of the agricultural water flow up to where it merges with the Sabi River.



Figure 3: Flow of surface and ground water in the Nasu-no-gahara area •ground water •surface water • Nasu Factory

Since the Nasu factory discharges wastewater into local channel, the water used in the production process is treated using a four-stage water purification system including chemical and biological treatment. Additionally, as a precaution, water is retained in a tank before discharge to evaluate water quality. If the water does not meet our own water quality standards that are several times stricter than the public standards, the purification process is performed again, but it has never been necessary to do this since the plant began operating in 2019. In addition to water saving and wastewater quality management, Shiseido will continue to make efforts to understand the input and output of water resources in the entire basin trough a detailed on-site survey and share this information with other stakeholders such as local governments and farmers to improve sustainable water stewardship.

7. Impacts on procurement

Many of the cosmetic raw materials purchased by Shiseido are made from plants. The precipitation change due to climate change also affects raw material production derived from agricultural harvests. Based on our actual raw material procurement results in 2021, we analyzed how much and in which regions water resources were used to grow raw material crops on the basis of water footprint methodology²⁸⁾. The sustainability of water consumption was analyzed by the precipitation change until 2100 and the demographic projections for each country and region used in the previous chapter.

As a result, we identified the material crops and locations whose cultivation would be significantly affected by climate change. These crops may make procurement impossible along with significant increases in costs. We will implement measures to avoid or mitigate the risk by changing the materials and diversifying the production areas for the material crops that might be severely affected.

Second, we analyzed the increase in procurement costs for palm oil and palm kernel oil, which are the most commonly used oilseed crops for cosmetic raw materials, because of the instability of agricultural production. First, we identified the raw materials containing ingredients derived from palm oil and palm kernel oil, such as glycerin and fatty acids, based on the actual procurement of raw materials in 2019, and calculated the total usage of palm oil and palm kernel oil. Then, we estimated the usage of palm oil and palm kernel oil for raw material production in 2030 based on our business growth scenario. Next, a regression analysis was conducted based on the monthly market transaction prices of palm oil and palm kernel oil over the past 25 years (1997-2021) to determine the average price increase, the standard deviation of the ratio of price fluctuations to the average price, and the frequency of prices exceeding the average. Based on the price trends, we forecasted the average price of palm oil and palm kernel oil in 2030 and calculated the potential price increase due to production instability caused by climate change by assuming a contribution of 0.5 from extreme weather events to the frequency of price upswings. The rate of increase in the frequency of once-every-10-year hot temperatures over land, heavy precipitation, and droughts as reported in the IPCC 6th Assessment Report was applied to project the increase in the frequency of production destabilization. The IPCC report shows the frequency of extreme weather events in 2100. Therefore, the frequency of extreme weather events in 2030 was set for the $1.5/2^{\circ}$ C (RCP 1.9, RCP 2.6) and 4° C temperature increases (RCP 8.5) based on the assumption of a linear increase in frequency from 2020 to 2100. We calculated the potential price increase of palm oil and palm kernel oil due to climate change by multiplying the average price, estimated procurement volume in 2030, standard deviation of the price fluctuation rate, and the frequency of extreme weather events.

Procurement impact = $A_{2030} * P_{2030AVE} * \sigma * R_{AW}$

A₂₀₃₀: Expected procurement amount in 2030

- P_{2030AVE}: Expected average price in 2030
- σ : Standard deviation of the percentage change in price relative to the moving average
- R_{AW}: Percentage of price upswing by extreme weather events

As a result, we estimated that the potential cost increase as of 2030 would be about 140 million yen per year due to climate impacts under the $1.5/2^{\circ}$ C scenario and about 290 million yen under the 4° C scenario. In addition to promoting the procurement of sustainable palm oil, with regard to material crops other than oil palm, we should also be aware of the possibility that material demand might lead to higher procurement costs in the future, as well as the possibility that procurement itself might become impossible because of climate change. We will continue to analyze the financial impact and implement measures to avoid or mitigate risks, such as changing materials and diversifying production areas.

8. Geopolitical risks

In 2021, while Asian countries and regions were accelerating the phase out of coal, coupled with the economic stagnation caused by the Covid-19 pandemic, fuel shortages became apparent in Europe. The global shortage of the natural gas supply rapidly increased fuel dependence on some natural gas producing countries and regions, and this became one of the factors that triggered the military invasion. At first glance, international military conflicts and decarbonization may seem unrelated, but decarbonization is closely linked to energy security. The global expansion of renewable energy will promote local energy production for local consumption and be able to stabilize the energy supply for the long term. But in the short term, it may destabilize the balance between international energy supply and demand and result in serious financial impacts. In addition, the civil war that broke out in the Middle East region in 2011 made the acceptance of refugees a major social issue in Europe. A severe drought that lasted for several years devastated agricultural production in rural areas, and the influx of many people into urban areas is said to have been one of the causes of this civil war. A climate model analysis suggests that this drought was caused by climate change²⁹⁾. The breakdown of risks related to such conflicts and civil wars can include the following items:

(1) Opportunity losses resulting from the suspension

of production and sales activities in the countries involved in the conflict

- (2) Increased procurement costs due to shortages in the supply of raw materials and energy produced in the countries involved in the conflict
- (3) Decrease in sales in other countries due to stagnation of the global economy

The potential financial impact of international conflict is expected to be significant compared to other transition and physical risks. We should consider geopolitical instability and destabilization of the energy supply-demand balance as new climaterelated risks, and we should also recognize that analyzing the magnitude of the potential impact and developing countermeasures are also important issues to be addressed in the future.

9. Increased sales opportunities related to climate change

In a 4° C scenario with a significant increase in temperatures, sales opportunities for products used in the summer will expand. Shiseido has elucidated the mechanism by which cool-touch ingredients, such as menthol, influence more effectively and continuously through research in the structure of the cell surface³⁰⁾. Cool-touch products based on these findings and technologies are expected to expand the opportunities not only in Japan and Asia but also in Europe where heat waves have caused significant damage in recent years.

Furthermore, the Japan Agency for Marine-Earth Science and Technology (JAMSTEC) announced that the amount of UV radiation reaching the ground surface in the mid-latitudes of the Northern Hemisphere is expected to increase toward the end of this century due to the various environmental factors, including climate change³¹⁾. The mid-latitudes of the Northern Hemisphere have many large cities with concentrated populations, such as Tokyo and Beijing. The increase in UV radiation is expected to lead to opportunities for the sale of sunscreen products or skincare products that treat skin damaged by UV rays.

In addition to these expectations, we are attempting to identify temperature-dependent consumption and consumer behaviors by a regression analysis of the relationship between temperatures and cosmetics sales performance in Japan over the past five years (2017–2021). Analyzing the relationship between weather, climate, and business is one of the key objectives of climate risk and opportunity analysis because it can lead to the acquisition of new business opportunities.

10. Risks and opportunities related to nature and biodiversity

Biodiversity and ecosystem issues are the aggregation of a myriad of problems at the local level that form a global problem, which are much different from the GHG emissions considered to have a uniform effect on change in radiative forcing. While there are many reports on the effects of economic activities and climate change on biodiversity, there are very few examples of quantitative and macroeconomic correlations between the effects of biodiversity loss on society and the economic activities of the cosmetic or personal care business sector because the conditions of biodiversity loss and the magnitude of the effects may vary depending on the region where the problem occurs. Therefore, a screening analysis was conducted to identify the dependencies and impacts related to ecosystem services of the personal care industry in accordance with ENCORE (Exploring Natural Capital Opportunities, Risks and Exposure)³²⁾ provided by the Natural Capital Finance Alliance.

The results indicate that the impacts of raw material procurement and production activities should be considered from the perspective of both the dependencies and impacts on ecosystem services. Since the impact of water resources used in production activities overlaps with the risk of drought and water shortages as climate change-related risks, the results of the assessment of land occupation and water resource consumption at the raw material procurement stage as the indirect impact as well as the biodiversity impacts due to land occupation by our production sites will be described in the following sections.

Table 4: Dependencies suggested by ENCORE and	
Shicoido's activitios	

Factor	Shiseido's activity				
Dilution by	Unintentional release of				
atmosphere and	pollutants				
ecosystems	Release ingredients from				
	products				
Fibers and other	Raw material procurement				
materials					
Surface water	Cultivation of raw material				
	crops				
	Raw materials production				
	Manufacturing and facility				
	cleaning				
	Use of products				
Ground water	Raw materials production				
	Manufacturing and facility				
	cleaning				
	Use of products				

Table 5: Impacts suggested by ENCORE and

Shiseidos activities						
Factor	Shiseido's activity					
	Cultivation of raw material					
	crops					
Water use	Raw materials production					
	Manufacturing					
	Use of products					
CUC amissions	Energy consumption					
GHG emissions	Activities on the value chain					
Non CHC sin nellutente	NOx, SOx, and PMs					
Non-GHG air pollutants	from fuel combustion					
Water pollutants	Eutrophication, acidification,					
Soil pollutants	heavy metal					
0 - l'idenante	Waste from our business					
Solid waste	Waste from sold products					

11. Impacts on biodiversity of land occupation of our business sites and the adjacent areas

Although the relative degree of impact is small, we recognize the importance of understanding and minimizing the impact of our own sites' land occupancy on biodiversity from the perspective of land manager responsibility. Under L2 and L3 of the LEAP approach, the TNFD Framework version 1.0 requires the identification and prioritization of locations that are ecologically sensitive and those deemed significant from the perspective of an organization's dependence and impact on nature, as well as risks and opportunities.

Table 6: LEAP approach

L	Understand the relationship between business activities and nature, including local characteristics
Ealuate	Analyze the magnitude of the impacts on nature from business and the dependencies on nature
A ssess	Identify the risks/opportunities with double materiality method from a perspective of dependencies and impacts
P epare	Set metrics and targets to manage risks/opportunities for nature conservation and restoration, and disclose the efforts

With the support of MS&AD InterRisk Research & Consulting, Inc., we identified our production sites and surrounding areas that were in sensitive locations from the perspectives of ecosystem importance, ecosystem integrity and ecosystem service provision in accordance with TNFD guidelines. Ecosystem importance was evaluated based on proximity to protected areas and key biodiversity areas (KBA) and taxon-integrated conservation priority. Proximity to protected areas and KBA was evaluated based on the management category of adjacent protected areas in accordance with the World Database on Protected Areas (WDPA) 33) and KBA34) within a radius of 100 m and 1,000 m from the factory. We evaluated taxonintegrated conservation priority based on the data set provided by Think Nature Inc., which shows the relative importance of biodiversity at each point, calculated from the perspective of vertebrate and tree species composition. In this evaluation, we referenced the International Union for Conservation of Nature (IUCN)'s Red Data Book, the Red List of endangered species published by the Ministry of the Environment and also data on the predicted probability of species distribution created by Think Nature Inc. We evaluated ecosystem integrity and the importance of ecosystem service provision, from the perspectives of biodiversity intactness and development pressure around the site. We evaluated biodiversity intactness, using data on the stat of layered habitats based on habitat distribution data and natural forest distribution data provided by Think Nature Inc. multiplied by the mean species abundance which was determined using the method developed by Tim Newbold³⁵⁾. Development pressure was evaluated using the Human Footprint Index developed by H. Mu³⁶⁾, which indicates the degree to which the impact of human activity on the environment has increased or decreased from 2000 to 2020.

In our identification of material locations, we focused on water resource consumption and land use from the perspective of our business activities' dependence and impact on nature. We calculated the environmental impact of our water resource consumption by weighing the consumption of tap water (surface water) and groundwater in 2023 using AWARE. In our groundwater assessments the groundwater to surface water ratio of the Water Unavailability Factor (*f*wua) at each point was multiplied by aware and used as a weighting factor. We evaluated land occupation by multiplying the area of each business site minus the green area by the taxon-integrated conservation priority and the characterization factor for land occupation according to Environmental Footprint 3.1. The environmental impact of water resource consumption and land occupation were integrated using the normalization factor and weighting factor in Environmental Footprint 3.1, and this was used as the evaluation indicator for material locations.

The heat map created based on the results of these evaluations is shown in Table 7. The results of these evaluations identified no areas where both the importance and integrity of the ecosystem were high. In terms of the sites' relationships with nature, as shown in item 6, the Beijing factory scored relatively high compared to other sites, its water resource scarcity is high. It should be noted that this heat map shows relative values between business sites and does not represent the absolute size of our footprint.

Site name	Country/	Sensitive l	oction				Material location		
	Region		Ecosystem Inportance		Ecosyste	n Integrity			
			Geography	Biology	Biodiversity	Development		Water	Land use
					Intactness	pressure			
Kakegawa	Japan								
Osaka	Japan								
Osaka ibaraki	Japan								
Nasu	Japan								
Fukuoka kurume	Japan								
Shiseido Cosmetics Manufacturing Co., Ltd.	China								
Shiseido Liyuan Cosmetics Co., Ltd.	China								
Taiwan Shiseido Hsinchu Factory	Taiwan								
Shiseido America Inc. East Windsor Factory	USA								
Val de Loire Factory	France								
Gien Factory	France								

Table 7: Condition of biodiversity and endangered species habitat around production sites

In conjunction with the identification of sensitive locations, we also conducted a survey of endangered species around the factory based on the IUCN Red Data Book and the Red List of the Ministry of the Environment. Concerns in recent years include not only vertebrates included in these lists, but also the decline of bees in France where two factories are located. To address regional issues like this, the factory has stopped using pesticides on the premises and is working to protect bees by setting up beehives on the factories' premises. In the future, it will be important to expand the scope of surveys such as these and to promote initiatives for protecting ecosystems, including endangered species, in accordance with the unique situation of each site.

12. Biodiversity impacts due to raw material procurement

In general, cosmetic raw materials, such as surfactants and moisturizers, are classified as chemicals, but many of them actually are made from bio-based resources for all or part of their ingredients. Since many materials, such as paper and bio-based plastics, are also made from bio-based resources for packaging, it is important to analyze the characteristics of individual ingredients and their regional characteristics in order to procure raw materials that have a large biodiversity impact. For this reason, TNFD recommends the LEAP approach а wav for investigating nature-related as risks/opportunities.

As part of the "L" and "A" investigations in the LEAP approach, based on the molecular structure of ingredients used in cosmetic ingredients, we identified raw materials derived from the bio-based resources of fats, oils, fatty acids, sugars, and alcohols that are used in the production of ingredients and estimated the amount of crop inputs for the agricultural crops that serve as raw materials. Since it is important to identify the regions where these crops are grown in order to assess the biodiversity impact, we mapped the producing countries and regions for

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each major agricultural crop related to our procured raw materials based on the results of interviews with suppliers, FAOSTAT, and the market price of crops. Based on that, we calculated the area of land transformation, land occupation, and water consumption.

We are focusing on these items as candidate metrics for measure the impact of our business activities on biodiversity and we are developing an analysis method that can take into account rainfall, water infrastructure, and economic activity in areas surrounding our raw materials production areas.



Figure 4: Area of land occupation for material crop production



Figure 5: Consumption of irrigation water for material crop production

The role of pollinators, such as honeybees, and weevils in the production of agricultural products is well known as one of the most important dependencies on nature. The Food and Agriculture Organization of the United Nations (FAO) has proposed some methods for calculating the value of pollinators³⁹: one is an evaluation method based on the additional cost when pollinators are replaced by other pollinators or labor, and the other is based on the amount of loss resulting from changes in supply and demand when the work of pollinators is lost. This can be interpreted as the impacts of the business risk by biodiversity loss and inadequate functioning of ecosystem services by pollinators. Therefore, for the purpose of quantifying biodiversity-related risks, we estimated the number of crops required to produce raw materials based on the actual procurement volume in 2023, and the dependence on pollinators was calculated using the FAO methodology. As a result, the dependence on pollinators was estimated to be about 2.6 billion yen per year.

On the other hand, these services provided by pollinators are only part of the dependence on biodiversity. If plant seeds attempt to germinate under sterile conditions with a significant lack of biodiversity, they can easily be killed by fungi if they are inadvertently introduced. The fact that plants can germinate and grow in soil inhabited by many different varieties of bacteria and fungi is a benefit of biodiversity that has created a well-balanced state of competition among different organisms. Most of our products contain plant-derived ingredients, and in a broad sense, all of our sales depend on biodiversity. It is important to develop a more comprehensive understanding of both *dependence* and the *impact* on biodiversity, as well as to promote quantitative assessments.

13. Organizing the relationship between factors

The risk and opportunity factors related to climate and nature are not independent variables but are intricately interrelated. For example, climate change can be a direct business risk factor in that it increases the probability of weather disasters, such as largescale typhoons, while rising temperatures can also increase supply chain vulnerability indirectly by destabilizing agricultural production through ecosystem impacts, such as the loss or displacement of habitat for temperature-sensitive organisms like honeybees. Conversely, the relationship of cause and effect can be reversed because deforestation with biodiversity loss leads to releasing the carbon stored

in the soil, which accelerates climate change.

Therefore, focusing on the factors identified in the previous section, we organized the nexus among the physical and transitional factors related to climate change, biodiversity and ecosystems, water, and resources. Then, we classified the risks and opportunities in the short term (<1 year), medium (1–5 years), long term (5–10 years), and super long term (more than 10 years) based on the time scale in which each related event becomes apparent in the future. Understanding the relationships among these factors is essential for appropriate action, and we will continue to analyze these factors for a comprehensive understanding of risk and opportunity.

						Time scale			
Risk/Opportunity	Cause	Classification		Short to mid term	long term	Super long term			
Employee health damage	Temperature rising							+	
Relocation of business site	Sea level rising							+	
Declining real estate value	Sea level rising							+	
Supply chain disruption	Floods							+	
Increased procurement cost	Floods, droughts, agricultural production, resource depletion	al)			ter ource			+	
Increased operating cost	Droughts, resource depletion	bist			V.a.			+	
Suspension of production	Floods, droughts	e (Pł						++	
Flood damage to facilities	Floods	ang						++	
Increased insurance costs	Floods, sea level rising	ie ch						+	
Disruption of logistics	Floods	limat						+	
Suspension of sales activities	Floods, geopolitics	D				++	++	++	
Increased/decreased product	Temperature rising, market								
sales	change		al)				+	++	
SCC burden	Carbon tax, adaptation costs		ition			+	+	+	
Renewal of energy equipment	Regulation, technology, market change						+	+	
Sustainable packaging	Regulation, technology, pollution		te chang				+	+	
Regulation for ingredient	Pollution, regulation		imat			+	+	++	
Regulatory Strengthening	Regulation		U	کر ا		++	++	++	
Sustainable brand/product development	Market change			odiversit			+	++	
Additional disclosure items	Land-based GHG emissions			ä		+	+	+	
Loss of innovation opportunities	Loss of genetic resources							+	

Table 8: List of climate- and nature-related risks and opportunities

Risk management

We assessed and identified the impactful risks holistically from a mid-to-long-term perspective. "Environmental (Climate Change, Biodiversity, etc.)" and "Natural Disaster, Infectious Disease and Terrorism" are listed as the categories related to sustainability. Risks related to climate and biodiversity are analyzed based on scientific and socioeconomic evidence and integrated into the enterprise risk management system as one of the elements related to climate change or natural disasters. According to their significance, the risks and their countermeasures are deliberated by the Global Risk Management & Compliance Committee and the Global Strategy Committee. The material risks are also proposed or reported to the Board of Directors as necessary.

Metrics and Targets

In 2021, the IPCC declared in its *6th Assessment Report* that it was unequivocal that human influence had warmed the atmosphere, oceans, and land and announced its prediction that the temperature increase would exceed 1.5° C around 2030. In response, the Glasgow Climate Pact, which agreed to limit the increase in global average temperature to 1.5° C or less compared to pre-industrial levels, was adopted at COP26. The Pact can be interpreted as countries all over the world recognize "the toward NET-ZERO emissions" as a common goal. As society moves toward decarbonization, there is no doubt that our business environment will also be greatly affected. Shiseido has continuously promoted initiatives to reduce GHG emissions as a pillar of our environmental activities since the publication of our first *Environmental Report '97* in 1998.

In this chapter, our transition plan for decarbonization and biodiversity conservation is described along with the metrics and the targets for risk and opportunity management and confirmation of the effectiveness of the activities. The plan will be added or modified when longer or more concrete action will be planned, and we will ensure transparent disclosure. For other climate- and nature-related factors not shown below, we will consider setting appropriate metrics and targets depending on the magnitude of the impact from a long-term risk management perspective.

1. GHG emissions and renewable energy

Shiseido recognizes importance of sustainability and we have incorporated ESG elements into our decision making, including the status of CO_2 emission reduction. These elements are included in the compensation factors used to calculate long-term incentive-based executive compensation, making up 20% of the total.

Furthermore, approximately 60% of the GHGs emitted due to energy used in our direct operations are due to production activities at our factories. Consequently, in 2023, we decided to introduce internal carbon pricing for factory equipment investments. In line with the IEA NZE Scenario, we set a carbon price of US\$130 per ton of GHG emissions (CO₂ equivalent), which will encourage decision-making that will move us towards decarbonization. In addition, we use the latest IT technologies, such as energy management systems, to

reduce unnecessary energy consumption and visualize GHG emissions from our production processes. This allows us to educate and motivate employees to save energy at our sites. At the same time, we aim to switch 100% to renewable energyderived electricity by 2030. Regarding GHG emissions, we set a long-term goal of NET-ZERO by 2050, which will be achieved by balancing residual emissions with beyond value chain mitigation (BVCM) such as removal credits and investments in neutralization. We also set the science-based target of 46.2% reduction for Scope 1 and Scope 2 GHG emissions, and 55% reduction by 2030 in terms of economic intensity along the 1.5° C trajectory as the mid-term targets.

Shiseido aims to reduce GHG emissions throughout the value chain by working with our suppliers and other stakeholders on introducing renewable energy into our supply chain, preventing deforestation related to raw material production, and developing and implementing new social models for the efficient collection and recycling of a wider range of materials, as well as our own efforts for selecting raw materials based on green chemistry principles, replacing with plant-derived materials, reducing packaging weight by expanding refilling and design optimization, making packaging recyclable, reducing energy consumption, and expanding renewable energy at our sites.

2. Raw material procurement

Raw material procurement is the largest contributor to our carbon footprint. We recognize the importance of reducing GHG emissions related to raw material procurement through collaboration with our suppliers. Some raw materials generate significant indirect emissions upstream of the supply chain. Palm oil and palm kernel oil, which are one of the most important oilseed crops for food and daily necessities, as well as cosmetics, are derived from oil palms grown in Southeast Asia such as Malaysia and Indonesia. Oil palm plantations are often developed and cause deforestation and significant loss of biodiversity. According to a report by Germer et al.40, when 1 hectare of tropical rainforest is developed to create a plantation, 777 to 1,443 t-CO₂e of GHG will be released from the ground over the next 25 years. Analyses based on the inventory databases for LCA and the agricultural statistics suggested that about 80% of the land use change from forests for the production of our raw materials seem to be from developing oil palm plantation. Therefore, in order to prevent GHG emissions associated with such land use changes and to conserve the precious rainforest ecosystem, Shiseido aims to switch all cosmetic ingredients directly purchased to RSPO-certified ingredients by 2026*. The GHG emissions that can be reduced by this initiative are estimated as approximately 70,000 t-CO₂e per year for oil palmderived cosmetic raw materials. In 2023, we switched 52%(w/w) of palm-related raw materials, equivalent to 4,275 tons of palm oil and palm kernel oil, corresponding to RSPO-certified raw materials through the Mass Balance System.

In the future, as with oil palms, we will continue to investigate the environmental impact of raw materials due to land use changes for other bio-based ones. Also, we will make efforts to minimize our impact on the climate and ecosystems by switching to sustainable procurement.

3. Saving water

Water is an essential resource in all aspects of cosmetics, including the cultivation of crops used as raw material ingredients, heat transfer medium during production, cleaning, and product use, as well as an important raw material for cosmetics. Climate change is expected to affect atmospheric circulation on a global scale, resulting in significant changes in rainfall conditions. In addition, glaciers in the Himalayas and the European Alps, which are water sources for Asia and the European region, are expected to recede due to rising temperatures. Because of the effects of climate change, there are regions that currently have abundant water resources but will face the threat of droughts in the future. Therefore, in order to make effective use of water resources and mitigate water risks caused by climate change, we are promoting water saving activities, especially at factories with high water consumption, with the goal of reducing the amount of water consumption at our sites by 40% per sales by 2026 compared to 2014 levels. In addition to saving water by optimizing equipment cleaning and reviewing manufacturing processes, our factories in France, which are particularly interested in water issues, have set their own targets and are working on initiatives to reuse water once used and switch from water to alcohol cleaning for fragrance product manufacturing equipment. As a result, the factories achieved water savings of more than 60% per unit of bulk production compared to 2009.

In recognition of the significance of the availability of water resources to our business, we have participated in the Research Group on Water, Climate Change, and Sustainable Development led by Professor Taikan Oki of the University of Tokyo. We strive to acquire the latest scientific knowledge in the areas of hydrology and climate change, and continuously improve our risk analysis methods related to water resources through discussions with experts in the fields of civil engineering and architecture, as well as the academic community.

4. Product development

As the transition to a decarbonized society, consumer awareness of climate and environmental issues is expected to increase more than ever. Responding flexibly to these changes in consumer awareness is critical to the sustainability of our business. We aim to replace all plastic cosmetics packaging with reusable, recyclable, or biodegradable materials by 2025. Shiseido developed and provided a variety of solutions for packaging since the launch of the first refillable face powder in 1926. Shiseido declares that it will optimize packaging design, select appropriate materials, and implement the concept of global reuse by refillable and replaceable products for consumers. In addition to these efforts, we will also work to reduce GHG emissions through innovation for a sustainable future by developing new materials using algae and new chemical recycling methods that can regenerate various types of plastic.

5. Disclosure

Shiseido supported the TCFD and disclosed the result of climate-related risk analysis based on the TCFD framework. In preparation for a decarbonized society, we compiled our climate-related goals, scope, and initiatives into a transition plan. We are disclosing climate-related information through our responses to the CDP, as well as our website, Integrated Report, and Sustainability Report. Our disclosure on Scope 1, Scope 2, and Scope 3 GHG emissions are verified by the independent third party verification organization, SGS Japan Inc., to ensure transparent disclosure. In addition, our target on mitigating climate change is certified as the science-based target along the 1.5° C trajectory by SBTi. Regarding renewable electricity, we have joined RE100 to promote the introduction proactively.

Table 9: GHG emissions (t-CO₂e)

Scop	e	Description	Internal data	Emission factor	2019	2023
Scop	be 1	Direct emissions due to our activities	Fuel consumption	Reference-1 ⁴¹⁾	27,036	21,105
Scop	be 2	Indirect emissions due to energy consumption provided by other entities	Power and steam consumption	Factor provided by power company	51,714	13,617
Scop	be 3	Indirect emissions other than Scope 2				
1	Purchased goods and services	Emissions generated from upstream of the supply chain, such as raw materials, advertising service, LUC due to palm- and paper-derived material production.	Raw material procurement volume POSM procurement volume, Advertising expenses Palm- and paper-related raw material procurement	IDEA v3.1 Ecoinvent 3.9 Reference-2 ⁴²⁾ Reference-3 ⁴⁰⁾	*1,210,000	509,000
2	Capital goods	Emissions generated from making capital goods.	CAPEX	Reference-2	231,000	139,000
3	Fuel- and energy- related activities	Emissions generated in the process of mining, extraction, refining, transportation of energy and fuels.	Amount of energy consumption	IDEA v3.1	15,600	9,740
4	Upstream transportation and distribution	Emissions generated from procurement transportation and shipping transportation.	Raw material procurement volume Product volume Distance between our factories and sales sites	IDEA v3.1 Ecoinvent 3.9	110,000	37,200
5	Waste generated in operations	Emissions generated in the process of transportation and waste treatment from our operations.	Waste generated by material type and disposal method	IDEA v3.1	20,700	13,900
6	Business travel	Emissions from employee business-related travel	Travel expenses Number of trips by destination Transportation distance	IDEA v3.1 Reference-2	14,700	9,460
7	Employee commuting	Emissions from employee commuting between home and Shiseido's site	Commuting expenses	IDEA v3.1 Reference-2	5,200	7,990
8	Upstream leased assets	Not applicable.			0	0
9	Downstream transportation and distribution	Emissions generated in storage and stores	Sales volume Product bottom area	Reference-4	**252,000	74,300
10	Processing of sold products	Not applicable. The products sold do not need to be processed for consumer use			0	0
11	Use of sold products	Emissions from product use, such as rinsing, drying up.	Energy, water, and consumable goods consumed in product use	IDEA v3.1	1,580,000	108,000
12	End-of-life treatment of sold products	Emissions generated in decomposition of ingredients, and the process of transportation and waste treatment from products sold	Amount of carbon derived from fossil resources in the molecules that make up the ingredient and packaging components Waste generated by material type	IDEA v3.1	148,000	59,400
13	Downstream leased assets	Not applicable.			0	0
14	Franchises	Not applicable.			0	0
15	Investments	Emissions from unconsolidated affiliates and stock investees	Scope 1 and scope 2 emissions of unconsolidated affiliates and stock investees Shareholding Ratio	_	**4,240	4,940

*Emissions related to LUC in procurement are added to disclosed value.

** Category additionally calculated by SBTi request

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