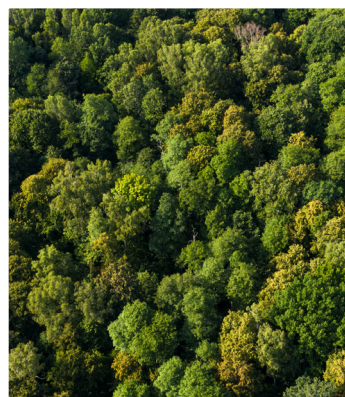


LOTTE SHOPPING

2023 TCFD Report

Dream Together for Better Earth



TCFD

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Standards

This report has been structured in accordance with the recommendations of the Task Force on Climate-Related Financial Disclosures (TCFD), a global standard for disclosing financial information related to climate change and European Sustainable Reporting Standards (ESRS).

Reporting Boundary

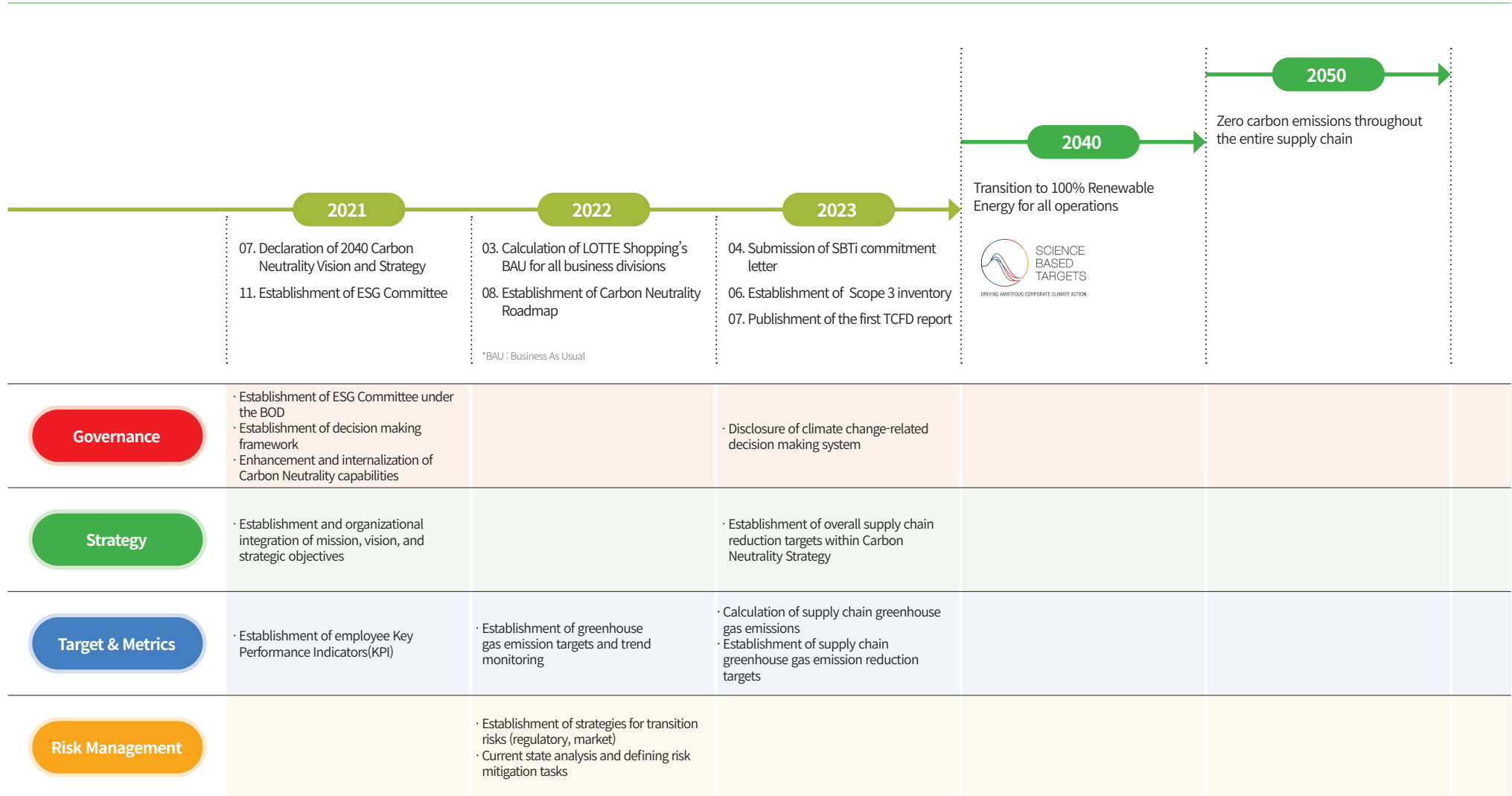
The reporting period for this report is from January 1st, 2022, to December 31st. It includes some contents before and after the reporting period to explain climate change response activities and performance. The main reporting scope is domestic operations.

Disclaimer

This report contains forecast information on climate change risk analysis and financial impact related to LOTTE Shopping's business activities, and analyzes changes in the internal and external business environment that may occur in the future. In addition, this report is based on past data and external public information, and we do not guarantee the accuracy and completeness of the contents. Future expectations, projections, plans, and anticipations may be included in this report. It is important to note that such 'predictive information' should not be used as evidence of legal responsibility for investors' investment results under any circumstances.

TCFD Roadmap

LOTTE Shopping has established a medium-to long-term roadmap to analyze and respond to actual and potential financial impacts that may arise from climate change. We have identified compliance, goal-setting and means of implementation, and established a management system in line with the TCFD recommendations to disclose performance and information.



TCFD 4Pillar Highlight

#1. Governance

- a) The board's oversight of climate-related risks and opportunities
- b) The management's role in assessing and managing climate-related risks and opportunities

We operate an efficient governance system centered on the ESG Committee under the BOD. The ESG Committee oversees environmental, social, and governance issues that may arise throughout the company. In addition, climate change risks and opportunities are systematically identified and addressed by the ESG Council.

#2. Strategy

- a) Climate-related risks and opportunities in the short, medium, and long term
- b) The impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning
- c) Resilience considering various scenarios related to climate change

We have established a 2040 Carbon Neutrality Vision and Roadmap, and analyzed the financial impacts associated with climate change response. Our analysis encompassed shifts in sales and profits within the retail sector, accounting for potential alterations stemming from forthcoming carbon market dynamics and policy adjustments. In tandem with the formulation of LOTTE Shopping's climate change response strategy, we will continuously monitor and align our actions.

#3. Target & Metrics

- a) The metrics to assess climate-related risks and opportunities
- b) Scope1, Scope2 and Scope 3 greenhouse gas emissions
- c) Targets for climate change risk and opportunity performance management

We are proactively committed to integrating renewable energy sources and environmentally conscious capital assets at our headquarters and sales offices. Our goal is to effectively curtail emissions across Scope 1, 2, and 3 categories. In particular, we establish long-term strategies for setting and achieving reduction targets across the supply chain and manage them through the establishment of regular monitoring metrics.

#4. Risk Management

- a) The processes for identifying and assessing climate-related risk
- b) The processes for managing climate-related risk
- c) How processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management

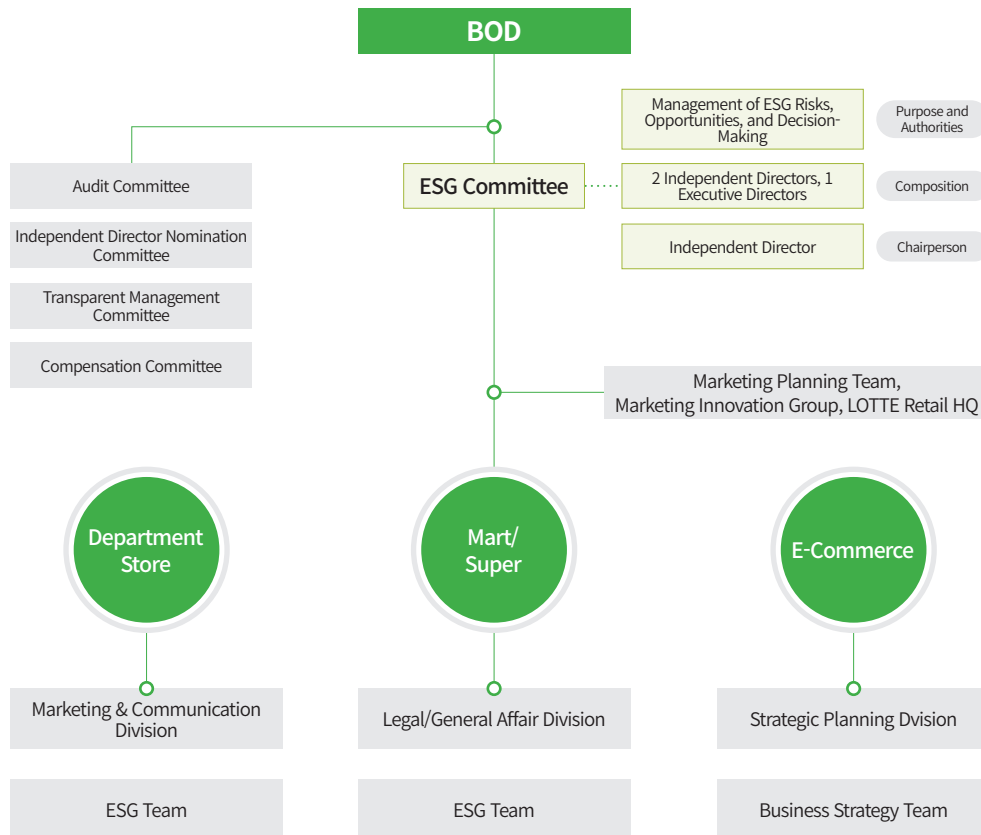
We have established an integrated climate change risk management system at the corporate level that includes all business divisions. Transition risks and physical risks that affect financial and non-financial performance are identified, defined, and managed to minimize their impact. We effectively manage and disclose climate-related risks through internal monitoring.

#1. Governance

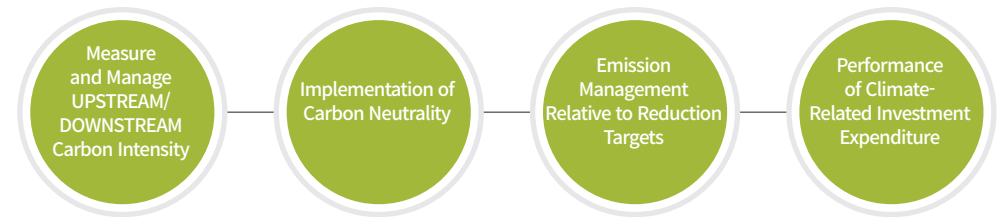
Governance to Respond to Climate Change

LOTTE Shopping operates the ESG Committee under the Board of Directors (BOD) to respond to climate change responsibly and professionally. The ESG Committee serves as the primary decision-making body for ESG management and is responsible for establishing and managing ESG risk management, capacity enhancement, and company-wide ESG promotion system. Furthermore, we have established a structure to strengthen ESG management execution by operating a working council among dedicated ESG teams within each business division.

ESG Governance Structure



CEO's Key Performance Indicators (KPIs) for Climate Change



Climate-related Agenda in Committee

Date	Climate-related Agenda	Reporting./Approval	Attendance
2023.03.09.	Selection of key ESG issues related to GHG emissions and climate change	Approval	100%
2023.03.09.	Pursuing Carbon Neutrality Roadmaps by business division	Reporting	100%
2022.12.08.	Joining Global Carbon Neutrality Initiative	Approval	100%
2022.10.13.	Development of EPD (Environmental Product Declaration) approved products	Reporting	100%
2022.10.13.	Establishment of raw material procurement policy	Approval	100%
2022.08.11.	LOTTE Shopping's Carbon Neutrality Roadmap establishment	Approval	100%
2022.03.08.	Promotion of PPA	Approval	100%

#2. Strategy

Climate Change Response Risk Definition Process



* Climate Change Response contents from LOTTE Shopping's ESG Initiatives and Activities

* Climate change related contents from LOTTE Shopping's Sustainability Report

LOTTE Shopping has identified emerging risks and opportunities arising from climate change and has formulated strategic initiatives to address them. Within the scope of ESG-related tasks, climate change-related efforts include 'RE:EARTH', 'RE:NERGY', and 'RE:USE'. The efficacy of these endeavors is gauged and overseen through measures such as expanding the offering of eco-friendly products, setting carbon emission targets for sales and distribution, and quantifying upstream carbon emissions.

#2. Strategy

Definition and Factors of Climate Change Risks by Type

Transition risks

Type	Risk factors for LOTTE Shopping	Potential financial impact	Opportunity factors	Response strategies
Policy/Legal	Enhanced mandatory disclosure of greenhouse gas emissions information	Increased cost of disclosure data management	Enhancement of domestic and international collaboration and investor confidence through strengthened disclosure for climate change response	Disclosure of plans for achieving the 2040 Carbon Neutrality Roadmap, along with implementation progress
	Carbon tax, carbon emission allowance price fluctuations	Increased operating costs due to greenhouse gas emission allowance price fluctuations	Participation in carbon emission trading market(buying, selling)	Active adoption of renewable energy to capture surplus carbon credits
	Risk of litigation for non-compliance as supply chain diligence and climate legislation takes hold	Increased environmental-related litigation costs	-	Internal compliance systematization
Technology	Development of low-power, low-carbon emission technologies for logistics services	Increased investment in research and development of new technologies	Utilization of policy incentives for the expansion of renewable energy usage	Investment in eco-friendly logistics centers and expansion of online platform investment
Market	Cost increase for the introduction and implementation of low-carbon, environmentally friendly practices in the logistics sector	Decreased demand and revenue for high-carbon products	Revenue expansion through new product development and market leadership	Strengthening customer feedback and partner collaboration for the expansion of eco-friendly, low-carbon products
	Increased demand for eco-friendly and circular economy-related products, as well as low-carbon fuel adoption	Risk reduction in carbon emission allowance and carbon tax due to greenhouse gas emission reduction		
Reputation	Increased customer preference for services/products and rising customer sensitivity to carbon emissions	Demand and revenue generation resulting from enhanced corporate image	Diversification of business portfolio and establishment of sustainable growth foundation	Continued promotion of communication on low carbon emissions and climate change mitigation in service and product selection
	Impact of external evaluation rating on climate change	Impact of capital market integration on credit risk		

Physical risks

Type	Risk factors for LOTTE Shopping	Potential financial impact	Opportunity factors	Response strategies
Acute	Coastal erosion	Decrease in profits due to inability to operate sales	Expansion of investment in all branches and affiliate facilities, and strengthening customer trust	Infrastructure improvement for natural disaster preparedness
	Drought, Water stress	Depreciation of branch asset value		
	Wildfire	Decrease in customer visits and purchase rates	Expansion of facilities for fire prevention and preparedness	
chronic	Temperature extremes, Tropical cyclone	Increase in operating costs and decrease in employee productivity	Implementation of automation(including AI) systems	Development of automated service system

Definition and predicted situations of RCP scenarios

Scenario	Definition	Carbon dioxide concentration in 2100	Projected temperature increase for the period 2081-2100
RCP2.6	If the impact of human activities is within the earth's inherent capacity for recovery	420ppm	+1.3°C
RCP4.5	If the greenhouse gas reduction policy is implemented considerably	540ppm	+2.4°C
RCP8.5	If greenhouse gases continue to be emitted at the current trend	940ppm	+4.0°C

*RCP (Representative Concentration Pathway) :Greenhouse gas concentration pathways adopted by IPCC

LOTTE Shopping, in alignment with its climate change response and the 2040 Carbon Neutrality Roadmap, has identified risks and opportunities based on the guidelines and forecasted financial impacts. Transition risks encompass policy/regulatory, technological, market, and reputational factors, while physical risks were analyzed for acute and chronic aspects. For the assessment of physical risks, the company identified risk factors, potential financial impacts, and response strategies in relation to seven climate hazards based on the RCP scenarios from the IPCC Fifth Assessment Report.

#2. Strategy

S&P Climonomics S&P Climonomics scenario analysis results analysis results

		Modeled Average Annual Loss(MAAL)									
		Extremely Low 0-1		Low 1-10		Medium 10-15		Medium-High 15-50		High 50-100	
		RCP 2.6		RCP 4.5		RCP 8.5					
		2030	2050	2030	2050	2030	2050				
Transition Risks	Carbon price	EL	L	EL	L	EL	EL				
	Policy/Legal	EL	EL	EL	EL	EL	EL				
	Technology	EL	EL	EL	EL	EL	EL				
	Reputation	EL	EL	EL	EL	EL	EL				
	Market	L	L	L	L	L	L				
Physical Risks	Coastal erosion	L	L	L	L	M	M				
	Drought	EL	EL	EL	EL	EL	EL				
	Water stress	EL	EL	EL	EL	EL	EL				
	Wildfire	EL	EL	EL	EL	EL	EL				
	Temperature extremes	EL	EL	EL	EL	EL	EL				
	Tropical cyclone	EL	EL	EL	EL	EL	EL				

* Through S&P Global Sustainable's Climonomics service, analysis of seven climate risks (coastal erosion, drought, water stress, wildfire, coastal flooding, temperature extremes, and tropical cyclone) was conducted. However, coastal flooding was excluded from the analysis due to it being categorized as N/A (Not Applicable) in the results.
 * MAAL (Modeled Average Annual Loss) : Ratio of predicted losses to current asset value

LOTTE Shopping's climate risk analysis criteria considers LOTTE World Tower, where the main headquarters and major branches of LOTTE Shopping are located, as a symbolic asset, given that LOTTE Shopping operates over 1,000 stores nationwide. The analysis reveals that the most significant risks are 'Carbon Pricing' and 'Market' within transition risks, and 'Coastal erosion' within physical risks. Other factors such as policy/legal, technology, reputation, market, drought, water stress, wildfire, temperature extremes, and tropical cyclone are expected to have minimal loss potential. Across RCP 2.6, 4.5, and 8.5 scenarios, LOTTE Shopping's climate risk factors result in very low to medium loss rates.

#2. Strategy

Financial Forecasting based on Scenario Analysis (Transition Risks)

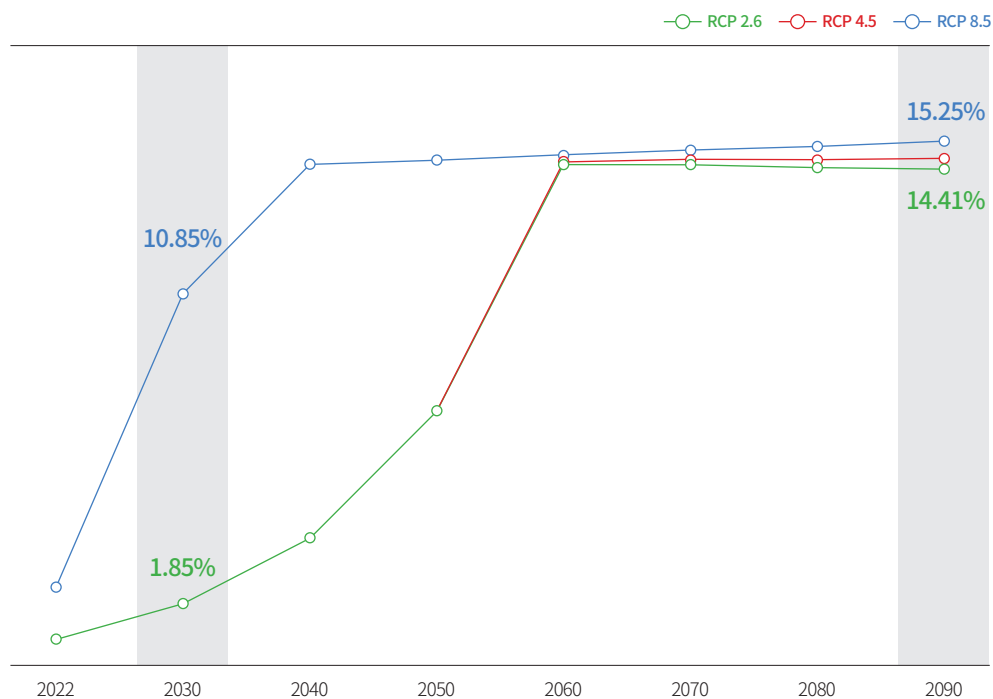
		RCP 2.6			RCP 4.5			RCP 8.5		
		2030	2040	2050	2030	2040	2050	2030	2040	2050
Carbon price	%	0.000	2.104	3.491	0.000	0.697	1.224	0.000	0.322	0.542
	Description	A high-intensity mitigation scenario to limit temperature rise to 2°C by 2100 leads to increased carbon emission allowance demand and price rise			Incorporating nationally determined contributions(NDCs) and mid-intensity reduction scenarios to maintain or increase carbon emission allowance demand and price			Incorporating low-intensity reduction scenario to maintain or slightly decrease carbon emission allowance demand and price		
Policy/legal	%	0.037	0.041	0.045	0.037	0.041	0.045	0.040	0.046	0.053
	Description	Stricter regulations compared to RCP 4.5 scenario require enhanced emission reduction obligations, regulatory compliance, cost management, and legal responsibilities			Stricter regulations compared to RCP 8.5 scenario require compliance with emission regulation and human resource responses			Maintenance of existing policies resulting in decreased carbon emission regulation and management, leading to positive financial impact		
Technology	%	0.233	0.264	0.284	0.233	0.264	0.286	0.252	0.292	0.334
	Description	Active investment in low-carbon emission technologies and aggressive technology development across LOTTE Shopping branches, up/downstream, capital goods and supply chain			Insufficient investment in low-carbon emission technology development for LOTTE Shopping's branches, upstream, and downstream activities, particularly concerning capital goods, alongside delayed technology investment			Comparative delay in the advancement of low-carbon emission technologies within LOTTE shopping's branches, upstream, and downstream sectors		
Reputation	%	0.262	0.296	0.319	0.262	0.296	0.321	0.283	0.328	0.375
	Description	Increased demands from internal and external stakeholders, including capital markets, rating agencies, and customers, impacting reputation positively or negatively in accordance with the degree of responsiveness			Gradual increase in requirements and feedback from internal and external stakeholders, including capital markets, rating agencies, customers, etc.			Increased financial impact due to low level of risk management, attributed to minimal stakeholder demands and interests		
Market	%	5.243	5.922	6.376	5.243	5.922	6.428	5.655	6.561	7.502
	Description	Increased customer preference for eco-friendly, low-carbon products → Active implementation of private brand (PB) products and marketing related to climate change			Slight increase in customer preference for eco-friendly, low-carbon products → Passive implementation of PB products and marketing related to climate change			Insignificant influence of customer preference for eco-friendly, low-carbon products → Limited impact on business direction		

LOTTE Shopping strategically employed the S&P Climonomics risk analysis tool to advance its 2040 climate change vision, undertaking a comprehensive evaluation of transition risks. This encompassed a thorough exploration of carbon pricing, regulatory factors, technological shifts, reputation implications, and market dynamics. To gauge potential financial ramifications, the analysis quantified the projected loss in comparison to existing asset valuations. This offered a valuable estimation of the potential impact on operational, risk-associated expenses and operational interruptions. Lotte Shopping identified market risk as the most significant factor and is therefore proactively planning to expanding its portfolio of eco-friendly and low-carbon products.

#2. Strategy

Financial Forecasting based on Scenario Analysis (Physical Risks)

LOTTE Shopping's estimation of financial impact (loss costs) due to physical risks



* Level of effort to minimize carbon emissions and energy use : RCP 2.6 > RCP 4.5 > RCP 8.5

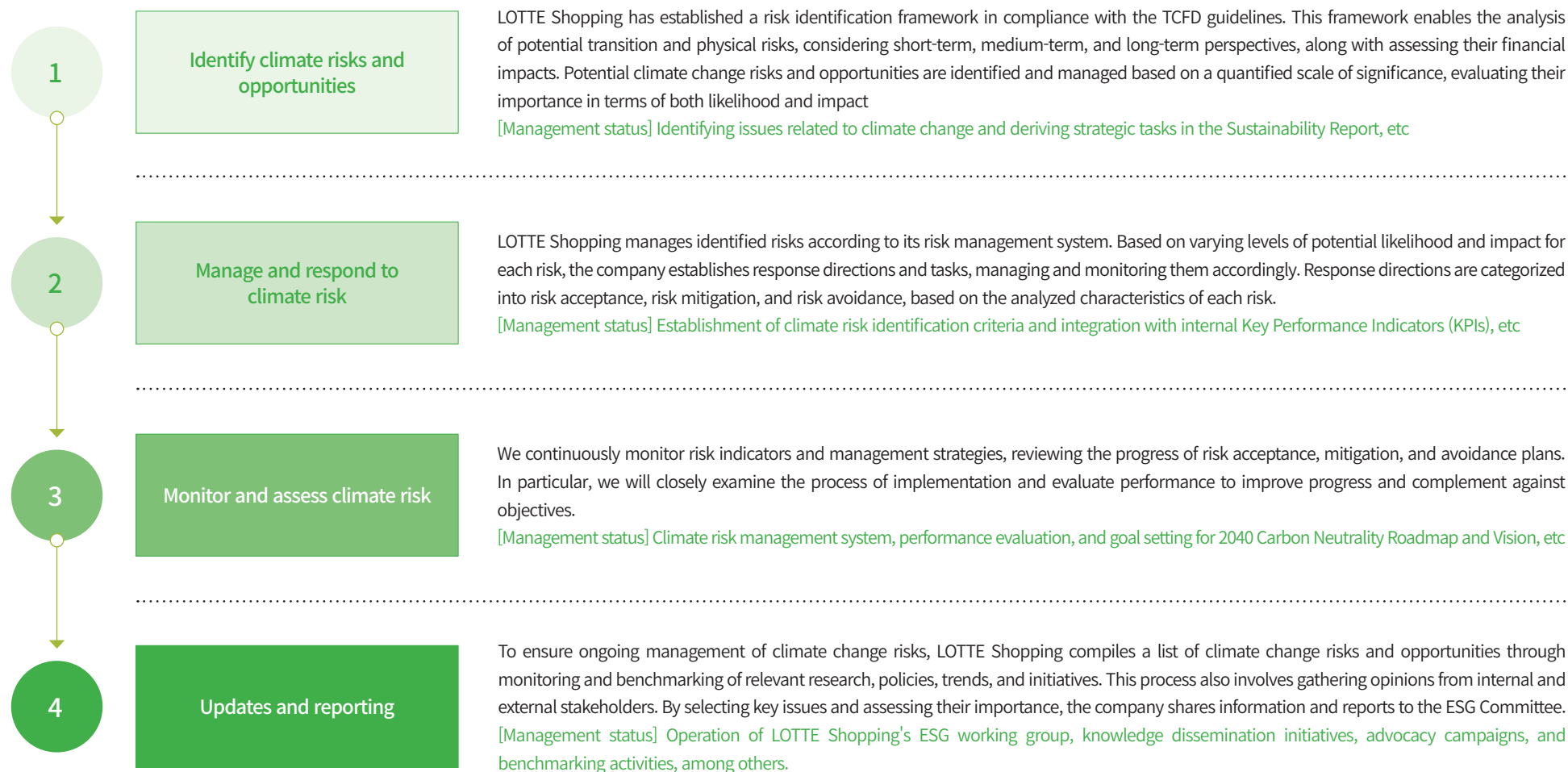
Modeled average annual loss from 2020 to 2090

	RCP 2.6	RCP 4.5	RCP 8.5
	%	%	%
2020	0.88	0.88	2.21
2030	1.85	1.85	10.85
2040	3.74	3.74	14.51
2050	7.38	7.38	14.65
2060	14.49	14.53	14.79
2070	14.49	14.56	14.93
2080	14.44	14.56	15.06
2090	14.41	14.59	15.25

LOTTE Shopping utilized S&P Sustainable1's Climonomics service to analyze the financial impact (loss costs) in order to assess the physical risks based on asset criteria. The analysis estimated decade-by-decade average annual asset value loss rates from 2020 to 2090 for climate hazards according to IPCC Fifth Assessment Report's RCP scenarios (RCP 2.6, 4.5, 8.5). Six climate risks, including temperature extremes, river flooding, drought, wildfire, tropical cyclone, and water stress, were considered. Among these, RCP 8.5 scenario showed the highest impact with an estimated asset loss rate of 15.25% by 2090. Notably, the period from 2030 to 2060 exhibited significant changes in impact. LOTTE Shopping aims to actively minimize financial impact by aligning with the detailed tasks of its 2040 carbon neutrality roadmap.

#3. Risk Management

Climate risk management process



#4. Target & Metrics

Climate change response Target & Metrics

In 2022, LOTTE Shopping's total greenhouse gas emissions for Scope 1 & 2 amounted to 722,630 tCO₂eq. To achieve its 2040 carbon neutrality goal, Lotte Shopping has established a medium to long-term roadmap. As part of this goal, the company aims to transition to renewable energy sources for all electricity consumed across its operations by 2040. By 2050, this transition will be extended to encompass the entire value chain to achieve carbon neutrality. Furthermore, to enhance its carbon neutrality target-setting, Lotte Shopping became the first domestic retailer to join the SBTi in April 2023 and has submitted a Commitment Letter as of July 2023. Moving forward, through SBTi, Lotte Shopping will review and validate its existing carbon neutrality plans to establish a sustainable and trustworthy carbon neutrality framework.

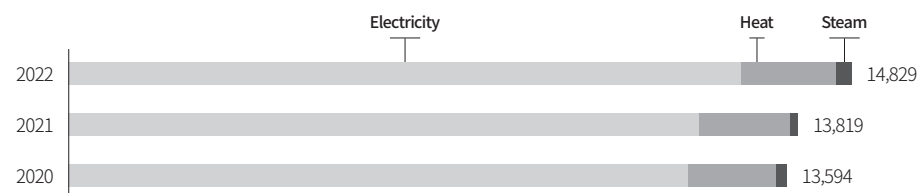
Greenhouse Gas Emission Status

Category	Unit	2020	2021	2022
Scope 1 emissions	tCO ₂ eq	95,208	97,469	101,259
Scope 2 emissions	tCO ₂ eq	577,588	582,786	621,371
Total emissions	tCO ₂ eq	672,796	680,255	722,630



Energy Consumption Status

Category	Unit	2020	2021	2022
Electricity	TJ	11,740	11,986	12,752
Heat	TJ	1,650	1,723	1,786
Steam	TJ	204	111	292
Total consumption	TJ	13,594	13,819	14,829

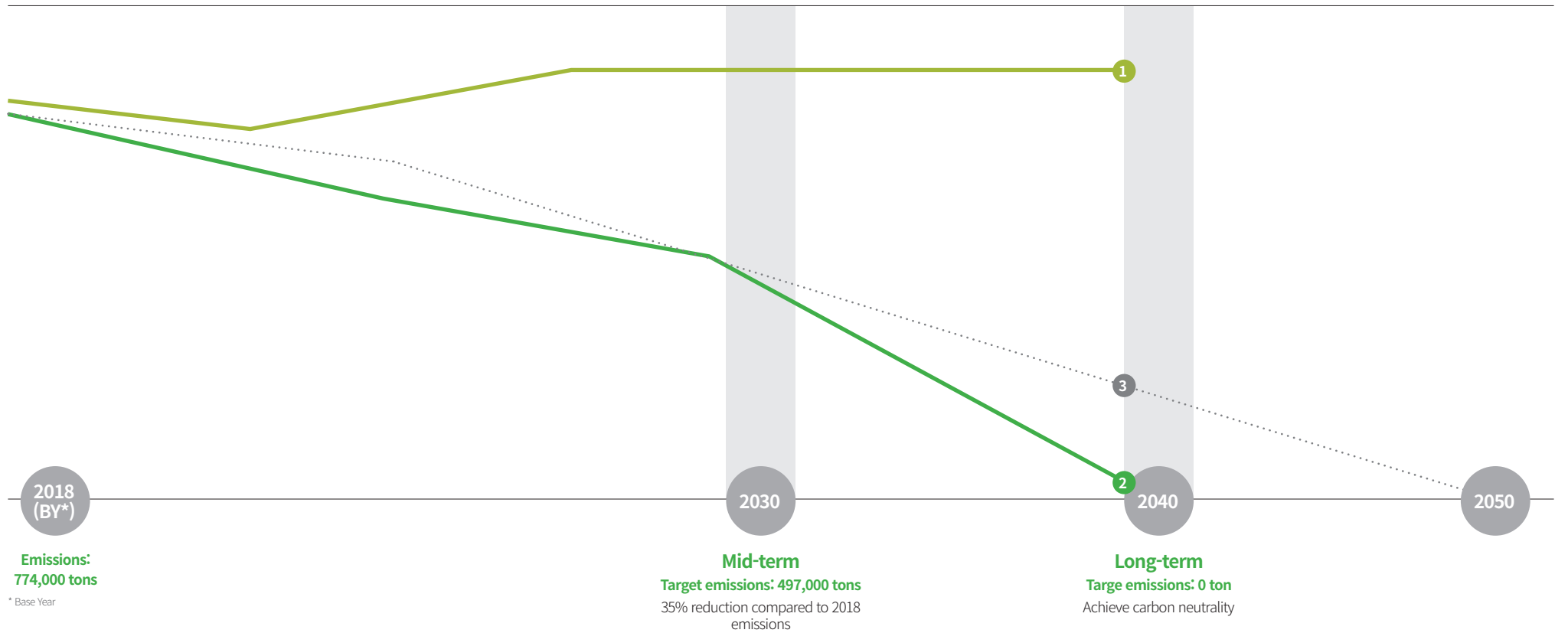


Net Zero Targets (Scope1+Scope2)

Category	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2035	2040
Target reduction rate (Compared to BAU)	%	6.7	8.5	20.8	21.0	21.7	34.1	36.8	40.4	68.3	100
PPA	%(Composition)	-	-	55	54	54	68	68	66	63	59
REC Purchases	%(Composition)	0	0	0	0	1	2	3	4	14	20
Photovoltaic self-consumption	%(Composition)	6	5	2	2	3	2	1	1	1	1
Energy facility investment	%(Composition)	94	95	43	44	42	28	27	26	17	12
Others	%(Composition)	-	-	-	-	-	-	-	2	6	8

LOTTE Shopping's 2040 Carbon Neutrality Roadmap(Scope 1, 2)

- ① BAU: Anticipated increase in emissions due to opening of new stores
- ② LOTTE Shopping's target emissions: Scope1, 2 emission goals
- ③ SBTi-based reduction target emissions: Absolute reduction method LAR 4.2%



LOTTE Shopping has devised a comprehensive 2040 Carbon Neutrality Roadmap to proactively address greenhouse gas reduction and achieve carbon neutrality. In alignment with both the national NDC (Nationally Determined Contribution) and the global Science Based Targets Initiative (SBTi), the company has established precise emission reduction targets. The overarching goal is to attain a complete elimination of emissions by the year 2040, translating to a 100% reduction from the 2018 baseline levels. To actively steer toward these ambitious aims, LOTTE Shopping is diligently overseeing the execution of meticulously outlined implementation tasks.

#4. Target & Metrics

Climate change response Target & Metrics

Scope 3 emission status

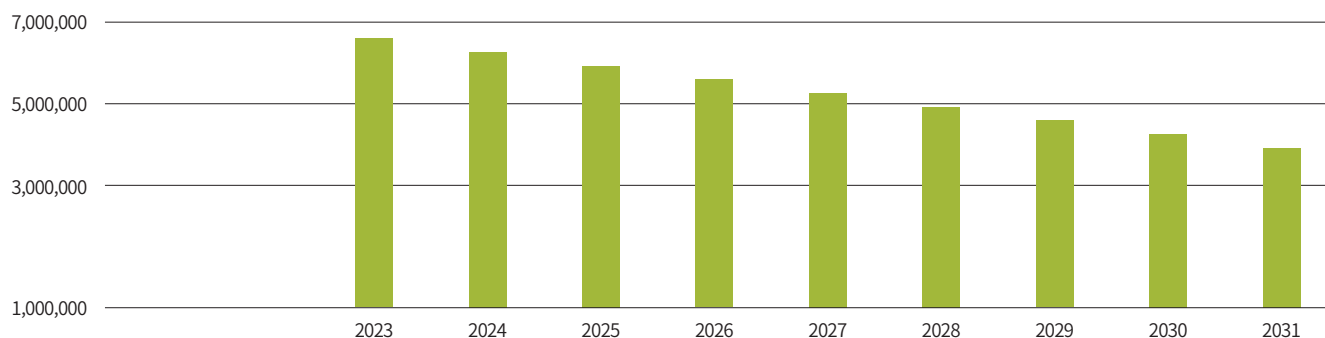
Category		Unit	2021 emissions	Ratio
Scope 3	Upstream			
	1. Purchased goods and services	tCO2eq	5,603,923	76.62%
	2. Capital goods	tCO2eq	48	0%
	4. Upstream transportation and distribution	tCO2eq	25,414	0.35%
	5. Waste generated in operations	tCO2eq	3,872	0.05%
	6. Business travel	tCO2eq	38	0%
	7. Employee commuting	tCO2eq	3,457	0.05%
Downstream				
14. Franchises	tCO2eq	1,677,632	22.94%	
Total		tCO2eq	7,314,384	100%

Efforts toward achieving zero carbon emissions across the value chain

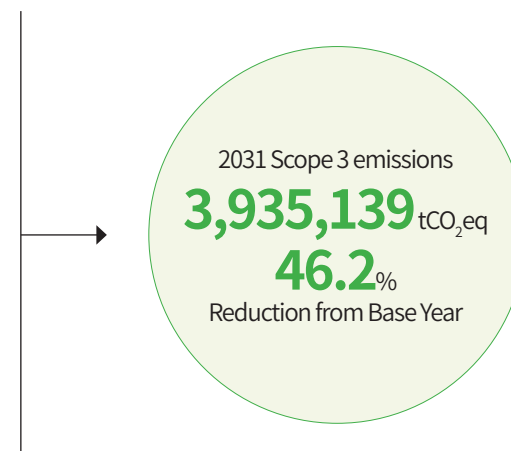
LOTTE Shopping is proactively engaged in calculating and managing Scope 3 emissions as part of its commitment to achieve carbon neutrality throughout its entire value chain. With a strong dedication to contributing to a sustainable environment and addressing climate change, the company is prioritizing the management and reduction of greenhouse gas emissions across the entire distribution process, spanning from raw material extraction to product disposal.

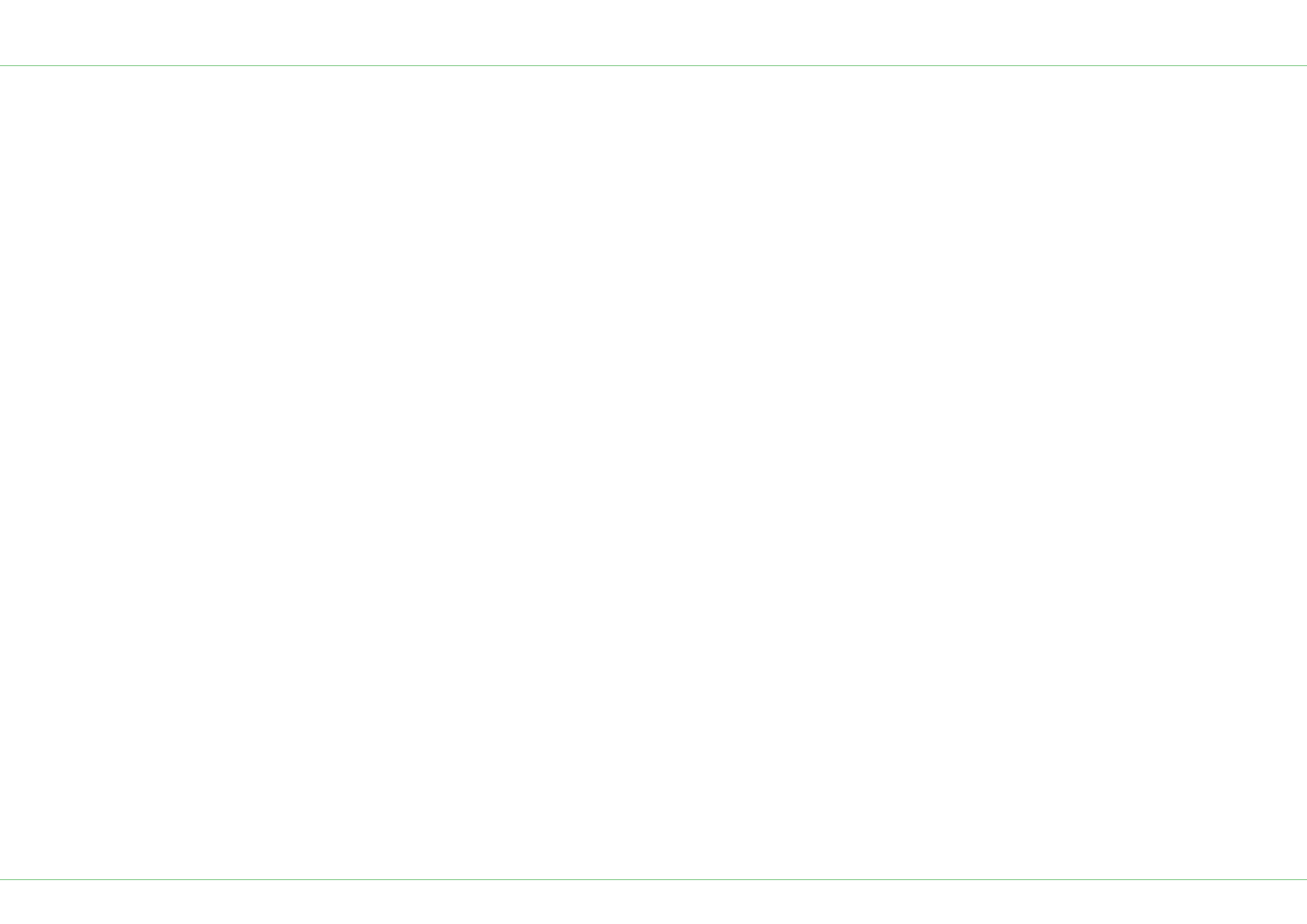
In alignment with recommendations from SBTi, LOTTE Shopping has established short-term reduction plans based on the 1.5°C scenario, using 2021 as the reference year, and aims to achieve reductions by 2031. Among the 15 detailed Scope 3 categories as of 2021, emissions from 7 categories (6 Upstream and 1 Downstream) have been quantified. Moving forward, the company is committed to improving the accuracy of Scope 3 emission calculations and creating detailed reduction plans to ultimately attain carbon neutrality across its entire value chain.

SBTi-based Scope 3 Reduction Roadmap



Target	Unit	2023	2024	2025	2026	2027	2028	2029	2030	2031
Scope 3 emissions	tCO2eq	6,638,535	6,300,610	5,962,686	5,624,761	5,286,837	4,948,912	4,610,988	4,273,063	3,935,139





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