



IT'S THE KEY TO SUSTAINABLE GROWTH

About This Report

Standards

This report has been prepared in accordance with the TCFD (Task Force on Climate-Related Financial Disclosures) Recommendations, which serve as the global framework for disclosing financial information related to climate change. In order to enhance the accuracy of the reporting content, relevant aspects of the TCFD guidelines were cross-referenced with the EU Sustainable Reporting Standards (ESRS).

Reporting Period & Boundary

The reporting period of this report covers from January 1, 2022, to December 31, 2022. To provide a comprehensive description of Samsung SDS' climate change mitigation activities and achievements, the report also includes relevant information prior to the reporting period. The reporting scope encompasses Samsung SDS headquarters, domestic and international business sites, as well as subsidiaries.

Disclaimer

This report includes predictive information regarding climate change risks and financial impacts associated with Samsung SDS' business activities. Such information is based on an analysis of potential internal and external changes in Samsung SDS' operational environment and carries inherent uncertainties. Furthermore, the content is grounded in historical data or reliable publicly available information. Samsung SDS does not guarantee the accuracy and completeness of this material and its contents. Moreover, this content may contain 'forward-looking statements', including expectations, forecasts, plans, and anticipations about the future. These forward-looking statements are subject to the inherent uncertainties of their nature, and actual future performance of Samsung SDS may differ from these statements due to the uncertain nature of the predictions.

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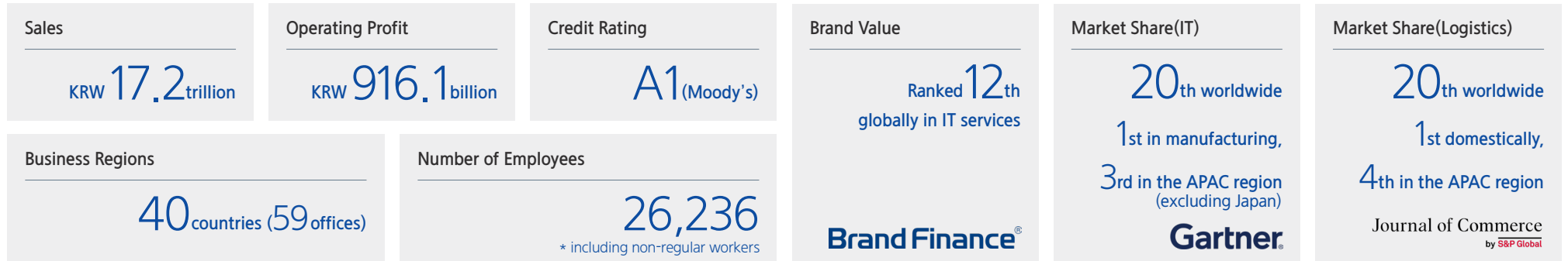
INTRODUCTION



Company Overview

Samsung SDS provides enterprise-optimized cloud-based IT services and logistics services based on digital logistics platforms.

Samsung SDS at a Glance



Key Business Areas of Samsung SDS

IT Services

Samsung Cloud Platform leverages our differentiated technological capabilities and expertise across various industries and processes to provide Hybrid/Multi-Cloud services, SaaS adoption and operation, and cloud-based digital transformation services that utilize digital technologies.



Sales 6.0 trillion

Operating Profit KRW 631.6 billion

Logistics Service

Samsung SDS provides global integrated logistics services, focusing on export-import logistics services, from customer's supply chain planning to logistics execution, through our digital logistics platform(Cello Square) that combines innovative IT technologies.



Sales KRW 11.3 trillion

Operating Profit KRW 284.5 billion

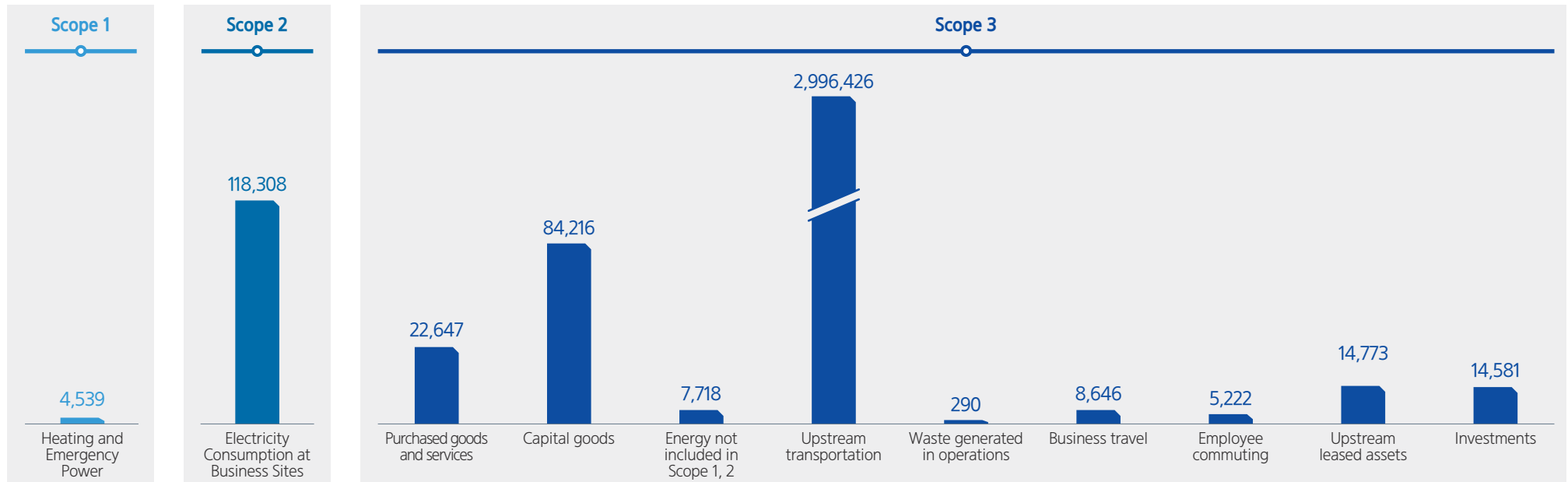
Samsung SDS Business and Climate Risks

Samsung SDS' primary businesses are IT services and logistics services, with the largest proportion of power consumption attributed to data center operations. The GHG emissions related to global logistics services constitute a relatively significant portion of scope 3 emissions. However, scope 3 emissions are indirect emissions within the supply chain and do not have a direct impact on Samsung SDS' climate risks. The most significant climate risks involve the transition of existing scope 2 emissions into environmentally friendly energy through the purchase of renewable energy and the costs associated with carbon credit purchases for regulatory compliance and GHG reduction.

To mitigate these risks, we are planning to establish and operate eco-friendly data centers equipped with the latest energy-saving systems, as well as expand solar power generation facilities and achieve a 100% transition to renewable energy through measures like purchasing renewable energy certificates (RECs). Particularly, given the growing importance of supply chain management, including Scope 3 emissions, we have extended our response to cover not only domestic upstream transportation but also global transportation, thereby disclosing scope 3 GHG emissions across the entire value chain. Additionally, we are implementing an eco-friendly logistics system through optimized solutions to contribute to the reduction of GHG emissions for both our customers and suppliers.

Samsung SDS' GHG Emissions Across the Entire Value Chain

(Unit: tCO₂e)



Sustainable Business Strategy



Enhancing customer's environmental value
Increasing visibility of carbon emissions data



Providing eco-friendly logistics services
Increasing visibility of carbon emissions data



Addressing customer's ESG challenges
Creating ESG-related business opportunities

		2023	2024	2025	2030	2050
Phased Implementation		Establishing quick-win tasks and foundational structures for ESG strategy implementation in the short term			Elevating ESG management through the implementation of mid-to-long-term strategies	
Business	Cloud Services	<ul style="list-style-type: none"> Securing high-efficiency equipment and liquid cooling system database Establishing a basis for carbon emissions measurement 	<ul style="list-style-type: none"> Developing a guide for liquid cooling design Providing low emissions simulations and Open API 	<ul style="list-style-type: none"> Conducting proof of concept (PoC) validation for liquid cooling system implementation 	<ul style="list-style-type: none"> Implementing liquid cooling within the data center Designing high-efficiency/high-performance hardware 	<ul style="list-style-type: none"> Building a Net Zero data center based on renewable technology
	Logistics	<ul style="list-style-type: none"> Developing and providing a customer-centric carbon dashboard 	<ul style="list-style-type: none"> Developing and providing environmentally friendly logistics products/services 		<ul style="list-style-type: none"> Providing environmentally friendly logistics consulting services 	<ul style="list-style-type: none"> Establishing a management system for environmentally conscious implementations and offering priority services
	Solutions	<ul style="list-style-type: none"> Establishing an ESG value measurement system Formulating new business initiative 	<ul style="list-style-type: none"> Measuring the effect of customer ESG value Acquiring ESG solution business capabilities 	<ul style="list-style-type: none"> Monetizing measured ESG value Driving ESG solution new business initiative 		<ul style="list-style-type: none"> Advancing and expanding the ESG solution business

Climate Change Response Status

Samsung SDS is contributing to national carbon neutrality and making efforts to mitigate the impact of climate change on industries and our lives. In particular, we are striving to address economic losses caused by climate change, enhance stakeholder value, and reduce the carbon footprint of the products and services we offer. This includes setting and pursuing a carbon neutrality roadmap. Over 90% of Samsung SDS' GHG emissions are generated domestically, with the indirect emissions from data center power usage being the largest contributor. Operating eco-friendly data centers and transitioning to renewable energy sources are key strategies for achieving carbon neutrality.





PUE²⁾ 1.1

Liquid Cooling Ready

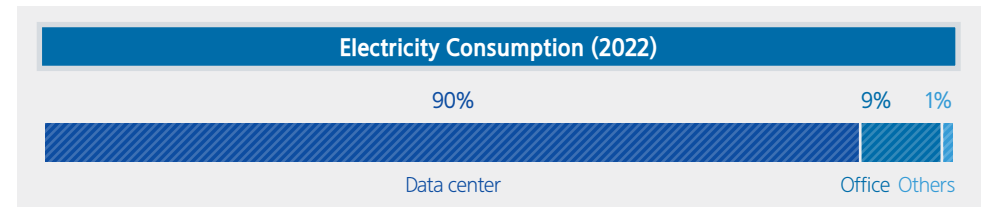
Dongtan Data Center

Korea's first high-performance computing exclusive data center



<p>PUE 1.2 Direct Free Cooling</p> <p>Chuncheon Data Center</p> <p>Acquired Green Data Center Certification (Platinum Grade)</p> 	<p>PUE 1.4 Indirect Free Cooling</p> <p>Sangam Data Center</p> <p>Winner of Data Center Dynamic Awards</p> 	<p>PUE 1.6 Water-side Economizer³⁾</p> <p>Suwon Data Center</p> <p>Acquired Asia's first Tier III certification</p> 	<p>PUE 1.8</p> <p>Gumi Data Center</p> <p>Integration/operation of Affiliated companies' IT resources</p> 
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1) Liquid Cooling: A technology that uses a liquid with high thermal conductivity to cool IT equipment, instead of using gas
 2) Power Usage Effectiveness (PUE): An index showing how efficiently a data center uses energy. The closer to 1.0, the more efficient
 3) Initial Free Cooling System



Efforts to cope with climate change

<p style="text-align: center;"><u>Data center</u></p> <ol style="list-style-type: none"> Enhancing Energy Efficiency in IT Infrastructure <ul style="list-style-type: none"> Server room cooling efficiency enhancement Construction of Eco-Friendly Data Centers <ul style="list-style-type: none"> Construction of high-efficiency computing data center (HPC): Dongtan Data Center Expansion of Renewable Energy Utilization <ul style="list-style-type: none"> Implementation of solar, geothermal, and fuel cell technologies 	<p style="text-align: center;"><u>Office & Others</u></p> <ol style="list-style-type: none"> SW Asset Reuse <ul style="list-style-type: none"> Minimizing resource usage through the reuse of knowledge assets 'Go Go Reuse' Campaign Minimize Disposable Items/Paper Usage <ul style="list-style-type: none"> Minimization of umbrella plastic wraps through umbrella rainwater remover Paperless Campaign Minimize Electricity Usage of Business Site <ul style="list-style-type: none"> Automatic light-off at lunchtime and night
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Climate Change Response

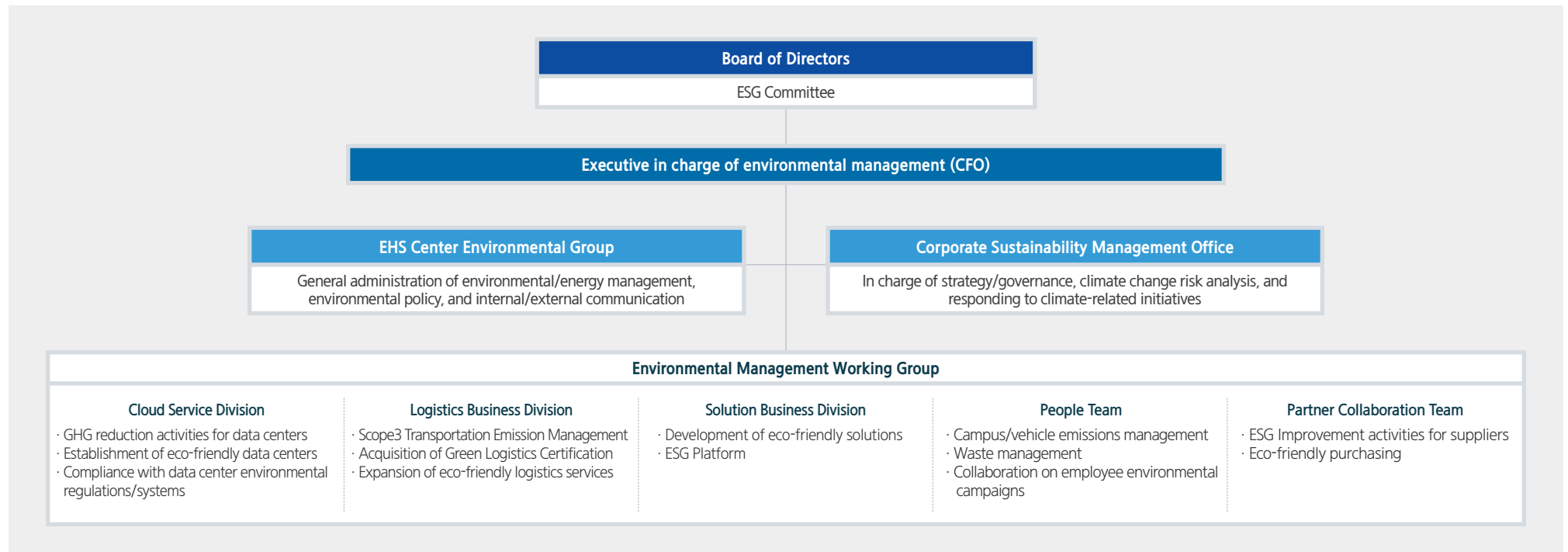
GOVERNANCE

Samsung SDS is enhancing its governance system by establishing a board of directors and an ESG committee to oversee climate change-related risks and opportunities, and by transparently disclosing the role of management. Through this system, we intend to effectively carry out management and supervision duties. This includes a thorough assessment of medium- to long-term climate change concerns and the integration of appropriate measures into their business strategies.

Governance

The responsibility for environmental and climate crisis response at Samsung SDS starts with the top executives. Together with the CEO, who serves as the Chairman of the Board of Directors, the Board performs governance and oversight of climate change strategy, operations, and management. Samsung SDS' executives, headed by the CFO overseeing environmental management, make decisions on overall environmental management through the Corporate Sustainability Management Office, the EHS Center Environmental Group, and the Environmental Management Organization. In December 2022, Samsung SDS established the EHS Center, a specialized organization focused on environmental management, and in May 2023, the Corporate Sustainability Management Office was established under the CFO to strengthen ESG governance.

Samsung SDS' Governance for Responding to Climate Change



Governance

ESG Committee

The ESG Committee was established with the delegation of authority from the Board of Directors to review issues and agendas related to ESG, including climate change mitigation. Recognizing the growing significance of ESG management, international management expert Seung-Ah Cho has been appointed as the chairman of the committee. The committee members, leveraging their individual expertise and experience, engage in discussions and decision-making related to climate change adaptation and other ESG-related agendas.

Overview of the ESG Committee

Composition	No. of people	Role (Limited to climate change)
Independent Directors	4	Establishment of climate change response strategies / Management of climate change response policy /
Member	1	Management and oversight of climate change response / Disclosure of climate change information

Composition of the ESG Committee

Classification	Name	Position	Expertise and Role
Chairman	Seung-Ah Cho	Independent Director	Establishment of climate change response strategies, international cooperation
	Hyun-Han Shin	Independent Director	Risk analysis, review of financial impacts
Member	Moo Il Moon	Independent Director	Review of regulations related to climate change
	Jae Jin Lee	Independent Director	Review of carbon emission reduction technologies for data center
	Sungwoo Hwang	Executive Director(CEO)	Review of business alignment with climate change response strategies

Members of the ESG Committee

(As of March 2023)

Independent Director



Seung-Ah Cho
Professor at Seoul National University, School of Business
*Chairman of the committee



Hyun-Han Shin
Professor at Yonsei University, School of Business



Moo Il Moon
Lead Attorney at Sejong Law Firm



Jae Jin Lee
Dean of the Graduate School of Data Science at Seoul National University



Sungwoo Hwang
CEO of Samsung SDS

The directors of the ESG Committee contribute to Samsung SDS' decision-making related to climate change response based on their expertise and experiences.

Chairman Seung-Ah Cho and Director Hyun-han Shin analyze the potential impacts of climate change on Samsung SDS through research in domestic and international academia. They provide optimized solutions by identifying, assessing, and mitigating climate-related risks, guided by the latest trends. Director Moo Il Moon contributes to enhancing Samsung SDS' climate change policies through his knowledge of climate-related laws both domestically and internationally. Director Jae Jin Lee offers advisory on designing scientifically sound GHG reduction pathways, leveraging data on energy usage and GHG emissions. Director Sungwoo Hwang, a well-versed CEO in various aspects of Samsung SDS' operations, acts as a coordinator, harmonizing the opinions of the committee members and facilitating synergies among their viewpoints.

Governance

ESG Committee Meeting Records for 2022

During the 2022, the Samsung SDS ESG Committee held four meetings, addressing and reviewing a total of five climate change-related agendas. The attendance rate for the committee meetings averaged 95%.

Climate Change-related Report/Approval Agenda of the ESG Committee

Committee Meeting Date	Climate Change Response Agenda	Attendance Rate
Jan 27, 2022	· Report on the operation plan of the environmental management organization	100%
Jul 28, 2022	· Report on the promotion of environmental management tasks	80%
Sep 29, 2022	· Approval of carbon neutrality targets · Report on RE100 membership progress	100%
Oct 27, 2022	· Report on scope 3 emissions status and management plan	100%

Report on the operation plan of the environmental management organization

We reported the establishment of a task force aimed at achieving Samsung SDS' carbon neutrality goal in response to heightened environmental management demands from international organizations, governments, investors, customers, and others. Additionally, we reported plans for key initiatives, including the construction of high-efficiency HPC data centers and the expansion of chilled water pumps.

Report on the promotion of environmental management tasks

We reported progress on the implementation of new technologies, such as the Liquid Cooling solution for DC energy efficiency and the UPS-less system, which not only reduce GHG emissions, but also contribute to minimizing power consumption for the realization of an Eco-Cloud. Samsung SDS plans to reduce 211,742 tons of GHG emissions through the implementation of low-power consumption DC technologies that will be carried out in three phases by 2035.

Approval of carbon neutrality targets

In addressing the cross-border environmental issue of climate change, Samsung SDS is also committed to scientifically setting its carbon neutrality goals. Carbon neutrality stands as an essential requirement for Samsung SDS' sustainable growth. Due to the significant uncertainty in predicting future climate change, Samsung SDS plans to continuously revise and redeem its carbon neutrality goals for Scope 1 and Scope 2 emissions targets, in accordance with domestic and international trends.

Report on RE100 membership progress

RE100 is a global climate change initiative with the goal of progressively transitioning a company's power consumption to 100% renewable energy by 2050. Samsung SDS is considering both carbon neutrality and joining the RE100 initiative.

Report on Scope 3 emissions status and management plan

We restated Scope 3 emissions by category to determine their scale and details. Additionally, we established a management plan for Scope 3 reduction and reported it to the ESG Committee.

ESG Committee Workshops

Samsung SDS conducted a workshop with the topic of carbon neutrality to enhance the expertise of the directors affiliated with the ESG Committee, thereby ensuring effective operation of the committee. We will continue to provide relevant education to the Board of Directors in order to consistently enhance their capabilities and knowledge, enabling them to effectively respond to climate risks and opportunities

Committee Workshops

Date	Workshop Contents
Apr 13, 2022	<p>[TOPIC] Discussion on Carbon Neutrality Direction</p> <ul style="list-style-type: none"> · Understanding global trends and the need for carbon neutrality · Discussion on the basic direction of carbon neutrality
May 16, 2022	<p>[TOPIC] Review of Carbon Neutrality Goals and Renewable Energy Transition Plans</p> <ul style="list-style-type: none"> · Identifying the status of carbon neutrality initiatives of key competitors/partners across different industries · Analysis of carbon emission status and scenarios for achieving carbon neutrality at different time points · Trends in the renewable energy market and expected purchase costs

Governance

EHS Committee

The EHS Center at Samsung SDS operates the EHS Committee, which oversees company-wide environmental management responsibilities. These responsibilities encompass tasks such as formulating strategies and policies to address climate change, planning relevant activities, their execution, and performance management.

Eunju Park, center head (executive vice president), is an expert with 38 years of experience in the environmental sector. He oversees Samsung SDS' climate change response and, to support the decisions of the ESG Committee, he ensures the final verification and reporting of climate change-related data and content.

The EHS Committee fulfill a supportive role in terms of coordination with various business sectors within Samsung SDS and provide legal, technical, and HR perspectives. This ensures the effective advancement of company-wide climate change response tasks.

Plan for Enhancing Climate Change Response Governance

Samsung SDS will consistently review and enhance the governance framework to ensure more effective decision-making regarding climate change response. Additionally, we will spare no effort in providing support, such as developing programs to enhance the capabilities of the ESG Committee, EHS Committee, and the Environmental Management Working Group.

Environmental Management Working Group

In order to manage GHG emissions across the value chain, we have organized the Environmental Management Working Group to systematically manage GHG emissions. Each department within the Working Group is responsible for climate change response tasks based on the nature of their respective roles.

Task	Department	Role
Management of Scope 1 & 2 Emissions	Datacenter Innovation Team	· GHG emissions management for data center · Operation of eco-friendly DC
	People Team	· GHG emissions management for business sites
	Logistics Planning Team	· Management of Scope 3 carbon emissions from upstream and downstream activities
Management of Scope 3 Emissions	Partner Collaboration Team	· Management of Scope 3 carbon emissions from purchasing
	People Team	· Management of Scope 3 carbon emissions from domestic and international business travel, commuting, and waste disposal
	Planning Team (Investment Group)	· Management of Scope 3 carbon emissions from investments
Support for Climate Change Response	Corporate Sustainability Management Office	· Operation of the ESG Committee · Response to climate change-related initiatives
	Planning Team (Corporate Strategy Group)	· Establishment of company-wide ESG strategy and setting direction for climate change response
	Research Institute Technology Strategy Team	· Green technology sensing · Eco-friendly R&D
	Strategic Marketing Office Consulting Team	· Establishment and operation of ESG platform

Climate Change Response

STRATEGY

The risks and opportunities arising from climate change differ depending on the industry and environment in which a company operates. Samsung SDS identifies and differentiates these risks and opportunities in the short, medium, and long terms.

We assess the financial impact of these risks on the company by categorizing them into significant transition and physical risks, through scenario analysis. This information is incorporated in our carbon neutrality strategy and major decision-making processes.

Samsung SDS has identified these risks, established scenarios, and is reflecting resilience in its strategies to respond to them.

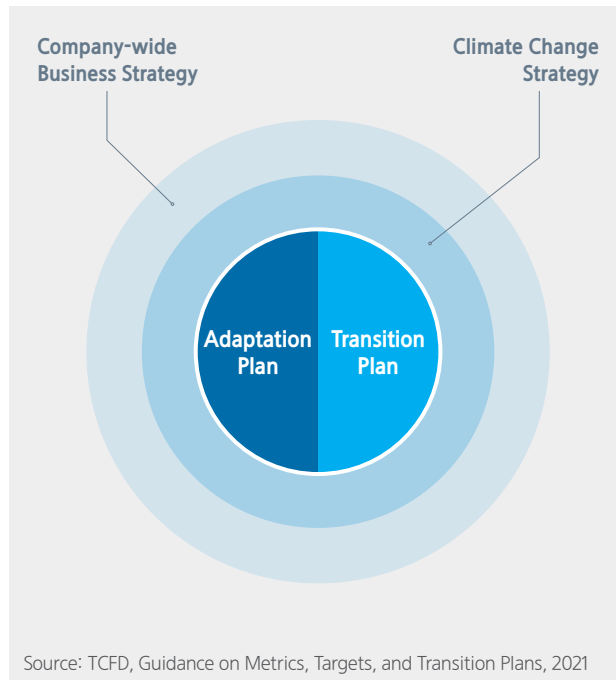


Strategy

Climate Change Strategy

In order to establish a climate change transition plan, Samsung SDS has identified the financial impact of climate change-related risks on its business activities. We analyzed risk and opportunity factors to incorporate them into financial plan. Additionally, scenario analysis were conducted for transition and physical risks, enabling the qualitative and quantitative assessment of the company's climate change risks. By integrating the financial impacts identified through scenario analysis into the overall business strategy, Samsung SDS aims to minimize the negative effects of risks and maximize the positive impacts of opportunities on the business. Furthermore, the company aims to establish comprehensive GHG management system covering both direct and indirect emissions, as well as subsidiaries and overseas branches within the entire value chain, with the goal of reducing and offsetting emissions. Additionally, Samsung SDS intends to transition the power used in data centers to renewable energy, thereby implementing an in-house climate change response strategy that aligns with the transition plan towards a low-carbon society.

Components of Climate Change Strategy



Direction of Samsung SDS' Climate Change Strategy Implementation

Opportunities | Sustainable Business of Samsung SDS

- **(Samsung Cloud Platform)** Providing customized carbon emission information to customers, identifying/proposing carbon emission reduction factors for customers to reduce carbon footprint
- **(Cello Square)** Cello Carbon Emission Management System for Scope 3 aggregation, provision of carbon emission information management, and low-carbon logistics services

Transition Plan | Climate Change Response Strategy

- **(Self-reduction and Offset of GHG)** Application of Eco-Cloud Data Center Low-Power Technology, replacement and expansion of facilities for improved data center energy efficiency, direct GHG emission reduction, etc.
- **(Establishment of Business Site GHG Emission Management System)** Systematization of Scope 1 and 2 emission management for business sites, advanced management of Scope 3 GHG emissions, systematization of emission calculation for overseas business sites
- **(Transition to Renewable Energy)** Purchase of renewable energy certificates(RECs), Power Purchase Agreement(PPA), management of carbon emission information and provision of low-carbon logistics services, such as installing renewable energy generation facilities in business sites.

Risk and Opportunity Factor Analysis

- Analysis of policy, legal, technological, market, and reputation risk factors, as well as acute and chronic physical risk factors, for short-term (three years, 2023-2025), medium-term (five years, 2026-2030), and long-term (twenty years, 2031-2050).

Climate Change Scenario Analysis

- **(Transition Risk Scenarios)** Analysis of carbon price scenarios (High, Moderate, Low) and GHG emission scenarios (BAU, Net-Zero)
- **(Physical Risk Scenarios)** Analysis of seven climate risks based on RCP scenarios.

Strategy

Analysis of Climate Change Risk and Opportunity Factors

To formulate a comprehensive strategy for climate change response, Samsung SDS has projected potential financial impacts in the short, medium, and long term. This is done in accordance with the TCFD guidelines, considering the risks and opportunities presented by climate change. Risks were analyzed based on policy, legal, technological, market, reputation, and acute and chronic physical risk factors in the context of transitioning to a low-carbon economy. Opportunities were identified and categorized according to their nature into resource efficiency, energy sources, products and services, markets, and resilience.

Risk Factors

Category	Type	Content	Potential Financial Impact	Timeframe ¹⁾		
				Short Term	Medium Term	Long Term
Transition Risks	Policy/Regulatory	Reinforcing mandatory disclosure of GHG emissions information	Increased indirect cost	●		
		Increase in carbon price due to tightening regulations such as carbon tax and carbon credit	Increased operating cost	●	●	●
		Risk of litigation due to climate-related legislation such as EU Corporate Sustainability Due Diligence	Increased litigation cost			●
	Technology	Emergence of low-carbon alternatives for IT/logistics services	Decreased revenue	●	●	
		Cost burden due to investment in low-power technology for data centers	Increased direct cost	●	●	
		Failure of new technology investment	Increased financial risk			●
	Market	Strengthening of carbon neutral requirements and eco-friendly purchasing policy by clients	Increased direct costs and decreased revenue		●	●
		Increase in energy costs due to the transition to renewable energy in the power sector	Increased direct cost	●	●	
		Increase in logistics cost due to carbon reduction in the logistics sector such as the introduction of eco-friendly fuels	Increased direct cost	●	●	●
		Decrease in consumer preference due to carbon emissions of product/service	Increased transition cost		●	●
Reputation	Increase in negative feedback from stakeholders	Declined corporate reputation			●	
	Decline in external evaluation rating on climate change response	Increased credit risk	●	●	●	
Physical Risks	Acute	Fluvial flooding	Decreased operating profit		●	●
		Intensifying drought	Declined asset value		●	●
		Wildfires	Decreased productivity		●	●
	Chronic	Extreme temperature	Increased operating costs and decreased productivity			●

Opportunity Factors

Category	Type	Content	Potential Financial Impact	Timeframe		
				Short Term	Medium Term	Long Term
Resource Efficiency		Energy efficiency in data centers through the application of liquid cooling technology	Reduced operating costs	●	●	
		Minimizing waste battery production through the application of UPS-less technology	Reduced operating costs	●	●	
		Transport efficiency through digital logistics platforms	Reduced costs and increased profits	●	●	●
Energy Sources		Utilization of policy incentives for renewable energy	Reduced operating costs		●	
		Participation in the carbon credit trading market (purchase or sale of remaining credits)	Reduced operating costs and improved profitability	●	●	
		Enhancing energy supply stability through distributed power generation	Improved profitability			●
Opportunity	Product/Services	Development of eco-friendly cloud services	Increased revenue	●	●	
		Expansion of low-carbon logistics goods and services	Increased revenue	●	●	
		Increase in consumer preference for low-carbon products/services	Increased product/service demand	●	●	●
Market		Increase in demand for digital transformation and IT services to reduce total energy	Increased revenue		●	●
		Enhancement of access to the low-carbon logistics market	Increased revenue		●	●
		Utilization of policy incentives in the public sector, such as price subsidies for low-carbon products	Reduced direct cost		●	●
Resilience		Mitigation of power cost volatility through long-term renewable energy supply contracts	Reduced operating costs and increased productivity			●
		Decrease in dependence on external power through self-reduction of carbon emissions	Enhanced productivity	●	●	●

1) Timeframe: Short term 3 years (2023-2025), Medium term 5 years (2026-2030), Long term 20 years (2031-2050)

Strategy

Analysis of Climate Change Risk Scenarios

Samsung SDS performed a scenario analysis based on transition/physical risk using S&P Global's climate change scenario analysis service, and identified the projected climate change risks for each specific scenario. For the scenario analysis of transition risk, we analyzed three carbon price scenarios (high/moderate/low) and two emissions scenarios (BAU and Net-Zero), and for the physical risk analysis, we estimated the average annualized asset value losses for seven climate risks under the RCP scenarios of the IPCC Fifth Assessment Report.

Transition Risks

Transition Risks

Analysis of carbon price risk scenarios due to stricter carbon regulations

S&P Sustainable¹ Policy Risk Assessment

High Carbon Price Scenario (1.6°C-2°C)	Moderate Carbon Price Scenario (1.6°C-2°C)	Low Carbon Price Scenario (3.1°C-4°C)
High-intensity mitigation scenario limiting global warming to within 2°C by 2100	Assumes achievement of the 2°C by 2100, but with action delayed in the short term. A moderate mitigation scenario that reflects full nationally determined contributions (NDCs) based on analysis of Ecofys, Climate Analytics, New Climate Team.	No separate target. A low-intensity mitigation scenario assumes full implementation of countries' NDCs

Physical Risks

Physical Risks

Asset loss analysis scenarios caused by physical risks

RCP scenarios of the IPCC Fifth Assessment Report

Scenario	Definition	CO ₂ concentration in 2100	Average temperature from 2081 to 2100
RCP2.6	Scenario with implementation of all emissions reduction policies to keep temperature rise below 2°C	420ppm	+1.3°C
RCP4.5	Scenario where substantial mitigation policies are implemented, resulting in a temperature rise being limited to 2°C.	540ppm	+2.4°C
RCP6.0	Scenario where partial mitigation policies are implemented, resulting in a temperature rise by 3°C.	670ppm	+2.7°C
RCP8.5	Scenario where emissions continue on current trends, resulting in a temperature rise over 4°C.	940ppm	+4.0°C

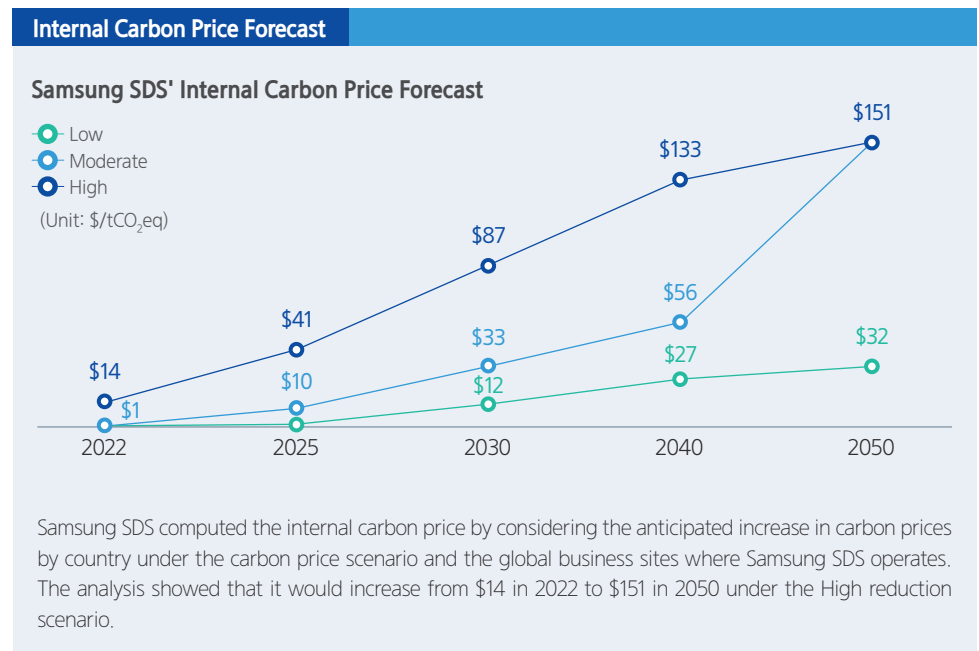
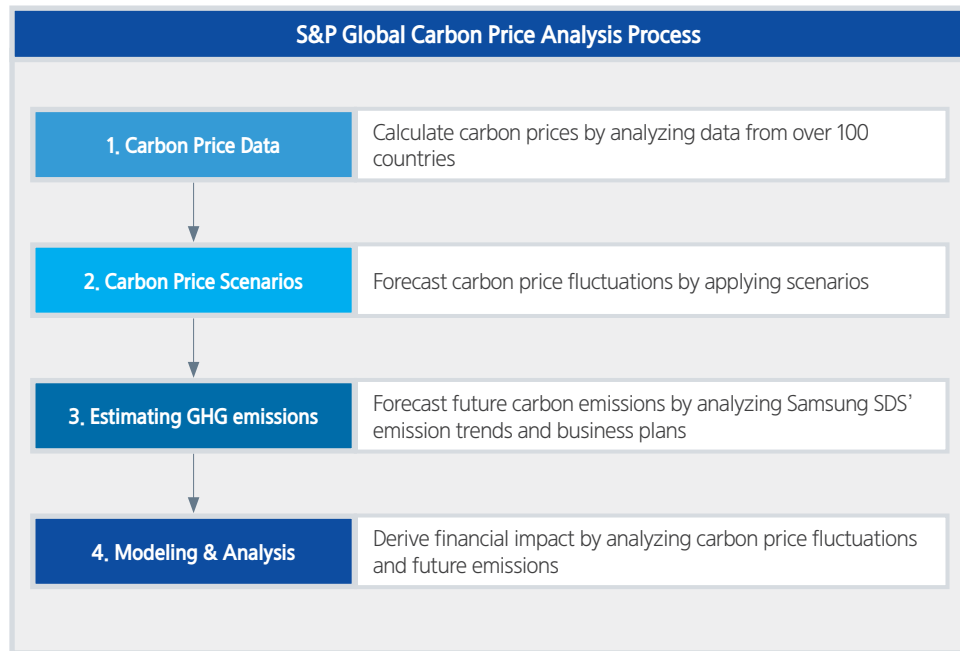
Strategy

Analysis of Climate Change Risk Scenarios

Transition Risks

To assess the financial impact of transition risks on Samsung SDS, we conducted a scenario analysis in collaboration with S&P Global, focusing on carbon price risk. The carbon price scenario analysis was conducted in four primary steps. Initially, we calculated carbon price by analyzing related to carbon taxes, emissions trading systems, and fuel costs across more than 100 countries. We applied the 'Trucost CEaR' scenario, which is based on the results of the 2°C global carbon cost estimation research, to predict changes in carbon prices and calculate the unreflected carbon cost. We analyzed the financial impact of future carbon costs based on our own analysis of Samsung SDS' carbon emission trends and business plans.

Carbon Price Risk Estimation Scenarios



Strategy

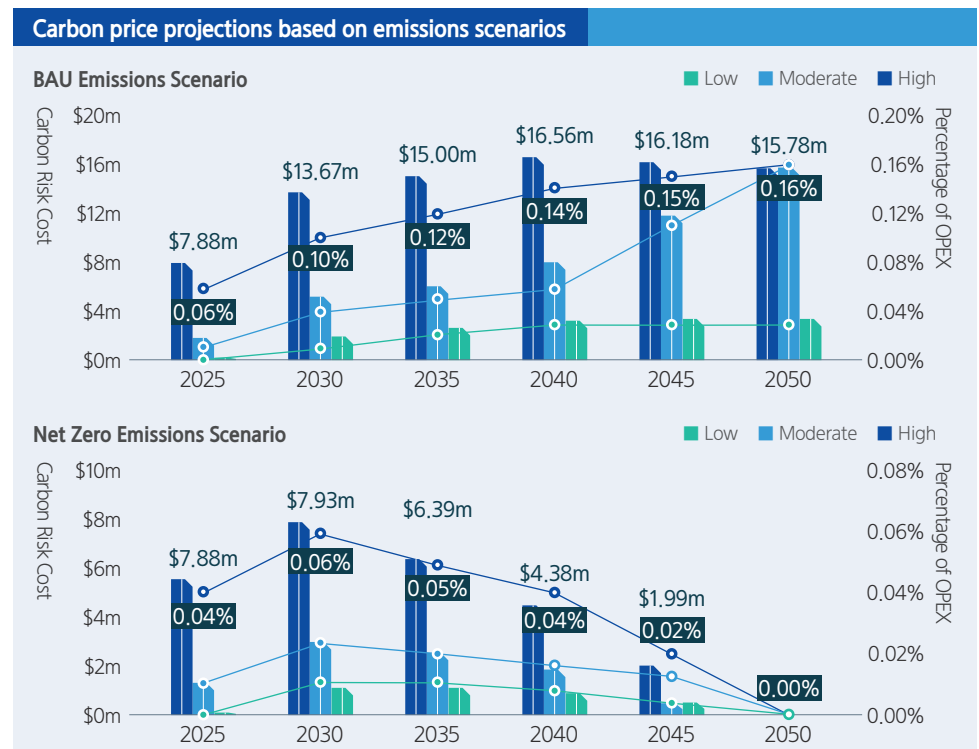
Analysis of Climate Change Risk Scenarios

Transition Risks

By evaluating three carbon price scenarios (high/moderate/low) and two emissions scenarios (BAU and Net-Zero), Samsung SDS calculated the total carbon cost associated with each scenario and determined the proportion of these costs relative to our total operating expenses (OPEX). Based on the BAU emissions scenario, the total cost of carbon price risk ascends from \$7.9 million in 2025 to \$15.8 million in 2050 under the High mitigation scenario. These costs represent a share of operating expenses(OPEX) amounting to 0.06% in 2025 and 0.16% in 2050. Despite the upward trend in costs driven by rising carbon prices and emissions, they remain a small percentage of OPEX and are not considered a significant risk.

GHG Emissions Estimation Scenario

Future Emissions Scenario	
BAU Scenario	Projected emissions if the company continues with current levels of self-reduction
Net-Zero Scenario	Scenario with zero net emissions of all greenhouse gases. Projected emissions if the company achieves net-zero in 2050 through renewable energy transition, etc.



Strategy

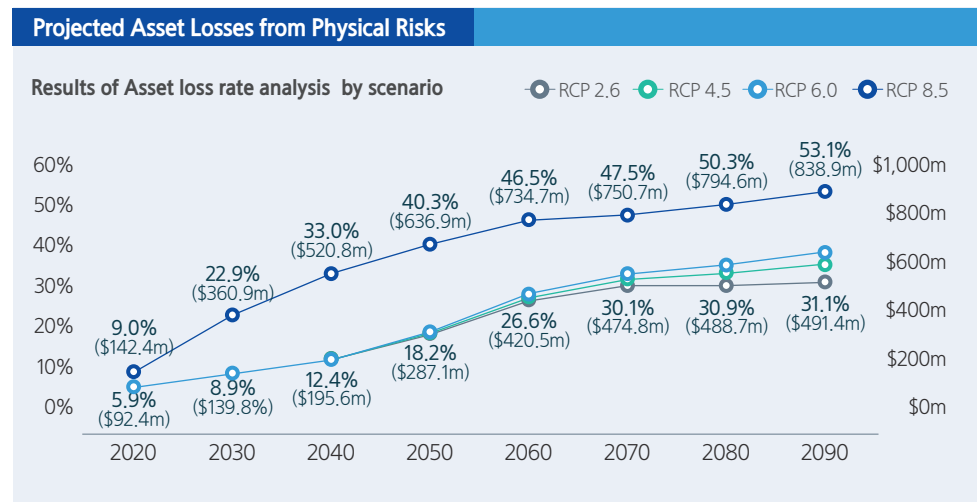
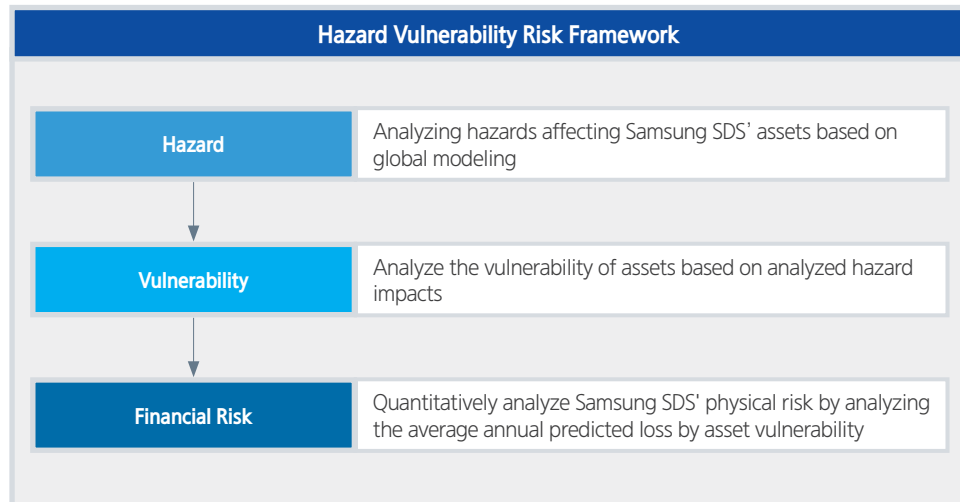
Analysis of Climate Change Risk Scenarios

Physical Risks

Samsung SDS employed S&P Global's Climonomics service to perform a physical risk analysis to understand the impact of physical risk on our assets. We projected average annualized asset value losses and decade-spanning losses from 2020 to 2090 for seven climate hazards, including fluvial flooding, abnormally high temperatures, drought, wildfires, coastal flooding, tropical cyclones, water shortages under the RCP scenarios (RCP 2.6, 4.5, 6.0, and 8.5) of the IPCC Fifth Assessment Report.

According to this analysis, under the RCP 8.5 scenario, which presents the highest climate change risk, Samsung SDS' asset loss rate is projected to be 22.9% in 2030 and 40.3% in 2050. Conversely, in the RCP 2.6 scenario, which has the lowest risk, the asset loss rate was comparatively low at 8.9% in 2030 and 18.2% in 2050.

Physical Risks Modeling Methodology



Strategy

Analysis of Climate Change Risk Scenarios

Physical Risks

Among the seven climate hazards, the greatest impact on asset loss is expected to be caused by fluvial flooding, with some degree of impact also expected from extreme temperature and drought. However, the risks of wildfires, coastal inundation, cyclones, and water stress are considered to have minimal potential for loss. The assets with high loss rates are the Sangam Data Center and Suwon Data Center, which are located near rivers and require high recovery costs due to the nature of data centers.

Result of Physical Risks Analysis based on RCP Scenario



MAAL(Modeled Average Annual Loss): Predicted losses and loss rates as a percentage of current asset value. Estimated as operating costs, capital costs of the damage, impact costs of business interruption, etc.

Scenario	Year	Fluvial Flooding	Temperature Extremes	Drought	Wildfire	Coastal Flooding	Tropical Cyclone	Water Stress
RCP 2.6	2030	3.1%	3.1%	2.6%	-	-	-	-
	2050	11.1%	4.3%	2.7%	-	-	-	-
RCP 4.5	2030	3.1%	3.1%	2.6%	-	-	-	-
	2050	11.1%	4.4%	2.8%	-	-	-	-
RCP 6.0	2030	3.1%	3.1%	2.6%	-	-	-	-
	2050	11.2%	4.5%	2.9%	-	-	-	-
RCP 8.5	2030	16.3%	3.4%	3.1%	0.1%	-	-	-
	2050	30.9%	5.6%	3.7%	0.1%	-	-	-

Response to Physical Risks

Fluvial Flooding

For the most likely risk of fluvial flooding, response scenarios are being established, taking into account the elevation of the ground where the assets are located and the highest water levels during past floods. Counter-measures are being implemented for facilities with a relatively high potential for flooding, such as parking lots and entrances. These measures include the installation and placement of flood barriers, protective shutters, and water pumping stations to prepare for such events.

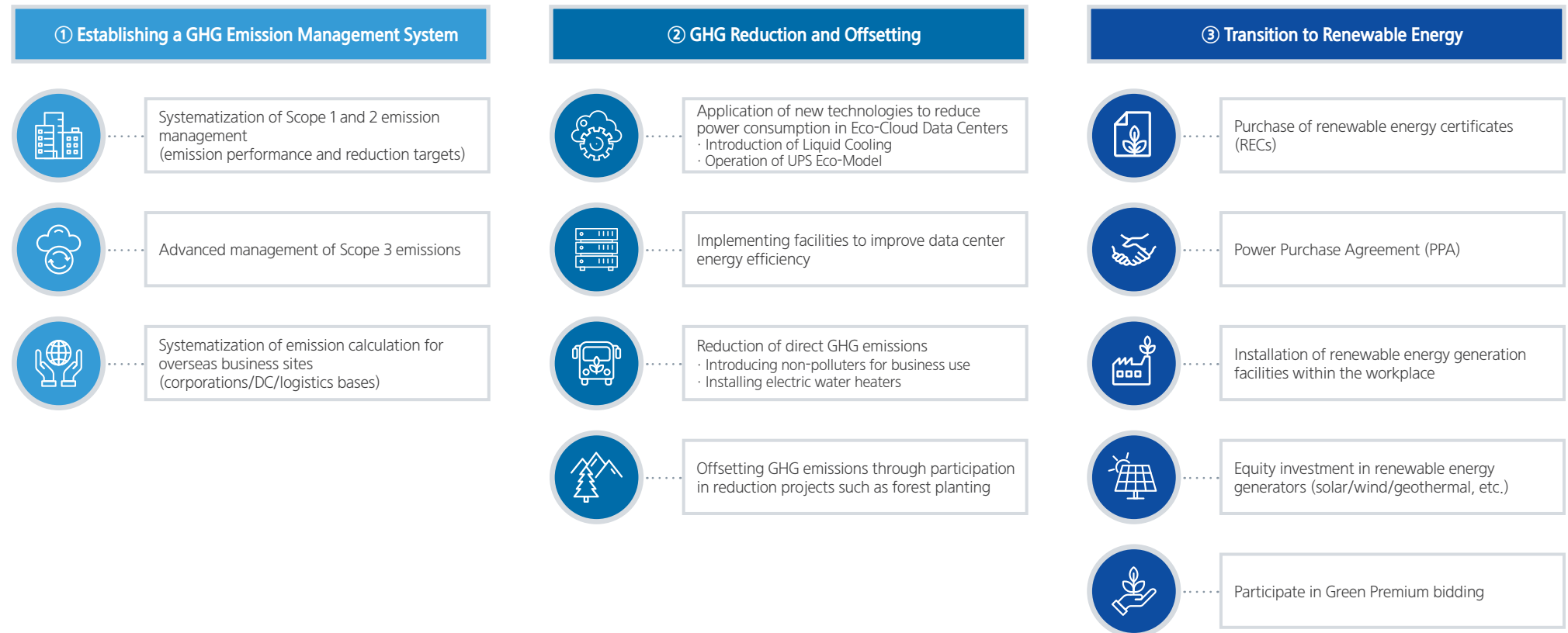
Extreme Temperature and Drought

In situations of extreme temperature and drought, there are concerns regarding additional operating costs and reduced productivity due to decreased cooling efficiency. Samsung SDS plans to mitigate such risks by continuously enhancing cooling efficiency, which involves expanding cooling facilities in data centers, upgrading outdated facilities, and applying liquid cooling technology.

Strategy

Low-Carbon Transition Plan

To minimize the negative impact of climate change risks and opportunities in business Samsung SDS has established climate change response strategies in alignment with international agreements like the Paris Agreement and national goals for carbon neutrality by 2050. We have implemented greenhouse gas management systems across all business units, including subsidiaries and overseas branches, to reduce and offset emissions. Additionally, Samsung SDS plans to achieve carbon neutrality by transitioning the energy used in data centers to renewable sources.



Strategy


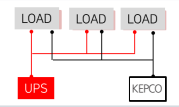
Green Investment Strategy

Roadmap

	Phase #1 (~'26)	Phase #2 (~'30)	Phase #3 (~'35)
Target	<p>Exploring new technologies to reduce emissions and improve energy efficiency</p> <ul style="list-style-type: none"> - Establishing technical standards for the implementation of Liquid Cooling technology - Conducting proof of concept(PoC) Validation for liquid colling system implementation 	<p>Expanding new technology application for low power, high efficiency data center operation</p> <ul style="list-style-type: none"> - Applying liquid cooling at Dongtan D/C over 35 percent - Applying UPS-less technology: More than 50 percent of IT devices 	<p>Expanding ESG Value delivery based the implementation of Eco-cloud</p> <ul style="list-style-type: none"> - Applying liquid cooling at Dongtan D/C over 75 percent - Applying UPS-less technology: More than 75 percent of IT devices
Action Plan	<ul style="list-style-type: none"> - The establishment of Guideline for Cold plate maintenance - UPS-less for Don DC HPC System 	<ul style="list-style-type: none"> - The application and performance verification of Cold Plate Method for Liquid Cooling - The installation of high-temperature refrigerant pipes For liquid cooling - The expansion of Multi-AZ (N+Raw → Raw+Raw) 	<ul style="list-style-type: none"> - The implementation and performance enhancement of Immersion - The operation of high-temperature, air-cooling Storage/NW equipment - Replacing UPS power with direct current OCP racks - The introduction of direct current server/NW/storage

Focused Areas

Samsung SDS has focused on the investment in the establishment of eco-friendly data center to implement low power, high efficiency eco-cloud.

	Liquid Cooling	UPS-less
Overview	<p>Next-generation cooling solution for high-power IT equipment, cooling by immersing the entire IT equipment in a special non-conductive liquid</p> 	<p>ESG Value delivery to customer based on the implementation of Eco-cloud</p> <ul style="list-style-type: none"> - Applying liquid cooling at Dongtan D/C over 75 percent - Applying UPS-less technology: More than 75 percent of IT devices 
Features	<ul style="list-style-type: none"> - The Best cooling performance - Limited types of non-conductive liquids that satisfy reactivity and Low-GWP - Need to improve communication error of fiber port for optical communication in case of flooding 	<ul style="list-style-type: none"> - Power Supply switching with minimal power loss in case of power failure by configuring UPS on one power source

Strategy

The Plan and Achievements of Green Investment

Target and Plan

Year	The amount of investment		Reduction		
	Sum		Expected Reduction	Liquid Cooling contribution	UPS-less contribution
	Period(unit:100M won)	Accum(unit:100M won)	Reduction(unit: ton)	Reduction(unit: ton)	Reduction(unit: ton)
'24Y~'26Y	205	205	3,821	460	3,361
'26Y~'30Y	138	343	34,713	21,800	12,913
'31Y~'35Y	95	438	99,292	65,569	33,723
Total	438	438	137,826	87,829	49,997

Achivements

Accumulative amount of investment for the establishment of eco-friendly D/C : 50.9 billion won

D/C	Item	Sum(unit:100M won)
Suwon D/C	The Installation of solar power generation facilities, etc.	114.4
Sangam D/C	The installation of inverter, etc.	2
Dongtan D/C	The construction of High-efficiency UPS, solar power facilities, etc.	392.1
Total		508.5

Samsung SDS has continuously invested in building low-carbon, high-efficiency and eco-friendly data center.

Suwon Data Center

- Approximately 64 MWh of renewable energy production and 48 ton of emission reduction per year through renewable energy generation based on the construction of solar power generation facilities in the upper part of the outdoor electric control room

Sangam Data Center

- The installation of inverter to control the cold water pump utilization rate according to the cooling load

Dontan Data Center

- Newly founded in February, 2023 to meet surging demand for high-performance computing (HPC)
 - Air-conditioned only by cooling tower for about 70% of a year, minimizing energy consumption for cooling
 - Minimizing energy consumption of the data center through solar power facilities and high-efficiency UPS
 - Plans to leverage the latest cooling technology (Liquid Cooling), waste heat and renewable energy to operate world-class power efficiency

Climate Change Response

RISK MANAGEMENT

Samsung SDS recognizes climate change risk as a major risk for the company and manages it by integrating it into the company-wide risk management system. Therefore, we established a systematic process in place to identify and assess potential climate change risks and opportunities and prepare countermeasures. This process covers the entire value chain, not just our own operations. We will persist in refining this process to enhance our capacity to analyze and effectively address the implications of climate change on our operations.



Risk Management

Climate Risk Identification and Evaluation Management Process

Samsung SDS has established a process for assessing climate change risks and opportunities and manages them along with company-wide risk management system. Through this process, we identify risks that could affect our business and operational strategies, and through scenario analysis, we identify potential financial impacts and establish countermeasures. These strategies are implemented through cross-functional collaboration, and significant risks are reported to the Board of Directors and Executive Management to inform the next year's action plan.

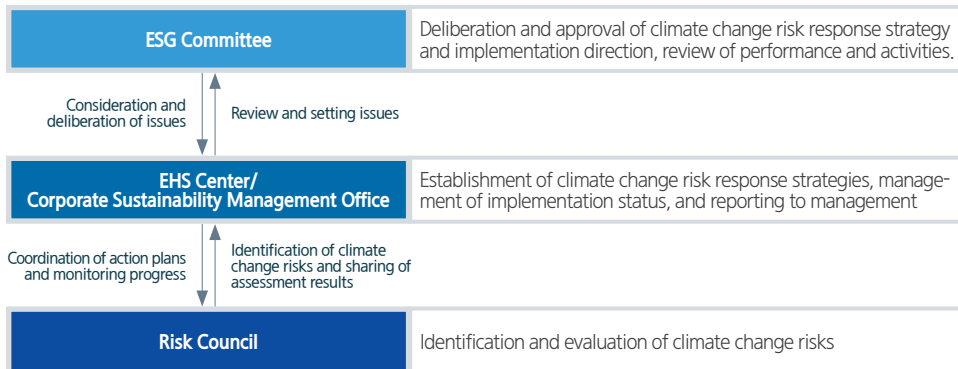


Risk Management

Integrated Climate Change Risk Management Process

Samsung SDS operates a Risk Council composed of relevant departments to identify and manage company-wide risks. The head of Risk Council (CRO) is CFO, and Risk Council includes representatives from each business area that requires risk management, including finance, management, HR, safety, environment, and compliance. Furthermore, significant risks and opportunities identified by the risk council are reported to the BOD or a committee under the BOD for decision-making under the responsibility of the top management. Sustainability issues, including climate change risks, are among the key topics discussed in the Risk Council, with regular meetings held at least once a year. For risks deemed significant, the Environmental, Health, and Safety (EHS) Center, a dedicated environmental management organization, along with the Corporate Sustainability Management Office a supporting organization, manage these risks. Decisions and management strategies from the EHS Center and the Corporate Sustainability Management Office are reported to the ESG Committee. Response strategies and action plans are subsequently developed and approved.

Company-wide Risk Management Process

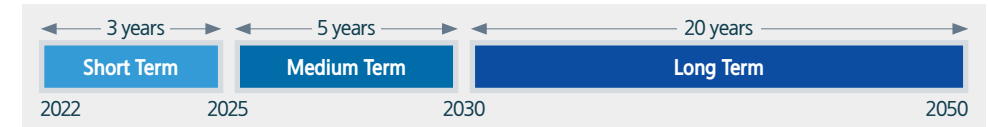


Climate Change Risk Review History

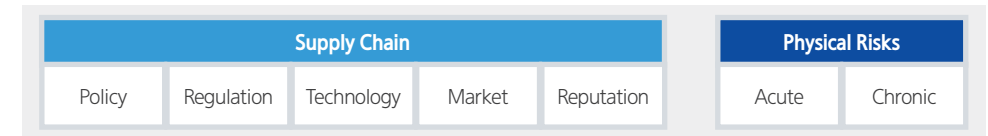
Date	Agenda	Department in Charge
October 24, 2022	· Management of data center energy use and carbon emissions	Data Center Innovation Team
January 31, 2023	· Climate change response and environmental management strategy	EHS Center
May 30, 2023	· Supply Chain Carbon Emission Management Plan	Partner Collaboration Team

Scope and types of climate change risk identification and assessment

Management Period



Climate Risk Types



Scope of Climate Risk Management



Risk Management

Company-wide Risk Management System

Samsung SDS manages identified climate change risks and opportunities by integrating them into our company-wide risk management system. We also monitor potential risks such as rising prices of carbon credits due to climate change and unstable supply and demand for renewable energy through sensitivity analysis. Furthermore, these risks undergo periodic reviews by dedicated committees, aligned with the reporting mechanism of the Board of Directors and the Risk Council, and establish strategies to manage and respond to these risks. In addition, Samsung SDS designates CFO as the Chief Risk Officer(CRO) and holds a Risk Management Council in which relevant departments participate to share identified risk issues and establish countermeasures.

Risk Management System



Risk Monitoring



Climate Change Response

METRICS AND TARGETS

Samsung SDS aims to measure and manage climate change-related risks and opportunities internally by setting climate change-related metrics and targets. Furthermore, we strive to transparently disclose to our stakeholders the progress of the targets we set and how we measure our performance.

Therefore, we set specific metrics and targets such as carbon neutrality targets, renewable energy transition targets, greenhouse gas emissions, and energy consumption to manage our carbon neutrality strategy and countermeasures.



Metrics and Targets

GHG Emissions(Scope 1, 2)

Category	Unit	2019	2020	2021	2022
Direct GHG emissions(Scope 1)	tCO ₂ eq	4,300	3,488	3,354	4,539
Indirect GHG emissions(Scope 2)	tCO ₂ eq	92,778	91,795	98,528	118,308
GHG total emissions(Scope 2, market-based)	tCO ₂ eq	92,778	91,795	98,528	118,308
Ratio GHG emissions(Scope 2, market-based) of GHG total emissions	%	95.6	96.3	96.7	96.3
GHG total emissions(Scope 2, location-based)	tCO ₂ eq	92,778	91,795	98,528	118,308
Ratio GHG emissions(Scope 2, location-based) of GHG total emissions	%	95.6	96.3	96.7	96.3
GHG total emissions(scope 1+scope 2)	tCO ₂ eq	97,073	95,277	101,882	122,842
GHG emissions intensity	tCO ₂ eq/100 million KRW	0.91	0.86	0.75	0.71

GHG Emissions(Scope 3)

Category ¹⁾	Unit	2020	2021	2022
1. Purchased goods and services	tCO ₂ eq	-	38,755	22,647
2. Capital goods	tCO ₂ eq	-	77,435	84,216
3. Energy not included in Scope 1, 2	tCO ₂ eq	-	-	7,718
4. Upstream transportation ²⁾	tCO ₂ eq	-	3,214,027	2,996,426
Air	tCO ₂ eq	-	1,617,183	1,388,921
Truck	tCO ₂ eq	-	982,347	1,023,681
Sea	tCO ₂ eq	-	607,285	575,023
Train	tCO ₂ eq	-	7,212	8,055
5. Waste generated in operations	tCO ₂ eq	-	339	290
6. Business travel	tCO ₂ eq	-	2,177	8,646
7. Employee commuting	tCO ₂ eq	-	6,980	5,222
8. Upstream leased assets	tCO ₂ eq	-	69,739	14,773
15. Investments	tCO ₂ eq	-	-	14,581
Total	tCO ₂ eq	5,890,563	3,409,452	3,154,520

- 1) Categories 9 to 14 of Scope 3 have been excluded from the calculations as they are not related to Samsung SDS' business operations.
2) Upstream transportation in 2020 was calculated from a conservative perspective for the entire global transportation scope by referring to the notification of the Ministry of Environment. From 2021 onwards, upstream transport logistics calculations have been refined according to the standards of the Global Logistics Emission Council(GLEC).

Metrics and Targets

Energy Consumption

Classification	Unit	2020	2021	2022
Total energy consumption	TJ	1,954	2,117	2,522
Energy consumption intensity (Revenue)	TJ/100 million KRW			0.015

Water Consumption

Classification	Unit	2020	2021	2022	
Water withdrawal	Waterworks	ton	326,406	323,461	401,701
	Underground water	ton	162,868	167,784	164,997
Total water consumption	ton	326,406	323,461	401,701	
Water recycling rate	%	33	34	29	

Waste Generation

Classification	Unit	2020	2021	2022 ¹⁾	
				HQ	Global ²⁾
Total waste generation	ton	1,575	953	496.7	2,183.8
Total waste recycled/reused	ton	0	361	113.4	897.2
Recycling rate	%	-	38	23	41

1) Starting from 2022, data from subsidiaries and overseas subsidiaries have been included. Since they do not fall under the category of business waste emitters based on emission criteria, the recycling/disposal information is not accurately known. Therefore, a conservative estimation has been made.

2) headquarters, overseas subsidiaries, and domestic subsidiaries.

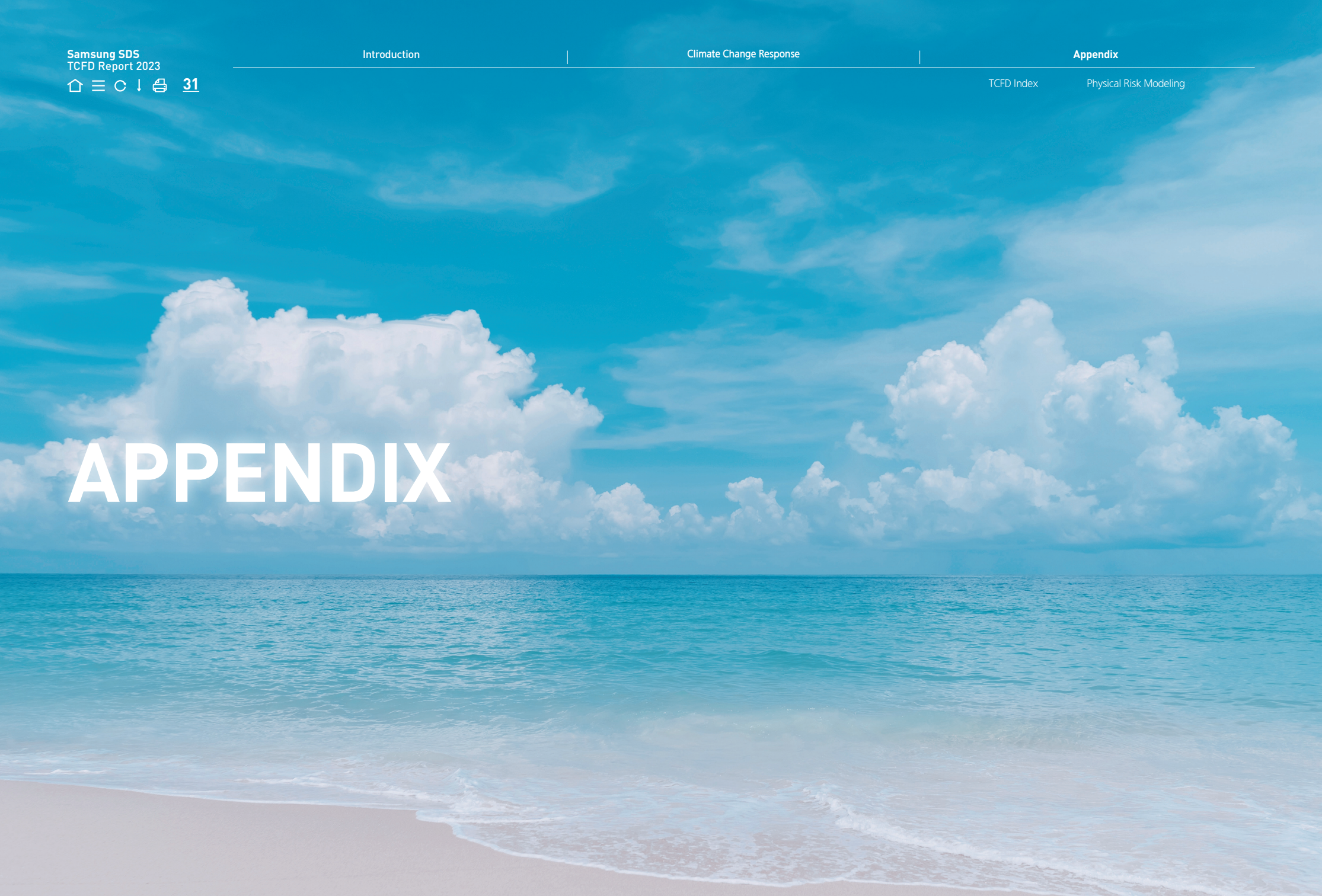
Eco-friendly Sales(Green Revenue)

Category	Unit	2022	
Cloud ¹⁾	Revenue	billion KRW	10,843.3
	CAPEX	billion KRW	4,952.9
	OPEX	billion KRW	9,085.3
Nexplant FMS ²⁾	Revenue	billion KRW	1,083.2
	CAPEX	billion KRW	0
	OPEX	billion KRW	1,031.4
Meeting (Video Conferencing)	Revenue	billion KRW	783.5
	CAPEX	billion KRW	0
	OPEX	billion KRW	497.9

1) Cloud includes MSP, CSP, and SaaS. (Meeting is included in SaaS, but excluded from Cloud to avoid duplication and calculated separately)

2) Nexplant FMS(Facility Management System): A solution that optimizes building operations through efficient integrated management of various facilities in a building and reduces energy and operating costs

APPENDIX



TCFD Index

Category	TCFD Recommendation	Page
Governance	a) Describe the board’s oversight of climate related risks and opportunities.	8-12
	b) Describe management’s role in assessing and managing climate related risks and opportunities.	
Strategy	a) Describe the climate-related risks and opportunities the company has identified over the short, medium, and long term.	13-21
	b) Describe the impact of climate-related risks and opportunities on the company’s businesses, strategy, and financial planning.	
	c) Describe the resilience of the company’s strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario.	
Risk Management	a) Describe the company’s processes for identifying and assessing climate-related risks.	22-25
	b) Describe the company’s processes for managing climate-related risks.	
	c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the company’s overall risk management.	
Metrics and Targets	a) Disclose the metrics used by the company to assess climate-related risks and opportunities in line with its strategy and risk management process.	26-28
	b) Disclose Scope 1, Scope 2, and, if appropriate, Scope 3 GHG emissions and the related risks.	
	c) Describe the targets used by the company to manage climate-related risks and opportunities and performance against targets.	

Physical Risks Modeling

Physical Risk	Risk Type	Definition	Underlying Variables
Extreme Temperature	Chronic	Calculate the annual frequency of daily maximum temperature over the observation period from 1950 to 1999 based on the asset location.	Temperature
Drought	Chronic	Calculate a drought index using the annual probability of occurrence of drought conditions, regional climate model data on temperature and precipitation, and data on the available water capacity of local soil layers over the observation period from 1980 to 1999 based on the asset location.	Temperature, Precipitation
Wildfire	Chronic	Calculate a wildfire-related index (Palmer Z-Index) using a historical shifts in the annual probability of wildfire-conductive conditions, and regional climate model data on temperature and precipitation over the observation period from 1980 to 1999 based on the asset location.	Temperature, Precipitation
Water Stress	Chronic	Calculate water stress metrics utilizing projections from 2020 to 2040, relying on location-specific data sourced from WRI's Aqueduct 3.0.	Withdrawal, Available Renewable Water Supply
Coastal Flooding	Acute	Calculated by integrating data from Kopp et al., 2014, which pertains to sea level rise and storm tide, with flood level data derived from Muis et al., 2016, encompassing around 100,000 segments of coastlines worldwide.	Sea level rise, storm tide
Fluvial Basin Flooding	Acute	Applied a statistical model of fluvial basin flood volumes and depths using three climate variables and four terrain variables as key factors.	Annual frost days, consecutive dry days, maximum 5-day precipitation, basin area, slope, impervious surface area, and lake-storage area in each basin
Tropical Cyclone	Acute	Analyze regional cyclone risk for the Atlantic and Northwest Pacific basins based on the annual frequency of typhoon formation, specific locations where localized tropical cyclones form, and the intensity and trajectory of the local tropical cyclones	Sea surface temperature

SAMSUNG SDS