Welcome to your CDP Climate Change Questionnaire 2021

C0. Introduction

C0.1

(C0.1) Give a general description and introduction to your organization.

Founded in 1985, Samsung SDS is an ICT company with solutions which have been leading the digital transformation and innovation of clients for over 30 years across a wide range of industries. With operations in 40+ countries, Samsung SDS' solutions utilize advanced analytics platforms, AI, blockchain, cloud technologies to serve a diverse range of industries including financial services, smart manufacturing, global logistics, and retail. Our vision for the new era is to become a data-driven digital transformation leader by leveraging the most advanced ICT technologies and solutions to discover actionable insights. Sustainability is central to Samsung SDS to enable digital technologies to make life better for everyone, everywhere. Setting goals for sustainability, Samsung SDS focuses where we can have the greatest impact. We recognize and embrace the opportunity and responsibility to address some of the greatest shared challenges facing society today, including climate change, the shift to cleaner energy, access to quality education and economic opportunity, human rights protection throughout the supply chain, and data security and privacy. We are committed to enabling to achieve a low-carbon. We are working to support all UN Sustainable Development Goals and TCFD. To find out more about us, please read our Sustainability Report at https://www.samsungsds.com/en/sustainability/downloads.html

C0.2

(C0.2) State the start and end date of the year for which you are reporting data.

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1, 2020	December 31, 2020	Yes	3 years

C0.3

(C0.3) Select the countries/areas for which you will be supplying data.

Republic of Korea

C0.4

(C0.4) Select the currency used for all financial information disclosed throughout your response.

KRW

C0.5

(C0.5) Select the option that describes the reporting boundary for which climate-related impacts on your business are being reported. Note that this option should align with your chosen approach for consolidating your GHG inventory.

Operational control

C1. Governance

C1.1

(C1.1) Is there board-level oversight of climate-related issues within your organization?

Yes

C1.1a

(C1.1a) Identify the position(s) (do not include any names) of the individual(s) on the board with responsibility for climate-related issues.

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	Our CEO carries strategic oversight of Samsung SDS' sustainability which includes climate change issues, which are part of the environmental management system. The CEO approves the company's sustainability policy and targets and is responsible for providing resources required to implementation of activities for improving sustainability. He makes major decisions on developing business model or business strategy of environment-friendly solutions and services. In addition, he instructs directly on energy efficiency improvements and greenhouse gas mitigation measures and evaluates progress and task performances.
Chief Financial Officer (CFO)	Our CFO is also responsible for overseeing sustainability including publishing sustainability report, and responding to corporate sustainability assessments including CDP and DJSI. As a chair of the ESG Council, our CFO plan and operate ESG related activities and to report to the BOD on a quarterly. Our ESG plans for 2021 and performances in 2020 were reported at this year's regular board meeting. The CFO is also the chair of the Risk Management Council held twice a month for executives and team leaders to discuss financial and non-financial risks, including

	climate change. CFO reports issues, including climate and environment related, to the Board.
Other C-Suite Officer	The BOD's role on ESG were reinforced by entrusting the Cloud Business Division leader (responsible for data center and cloud business) as one of internal executive members. Primary responsibility for managing climate-related issues is delegated to him for approximately 90% of our carbon emissions are from data centers.

C1.1b

(C1.1b) Provide further details on the board's oversight of climate-related issues.

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Please explain
Scheduled – all meetings	Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding annual budgets Monitoring implementation and performance of objectives Monitoring and overseeing progress against goals and targets for addressing climate-related issues	The Samsung SDS' Board of Directors review of our sustainability matters, strategy, and programs at quarterly meetings includes climate-related issues. Reviewing and guiding sustainability strategy and goals enables the board to understand, oversee and advise on the role and impact of climate change and other key sustainability issues on our business. Climate-related issues are briefed to the Board by The Risk Management Council. The Risk Management Council was founded in 2020 which is composed of leaders of related organization including the IR, Data Center, HR, Legal, Data Protection, Supply Chain Management, etc. They discuss financial and non-financial issues arise when conducting business, and have responsibility to report to the Board

C1.2

(C1.2) Provide the highest management-level position(s) or committee(s) with responsibility for climate-related issues.

Name of the position(s) and/or committee(s)	Responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	Both assessing and managing climate-related risks and opportunities	Quarterly

Chief Financial Officer (CFO)	Both assessing and managing climate-related risks and opportunities	More frequently than quarterly

C1.2a

(C1.2a) Describe where in the organizational structure this/these position(s) and/or committees lie, what their associated responsibilities are, and how climate-related issues are monitored (do not include the names of individuals).

Accountability to advance environmental performance at Samsung SDS starts at the top, with our Board, which includes our CEO, who is responsible for providing governance and oversight over the strategy, operations and management. Along with the BOD, Samsung SDS has ESG Council to manage overall ESG related issues, and Risk Management Council which receives briefings twice a month on both financial and non-financial risks including climate-related issues. This process allows us to escalate climate risks to the Board as frequently as necessary—even to every Board meeting—if climate-related risks were within the most critical set of risks for review. The CFO reports to the CEO and coordinates the Company's annual Risk Management process and actively monitors business continuity risks, including climate-related risks, as part of that process.

CFO, Head of Corporate Management Office, is responsible for corporate-wide risk and opportunity management, and also plays a role as the CRO, Head of Risk Management Council, responsible for assessing and managing risks and opportunities. Based on the policy, procedures and checklists, the council mainly reviews the risks and opportunities of our business. The areas where expertise or advanced knowledge is required such as financial risks or climate change-related risks and opportunities, respective team controls and manages its related risks and opportunities. The Risk Management Council holds meetings every other Friday. The issues monitored and discussed by the council are briefed on a quarterly basis. Therefore, the BOD can be reported any significant climate-related risks.

Additionally, the Data Center Innovation Team leader is in charge of climate change mitigation strategy by each data center for better efficiency for approximately 90% of Samsung SDS' GHG emissions is generated from data centers. The Data Center Innovation Team leader reviews the overall risks of climate change related to the data centers while making detailed planning and investment decisions. The team leader is responsible for receiving reports on GHG emissions and emission rights, making decisions on emissions trading, and reporting important issues to the Risk management Council.

C1.3

(C1.3) Do you provide incentives for the management of climate-related issues, including the attainment of targets?

	Provide incentives for the management of climate-related issues	Comment

Row 1	Yes	Samsung SDS offers monetary incentives management in charge of climate change tasks based on the performance of their work.

C1.3a

(C1.3a) Provide further details on the incentives provided for the management of climate-related issues (do not include the names of individuals).

Entitled to incentive	Type of incentive	Activity inventivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction project Emissions reduction target	The CEO has responsibility to oversee and make decisions on climate-related issues. Therefore, a part of the variable compensation depends on the performance of these business units, including their GHG reduction target. Samsung SDS transparently and accurately evaluates CEO according to the KPIs.
Business unit manager	Monetary reward	Emissions reduction project Emissions reduction target Energy reduction project Energy reduction target Efficiency project Efficiency target	The Head of Data Center Innovation Team receives annual salary based on the performance on climate change goals and related objectives on energy efficiency, water use, and related activities. Other activities that are linked with sustainability incentives are energy efficiency targets and GHG reduction target.
Facilities manager	Monetary reward	Emissions reduction target Energy reduction target Efficiency target	Facility managers carry the company's climate change goals as part of their business goals and objectives. The goals are defined in terms of energy efficiency improvements and adoption of renewable energy in the operations.
Chief Financial Officer (CFO)	Monetary reward	Company performance against a climate-related sustainability index	Our CFO is responsible for overseeing sustainability including climate-related issues. A part of his KPI is considered by results of corporate sustainability assessment including CDP, DJSI, etc.

C2. Risks and opportunities

C2.1

(C2.1) Does your organization have a process for identifying, assessing, and responding to climate-related risks and opportunities?

Yes

C2.1a

(C2.1a) How does your organization define short-, medium- and long-term time horizons?

	From (years)	To (years)	Comment
Short-term	1	2	2021-2022
Medium-term	3	10	2023~2030
Long-term	6	30	2031~2050

C2.1b

(C2.1b) How does your organization define substantive financial or strategic impact on your business?

Samsung SDS endeavours to voluntarily implement the recommendations of the TCFD along with the guidelines of CDP on climate change. Accordingly, the substantive financial and strategic impacts associated with climate change is defined as follows: the impact of low carbon transition (policy, regulation, technology, market, reputation) or physical risk of climate change on the company's existing business activities (e.g. operation of data center) and financial management (e.g. corporate cash flow, profit and loss). In terms of financial impact, we consider risks and opportunities with potential financial implications of over KRW 1.6 billion per year for our business as substantive financial impact for Samsung SDS.

C2.2

(C2.2) Describe your process(es) for identifying, assessing and responding to climate-related risks and opportunities.

Value chain stage(s) covered

Direct operations

Risk management process

Integrated into multi-disciplinary company-wide risk management process

Frequency of assessment

More than once a year

Time horizon(s) covered

Short-term
Medium-term
Long-term

Description of process

Although we do not belong to carbon-intensive industry, it is inevitable for everyone to be impacted by climate change. Samsung SDS is fully aware of the importance of corporate roles in response to climate change. The CFO is given the responsibility and authority to make important decisions such as investment in climate change mitigation.

CFO 1) meets twice a month with leaders of related departments and business units to discuss emerging risks, 2) prepares environmental management guidelines and monitoring of the system through regular inspections 3) drives environmental management for data centers where most likely affected by climate-related issues. When significant risks may be escalated for consideration, related teams assess the issues and report back to the Risk Management Council under CFO. The Board of Directors validates this risk priority annually and receives quarterly briefings from CFO.

To identify climate-related risks, we engage key stakeholders to help us understand relevant environmental and social issues. Furthermore, "Materiality Analysis" was conducted as part of preparing sustainability report to prioritize and analyze the climate change and sustainability issues that may affect the company and its stakeholders from the short- to long-term perspective every year. The climate-related issues include low carbon transition risks and opportunities and their financial implications. As a result, climate change is considered to be one of the important issues, and we are conducting risk analysis, response, and evaluation activities related to this issue.

Designated the CFO as the Chief Risk Officer (CRO), the Risk Management Council manages sustainability issues. The council analyses the laws and regulations on climate change, the reputation of the group, and the supply chain with the support of relevant departments of the company. Then, the council identifies and manages specific activities for managing important climate change risks and opportunities during the business including planning and operation of data centers. The council also evaluates the performance of such activities of managing the major risks and opportunities. Based on the evaluation, improvement measures are reviewed for more effective management and major performances are communicated with the public through corporate sustainability reports every year. Specifically to respond to climate related changes, the council has established 'Carbon Zero Initiative' for corporate wide eco-friendly management. We analyze risks and opportunities of our business including service development, worksite operation, R&D, and finance, etc. Carbon Zero Initiative is a strategy to offset the amount of GHG emissions. To achieve carbon neutrality, we will ① reduce GHG emissions at most, ② join RE100, and ③ expand eco-friendly partnerships.

[Examples of risks and opportunities]
1. Physical risks and opportunities

Natural disasters such as floods, droughts, and forest fires increase, and physical risks are increasing due to climate change, which directly affects the financial performances of Samsung SDS. Such physical risks may damage data centers, destroy electronic data or cause malfunctions related to the IT services for the client of Samsung SDS. Samsung SDS operating a risk management system which facilitate the cooperation of the Data Center Innovation Team and the ESG council in the area to enable prompt and effective handling of physical damage due to natural disasters.

2. Transitional risks and opportunities
As the international climate negotiations under the UNFCCC strengthens global ambition on managing greenhouse gas emissions along with adaptation to climate change, Korean government has also tightened regulations on climate change. In 2018, amendments to the 2030 Greenhouse Gas Roadmap of Korea have been announced to increase domestic emissions reduction targets in various industrial sectors. Samsung SDS monitors these global and domestic changes in GHG-related regulations, which accelerate the company to come up with progressive set of actions to reduce GHG emissions along with the introduction of more resilient and adaptive data centers.

[Examples of actions for risks]
1. Transitional risk
As the global climate change and sustainable management standards are strengthened, Samsung SDS defines them as potential risks. For instance, we voluntarily implemented UN SDGs (Sustainable Development Goals), including the response to climate change. In addition, Samsung SDS has established a 'Carbon Zero Initiative' strategy to proactively manage environmental impact such as increased demand on data center energy and GHG in order to achieve a sustainable business.

2. Physical risk
To improve the vulnerability of the data center to climate change and to improve its resiliency, Samsung SDS has acquired and continuously managed its environmental management system (ISO14001) and green certification at its data centers. In addition, Samsung SDS strengthens the integrated monitoring system over infrastructure, security facilities and data center management and conduct activities in response to climate change risks when selecting new data center locations.

C2.2a

(C2.2a) Which risk types are considered in your organization's climate-related risk assessments?

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	As our Code of Conduct states that “We comply with all laws and ethical standards,” Samsung SDS adheres to laws that we are subject to. Climate-related regulation is no exception. We monitor our adherence to the current regulations through ISO14001, certified

		Environmental Management System. Risk related to carbon emission has not been substantive for Samsung SDS for we are an ICT services company; we are not asset-intensive nor we are not operating in a carbon-intensive industry. Therefore, we are not subject to the same level or speed of regulatory change as companies in high-emitting sectors. Samsung SDS is generally only required to report emissions and energy consumption. With compliance to the Korean Emission Trading Scheme, Samsung SDS reports greenhouse gas emissions. The government allocates carbon emission quota for each corporate. Although quota can be bought and sold, we recorded greenhouse gas emissions that were about 9% lower than the government quota through active management activities. As approximately 90% of GHG emissions is generated from our data centers, we have a team to be responsible for data center operation and management along with climate change mitigation strategy. We established a GHG inventory system to aggregate GHG emissions and energy consumption of all worksites. Samsung SDS also supports TCFD and analyzed climate change risks. GHG Emissions Trading Scheme could be a financial risk which may provoke the purchasing cost of an increase of carbon credits purchase cost, investment in GHG reduction facilities and verification. Particularly, carbon credits are expected to be insufficient despite the carry-over from the previous year due to a 10% paid allocation of carbon credit in Phase 3. The current carbon credit price (approximately KRW 24,100/tCO2eq, the average transaction price of the Korean GHG emissions trading scheme KAU20 in 2020) based on the 'RCP 8.5 and IEA policy standard Scenario' is a risk. However, Approximately 82,500 KRW/Ton of extra spending is anticipated in order to achieve the goal of Carbon Net Zero Initiative by 2050.
Emerging regulation	Relevant, always included	Samsung SDS must comply with current regulations as mentioned above and emerging regulations in order to comply with our Code of Conduct, "We comply with all laws and ethical standards." We especially have an eye on climate-related regulation as this is an area that has become a more important issue in recent years. Samsung SDS is a global company operating 68 offices worldwide. Therefore, we monitor regulations including climate change related regulations especially in which our offices are located we do not run carbon-intensive business. Examples of emerging regulation we are monitoring are global carbon tax and carbon border adjustment mechanism which already have been implemented to some countries around the globe. Although approximately 90% of our GHG emissions are from data centers in Korea and are regulated by K-ETS, Samsung SDS closely monitors such regulations due to logistics service, one of

		our business domains. Samsung SDS' logistics business (4PL) is not directly involved with transportation, we do pay close attention to carbon emissions of our suppliers/partners. Further, we make various company-wide efforts to reduce carbon emissions and save energy.
Technology	Relevant, always included	Technology related risk is mainly related to our data centers where about 90% of our GHG emissions occurring. We expect data center outsourcing business to expand in the era of the 4th Industrial Revolution, and, therefore, we are preparing to improve our energy efficiency of our data centers. 1) Free cooling system: Cooling server rooms is critical in terms of energy efficiency of data center. In order to avoid the risk of increased cooling energy in data centers due to climate change and global warming, free cooling system and free air cooling system have been implemented to our data centers. We also have been optimizing through the separation and containment of cold and hot aisles within the server room and through the minimization of cool air leaks. Chuncheon Data Center is situated in Chuncheon, the coldest area among data center locations. Cool air of Chuncheon directly flows into the server room for 9 months throughout the year, which dramatically decreased its consumption of cooling power. In addition, high-efficiency air-cooled chillers and 99% high-efficiency UPS were adopted and power transformation steps were reduced to conserve the energy use of infrastructure equipment to ultimately reach a PUE level of 1.2, the highest-ever recorded in Korea. 2) Renewable energy: The company utilizes a wide range of renewable energy-based energy resources such as solar water heating, photovoltaic power generation, geothermal cooling/heating system, fuel cell technology, natural lighting, geothermal heat pump, etc. to meet the energy needs of data centers. Especially we are expanding the use of clean energy by installing photovoltaic system and solar water heating systems on rooftops of the data centers. Sangam Data Center saves up to KRW 140 million in operating expenses annually by applying a 400RT geothermal heat pump that uses groundwater that has very small temperature changes throughout the year. Samsung SDS continues to improve PUE by expanding the use of renewable energy, implementing high-efficiency power facilities, controlling the number of AHU (Air Handling Unit) using CFD (Computational Fluid Dynamics), and exploring optimal cooling conditions through machine learning. Samsung SDS improves energy efficiency through the construction and operation of eco-friendly data centers. Corporate reputation, market

		power, and corporate value can be strengthened when satisfying stakeholders' increasing demands for low-carbon data centers.
Legal	Relevant, always included	Samsung SDS adhere to all laws and regulations as addressed the above. Therefore, understanding regulation and risks is also a major consideration to us. To date, Samsung SDS has not had climate-related litigation, nor do we believe we have financial liability for causing climate change due to the nature of our business, but we continue to re-assess the potential risks which might cause legal issues. There can be a risk for excessive GHG emissions; violating GHG Target Management or ETS. However, we believe that Samsung SDS has low potential of violating such laws for we are a professional services company not operating in a high-intensive industry. Regardless, we monitor and control our emissions closely. Another risk is related to our data center. For it is our one of business domains to provide IT services, physical damage of the data centers can cause Samsung SDS to fail to meet the terms of contracts. Due to climate change, chance of natural disasters causing physical damage to the data centers may increase in the future. Thus, the contractual terms for IT services and procurement of Samsung SDS may need to be reviewed to avoid potential legal conflict with the client or suppliers when the physical damage related to natural disasters affect the quality of the IT services of Samsung SDS.
Market	Relevant, always included	As an IT services company, understanding market expectations is critical to success and to protect shareholder values. Climate change has resulted in an increase of social demands to improve resource utilization efficiency related to carbon emissions such as consumables, raw materials, and energy. Therefore, Samsung SDS is in the process of developing safer, resilient and energy-saving data centers to satisfy those demand of the market. We have established PMS (Power Management System) to monitor IT equipment usage and data center facility usage in real time for efficient energy management to measure, evaluate, and manage energy usage for each sector, while monitoring the results of various energy efficiency improvement activities.
Reputation	Relevant, always included	Reputation risk is highly relevant to Samsung SDS as it may affect our business because we are an IT service provider that talent attraction and client trust are most considerable. Thus, hiring highly skilled individuals, being innovative, being able to deliver services and solutions, and being a good corporate citizen all matter to us. Therefore, climate-related risks is also important and relevant. Samsung SDS considers that there is correlation between climate change management and corporate reputation. Although Samsung

		SDS is not considered a high-risk industry, we do continue to expand our efforts to be a leading ICT service provider. We are an IT services company, are not asset-intensive, and therefore are not subject to any substantive regulations. However, we continue to innovate to improve how we manage carbon and energy internally, and also helping companies solve their sustainability and climate-related risk problems. As of the social demands for companies to be environment-friendly, Samsung SDS continues to evolve to meet our shareholders' expectations.
Acute physical	Relevant, always included	Acute physical risks exist primarily because we are an IT service provider which have data centers. This type of operational risks are beyond our control. While not the only driver of disruption, extreme weather events have the potential to disrupt operations by impacting our people and our locations. For example, our facilities (e.g., data center) might be affected by extreme weather event which may impair our ability to maintain service to clients. Such interruption may cause system error, power outage, and more. For in case of such natural disaster (e.g., flooding, typhoons, severe droughts, etc.) we have established emergency and disaster preparedness and response guide and system, and designed measures to protect major facilities such as data centers to minimize risks of such events and to ensure the safety of our people. Especially, we have tried our best to prevent the spread of disease under the unprecedented pandemic, COVID-19, situation. We organized emergency response system, established response process for emergency situations, have operated in-house quarantine center and resided medical staff, and prepared contingency plan. We have developed IT solutions (e.g., Virtual Desktop Infrastructure, in-house collaboration solutions, quarantine self-survey and guide through chatbot, etc.) to work from home to protect our people and to provide convenient work environment. Further, because mutual growth is one of values to pursue, we have been providing quarantine supplies (e.g., masks, sanitizers, etc.) to our suppliers/partners, and offering our collaboration solutions to SME suppliers/partners for free.
Chronic physical	Relevant, always included	Risks caused by climate change is inevitable to all. Samsung SDS, too, recognizes the issue, and considers ways how to respond. We recognize that conditions change over time and therefore monitor climate change trend (especially global warming) or energy and water scarcity, but these have not substantively impacted us to date. Global warming caused by climate change may affect the operational cost of our data centers. Cooling a server room consumes the most energy to operate a data center. Result of our internal analysis shows a correlation between global warming and data center operation cost;

		energy cost rises by 1.1% when 1°C increases. That is, cooling cost increases significantly as global warming continues to rise the overall global temperature. If the average temperature rises by 2°C, the energy cost could increase by about 500 million won per year, and if the average temperature rises by 4°C, the cost will increase by about 800 million won.

C2.3

(C2.3) Have you identified any inherent climate-related risks with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.3a

(C2.3a) Provide details of risks identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation

Carbon pricing mechanisms

Primary potential financial impact

Increased indirect (operating) costs

Company-specific description

Samsung SDS is subject to the allocation of GHG emission allowances under the Emission Trading Scheme of Korea. Annually Samsung SDS should submit emission allowances to the Korean government in accordance with the actual GHG emissions verified each year. Therefore, it is necessary to reduce GHG emissions which accelerate the investment in GHG reduction and energy saving activities in order to reduce the compliance cost of purchasing emission allowances from the carbon market in Korea. In case of failure to fulfilling the required amount of carbon credit, there is a fine posed by the government corresponding to three times the average price of the carbon credit in the current carbon market in accordance with the "Enforcement Decree of the Act on the Allocation and Trading of Greenhouse-Gas Emission Permits".

Time horizon

Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, an estimated range

Potential financial impact figure (currency)

Potential financial impact figure – minimum (currency)
0

Potential financial impact figure – maximum (currency)
1,600,000,000

Explanation of financial impact figure
The implementation of the Emission Trading Scheme has the financial risk of the purchase cost of allowance or the imposition of fines. Our last year's GHG emissions was 16,665 tons, and GHG emissions may increase up to 10% each year. In this case, 10% increase in GHG emissions corresponds to roughly 9,500 tCO2e, and it will have a financial impact of up to KRW 1.6 billion: GHG emissions over quota 16,665 tons x (price of Korean Allowance Unit 24,100 KRW/tCO2 + fine 72,300).

Cost of response to risk
400,000,000

Description of response and explanation of cost calculation
In order to manage the risks, it is investing energy saving facilities such as free cooling system and constructing a new data center in Chuncheon, where the average temperature is low in our country.

Comment
Samsung SDS responds to the Emission Trading Scheme by actively implementing greenhouse gas emission reduction activities centered on products and business sites. In 2020, Samsung SDS reduced GHG emissions by 2,398 tCO2eq in 2020 through free cooling system, solar water heating, and use of renewable energy (solar power and geothermal energy). The estimated costs of implementing these GHG mitigation activities in 2020 is 2,268,000,000 KRW.

Identifier
Risk 2

Where in the value chain does the risk driver occur?
Direct operations

Risk type & Primary climate-related risk driver

Acute physical

Increased severity and frequency of extreme weather events such as cyclones and floods

Primary potential financial impact

Decreased asset value or asset useful life leading to write-offs, asset impairment or early retirement of existing assets

Company-specific description

Physical impacts of climate risk in Korea take the form of increased frequency and severity of storms and flooding. This could lead to blackout or other forms of problems regarding energy supply, temporary closure of data centers, partial destroy of electronic data and/or delay of delivering timely IT services to the client. For example, frequency of replacing data center air filtration can be increased due to yellow dust and micro-dust caused by global warming and use of fossil fuel. At the same time, such dust may decrease power generation of solar power may decrease due to lack of sunlight, which in turn results in the increased consumption of grid electricity which leads more electricity cost as well as carbon cost for more GHG emissions.

Time horizon

Short-term

Likelihood

Very likely

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

26,041,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Estimated financial implications of the risk before action taken (26,040 million KRW) is based on the assumption that the corporate asset value would drop 0.4% if the 2 ℃ of global warming due to climate change (reference: Green European Foundation, GEF). The estimated risk is 26,041 million KRW, 0.4% of the corporate asset value of Samsung SDS (6,510 billion KRW in the year of 2020).

Cost of response to risk

17,000,000,000

Description of response and explanation of cost calculation

We invested in energy saving facilities starting from end of 2016 and carried out 27.6 billion KRW in 2017. In addition to investment, it is also pushing for various activities such as improvement of operation.

Comment

Based on the scenario analysis done by Samsung SDS, climate change may affect the general O&M cost for data centers increased by 10% to take precautionary and protective measures to deal with potential damage from natural disasters. When the data center maintenance cost rises by 10% due to the previously mentioned risks, an additional cost of about KRW 1.7 billion per year can be incurred.

Identifier

Risk 3

Where in the value chain does the risk driver occur?

Downstream

Risk type & Primary climate-related risk driver

Reputation

Increased stakeholder concern or negative stakeholder feedback

Primary potential financial impact

Decreased revenues due to reduced demand for products and services

Company-specific description

Samsung SDS is required by a variety of stakeholders to disclose its policy and response related to climate change, which is directly linked to the company's reputation. As non-financial information, such as CDP and DJSI, is used as a major criterion of the company's investment value, Samsung SDS recognizes the need to implement management activities from a long-term and active perspective in consideration of ESG factors. If response to climate change and information disclosure are insufficient, there is a risk withdrawing investment and losing customers. Recently, the National Pension Service declared that companies with inadequate ESG responses would be excluded from investment. If Samsung SDS does not properly manage non-financial factors such as climate change response and greenhouse gas reduction, it risks falling market value of its stock price due to withdrawing investment.

Time horizon

Medium-term

Likelihood

More likely than not

Magnitude of impact

High

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

94,303,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Corporate reputation is an intangible factor and it is practically difficult to find a reliable methodology for converting it to quantitative financial value. However, it is anticipated that more investors will make investment decisions based on socio-environmental factors as well as financial value in the future. Therefore, we estimated the financial impact from socio-environmental factors assuming scenarios in which investors would be excluded from new investments or withdrawn from existing investments due to the deteriorating reputation associated with climate change. This could include loss of client relationships/business, failure to secure new business and/or reduced shareholder value. If the National Pension Service retrieves 10% of its current share of stock, there could be a financial impact of around KRM 94 billion KRW. (Samsung SDS stock price in 11th July 2020: 182,000 KRW x Number of shares of the National Pension Service: 5,181,484 = 94,303 million KRW)

Cost of response to risk

448,000,000

Description of response and explanation of cost calculation

Samsung SDS is strongly committed to corporate actions related to climate change. Our lines of business have specific and measurable climate-related goals and metrics. To communicate with stakeholders and disclose environmental engagements, we publish sustainability report and participate in CDP every year. We conduct materiality assessment every year to analyze our key sustainability issues. The result shows that the responding to climate change issue is becoming more important topic every year. We support TCFD and disclose information as recommended. The cost of management is calculated based on the sum of yearly-salary for 3 staffs in charge of relevant works (248 million KRW/year) and consultation fee for sustainability report and materiality assessment (200 million KRW/year).

Comment

C2.4

(C2.4) Have you identified any climate-related opportunities with the potential to have a substantive financial or strategic impact on your business?

Yes

C2.4a

(C2.4a) Provide details of opportunities identified with the potential to have a substantive financial or strategic impact on your business.

Identifier

Opp1

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient modes of transport

Primary potential financial impact

Reduced direct costs

Company-specific description

Samsung SDS offers logistics services globally based on our unique IT capabilities such as Cello (Integrated logistics platform that is the basis of Samsung SDS' global logistics services). It operates global supply chain with integrated logistics outsourcing system for 4PL logistic services. Besides Cello, Samsung SDS has developed other IT-based services including Cello Square (One-stop platform for global e-Commerce logistics), Cello Trust (Block Chain-based platform for supply chain traceability), Cello Digital Services (IT-based logistics service package specialized for each logistics area). These services contribute to low-carbon logistics of Samsung SDS itself and other client logistic companies by achieving efficiency in terms of energy and resources through saving time for logistics and saving fuel for logistics. As climate change accelerate the transformation into low-carbon logistics, Samsung SDS is further developing the feature of low-carbon and zero-carbon logistics by periodical improvement of these IT service platform.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

2,242,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

While four major logistic services of Samsung SDS (Cello, Cello Square, Cello Trust, Cello Digital Services) as a whole have a benefit of saving resources and energy, the exact degree of such benefit is subject to fluctuation depending on the specific circumstances of installing and operating the solutions. However, as a general level, installing these four IT platforms in a harmonious manner may result in 10 to 20% increased efficiency in saving fuel for logistics based on the internal analysis of Samsung SDS. As Samsung SDS consumes 14,185 kilo liters of diesel in 2020 for downstream logistic business which costs roughly 20,176 million KRW in 2020. If we suppose that 10% of the logistics cost is saved in 2020 by installing this technology, the saved cost for Samsung SDS in 2020 is considered as 1,576,196 kilo liters of diesel which result in the saved cost of 2,242 million KRW.

Cost to realize opportunity

68,436,000,000

Strategy to realize opportunity and explanation of cost calculation

(3) Strategy of Samsung SDS for realizing this opportunity is continuously improving the quality of these IT services including Cello, Cello Square, Cello Trust, Cello Digital Services. R&D cost for reviewing and improving these services occupies roughly 1.2% of the revenue of Samsung SDS' logistics business (5,702,982 million KRW). Therefore, R&D cost for logistics IT services of Samsung SDS corresponds to 68,436 million KRW.

Comment

The cost of participating in ETS market is 550,000 KRW per year.

Identifier

Opp2

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Resource efficiency

Primary climate-related opportunity driver

Use of more efficient modes of transport

Primary potential financial impact

Reduced direct costs

Company-specific description

Based on the internal research in 2020, Samsung SDS regards climate change as one of the important drivers underlying the social demand for advanced and eco-friendly data center. In this regard, Samsung SDS has decided to expand the construction and operation of eco-friendly data centers with improved energy efficiency and better security, safety and resiliency. Samsung SDS is operating 17 data centers worldwide and these data centers are being improved based on growing social demand for eco-friendly data centers with low-carbon energy, high level of energy independency, and resiliency to extreme weather events among other advanced features. By doing this, we expect that corporate reputation, market power, and corporate value of Samsung SDS will be strengthened as well as satisfying stakeholders' increasing demands for low-carbon data centers.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

400,000,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Samsung SDS is applying climate technology to existing data operations and new data centers. Samsung SDS closely analyzes utilities such as air conditioning, electricity, firefighting, and security on data centers, considering the impacts of abnormal temperatures or disasters caused by climate change. Additionally, we strengthen the integrated monitoring system over infrastructure, security facilities and data center management and conduct activities in response to climate change risks when selecting new data center locations. Samsung SDS assesses the impact of largely two categories of data center improvements, namely measures for 1) GHG mitigation and 2) adaptation. In our internal research, each category of mitigation and adaption improvement may account for 5% increase of the revenue of Samsung SDS related to ITO and cloud services. Therefore, as the revenue for cloud and ITO is 3,942,131 million KRW, potential increase of revenue thanks to these improvements for data centers may be up to roughly 400,000 million KRW.

Cost to realize opportunity

214,000,000

Strategy to realize opportunity and explanation of cost calculation

Major activities of improving data center related to climate change include advancement of PUE (Power Usage Effectiveness) indicators by expanding the use of renewable energy, implementing high-efficiency and security measures for power facilities, controlling the number of AHU (Air Handling Unit) using CFD (Computational Fluid Dynamics), and exploring optimal cooling conditions through machine learning. The expected cost for doing major activities are 64 million KRW for installing solar-power generation facility, 150 million KRW as precautionary measures for adapting climate change (upgrading the system of controlling the data center) at Sangam data center. In total, 214 million KRW is expected for doing the mitigation and adaption improvement activities for the year of 2021.

Comment

Identifier

Opp3

Where in the value chain does the opportunity occur?

Direct operations

Opportunity type

Products and services

Primary climate-related opportunity driver

Development and/or expansion of low emission goods and services

Primary potential financial impact

Increased revenues through access to new and emerging markets

Company-specific description

The demand for integrated ESG management and reporting solution for companies are expected to increase as Korean government has recently introduced a plan to adopt legal requirement for companies to manage their ESG performances in alignment with a variety of the ESG standards and frameworks. Based on the years of experience and knowledge of Samsung SDS, the company sees this as a business opportunity and reviewing the development of one centralized tool where client companies can manage, track and report ESG data and strategies. As more companies are recognizing the need for reliable systems to effectively manage and report the ESG data, Samsung SDS can provide a broad solution complete with the latest industry frameworks and standards to assist clients through the ESG reporting process, help manage sustainability risk and provide relevant insights to internal and external stakeholders.

Time horizon

Medium-term

Likelihood

Virtually certain

Magnitude of impact

Medium

Are you able to provide a potential financial impact figure?

Yes, a single figure estimate

Potential financial impact figure (currency)

132,333,000,000

Potential financial impact figure – minimum (currency)

Potential financial impact figure – maximum (currency)

Explanation of financial impact figure

Last year, over 100 companies disclosed their ESG related data through corporate sustainability reports, and the number is expected to be increased as Korean Government announced that all listed companies in Korea are required to open their ESG data by 2025. That is, it is soon to be a legal requirement to disclose corporate ESG data including their targets, performances, activities related to ESG indicators. In this context, our annual revenue is expected to be increased, up to 132,333 million KRW, if we occupy 1/3 of the Korean ESG platform market with our ESG platform.

Cost to realize opportunity

580,000,000

Strategy to realize opportunity and explanation of cost calculation

We strategically aim to develop an ESG platform including the following features:
1) With the platform, corporate may better understand and manage their ESG goals/performances in accordance with the ESG indicators such as KCGS (Korea Corporate Governance Service), K-ESG (Korea ESG Standards), Sustainability Accounting Standards Board (SASB), Task Force on Climate-Related Financial Disclosures (TCFD) and United Nations Sustainable Development Goals (UN SDGs) and others. Further, the platform will allow defining and tracking client-specific corporate goals and KPIs.
2) The platform will allow manage ESG risks including climate-related issues by providing industry-specific analysis to assess, manage and report the risks.
3) Samsung SDS ESG platform is to identify themes, understand relationships and inter-dependencies, and track ESG progress and status. The cost for developing these solutions will roughly be 414 million KRW per year in development phase and 166 million KRW per year in operation and improvement phase.

Comment

C3. Business Strategy

C3.1

(C3.1) Have climate-related risks and opportunities influenced your organization's strategy and/or financial planning?

Yes, and we have developed a low-carbon transition plan

C3.1a

(C3.1a) Is your organization's low-carbon transition plan a scheduled resolution item at Annual General Meetings (AGMs)?

	Is your low-carbon transition plan a scheduled resolution item at AGMs?	Comment
Row 1	No, and we do not intend it to become a scheduled resolution item within the next two years	

C3.2

(C3.2) Does your organization use climate-related scenario analysis to inform its strategy?

Yes, qualitative and quantitative

C3.2a

(C3.2a) Provide details of your organization's use of climate-related scenario analysis.

Climate-related scenarios and models applied	Details
RCP 2.6 RCP 8.5 IEA Sustainable development scenario Nationally determined contributions (NDCs)	Samsung SDS is undertaking qualitative and quantitative scenario analysis on the potential effects of increased extreme weather events. Scenario analysis is based on NDC which describes national policies and target for dealing with climate change issues. Under the Paris Agreement, the Korean Government set a goal of reducing greenhouse gas emissions by 37% compared to BAU by 2030. In 2030, 80.2% of this national target will be allocated to the companies regulated by emission trading system in Korea. There are annual GHG reduction targets for different industries. In addition, GHG reduction target specified in the NDC is in line with RCP 2.6 and BAU scenario and emissions suggested in the NDC corresponds to the RCP 8.5. Therefore, RCP 2.6 and RCP 8.5 may also be considered to be the scenarios based on which Samsung SDS implements scenario analysis. - Boundary of scenario analysis Samsung SDS establishes climate change scenarios on 2 major environmental areas (① physical environment, ② business environment such as regulation, market, technology level, etc.) and analyzes the risks of environments in

	reference to existing global standards such as CDP and TCFD. There are two scenarios for each environmental area and the company manages risks by comparing risks in 'RCP 2.6 and IEA Sustainable Development Scenario' to risks in 'RCP 8.5 and IEA Scenario based on current standards'. - Time horizon of scenario analysis Time horizon of scenario analysis related to climate change is done in terms of short (~ 5 years), intermediate (~ 10 years) and long-term (~ 20 years) in line with the time horizon for risk and opportunity analysis regarding climate change issues for Samsung SDS. - Subjects for scenario analysis Samsung SDS defines 6 areas for risk and opportunity analysis including government regulations, natural disasters, climate technologies, changing temperature and weather, market, reputation. As for business impact analysis, Samsung SDS decided 6 subjects of concern including financial impact, business strategy, products and services, workplaces, R&D, Value chain. - Major findings of scenario analysis 1) Temperature and weather changes: Risk of cooling cost for data center due to global warming 2) Natural disaster: Facility management risks due to climate change in terms of potential loss and damage along with adaptation facilities and equipment 3) Global and domestic regulation enhanced in the near future for Samsung SDS especially GHG emission regulation for logistics vehicles, market demand for more resilient data center, etc. The exemplary actions of Samsung SDS for further actions in consideration of scenario analysis (a) Establishment of company-wide measures to deal with climate change In 2020, as the level of compliance cost increases, Samsung SDS has decided to periodically plan and implement activities of reducing GHG emissions as well as monitoring the performance of such activities. (b) Actions for expanding environmentally-friendly data center should consider climate change risks and opportunities As one of the first actions decided by Samsung SDS after the consideration of scenario analysis regarding climate change, in January 2020, Samsung SDS decided to establish a Data Center Infra Management System (DCIM) to monitor the energy consumption of IT devices and data center facilities in real time in order to measure, evaluate, and reduce energy use in all components (air conditioning, electricity, firefighting, and security). Samsung SDS also developed an energy management system that is based on PUE to effectively respond to climate change policies and other regulations.

C3.3

(C3.3) Describe where and how climate-related risks and opportunities have influenced your strategy.

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	Factors including increased understanding and awareness about climate change and its causes and effects, as well as policy, reputation and financial factors are driving increased client demand for our low-carbon products and services. Based on the risk and opportunity analysis, we figured out climate change adds the value of eco-friendly data center. For that reason, we set our corporate strategy for 2030 about building safe and environmentally-friendly data center and improving safety, resiliency, and energy and information security of existing data center. Activities directly related to climate change include digital monitoring system for energy consumption, energy efficiency improvement measures and reduction in unnecessary usage of energy, etc.
Supply chain and/or value chain	Evaluation in progress	As our stakeholder's interest in climate change grows, we recognize the need to reduce GHG emissions in our value chain of suppliers as well as our own operation. For many of our suppliers, climate-related risks and opportunities are mainly related to the GHG emissions of vehicles for logistics. As global movement to low-carbon and green logistics are being witnessed, demand of our suppliers is growing for managing their fuel consumption and usage of low-carbon vehicles. Samsung SDS is planning to develop an initiative within the next 3 years to accelerate suppliers of value chain to enhance their capability in the area of low-carbon logistics.
Investment in R&D	Yes	Samsung SDS continuously conducts researches on climate change in order to enhance the competitiveness of our business. The studies are mainly related to IT solutions related to energy use efficiency, such as corporate ESG monitoring solutions, smart building solutions, and intelligent factory solutions. From 2020 to the years to come, Samsung SDS has decided to do intensive R&D activities for climate-change related areas. There is a close link between climate change and risks and opportunities of some IT solutions related to energy management and digital transformation of the companies.

Operations	Yes	Physical risks with implications for our operations include increased frequency and severity of storms with related flooding. IT services is exposed to the risk of natural disasters caused by abnormal weather conditions. We identified important physical risks such as power outages caused by natural disasters, and manages risks by focusing on risk hedges. One example is the uninterruptible power supply (UPS) which is being used as the emergency power generator to minimize the damage in a blackout situation. Samsung SDS also installed solar panel for electricity generation to enhance our capability in terms of energy independence and low carbon energy. For the time period from the year of 2020 to 2030, Samsung SDS will increase our renewable energy output to manage these risks in short- to medium term.

C3.4

(C3.4) Describe where and how climate-related risks and opportunities have influenced your financial planning.

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs	Samsung SDS considers climate-related risks and opportunities in our financial planning under the umbrella of our business continuity and resilience planning. However, it is not substantive enough for us yet to change our financial planning based on expectation of acute weather events or business disruption. Climate-related opportunities may influence our revenue forecast for Samsung SDS plans to pursue data and digital ESG management with customers in the era of the 4th industrial revolution. We will continuously share information and insights with experts to quickly identify changes brought by ESG and will promote long term ESG management based on digital technologies. To effectively respond to the growing demands for ESG management in the global market, Samsung SDS plans to build ESG platform that digitizes ESG management processes, including strategy, information management, monitoring, task management, and disclosure management. The data-based digital ESG platform will be launched on a pilot at the end of 2021. Samsung SDS plans to attempt a more structured and systematic approach to ESG management. Note that due to the fast-moving nature of IT industries we serve, we believe climate-related risks are less relevant. Although we acknowledge

		such risks as we analyzed based on TCFD recommendation, we have considered plans to minimize such risks as possible. Our Risk Management Council is responsible to manage and respond to the corporate-wide risks including that of environment change. Samsung SDS Major GHG Reduction Strategies include 1) establishment of integrated energy management system, 2) construction of eco-friendly data centers, 3) expansion of renewable energy use, and 4) server rooms and IT equipment energy efficiency improvement. For the year of 2020, to reduce GHG emissions, Samsung SDS performs various activities such as establishing an integrated energy management system, expanding eco-friendly data centers, implementing energy-efficient IT equipment and infrastructure, adopting renewable energy sources. Performance of such mitigation activities (monitored in amount of energy savings or tone of CO2 reduced) as well as cost for doing the activities are assessed quarterly and compiled and archived on an annual basis. That is, Samsung SDS are preparing to mitigate risks while we considers impact of such risk is low although we recognize this risk to highly likely to occur.

C3.4a

(C3.4a) Provide any additional information on how climate-related risks and opportunities have influenced your strategy and financial planning (optional).

It's clear that climate change is having an important on our business strategy. Climate change causes the increase of cooling system cost. Regarding ETS compliance, investment for energy saving facilities and verification cost of emission inventory and monitoring plan can increase our service cost. In this regard, we add cost saving plans and respond to climate change regulations as an important factor in our business strategy.
Elements of climate change have a considerable impact on our strategies. For example, global warming effect, ETS, sufficient allocation of emission units, increase of emission units, abnormal climates (e.g. very high temperature, typhoon) and demand from external interests to respond to climate change are elements of climate change influenced on our strategies.
Our business strategy is linked to GHG reduction targets. As a strategy to increase energy efficiency, we can reduce energy costs compared to competitors and increase cost competitiveness over the long term. It can have a good reputation impact. Also, we are doing our best to minimize GHG emissions through improving server efficiency using cloud computing technology, etc.

The most important element of short-term strategy impacted by climate change is ETS. We have done our best to save energy by various activities to meet allocated emission unit. But, it was never enough, so we purchased the carbon credits from other companies.
With the long term business strategy of climate change, new data center's construction site have been selected in cold area, Chuncheon city and currently being constructed by July 2019. And we regard energy efficiency as No.1 priority using by newly high efficiency technologies such as free cooling and free air cooling system.

Facility group is responsible for gathering information on climate change (international conferences, domestic laws and policies, customer requirements, weather conditions, NGOs

and media issues, etc.) by participating in press, seminars. Report the gathered information internally and, if important, report to the unit leader or CFO. Then they make an appropriate decision and Facility group has a progress in which it reflects the decision in their work. For example, since 2015, Suwon Data Center (DC) has been involved in ETS. As a result of estimating emissions, it has been concluded that allocated emission units are insufficient. In this regard, the department has concluded reduction projects and CFO approved the final approval with investment of 3.36 billion KRW to introduce the reduction facilities. After that, the department proceeded with the construction until 2016, and it's currently operating normally and in reducing GHG. In addition, we are doing various non-investment energy saving campaigns. As a result, GHG emission at Suwon DC were reduced by about 5,000 tonCO2eq compared to last year, and total GHG emission dropped 4.5% year-on-year.

We analyze the monthly energy usage and compare it with the previous month or year to find the reason for the change. And we deal with short-term issues of change immediately, and consider whether to invest for the long-term. In addition, several reduction activities is monitored monthly to encourage. It's reported to CEO or CFO on an irregular basis on important issues such as demand of outer emission units.
Since data centers have a large amount of energy required for cooling, energy efficiency is considered first when selecting location, cooling solutions, energy supply systems, facilities and Life cycle energy cost is reviewed. Chuncheon data center, which is underconstructed, was designed to reduce energy consumption by 10% more than Sangam data center, which newly opened in 2015.

C4. Targets and performance

C4.1

(C4.1) Did you have an emissions target that was active in the reporting year?

Intensity target

C4.1b

(C4.1b) Provide details of your emissions intensity target(s) and progress made against those target(s).

Target reference number

Int 1

Year target was set

2020

Target coverage

Company-wide

Scope(s) (or Scope 3 category)

Scope 1+2 (location-based)

Intensity metric

Metric tons CO2e per unit revenue

Base year

2020

Intensity figure in base year (metric tons CO2e per unit of activity)

8,648

% of total base year emissions in selected Scope(s) (or Scope 3 category) covered by this intensity figure

100

Target year

2030

Targeted reduction from base year (%)

21

Intensity figure in target year (metric tons CO2e per unit of activity) [auto-calculated]

6,831.92

% change anticipated in absolute Scope 1+2 emissions

21

% change anticipated in absolute Scope 3 emissions

Intensity figure in reporting year (metric tons CO2e per unit of activity)

8,648

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this a science-based target?

No, but we anticipate setting one in the next 2 years

Target ambition

Please explain (including target coverage)

Because approximately 90% of our GHG emissions is from data centers, it is important for us to reduce energy used to cool our data centers' server rooms to reduce the amount of emissions. To reduce GHG emissions and effectively manage energy use at the data centers, Samsung SDS adapted PUE (Power Usage Effectiveness), a ratio that describes how efficiently a data center uses energy, and has established target to

improve PUE at each data center. Average PUE across our data centers for the last year was 1.54 achieving our 2020 target for data center energy efficiency.

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?

Target(s) to increase low-carbon energy consumption or production

C4.2a

(C4.2a) Provide details of your target(s) to increase low-carbon energy consumption or production.

Target reference number

Low 1

Year target was set

2020

Target coverage

Company-wide

Target type: absolute or intensity

Absolute

Target type: energy carrier

Electricity

Target type: activity

Consumption

Target type: energy source

Low-carbon energy source(s)

Metric (target numerator if reporting an intensity target)

MWh

Target denominator (intensity targets only)

Base year

2020

Figure or percentage in base year

3,193

Target year

2030

Figure or percentage in target year

6,994

Figure or percentage in reporting year

3,193

% of target achieved [auto-calculated]

0

Target status in reporting year

New

Is this target part of an emissions target?

Yes, this target is about energy saving and this target is part of the GHG mitigation target in carbon intensity for Samsung SDS specified in C.C.4.1b of this document

Is this target part of an overarching initiative?

No, it's not part of an overarching initiative

Please explain (including target coverage)

C4.3

(C4.3) Did you have emissions reduction initiatives that were active within the reporting year? Note that this can include those in the planning and/or implementation phases.

Yes

C4.3a

(C4.3a) Identify the total number of initiatives at each stage of development, and for those in the implementation stages, the estimated CO2e savings.

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	0	0
To be implemented*	4	876
Implementation commenced*	16	1,652
Implemented*	4	1,676
Not to be implemented	0	0

C4.3b

(C4.3b) Provide details on the initiatives implemented in the reporting year in the table below.

Initiative category & Initiative type

Energy efficiency in buildings

Other, please specify

Cooling System

Estimated annual CO2e savings (metric tonnes CO2e)

1,489

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

302,721,038

Investment required (unit currency – as specified in C0.4)

2,168,000,000

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

Initiative category & Initiative type

Energy efficiency in buildings

Other, please specify

Adjustment of internal energy usage standard for saving energy

Estimated annual CO2e savings (metric tonnes CO2e)

227

Scope(s)

Scope 2 (location-based)

Voluntary/Mandatory

Voluntary

Annual monetary savings (unit currency – as specified in C0.4)

10,743,121

Investment required (unit currency – as specified in C0.4)

0

Payback period

4-10 years

Estimated lifetime of the initiative

6-10 years

Comment

C4.3c

(C4.3c) What methods do you use to drive investment in emissions reduction activities?

Method	Comment
Compliance with regulatory requirements/standards	ETS compliance Samsung SDS plans new GHG reduction project every year to respond to the target management system and continues to manage the existing GHG reduction project to reduce the cost of complying the requirement of K-ETS
Employee engagement	KPI of energy management group staffs As active participation of employees is essential in reducing of energy consumed in lighting, heating, and cooling, and promoting the use of energy saving devices, we encourage employees to voluntarily participate.
Internal incentives/recognition programs	We provide the bonus for finding energy saving items to all employee who are suggested.

C4.5

(C4.5) Do you classify any of your existing goods and/or services as low-carbon products or do they enable a third party to avoid GHG emissions?

Yes

C4.5a

(C4.5a) Provide details of your products and/or services that you classify as low-carbon products or that enable a third party to avoid GHG emissions.

Level of aggregation

Group of products

Description of product/Group of products

Samsung SDS provides advanced logistics services on Cello, our integrated logistics platform: end-to-end logistics service covering international/inland shipping, warehouse management, and 4PL services including consulting and IT services. Cello covers all areas of logistics, including international transport, customs clearance, inland transport, warehousing, last-mile delivery (LMD), reverse logistics, etc. It also helps manage master data, contracts, invoicing, and others that are commonly required in logistics. On Cello, you can track the status of your shipments in real time while also having access to every function you need for global logistics, such as operation progress and indicators. Our Cello solution allows our clients to optimize the routes and therefore minimize the carbon emissions during logistics process.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

51.8

Comment

Level of aggregation

Product

Description of product/Group of products

Manufacturing Environment Monitoring: Nexplant

Samsung SDS is working to develop an advanced Intelligent Factory business. To this end, we realize intelligence in all areas of manufacturing based on the Nexplant platform, which integrates new information technologies such as big data, AI, IoT, blockchain, and cloud.

Nexplant provides an automatic control system for safe and smart operation by monitoring and controlling the facilities used in factories (electricity, air conditioning, water, wastewater, etc.) and enables real-time IT-based monitoring and management of air/water pollutants with its own state-of-the-art remote monitoring system. 20 workplaces of 7 companies use Samsung SDS' Nexplant platform to detect anomalies in real-time and predict failure to increase the facility operation rate, while improving quality by optimal control and analysis.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product and avoided emissions

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

0.83

Comment

Level of aggregation

Group of products

Description of product/Group of products

Data Center Outsourcing and Hybrid Cloud
In the era of the 4th Industrial Revolution, the data center outsourcing business is expected to grow along with data usage increase. Samsung SDS plans to build additional data centers and has established a 'Carbon Zero Initiative' strategy to proactively manage environmental impact such as increased demand on data center energy and GHG in order to achieve a sustainable business.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

10.54

Comment

Level of aggregation

Product

Description of product/Group of products

Building Energy Efficiency Management System: Brightics IoT BMS
Samsung SDS contributes to building energy efficiency through the Brightics IoT BMS (Building Management System) based on its accumulated IoT technology. With Brightics IoT BMS, we can collect and analyze building energy data to come up with our saving plan, as well as improve
the energy management level. Energy aggregation, demand forecasting, and operational status analysis can reduce energy use by 9~13% per year on average.

Are these low-carbon product(s) or do they enable avoided emissions?

Low-carbon product

Taxonomy, project or methodology used to classify product(s) as low-carbon or to calculate avoided emissions

Evaluating the carbon-reducing impacts of ICT

% revenue from low carbon product(s) in the reporting year

3

Comment

C5. Emissions methodology

C5.1

(C5.1) Provide your base year and base year emissions (Scopes 1 and 2).

Scope 1

Base year start

January 1, 2020

Base year end

December 31, 2020

Base year emissions (metric tons CO2e)

3,487.64

Comment

Scope 2 (location-based)

Base year start

January 1, 2020

Base year end

December 31, 2020

Base year emissions (metric tons CO2e)

91,794.58

Comment

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.2

(C5.2) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.

IPCC Guidelines for National Greenhouse Gas Inventories, 2006
ISO 14064-1
Korea GHG and Energy Target Management System Operating Guidelines
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

C6. Emissions data

C6.1

(C6.1) What were your organization's gross global Scope 1 emissions in metric tons CO2e?

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)

3,488

Start date

January 1, 2020

End date

December 31, 2020

Comment

Samsung SDS's fiscal 2020 Scope 1 GHG emissions resulted from 1) leased car usage by our employees and 2) fuel usage in locations where we have operational control of boilers and generators.

Past year 1

Gross global Scope 1 emissions (metric tons CO2e)

4,300

Start date

January 1, 2019

End date

December 31, 2019

Comment

Past year 2

Gross global Scope 1 emissions (metric tons CO2e)

4,429

Start date

January 1, 2018

End date

December 31, 2018

Comment

Past year 3

Gross global Scope 1 emissions (metric tons CO2e)

4,544

Start date

January 1, 2017

End date

December 31, 2017

Comment

C6.2

(C6.2) Describe your organization's approach to reporting Scope 2 emissions.

Row 1

Scope 2, location-based

We are reporting a Scope 2, location-based figure

Scope 2, market-based

We have no operations where we are able to access electricity supplier emission factors or residual emissions factors and are unable to report a Scope 2, market-based figure

Comment

C6.3

(C6.3) What were your organization's gross global Scope 2 emissions in metric tons CO2e?

Reporting year

Scope 2, location-based

91,795

Start date

January 1, 2020

End date

December 31, 2020

Comment

Past year 1

Scope 2, location-based

92,778

Start date

January 1, 2019

End date

December 31, 2019

Comment

Past year 2

Scope 2, location-based

90,161

Start date

January 1, 2018

End date

December 31, 2018

Comment

Past year 3

Scope 2, location-based

92,144

Start date

January 1, 2017

End date

December 31, 2017

Comment

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?

No

C6.5

(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

Evaluation status

Relevant, calculated

Metric tonnes CO2e

41,761

Emissions calculation methodology

Calculation formula: Total hardware purchases for 2020 (million/year) * Emission coefficient (CO2eq / million)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Based on internally managed hardware purchase amount data, the company manages greenhouse gas emissions from the use of purchased products and services by utilizing domestic and foreign ETS emission factors.

Capital goods

Evaluation status

Relevant, calculated

Metric tonnes CO2e

96

Emissions calculation methodology

Calculation formula: Laptop, desktop, monitor purchases (large/year) * emission coefficient by product (kgCO2eq/year)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The company manages the purchase volume data of laptops, desktops, and monitors, and manages greenhouse gas emissions by utilizing the greenhouse gas emission coefficient of certified environmental performance labelling products provided by the Ministry of Environment.

Fuel-and-energy-related activities (not included in Scope 1 or 2)

Evaluation status

Not relevant, explanation provided

Please explain

Samsung SDS annually calculates and reports the GHG emissions to the Korean government as part of legal requirement specified under the domestic regulation on emission trading scheme. The annual report of GHG emissions prepared by Samsung SDS is also utilized in CDP reporting. As the report deals with 100% of scope 1 and 2 emissions, there is no GHG emissions subject to this category of fuel-and-energy-related activities (not included in Scope 1 or 2).

Upstream transportation and distribution

Evaluation status

Not relevant, explanation provided

Please explain

No upstream transportation and distribution is associated with the business of Samsung SDS as it is mainly related to the development of IT-based platforms and businesses as well as logistics. Therefore, no upstream transportation or distribution is basically necessary for Samsung SDS and no such action occurs in the year of 2020.

Waste generated in operations

Evaluation status

Relevant, calculated

Metric tonnes CO2e

8.6

Emissions calculation methodology

Calculation formula: Amount of garbage bag generated by size of 2020 (ea) x liter of garbage bag x density (kg/liter) x emission coefficient (kgCO2/household waste kg)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

The company collects data on the amount of garbage bags generated from Pangyo Campus, and collects and manages waste generated from the West/East campus. Waste-related emissions are managed by utilizing density and greenhouse gas emission factors provided by the state based on each generation data.

Business travel

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,470

Emissions calculation methodology

Calculation formula: Employee overseas business trip distance (km) * Emission coefficient (gCO2eq/km)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

Using information on overseas business trips sampled in 2020, the total amount of greenhouse gas emissions for employees due to business trips by means of transportation was calculated.

Employee commuting

Evaluation status

Relevant, calculated

Metric tonnes CO2e

6,168.5

Emissions calculation methodology

Calculation formula: Number of employees (person) x proportion of use (%) x travel distance (km/person) x emission coefficient (gCO2/person/km)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

It was calculated based on the current status of commuting distance between employers and employees managed by the company.

Upstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

For the whole period of 2020, there was no upstream leased asset for Samsung SDS. (i.e. no employees of Samsung SDS are working in the leased asset in 2020). Therefore, this category is not applicable for Samsung SDS.

Downstream transportation and distribution

Evaluation status

Relevant, calculated

Metric tonnes CO2e

1,892,416.9

Emissions calculation methodology

Calculation formula: Samsung SDS Domestic Business Distance (km) x Weight of Cargo (ton) x Vehicle Emission Factor (gCO2/km)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

We manage downstream transportation and distribution travel distances by truck capacity. Based on the data, the company manages greenhouse gas emissions by utilizing the weight of transport cargo based on data from Statistics Korea and the greenhouse gas emission coefficient by truck capacity based on CDM methodology.

Processing of sold products

Evaluation status

Not relevant, explanation provided

Please explain

As services sold by Samsung SDS does not require additional processing before the utilization of such services by the end-users, this category is not applicable for Samsung SDS.

Our business is focused on services and solutions rather than goods. So we do not process sold goods.

Use of sold products

Evaluation status

Not relevant, explanation provided

Please explain

The services of Samsung SDS is mainly related to the production of intellectual property which does not incur the GHG emissions during the usage of services. In addition, fuel consumption of transportation vehicles associated with logistics business of Samsung SDS is considered in the Scope 3 Category “Upstream transportation and distribution”. Therefore, this category of “Use of sold products” is not applicable for Samsung SDS.

End of life treatment of sold products

Evaluation status

Not relevant, explanation provided

Please explain

The services of Samsung SDS is mainly related to the production of intellectual property which does not incur the GHG emissions during the end-of-life stage of services such as GHG emissions from disposing used products or treating physical waste. Therefore, this category of “Use of sold products” is not applicable for Samsung SDS.

Downstream leased assets

Evaluation status

Not relevant, explanation provided

Please explain

For the whole period of 2020, there was no upstream leased asset for Samsung SDS. (i.e. Samsung SDS did not lease its assets to other entities in 2020). Therefore, this category is not applicable for Samsung SDS.

Franchises

Evaluation status

Not relevant, explanation provided

Please explain

For the whole period of 2020, Samsung SDS does not own or operate franchises. Therefore, this category is not applicable for Samsung SDS.

Investments

Evaluation status

Relevant, calculated

Metric tonnes CO2e

34,664.3

Emissions calculation methodology

Calculation formula: total revenue (KRW million) of domestic companies owned by Samsung SDS x Raw greenhouse gas emission coefficient of related industries (KRW tCO2/million)

Percentage of emissions calculated using data obtained from suppliers or value chain partners

0

Please explain

SDS manages sales by utilizing equity and value-added ratios based on sales information for each subsidiary. Based on the relevant data, greenhouse gas emissions are managed by utilizing the greenhouse gas emission coefficient in the relevant industry.

Other (upstream)

Evaluation status

Please explain

Other (downstream)

Evaluation status

Please explain

C6.7

(C6.7) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

No

C6.10

(C6.10) Describe your gross global combined Scope 1 and 2 emissions for the reporting year in metric tons CO2e per unit currency total revenue and provide any additional intensity metrics that are appropriate to your business operations.

Intensity figure

8,648

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)

95,277

Metric denominator

unit total revenue

Metric denominator: Unit total

11,017,432,000,000

Scope 2 figure used

Location-based

% change from previous year

4.5

Direction of change

Decreased

Reason for change

In 2020, Samsung SDS' greenhouse gas emissions fell by about 2% compared to 2019, while total revenue rose by 2.78%. This can be attributed to Samsung SDS's aggressive greenhouse gas reduction activities. In particular, the Suwon Data Center exceeded the reduction target by 9% in 2020, contributing to the greenhouse gas reduction performance. It also appears to have affected sales growth by providing high value-added services to customers through continuous R&D investment.
* Calculation method
[2019] GHG Emission: 97,073 tCO2eq / total revenue: 10.7 trillion KRW (10,719,632 million KRW) = Intensity: 9,056 tCO2e/trillion KRW
[2020] GHG Emission: 95,277 tCO2eq / total revenue: 11.0 trillion KRW (11,017,432 million KRW) = Intensity: 8,648 tCO2e/trillion KRW

C7. Emissions breakdowns

C7.1

(C7.1) Does your organization break down its Scope 1 emissions by greenhouse gas type?

Yes

C7.1a

(C7.1a) Break down your total gross global Scope 1 emissions by greenhouse gas type and provide the source of each used greenhouse warming potential (GWP).

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	3,449.56	IPCC Second Assessment Report (SAR - 100 year)
CH4	10.63	IPCC Second Assessment Report (SAR - 100 year)
N2O	27.46	IPCC Second Assessment Report (SAR - 100 year)

C7.2

(C7.2) Break down your total gross global Scope 1 emissions by country/region.

Country/Region	Scope 1 emissions (metric tons CO2e)
Republic of Korea	3,488

C7.3

(C7.3) Indicate which gross global Scope 1 emissions breakdowns you are able to provide.

By facility

C7.3b

(C7.3b) Break down your total gross global Scope 1 emissions by business facility.

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Suwon Data Center	462.79	37.25759	127.058865
Sangam Data Center	102.08	37.582909	126.886979
Gumi Data Center	255.57	36.1074	128.415101
Chuncheon Data Center	14.02	37.84664	127.701969
Gwacheon Data Center	8.94	37.426141	126.99056
East Campus	830.01	37.516594	127.101056
HQ(West Campus)	1,544.35	37.516368	127.100359
Daedeok Center	0	36.392216	127.40218
Seoul R&D Campus	197.76	37.466143	127.022977
Communication Point (Node/AP)	0	37.25759	127.058865
Pangyo Campus	72.13	37.395863	127.108533

C7.5

(C7.5) Break down your total gross global Scope 2 emissions by country/region.

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)	Purchased and consumed electricity, heat, steam or cooling (MWh)	Purchased and consumed low-carbon electricity, heat, steam or cooling accounted for in Scope 2 market-based approach (MWh)
Republic of Korea	91,794.58	0	196,906.51	0

C7.6

(C7.6) Indicate which gross global Scope 2 emissions breakdowns you are able to provide.

By facility

C7.6b

(C7.6b) Break down your total gross global Scope 2 emissions by business facility.

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Suwon Data Center	41,431.46	
Sangam Data Center	23,986.59	
Gumi Data Center	8,163.86	
Chuncheon Data Center	8,893.17	
Gwacheon Data Center	564.93	
East Campus	1,764.54	
HQ(West Campus)	4,140.29	
Daedeok Center	21	
Seoul R&D Campus	829	
Communication Point (Node/AP)	1,560.13	
Pangyo Campus	439.61	

C7.9

(C7.9) How do your gross global emissions (Scope 1 and 2 combined) for the reporting year compare to those of the previous reporting year?

Decreased

C7.9a

(C7.9a) Identify the reasons for any change in your gross global emissions (Scope 1 and 2 combined), and for each of them specify how your emissions compare to the previous year.

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption				
Other emissions reduction activities	1,796	Decreased	1.85	Samsung SDS reduced greenhouse gas emissions by 1,796tCO2eq through various activities such as outdoor cold water cooling, solar and solar energy utilization, and geothermal heating and

				cooling over the past year. In particular, Suwon Data Center, a business place subject to emission trading, reduced greenhouse gases through reduction investment and operation improvement activities such as the introduction of outdoor cold water cooling/containment/sun heat bath/aircraft butter. Emissions value(percentage) = (reduction 1,796tCO2 in 2020 / GHG 97073tCO2eq in 2019) *100 = 1.85%
Divestment	10,216	Decreased	10.5	Gwacheon DC was disposed in March of 2020.
Acquisitions	6,274	Increased	6.5	Chuncheon DC was established June of 2019.
Mergers				
Change in output				
Change in methodology				
Change in boundary				
Change in physical operating conditions				
Unidentified				
Other				

C7.9b

(C7.9b) Are your emissions performance calculations in C7.9 and C7.9a based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Location-based

C8. Energy

C8.1

(C8.1) What percentage of your total operational spend in the reporting year was on energy?

More than 0% but less than or equal to 5%

C8.2

(C8.2) Select which energy-related activities your organization has undertaken.

	Indicate whether your organization undertook this energy-related activity in the reporting year
Consumption of fuel (excluding feedstocks)	Yes
Consumption of purchased or acquired electricity	Yes
Consumption of purchased or acquired heat	Yes
Consumption of purchased or acquired steam	No
Consumption of purchased or acquired cooling	No
Generation of electricity, heat, steam, or cooling	Yes

C8.2a

(C8.2a) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	17,896.08	17,896.08
Consumption of purchased or acquired electricity		197.1	196,867.9	197,065
Consumption of purchased or acquired heat		0	38.61	38.61
Consumption of self-generated non-fuel renewable energy		0		0
Total energy consumption		197	239,615	239,812

C8.2b

(C8.2b) Select the applications of your organization's consumption of fuel.

	Indicate whether your organization undertakes this fuel application
Consumption of fuel for the generation of electricity	Yes
Consumption of fuel for the generation of heat	Yes
Consumption of fuel for the generation of steam	Yes
Consumption of fuel for the generation of cooling	No
Consumption of fuel for co-generation or tri-generation	No

C8.2c

(C8.2c) State how much fuel in MWh your organization has consumed (excluding feedstocks) by fuel type.

Fuels (excluding feedstocks)

Diesel

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

422.3

MWh fuel consumed for self-generation of electricity

422.3

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

0

Emission factor

74.869

Unit

kg CO2e per GJ

Emissions factor source

Korea GHG & energy target management System Operating guideline

Comment

emergency generator

Fuels (excluding feedstocks)

Liquefied Natural Gas (LNG)

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

14,349.49

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

0

MWh fuel consumed for self-generation of steam

14,349

Emission factor

56.152

Unit

kg CO2e per short ton

Emissions factor source

Korea GHG & energy target management System Operating guideline, IPCC Guideline 2006

Comment

LNG Boiler for heating

Fuels (excluding feedstocks)

Motor Gasoline

Heating value

HHV (higher heating value)

Total fuel MWh consumed by the organization

3,081.39

MWh fuel consumed for self-generation of electricity

0

MWh fuel consumed for self-generation of heat

3,081.39

MWh fuel consumed for self-generation of steam

0

Emission factor

72.305

Unit

kg CO2e per GJ

Emissions factor source

Korea GHG & energy target management System Operating guideline

Comment

C8.2d

(C8.2d) Provide details on the electricity, heat, steam, and cooling your organization has generated and consumed in the reporting year.

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	326.79	129.69	0	197
Heat	2,811.86	2,811.86	111	111
Steam	12,914.54	12,914.54	0	0
Cooling				

C9. Additional metrics

C9.1

(C9.1) Provide any additional climate-related metrics relevant to your business.

Description

Waste

Metric value

1,575

Metric numerator

ton

Metric denominator (intensity metric only)

% change from previous year

21

Direction of change

Increased

Please explain

Samsung SDS monitors waste generation and disposal at each building and data center. In 2020, the use of disposable products such as lunch boxes for employees was temporarily increased due to global pandemic. However, the company continuously seeks to manage waste such as replacing plastic packaging with paper.

C10. Verification

C10.1

(C10.1) Indicate the verification/assurance status that applies to your reported emissions.

	Verification/assurance status
Scope 1	Third-party verification or assurance process in place
Scope 2 (location-based or market-based)	Third-party verification or assurance process in place
Scope 3	Third-party verification or assurance process in place

C10.1a

(C10.1a) Provide further details of the verification/assurance undertaken for your Scope 1 emissions, and attach the relevant statements.

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

Independent Verification Statement (Samsung SDS).pdf

SamsungSDS_Sustainability_Report_2021_en_interactive_저용량.pdf

Page/ section reference

1 page
128/132 page

Relevant standard

Korean GHG and energy target management system

Proportion of reported emissions verified (%)

100

C10.1b

(C10.1b) Provide further details of the verification/assurance undertaken for your Scope 2 emissions and attach the relevant statements.

Scope 2 approach

Scope 2 location-based

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

Independent Verification Statement(Samsung SDS).pdf
SamsungSDS_Sustainability_Report_2021_en_interactive_저용량.pdf

Page/ section reference

1p
128/132 p

Relevant standard

Korean GHG and energy target management system

Proportion of reported emissions verified (%)

100

C10.1c

(C10.1c) Provide further details of the verification/assurance undertaken for your Scope 3 emissions and attach the relevant statements.

Scope 3 category

Scope 3: Downstream transportation and distribution

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

SamsungSDS_Sustainability_Report_2021_en_interactive_저용량.pdf

Page/section reference

128/132 p

Relevant standard

AA1000AS

Proportion of reported emissions verified (%)

100

C10.2

(C10.2) Do you verify any climate-related information reported in your CDP disclosure other than the emissions figures reported in C6.1, C6.3, and C6.5?

Yes

C10.2a

(C10.2a) Which data points within your CDP disclosure have been verified, and which verification standards were used?

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C3. Business strategy	Other, please specify Climate change business strategy	AA1000 Assurance Standard	Verified on greenhouse gas reduction strategies through verification of sustainability reports
C4. Targets and performance	Year on year change in emissions (Scope 1 and 2)	AA1000 Assurance Standard	Verified on greenhouse gas reduction strategies through verification of sustainability reports

C11. Carbon pricing

C11.1

(C11.1) Are any of your operations or activities regulated by a carbon pricing system (i.e. ETS, Cap & Trade or Carbon Tax)?

Yes

C11.1a

(C11.1a) Select the carbon pricing regulation(s) which impacts your operations.

Korea ETS

C11.1b

(C11.1b) Complete the following table for each of the emissions trading schemes you are regulated by.

Korea ETS

% of Scope 1 emissions covered by the ETS

13

% of Scope 2 emissions covered by the ETS

45

Period start date

January 1, 2020

Period end date

December 31, 2020

Allowances allocated

45,999

Allowances purchased

0

Verified Scope 1 emissions in metric tons CO2e

463

Verified Scope 2 emissions in metric tons CO2e

41,431

Details of ownership

Facilities we own and operate

Comment

C11.1d

(C11.1d) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

As Samsung SDS has been subjected to the GHG emissions Trading Scheme since 2015 in accordance with the Framework Act on Low Carbon, Green Growth, the company has been reporting GHG emissions on Scope 1, 2 to the Ministry of Environment. Designated workplaces where GHG emissions must be reported include 4 data centers, headquarter, 2 campuses, and communication hubs distributed throughout the country. The company established a GHG inventory system to aggregate data center energy consumption and GHG emission data in real time. This enabled Suwon Data Center to reduce more carbon emissions by 9% than the government GHG emission quotas.

Samsung SDS responds to the emission trading system by actively implementing greenhouse gas emission reduction activities centered on products and business sites. In order to reduce CO2 emissions of data centers, Samsung SDS reduced GHG emissions through free cooling system, solar water heating, and use of renewable energy (solar power and geothermal energy) in the year of 2020. Suwon Data Center is subjected to the Carbon Emissions Trading Scheme. The data center reduced GHG emissions by investing on facilities such as free cooling system, containment, solar water heating system, ventilation inverter, and improving data center operation.

The response strategy for Korea ETS, that we are participating, is primarily to reduce GHG emissions by various method such as investment on energy saving facilities and improvement of operation. Also, if GHG target is not fulfilled by analyzing the prediction of GHG reduction and emissions, emission units should be purchased in Korean Exchange (KRX). We now achieve our emission target with various emission reduction practices and by precise predictions.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?

No

C11.3

(C11.3) Does your organization use an internal price on carbon?

No, but we anticipate doing so in the next two years

C12. Engagement

C12.1

(C12.1) Do you engage with your value chain on climate-related issues?

Yes, our suppliers

Yes, our customers

C12.1a

(C12.1a) Provide details of your climate-related supplier engagement strategy.

Type of engagement

Engagement & incentivization (changing supplier behavior)

Details of engagement

Other, please specify

Samsung SDS provides ESG related training courses (including the subject of climate change) and incentives to those who practice ESG.

% of suppliers by number

73

% total procurement spend (direct and indirect)

88

% of supplier-related Scope 3 emissions as reported in C6.5

80

Rationale for the coverage of your engagement

Samsung SDS is operating the management framework to facilitate the action of suppliers in terms of corporate sustainable management including climate change issues and management of GHG emissions. To do that, Samsung SDS developed ESG-integrated code of conduct which should be observed by suppliers as part of contractual relationship with Samsung SDS. This code of conduct deals with largely four ESG areas including environmental issues such as climate change.

Impact of engagement, including measures of success

In 2020, ESG-integrated code of conduct (CoC) has been applied to and signed by 203 suppliers. During the process of fulling contractual activities, Samsung SDS periodically evaluate how well ESG values ingrained in CoC are realized and managed by suppliers though self-assessment by suppliers, on-site audit by Samsung SDS and evaluation-based feedback between Samsung SDS and suppliers. Upon the evaluation, suppliers with excellent level of ESG management has the advantage for securing and maintaining supply contract. Expected impact of this supplier management framework is to accelerate suppliers to manage and reduce GHG emissions proactively.

Comment

C12.1b

(C12.1b) Give details of your climate-related engagement strategy with your customers.

Type of engagement

Collaboration & innovation

Details of engagement

Other, please specify

Carbon emission reduction and provide energy efficient solutions

% of customers by number

47

% of customer - related Scope 3 emissions as reported in C6.5

95.7

Please explain the rationale for selecting this group of customers and scope of engagement

Samsung SDS offers logistics services globally based on our unique IT capabilities such as Cello (Integrated logistics platform that is the basis of Samsung SDS' global logistics services). It operates global supply chain with integrated logistics outsourcing system for 4PL logistic services. Besides Cello, Samsung SDS has developed other IT-based services including Cello Square (One-stop platform for global e-Commerce logistics), Cello Trust (Blockchain-based platform for supply chain traceability), Cello Digital Services (IT-based logistics service package specialized for each logistics area). These services contribute to low-carbon logistics of Samsung SDS itself and other client logistic companies by achieving efficiency in terms of energy and resources through saving time for logistics and saving fuel for logistics. As climate change accelerate the transformation into low-carbon logistics, Samsung SDS is further developing the feature of low-carbon and zero-carbon logistics by periodical improvement of these IT service platform.

Impact of engagement, including measures of success

While four major logistic services of Samsung SDS (Cello, Cello Square, Cello Trust, Cello Digital Services) as a whole have benefits of saving resources and energy, the exact degree of such benefit is subject to fluctuation depending on the specific circumstances of installing and operating the solutions. However, as a general level, installing these four IT platforms in a harmonious manner may result in 10 to 20% increased efficiency in saving fuel for logistics based on the internal analysis of Samsung SDS.

C12.3

(C12.3) Do you engage in activities that could either directly or indirectly influence public policy on climate-related issues through any of the following?

Direct engagement with policy makers

Trade associations

Other

C12.3a

(C12.3a) On what issues have you been engaging directly with policy makers?

Focus of legislation	Corporate position	Details of engagement	Proposed legislative solution
Mandatory carbon reporting	Support	Suwon DC was the only subject building/site to GHG Target Management Scheme and has submitted GHG inventory every year since 2012, and it was verified by government authorized third party. Due to revision of law and regulation, in 2014 the entire company was included as the subject and emission inventory of all 11 sites were prepared and submitted. We are submitting the GHG emission trading scheme's emission report and complying with the obligation according to the guidelines.	We are complying and submitting the Target Management Scheme's emission reporting obligation according to the guidelines, and doesn't make any special suggestions.
Cap and trade	Support with minor exceptions	According to ETS, we also submitted GHG inventory and Monitoring plan to government after the 3rd party's verification. In addition, emission units are submitted within the deadline to comply with regulation. Because the ETS regulations do not fully reflect our business situations, we would like to propose the improvement of the system.	As an enterprise which the most of carbon emissions is from data centers, we propose that K-ETS to investigate our industry in detail and re-categorize the emission sectors for companies that operate data centers. Samsung SDS has submitted our proposal to improve the system through the relevant association, Korean Data Center Council (KDCC), to reflect the characteristics of the data center industry.

C12.3b

(C12.3b) Are you on the board of any trade associations or do you provide funding beyond membership?

Yes

C12.3c

(C12.3c) Enter the details of those trade associations that are likely to take a position on climate change legislation.

Trade association

Korea Data Center Council (KDCC),

Is your position on climate change consistent with theirs?

Consistent

Please explain the trade association's position

KDCC is an association representing data center industry under the Ministry of Science and ICT (MSIT). We delivered the opinions to the government that data centers contribute to country's total reduction of GHG and assign data center businesses to ETS.

How have you influenced, or are you attempting to influence their position?

Stance of KDCC is in line with our stance. In support of this, we participate in the reduction study meeting held by KDCC, providing requested information and our opinions. Specifically, we proposed a methodology to reflect the characteristics of the data center industry in terms of pre-allocation, additional allocation, reduction amount recognition, and new facility approval.

C12.3e

(C12.3e) Provide details of the other engagement activities that you undertake.

While we are under process of confirming to be supplied renewable energy from Korea Electric Power Corporation (KPC), we participate in the government policy of expanding supply of renewal energy. Samsung SDS recommended that the government to secure legal grounds for data center energy, such as energy efficiency, by participating in the MSIT policy on activating the data center (National Framework Act on Information Technology) and preparing a system for renewable energy supply.

C12.3f

(C12.3f) What processes do you have in place to ensure that all of your direct and indirect activities that influence policy are consistent with your overall climate change strategy?

The groups engaged with public policy and our Facility group meet once a month to discuss how to respond to the climate change policies. They report their discussion results to business division leader and CFO. When policy changes, we respond to reflect in the work of the Facility group which is responsible for gathering information on climate change (international conferences, domestic laws and policies, customer requirements, weather conditions, NGOs and media issues, etc.) by participating in press, seminars. If the change is significant, the changes and follow-up activities are reported to business division leader and CFO. The Facility group proceed to respond to the change based on executive's decisions.

The ESG council under CFO is in charge of business strategies to respond to climate change. The ESG committee identified issues related to climate change and reviews the risk factors related to sustainability. In the case of issues which have critical effects into business

management, the ESG council reports to the Board of Directors by putting together the major risk items. For the direct engagement activities with external organizations and industry association, Samsung SDS sets the principles for figuring out appropriate official opinions in consideration of sustainable development of Samsung SDS and society. If the course of communication and/or action is necessary, the ESG council undergoes preliminary review and comes up with specific guidelines for external communication.

C12.4

(C12.4) Have you published information about your organization's response to climate change and GHG emissions performance for this reporting year in places other than in your CDP response? If so, please attach the publication(s).

Publication

In voluntary sustainability report

Status

Complete

Attach the document

SamsungSDS_Sustainability_Report_2021_en_interactive_저용량.pdf

Page/Section reference

Governance: page 53
Risks & Opportunities: page 60-61
Emissions figures: page 55
Emission targets: page 53-55, 60-61

Content elements

Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

C15. Signoff

C-FI

(C-FI) Use this field to provide any additional information or context that you feel is relevant to your organization's response. Please note that this field is optional and is not scored.

OVERALL SUSTAINABILITY STRATEGY
Samsung SDS Sustainability website
https://www.samsungsds.com/en/unsdgs/goals.html
https://www.samsungsds.com/en/sustainability/downloads.html

C15.1

(C15.1) Provide details for the person that has signed off (approved) your CDP climate change response.

	Job title	Corresponding job category
Row 1	Executive Vice President and Chief Financial Officer	Chief Financial Officer (CFO)

SC. Supply chain module

SC0.0

(SC0.0) If you would like to do so, please provide a separate introduction to this module.

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SC0.1

(SC0.1) What is your company's annual revenue for the stated reporting period?

	Annual Revenue
Row 1	11,017,431,525,517

SC0.2

(SC0.2) Do you have an ISIN for your company that you would be willing to share with CDP?

Yes

SC0.2a

(SC0.2a) Please use the table below to share your ISIN.

	ISIN country code (2 letters)	ISIN numeric identifier and single check digit (10 numbers overall)
Row 1	KR	7018260000

SC1.1

(SC1.1) Allocate your emissions to your customers listed below according to the goods or services you have sold them in this reporting period.

SC1.2

(SC1.2) Where published information has been used in completing SC1.1, please provide a reference(s).

SC1.3

(SC1.3) What are the challenges in allocating emissions to different customers, and what would help you to overcome these challenges?

Allocation challenges	Please explain what would help you overcome these challenges

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?

No

SC1.4b

(SC1.4b) Explain why you do not plan to develop capabilities to allocate emissions to your customers.

We expect our customer manage this emission as scope 2 or 3.

SC2.1

(SC2.1) Please propose any mutually beneficial climate-related projects you could collaborate on with specific CDP Supply Chain members.

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?

No

SC4.1

(SC4.1) Are you providing product level data for your organization's goods or services?

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I am submitting to	Public or Non-Public Submission	Are you ready to submit the additional Supply Chain questions?
I am submitting my response	Investors Customers	Public	No, I will complete the Supply Chain questions and return to submit them by the deadline shown on my dashboard. I understand that if I do not return to submit my additional Supply Chain questions by the deadline, they will not be submitted to customers.

Please confirm below

I have read and accept the applicable Terms