Hyosung Chemical

2024 CDP Corporate Questionnaire 2024

Word version

Important: this export excludes unanswered questions
This document is an export of your organization's CDP questionnaire response. It contains all data points for questions that are answered or in progress. There may be questions or data points that you have been requested to provide, which are missing from this document because they are currently unanswered. Please note that it is your responsibility to verify that your questionnaire response is complete prior to submission. CDP will not be liable for any failure to do so.
Terms of disclosure for corporate questionnaire 2024 - CDP

.

11/19/2024, 11:56 pm

Contents

C1. Introduction

(1.1) In which language are you submitting your response?

Select from:

☑ English

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

Select from:

☑ KRW

(1.3) Provide an overview and introduction to your organization.

(1.3.2) Organization type

Select from:

☑ Publicly traded organization

(1.3.3) Description of organization

[General Introduction] Hyosung Chemical was established as the former Tongyang Nylon Co. in 1966, began the chemical division, developed chips for PET bottles and expanded into the PP and propylene business in 1979. Hyosung Co. merged it in1998. The chemistry division of Hyosung Co. was spined off to be Hyosung Chemical Co. in 2018. The headquarter is located in Seoul and the local business sites consist of the R&D organization under Hyosung Co. and 3 plants in total. [Business Division] Hyosung Chemical is mainly involved in the chemical division. The petrochemical division is a business cycle industry which is sensitive to oil prices and seriously affected by global economic, and supply and demand situations. It includes electron the materials and film industry and the special gas industry. The petrochemical industry predicts that the investment in product development will increase as the value of versatile products declines due to the growth in Chinese market. The electron material industry is expected to grow steadily because of the growth in large area display and OLED markets and increasing demand in IT products. Hyosung Chemical has proceeded with the expansion of export sales and development of commercializing technology by investing in Vietnam and constructing plants to expand overseas polypropylene markets and by establishing material laboratories to diversify gas businesses. [Response to climate change] Hyosung Chemical is a company subject to the allocation of ETS, the government GHG regulation, and is obligated to report its emissions every year. According to the 'Second National Climate Change Response Basic Plan' established in 2019, the Korean government set the national reduction target for 2030 at a 24.4% reduction (20.5% for industries) compared to the baseline in 2017. However, in 2021, the government revised the national greenhouse gas reduction target to a 40% reduction (14.5% for industries) compared to the baseline in 2018. Accordingly, at the end of 2021, Hyosung Chemical also adjusted its greenhouse gas reduction target, increasing it from a 12.2% reduction compared to the baseline in 2017 to a 14.5% reduction compared to the baseline in 2018. In addition, Hyosung Chemical

established the green management vision 'realization of an eco-friendly company that leads a better life for mankind' and the 4 strategies 'reduction of greenhouse gas emissions, commercialization of low-carbon technology through development of eco-friendly technology, creation of an eco-friendly corporate culture, and establishment of stakeholder trust through environmental information disclosure ' to implement green management activities for all domestic business sites. The detailed promotion work is like the following, 'contribution to GHG emission reduction when using products, decline in subsidiary materials usage including water, utility, et cetera and expansion of recycling and reuse.' Hyosung Chemical established an ESG management promotion committee headed by the CEO to meet social demands for ESG management participation, and the EHS committee established in 2020 has been changed and operated under the ESG management promotion committee. The ESG Management Promotion Committee operates a regular meeting once a quarter under the supervision of the CEO, reviews the progress of ESG management and agendas, and submits them to the board of directors if necessary.
[Fixed row]

(1.4) State the end date of the year for which you are reporting data. For emissions data, indicate whether you will be providing emissions data for past reporting years.

	End date of reporting year	Alignment of this reporting period with your financial reporting period	Indicate if you are providing emissions data for past reporting years
	12/30/2023	*Select from:* ☑ Yes	*Select from:* ☑ No

[Fixed row]

(1.4.1) What is your organization's annual revenue for the reporting period?

2011883834521

(1.5) Provide details on your reporting boundary.

(1.5.1) Is your reporting boundary for your CDP disclosure the same as that used in your financial statements?

Select from:
☑ No

(1.5.2) How does your reporting boundary differ to that used in your financial statement?

Hyosung Chemical reports its financial statements on a consolidated basis for the reporting year (2023); however, CDP reports using a separate basis. [Reporting Standards] Hyosung Chemical provides consolidated financial statements that include two subsidiaries. In contrast, CDP applies the reporting boundary only to the parent company, Hyosung Chemical Co., Ltd. [Reason] Due to the absence of internal standards and a lack of expertise in the reporting year, Hyosung Chemical was unable to calculate environmental performance data for the two subsidiaries excluding Hyosung Chemical Co., Ltd., resulting in a lack of consistency. Given the significant importance of these subsidiaries in the operational boundary, Hyosung Chemical plans to include environmental performance data for all subsidiaries in the CDP reporting scope within two years.
[Fixed row]

(1.6) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

ISIN code - bond

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

ISIN code - equity

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ Yes

(1.6.2) Provide your unique identifier

KR7298000001

CUSIP number

(1.6.1) Does your organization use this unique identifier?

Select from:
☑ No

Ticker symbol

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

SEDOL code

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

LEI number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

D-U-N-S number

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

Other unique identifier

(1.6.1) Does your organization use this unique identifier?

Select from:

☑ No

[Add row]

(1.7) Select the countries/areas in which you operate.

Select all that apply

☑ Republic of Korea

(1.8) Are you able to provide geolocation data for your facilities?

(1.8.1) Are you able to provide geolocation data for your facilities?

Select from:

☑ Yes, for all facilities

(1.8.2) Comment

We can provide the geographical location data for all 8 of our facilities, and the data presented in the report is the aggregated value for these 8 sites.
[Fixed row]

(1.8.1) Please provide all available geolocation data for your facilities.

Row 1

(1.8.1.1) Identifier

Banpo Headquarter

(1.8.1.2) Latitude

37.500669

(1.8.1.3) Longitude

127.003257

(1.8.1.4) Comment

Located in Seoul

Row 2

(1.8.1.1) Identifier

Gongdeok building

(1.8.1.2) Latitude

37.545639

(1.8.1.3) Longitude

126.951677

(1.8.1.4) Comment

Located in Seoul

Row 3

(1.8.1.1) Identifier

Hoehyeon AK building

(1.8.1.2) Latitude

37.559732

(1.8.1.3) Longitude

126.979523

(1.8.1.4) Comment

Located in Seoul

Row 4

(1.8.1.1) Identifier

Gumi Plant

(1.8.1.2) Latitude

36.090641

(1.8.1.3) Longitude

128.407533

(1.8.1.4) Comment

Located in Gumi

Row 5

(1.8.1.1) Identifier

Yongyeon Plant

(1.8.1.2) Latitude

35.483134

(1.8.1.3) Longitude

129.353262

(1.8.1.4) Comment

Located in Ulsan

Row 6

(1.8.1.1) Identifier

Daejeon Plant

(1.8.1.2) Latitude

36.443127

(1.8.1.3) Longitude

127.402784

(1.8.1.4) Comment

Located in Daejeon

Row 7

(1.8.1.1) Identifier

Oksan Plant

(1.8.1.2) Latitude

36.700357

(1.8.1.3) Longitude

127.373944

(1.8.1.4) Comment

Located in Cheongju

Row 8

(1.8.1.1) Identifier

Onsan Tank Terminal

(1.8.1.2) Latitude

35.442969

(1.8.1.3) Longitude

129.356335

(1.8.1.4) Comment

Located in Ulsan
[Add row]

(1.14) In which part of the chemicals value chain does your organization operate?

Bulk inorganic chemicals

☑ Other industrial gases

Bulk organic chemicals

☑ Lower olefins (cracking)

☑ Polymers

(1.24) Has your organization mapped its value chain?

(1.24.1) Value chain mapped

Select from:

☑ Yes, we have mapped or are currently in the process of mapping our value chain

(1.24.2) Value chain stages covered in mapping

Select all that apply

☑ Upstream value chain

☑ Downstream value chain

(1.24.3) Highest supplier tier mapped

Select from:

☑ Tier 1 suppliers

(1.24.4) Highest supplier tier known but not mapped

Select from:

☑ All supplier tiers known have been mapped

(1.24.7) Description of mapping process and coverage

We map the value chain, including both Tier 1 suppliers and Tier 1 customers. We assess the ESG management level of Tier 1 suppliers annually to understand their environmental management status. Additionally, for calculating Scope 3 greenhouse gas emissions, we use the mapped value chain up to Tier 1, including distances between Tier 1 suppliers and ourselves, as well as distances from our company to Tier 1 customers.
[Fixed row]

(1.24.1) Have you mapped where in your direct operations or elsewhere in your value chain plastics are produced, commercialized, used, and/or disposed of?

	Plastics mapping	Primary reason for not mapping plastics in your value chain	Explain why your organization has not mapped plastics in your value chain
	Select from: ☑ No, but we plan to within the next two years	*Select from:* ☑ Not an immediate strategic priority	*It is not a strategic priority at the moment, so we have not yet conducted the mapping, but we plan to complete it within the next two years.*

[Fixed row]

C2. Identification, assessment, and management of dependencies, impacts, risks, and opportunities

(2.1) How does your organization define short-, medium-, and long-term time horizons in relation to the identification, assessment, and management of your environmental dependencies, impacts, risks, and opportunities?

Short-term

(2.1.1) From (years)

1

(2.1.3) To (years)

3

(2.1.4) How this time horizon is linked to strategic and/or financial planning

Hyosung Chemical considers 12 years as ‘short-term’. (20232025)

Medium-term

(2.1.1) From (years)

4

(2.1.3) To (years)

5

(2.1.4) How this time horizon is linked to strategic and/or financial planning

Hyosung Chemical considers 45 years as ‘medium-term’. (20262027)

Long-term

(2.1.1) From (years)

6

(2.1.2) Is your long-term time horizon open ended?

Select from:

☑ No

(2.1.3) To (years)

10

(2.1.4) How this time horizon is linked to strategic and/or financial planning

Hyosung Chemical considers 510 years as 'long-term'. (20282032)
[Fixed row]

(2.2) Does your organization have a process for identifying, assessing, and managing environmental dependencies and/or impacts?

	Process in place	Dependencies and/or impacts evaluated in this process
	Select from: ☑ Yes	*Select from:* ☑ Both dependencies and impacts

[Fixed row]

(2.2.1) Does your organization have a process for identifying, assessing, and managing environmental risks and/or opportunities?

	Process in place	Risks and/or opportunities evaluated in this process	Is this process informed by the dependencies and/or impacts process?
	Select from: ☑ Yes	*Select from:* ☑ Both risks and opportunities	*Select from:* ☑ Yes

[Fixed row]

(2.2.2) Provide details of your organization's process for identifying, assessing, and managing environmental dependencies, impacts, risks, and/or opportunities.

Row 1

(2.2.2.1) Environmental issue

Select all that apply

☑ Climate change

☑ Water

(2.2.2.2) Indicate which of dependencies, impacts, risks, and opportunities are covered by the process for this environmental issue

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(2.2.2.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(2.2.2.4) Coverage

Select from:

☑ Full

(2.2.2.5) Supplier tiers covered

Select all that apply

☑ Tier 1 suppliers

(2.2.2.7) Type of assessment

Select from:

☑ Qualitative and quantitative

(2.2.2.8) Frequency of assessment

Select from:

☑ Annually

(2.2.2.9) Time horizons covered

Select all that apply

☑ Short-term

☑ Medium-term

☑ Long-term

(2.2.2.10) Integration of risk management process

Select from:

☑ Integrated into multi-disciplinary organization-wide risk management process

(2.2.2.11) Location-specificity used

Select all that apply

☑ Site-specific

☑ National

(2.2.2.12) Tools and methods used

Enterprise Risk Management

☑ Enterprise Risk Management

International methodologies and standards

☑ ISO 14001 Environmental Management Standard

(2.2.2.13) Risk types and criteria considered

Acute physical

☑ Cyclones, hurricanes, typhoons

Chronic physical

☑ Increased severity of extreme weather events

Policy

☑ Carbon pricing mechanisms

☑ Changes to national legislation

Market

☑ Availability and/or increased cost of raw materials

☑ Changing customer behavior

Reputation

☑ Negative press coverage related to support of projects or activities with negative impacts on the environment (e.g. GHG emissions, deforestation & conversion, water

stress)

Technology

☑ Transition to lower emissions technology and products

Liability

☑ Non-compliance with regulations

(2.2.2.14) Partners and stakeholders considered

Select all that apply

☑ Customers

☑ Employees

☑ Investors

☑ Suppliers

☑ Regulators

☑ Local communities

(2.2.2.15) Has this process changed since the previous reporting year?

Select from:

☑ No

(2.2.2.16) Further details of process

1. Strategic Risk Assessment, Evaluation, and Management Process Hyosung Chemicals identifies and assesses issues that affect its business activities and their impact on the environment, society, and economy, as well as opportunities and risks related to its financial performance. These issues are selected as significant topics and managed as risks, considering uncertainties in the market and external and internal risks and opportunities that could significantly impact management activities. Risks are categorized into financial and non-financial (business continuity, management) risks, with a focus on defining key risks based on their potential impact and likelihood of occurrence. The risk management process consists of "internal and external situation analysis - risk identification - risk evaluation - risk mitigation - risk monitoring and change management - reporting to the Board of Directors/Top Management." Each risk is managed by the ESG Management Committee under the supervision of the CEO, and key risks and response measures are reported to the Board of Directors. Climate change-related risks are also integrated into this comprehensive risk management process and managed through the following detailed processes. 2. Direct Operation Facility Evaluation Process Hyosung Chemicals' directly operated facilities include the Ulsan (Yongyeon Plant), Gumi Plant, Oksan Plant, and Anyang Plant. The company listens to the Voice of Customer (VOC) across all business areas, including sales, marketing, quality, and research and development, to reflect customer feedback. This involves identifying market trends and key customer needs, such as the demand for eco-friendly materials and low-carbon product development, in order to establish its business

strategy. To achieve this, all employees are engaged in C-Cube activities, which consist of a five-step process of collection, analysis, sharing, implementation, and result management, to gather and manage feedback through a system. C-Cube activities are conducted more than once a year and continuously respond to and address improvement suggestions based on receiving approximately 7,375 VOC cases in the short term, for example, in 2023. 3. Upstream Evaluation Process The main targets of upstream risk evaluation at Hyosung Chemicals are intermediate material suppliers, who are suppliers of raw materials, which are essential components of their key chemical products. The risks associated with raw material suppliers can directly affect the company's risks. Therefore, upstream risks are included in the comprehensive risk management process. 4. Downstream Evaluation Process The main targets of downstream risk evaluation at Hyosung Chemicals are major customers who purchase their products. Since producing and developing products that meet customer needs directly impacts the company's revenue, downstream risk management is included in the comprehensive risk management process. Particularly, due to ongoing climate change and changes in consumer behavior, customers demand continuous disclosure of climate-related information from Hyosung Chemicals, along with the use of environmentally friendly materials, greenhouse gas reduction in the production process, and low-carbon product development.
[Add row]

(2.2.7) Are the interconnections between environmental dependencies, impacts, risks and/or opportunities assessed?

(2.2.7.1) Interconnections between environmental dependencies, impacts, risks and/or opportunities assessed

Select from:

☑ Yes

(2.2.7.2) Description of how interconnections are assessed

Hyosung Chemicals analyzes global sustainability issues, global guidelines, sustainability issues in the industries it operates in, policies and regulations, as well as the opinions of internal and external stakeholders, in accordance with the GRI Standards each year. This analysis helps dependencies on the company's business performance and potential impacts of its business activities on the environment, society, and economy, as well as the dependencies of sustainability issues on its business performance. Through a seven-step process, key topics for sustainable management are selected, and integrated risks and opportunities are identified and evaluated, which are then managed by the ESG Management Committee. For the year 2023, six key topics were selected: expanding sustainable business, managing chemical and environmental pollutants, product safety and quality management, workplace health and safety, risk management, and strengthening sustainability management leadership. These topics are monitored continuously.
[Fixed row]

(2.3) Have you identified priority locations across your value chain?

(2.3.1) Identification of priority locations

Select from:

☑ Yes, we have identified priority locations

(2.3.2) Value chain stages where priority locations have been identified

Select all that apply

☑ Direct operations

(2.3.3) Types of priority locations identified

Sensitive locations

☑ Areas of limited water availability, flooding, and/or poor quality of water

(2.3.4) Description of process to identify priority locations

Hyosung Chemical utilized WRI's water risk assessment tool, Aqueduct 4.0, to analyze quantity, quality, regulatory, and reputational risk indicators at its directly operated sites. As a result, the company identified sites where the ratio of 'available surface water and groundwater supply' to 'total demand' was high, ranging from 40% to 80%.

(2.3.5) Will you be disclosing a list/spatial map of priority locations?

Select from:

☑ No, we have a list/geospatial map of priority locations, but we will not be disclosing it

[Fixed row]

(2.4) How does your organization define substantive effects on your organization?

Risks

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Capital expenditures

(2.4.3) Change to indicator

Select from:

☑ Absolute increase

(2.4.5) Absolute increase/ decrease figure

500000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Likelihood of effect occurring

(2.4.7) Application of definition

Hyosung Chemicals company-widely operates the delegated decision-making regulations by granting responsibility and authority depending on the financial impact of each project including responses to climate change or using opportunities. The budgets and investment activities, including physical and transition risks and opportunities caused by climate change, are established every year, and when necessary, the Investment Review Subcommittee or the Investment Review Committee is held for a certain amount or more of budget at each PU (Performance Unit) and PG (Performance Group). If the amount is more than KRW 1 billion for investments included in the budget, it should be dealt with at the management meeting. And if KRW 500 1,000 million for those not included in the budge, the CEO should make decision on them and if the amount is more than KRW 1 billion, it should be dealt with at the management meeting level. Therefore, the significant financial impact used to identify and assess climate change risks can be defined by the size of the project/investment budget, considering the authority and the highest-level decision-making stage, Hyosung Chemical defines critical financial impact which is worth more than KRW 500 million and this is applied equivalently to all projects including climate change. Regarding non-financial impacts related to climate change, all members of the organization assess the likelihood of potential risks and opportunities on a weekly, monthly, and quarterly basis, managing them according to the PDCA cycle. The ESG management team integrates and manages overall corporate risks and reports to the management and the board of directors.

Opportunities

(2.4.1) Type of definition

Select all that apply

☑ Qualitative

☑ Quantitative

(2.4.2) Indicator used to define substantive effect

Select from:

☑ Revenue

(2.4.3) Change to indicator

Select from:

☑ Absolute increase

(2.4.5) Absolute increase/ decrease figure

500000000

(2.4.6) Metrics considered in definition

Select all that apply

☑ Likelihood of effect occurring

(2.4.7) Application of definition

Hyosung Chemicals company-widely operates the delegated decision-making regulations by granting responsibility and authority depending on the financial impact of each project including responses to climate change or using opportunities. The budgets and investment activities, including physical and transition risks and opportunities caused by climate change, are established every year, and when necessary, the Investment Review Subcommittee or the Investment Review Committee is held for a certain amount or more of budget at each PU (Performance Unit) and PG (Performance Group). If the amount is more than KRW 1 billion for investments included in the budget, it should be dealt with at the management meeting. And if KRW 500 1,000 million for those not included in the budge, the CEO should make decision on them and if the amount is more than KRW 1 billion, it should be dealt with at the management meeting level. Therefore, the significant financial impact used to identify and assess climate change risks can be defined by the size of the project/investment budget, considering the authority and the highest-level decision-making stage, Hyosung Chemical defines critical financial impact which is worth more than KRW 500 million and this is applied equivalently to all projects including climate change. Regarding non-financial impacts related to climate change, all members of the organization assess the likelihood of potential risks and opportunities on a weekly, monthly, and quarterly basis, managing them according to the PDCA cycle. The ESG management team integrates and manages overall corporate risks and reports to the management and the board of directors.

[Add row]

(2.5) Does your organization identify and classify potential water pollutants associated with its activities that could have a detrimental impact on water ecosystems or human health?

(2.5.1) Identification and classification of potential water pollutants

Select from:

☑ Yes, we identify and classify our potential water pollutants

(2.5.2) How potential water pollutants are identified and classified

Hyosung Chemical complies with legal discharge limits for water pollutants and has established stricter internal discharge standards for management. The company maintains emissions of BOD, TOC, SS, T-N, pH, and n-Hexane within 80% of legal limits, measuring BOD, TOC, SS, and T-N once every six months, and pH and n-Hexane annually. The Environmental Safety Team, responsible for measuring these pollutants, reports the indicators quarterly to the ESG Management Promotion Committee, chaired by the CEO and attended by all ESG-related executives. Through this process, the company regularly manages the potential impacts of water pollutants at the executive level.
[Fixed row]

(2.5.1) Describe how your organization minimizes the adverse impacts of potential water pollutants on water ecosystems or human health associated with your activities.

Row 1

(2.5.1.1) Water pollutant category

Select from:

☑ Other nutrients and oxygen demanding pollutants

(2.5.1.2) Description of water pollutant and potential impacts

Hyosung Chemical has a dedicated department that measures the emissions of potential water pollutants, including BOD, TOC, SS, T-N, pH, and n-Hexane, based

on internal discharge allowance standards. These measurements are reported quarterly to the ESG Management Promotion Committee, chaired by the CEO. The company maintains emissions of BOD, TOC, SS, T-N, pH, and n-Hexane within 80% of legal discharge limits. If these substances are not systematically managed, they could lead to water pollution and the destruction of aquatic ecosystems in nearby rivers, streams, and seas.

(2.5.1.3) Value chain stage

Select all that apply

☑ Direct operations

(2.5.1.4) Actions and procedures to minimize adverse impacts

Select all that apply

☑ Beyond compliance with regulatory requirements

(2.5.1.5) Please explain

Hyosung Chemical manages emissions of BOD, TOC, SS, T-N, pH, and n-Hexane within 80% of legal discharge limits, measuring BOD, TOC, SS, and T-N once every six months, and pH and n-Hexane annually for reporting to management. To minimize the impact on water quality near its facilities, the company either operates wastewater treatment plants directly or outsources wastewater treatment. Additionally, to meet its internal discharge standards, Hyosung Chemical installed a new pollutant early detection system at the final discharge point of the rainwater drainage system in 2023, with plans to implement the same system across all facilities in the future.
[Add row]

C3. Disclosure of risks and opportunities

(3.1) Have you identified any environmental risks which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

Climate change

(3.1.1) Environmental risks identified

Select from:

☑ Yes, both in direct operations and upstream/downstream value chain

Water

(3.1.1) Environmental risks identified

Select from:

☑ Yes, both in direct operations and upstream/downstream value chain

Plastics

(3.1.1) Environmental risks identified

Select from:

☑ No

(3.1.2) Primary reason why your organization does not consider itself to have environmental risks in your direct operations and/or upstream/downstream value chain

Select from:

☑ Not an immediate strategic priority

(3.1.3) Please explain

Not an immediate strategic priority
[Fixed row]

(3.1.1) Provide details of the environmental risks identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.1.1.1) Risk identifier

Select from:
☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Policy
☑ Carbon pricing mechanisms

(3.1.1.4) Value chain stage where the risk occurs

Select from:
☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply
☑ Republic of Korea

(3.1.1.9) Organization-specific description of risk

Hyosung Chemical is a company included in the allocation target of the emissions trading system, which is being implemented to achieve the national greenhouse

gas reduction target (a 40% reduction by 2030 compared to 2018). Since its separate incorporation due to Hyosung's personnel division in 2018, Hyosung Chemical has been implementing the emissions trading system from the second planning period (2018-2020) onwards. In the case of the third planned period (2021-2025), the government demands continuous reduction of greenhouse gas through changes in the allocation adjustment coefficient, which further increases the burden, and the continuously increasing operating costs and liabilities also exist as climate change risk factors. Also, due to the ongoing growth of global plastic market and the increase in market demand for eco-friendly materials, the production volume of polyketone, nylon and PET films is increasing. Hyosung Chemical also continues to increase the production volume of corresponding products such as POKETONE and Films. As a result, an annual increase in emissions is expected. Consequently, the Emission Trading System is classified as a significant risk and is reported to the ESG Management Promotion Committee through continuous monitoring every year. Hyosung Chemical reports emission allowance and emission debt as intangible assets and provisions for liabilities, respectively, in our financial statements and business report.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased direct costs

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Long-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Virtually certain

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

In the report year, Hyosung Chemical did not exceed its emissions compared to the allocation, so there is no financial risk related to carbon pricing. However, to reduce greenhouse gas emissions at its facilities, it invested 663 million KRW in energy-saving activities, including replacing old equipment and improving equipment efficiency.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.23) Anticipated financial effect figure in the long-term – minimum (currency)

510000000

(3.1.1.24) Anticipated financial effect figure in the long-term – maximum (currency)

680000000

(3.1.1.25) Explanation of financial effect figure

Hyosung Chemical assessed the financial impact of the current emissions trading system regulations affecting its directly operated facilities by predicting greenhouse gas emissions and the surplus or deficit of emissions permits during the third planning period. It was assumed that there would be an increase in direct costs for additional emissions permits. In 2023, the petrochemical industry was not financially affected due to a decrease in market demand caused by investments in petrochemical plants in China and the Middle East, resulting in emissions being lower than allocated permits. The market outlook for 2024 and 2025 also appears unfavorable, and it is expected that there will be surplus emissions permits remaining during the rest of the third planning period. For the medium- to long-term fourth planning period (2026–2030), although the government's allocation has not yet been confirmed, applying a 10% adjustment factor to the average expected emissions from 2022 to 2024 suggests that the financial impact could be approximately 510 million KRW in 2026 (with an emissions permit price of 15,000 KRW, considering the expected carryover from 2025) and about 680 million KRW from 2027 to 2030 (with an emissions permit price of 20,000 KRW). The financial impact for the longer term (2031–2032) has not been quantified. (Note: Short term: 2023–2025; Medium term: 2026–2027; Long term: 2028–2032.)

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Increase environment-related capital expenditure

(3.1.1.27) Cost of response to risk

680900000

(3.1.1.28) Explanation of cost calculation

In 2023, a total of 680.9 million KRW was spent to respond to risks, encompassing various activities. This includes 17.9 million KRW for third-party verification of emissions reporting and 663 million KRW for greenhouse gas reduction activities.(Reduction activities:564 million KRW for raw material recovery at Yongyeon Plant 1, 24 million KRW for operational efficiency improvements through dew point control at Yongyeon Plant 3, 24 million KRW for capacity reduction at the Gumi Plant, 1 million KRW for temperature control system improvements, and 64 million KRW for applying air conditioning inverters in the electrical room at the Ok-san Plant)

(3.1.1.29) Description of response

In 2023, Hyosung Chemical invested 564 million KRW in the recovery of raw materials for the PP3 recovery process at the Yongyeon Plant 1, 24 million KRW in improving operational efficiency through dew point control for dryers at Yongyeon Plant 3, 24 million KRW for capacity reduction at the Gumi Plant, 1 million KRW for improving temperature control systems, and 64 million KRW for applying energy-conserving inverters in the electrical room at the Ok-san Plant. Additionally, other facilities are conducting greenhouse gas reduction activities by identifying and implementing efficiency improvement ideas to reduce energy consumption. These reduction activities are expected to achieve a decrease of 1,927 tons of CO2 equivalent per year in greenhouse gas emissions and a reduction of 40.3 TJ per year in energy consumption.

Water

(3.1.1.1) Risk identifier

Select from:

☑ Risk1

(3.1.1.3) Risk types and primary environmental risk driver

Liability

☑ Non-compliance with legislation

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Downstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Republic of Korea

(3.1.1.7) River basin where the risk occurs

Select all that apply

☑ Other, please specify **:**Nakdong River

(3.1.1.9) Organization-specific description of risk

Hyosung Chemical discharges industrial wastewater in accordance with the Water Environment Conservation Act regulated by the Ministry of Environment. If the company fails to comply with legal regulations, it may face administrative penalties such as fines, operational suspensions, or business closures. Notably, for first-time administrative penalties, the business could be suspended for up to three months.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Disruption to sales

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Unlikely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

If Hyosung Chemical fails to comply with water-related regulations, it may face operational or business suspensions, preventing it from selling products to customers

and potentially causing a sharp decline in revenue.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

496080945540

(3.1.1.25) Explanation of financial effect figure

If Hyosung Chemical faces a three-month operational or business suspension due to a serious regulatory violation, it would be unable to sell products to customers for approximately 90 days. Based on 2023 figures, Hyosung Chemical's revenue is 2,011,883,834,521 KRW, resulting in an average daily revenue of 5,512,010,506 KRW when divided by 365 days. Therefore, if the company experiences a 90-day suspension, it could incur a loss of approximately 496,080,945,540 KRW by multiplying the average daily revenue by 90 days.

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Improve maintenance of infrastructure

(3.1.1.27) Cost of response to risk

273000000

(3.1.1.28) Explanation of cost calculation

As of 2023, the total costs for the three activities are as follows: New emission facility investment: 119 million KRW TMS maintenance: 106 million KRW Emission facility maintenance: 48 million KRW Overall, the total cost for these activities amounts to approximately 273 million KRW.

(3.1.1.29) Description of response

Hyosung Chemical undertakes three activities to comply with water-related environmental regulations. The company invests in emission facilities, maintains a TMS for accurate measurements, and ensures the upkeep of these facilities. In 2023, Hyosung Chemical installed pH meters and oil detectors at stormwater discharge points to reduce non-point source pollutants, managed the TMS, and maintained drainage systems.

Water

(3.1.1.1) Risk identifier

Select from:

☑ Risk2

(3.1.1.3) Risk types and primary environmental risk driver

Liability

☑ Non-compliance with legislation

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Republic of Korea

(3.1.1.7) River basin where the risk occurs

Select all that apply

☑ Other, please specify **:**Nakdong River

(3.1.1.9) Organization-specific description of risk

Hyosung Chemical discharges industrial wastewater in accordance with the Water Environment Conservation Act regulated by the Ministry of Environment. If the company fails to comply with legal regulations, it may face administrative penalties such as fines or business suspension. Receiving such administrative penalties could significantly impact its capital and revenue.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Fines, penalties or enforcement orders

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Unlikely

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

If Hyosung Chemical fails to comply with water-related regulations, it may face fines and penalties in the future.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

0

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

100594191726

(3.1.1.25) Explanation of financial effect figure

If Hyosung Chemical commits a serious regulatory violation and is subjected to a fine, the penalty could be up to 5% of its maximum revenue. Based on 2023 figures, Hyosung Chemical's revenue is 2,011,883,834,521 KRW, which means a 5% fine would amount to 100,594,191,726 KRW.

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Improve maintenance of infrastructure

(3.1.1.27) Cost of response to risk

273000000

(3.1.1.28) Explanation of cost calculation

As of 2023, the total costs for the three activities are as follows: New emission facility investment: 119 million KRW TMS maintenance: 106 million KRW Emission facility maintenance: 48 million KRW Overall, the total cost for these activities amounts to approximately 273 million KRW.

(3.1.1.29) Description of response

Hyosung Chemical undertakes three activities to comply with water-related environmental regulations. The company invests in emission facilities, maintains a TMS for accurate measurements, and ensures the upkeep of these facilities. In 2023, Hyosung Chemical installed pH meters and oil detectors at stormwater discharge points to reduce non-point source pollutants, managed the TMS, and maintained drainage systems.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk2

(3.1.1.3) Risk types and primary environmental risk driver

Acute physical

☑ Cyclone, hurricane, typhoon

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Direct operations

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Republic of Korea

(3.1.1.9) Organization-specific description of risk

The frequency of heavy rains and typhoons is increasing around the summer season, which could lead to loss of physical assets of Hyosung Chemical, which has a business site in Korea. In particular, in the case of PP and film, which are major products of Hyosung Chemical, products may be damaged due to flooding, which may lead to additional sales losses. Therefore, Hyosung Chemical Yongyeon, Gumi, and Oksan workplaces periodically conduct preliminary facility inspections every year to minimize the impact that can cause losses on assets. Each plant of Hyosung Chemical analyzed heavy rain as a physical risk factor that requires a priority response in 2022 and based on the inspection results, necessary measures such as roof leak repair are established and implemented.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Increased direct costs

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Very likely

(3.1.1.14) Magnitude

Select from:

☑ Medium-high

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

It is expected that torrential rain or typhoons will stop the operation of production facilities or disrupt distribution from suppliers, resulting in a loss of 5% of product sales.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.19) Anticipated financial effect figure in the short-term – minimum (currency)

3790000000

(3.1.1.20) Anticipated financial effect figure in the short-term – maximum (currency)

8570000000

(3.1.1.25) Explanation of financial effect figure

Hyosung Chemical assessed the financial impact of product damage due to short-term physical environmental changes, such as heavy rainfall and flooding caused by typhoons, at its directly operated facilities in South Korea. In 2023, the production volumes are projected to be 594,873 tons for PP and 62,619 tons for films, with unit prices ranging from 1,041,300 to 2,375,100 KRW per ton for PP and from 2,200,000 to 4,800,000 KRW per ton for films. If 5% of the production volume is damaged and unsold due to heavy rainfall, the loss would amount to approximately 30,972 to 70,644 million KRW for PP and 6,921 to 15,101 million KRW for films, resulting in a total loss of 37,893 to 85,745 million KRW. (Note: The 2023 management plan applies an exchange rate of 1,300 KRW/USD.)

(3.1.1.26) Primary response to risk

Infrastructure, technology and spending

☑ Increase environment-related capital expenditure

(3.1.1.27) Cost of response to risk

217200000

(3.1.1.28) Explanation of cost calculation

In 2023, a total of 217.2 million KRW was spent to address risks, which includes the sum of various activities: - PPDH PU: 60.8 million KRW (including 9.2 million KRW for regular inspections and repairs related to PP risks and typhoon damage) - NEOCHEM PU: 25.6 million KRW (including 9.5 million KRW for roof replacement work for the tent warehouse at Plant 3) - TPA PU: 32.6 million KRW (including 8.0 million KRW for installing SUS plates in the drainage system of Plant 2's PTA process) - POK PU: 25.6 million KRW (including 15.0 million KRW for tent roof replacement work at the POK tent warehouse) - OPTICAL PU: 33.2 million KRW (including 8.0 million KRW for applying plate covers to corroded walls in the Optical main building and Dope building) - FILM PU: 39.5 million KRW (including 8.0 million KRW for additional installation work on the drainage system at the Film east side)

(3.1.1.29) Description of response

In 2023, a total of 217.2 million KRW was spent on preparing for extreme weather, including 203.9 million KRW for office building repairs and drainage improvements, and 13.3 million KRW for typhoon damage recovery. This investment has helped mitigate the damages caused by extreme weather in 2023 and is expected to prevent future physical risks.

Climate change

(3.1.1.1) Risk identifier

Select from:

☑ Risk3

(3.1.1.3) Risk types and primary environmental risk driver

Reputation

☑ Increased partner and stakeholder concern or negative partner and stakeholder feedback

(3.1.1.4) Value chain stage where the risk occurs

Select from:

☑ Downstream value chain

(3.1.1.6) Country/area where the risk occurs

Select all that apply

☑ Republic of Korea

(3.1.1.9) Organization-specific description of risk

The frequency of evaluations from Hyosung Chemical's clients is steadily increasing. The number of evaluation requests from clients has grown significantly each year, with 2 requests in 2021, 14 in 2022, and 33 in 2023. Additionally, client demands are diversifying and becoming more sophisticated, with participation in CDP and obtaining Ecovadis certification. If Hyosung Chemical fails to respond adequately to these demands, it may face disadvantages in supplier evaluations due to score reductions. In other words, there is a risk of revenue decline due to the increasing negative perceptions from stakeholders.

(3.1.1.11) Primary financial effect of the risk

Select from:

☑ Decreased revenues due to reduced demand for products and services

(3.1.1.12) Time horizon over which the risk is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.1.1.13) Likelihood of the risk having an effect within the anticipated time horizon

Select from:

☑ Virtually certain

(3.1.1.14) Magnitude

Select from:

☑ High

(3.1.1.16) Anticipated effect of the risk on the financial position, financial performance and cash flows of the organization in the selected future time horizons

In 2023, Hyosung Chemical received a total of 33 ESG-related requests from 20 different clients. The revenue generated from these clients amounted to 266,898 million KRW, which represents approximately 13.27% of Hyosung Chemical's total revenue (2023 standalone revenue: 2,011,884 million KRW). The increasing sophistication of clients' ESG requests, including CDP and EcoVadis evaluations, poses a risk of lower supplier evaluation scores, potentially leading to a decrease in revenue.

(3.1.1.17) Are you able to quantify the financial effect of the risk?

Select from:

☑ Yes

(3.1.1.21) Anticipated financial effect figure in the medium-term – minimum (currency)

13340000000

(3.1.1.22) Anticipated financial effect figure in the medium-term – maximum (currency)

18680000000

(3.1.1.25) Explanation of financial effect figure

Hyosung Chemical has assessed the financial impact of failing to provide environmental information requested by clients through EcoVadis or CDP, which could lead to decreased demand from downstream customers. In 2023, the revenue from the 20 clients requesting ESG-related responses amounted to 266,898,352,468 KRW. Assuming that the reputation risk from clients results in a revenue decline of 5-7%, the financial impact is estimated to be between 13,344,917,623 KRW and 18,682,884,673 KRW.

(3.1.1.26) Primary response to risk

Engagement

☑ Engage with customers

(3.1.1.27) Cost of response to risk

431000000

(3.1.1.28) Explanation of cost calculation

The costs for EcoVadis and related sustainability efforts are as follows: - EcoVadis response: 3.3 million KRW - Scope 3 third-party verification: 2.5 million KRW - CDP response (participation fee): 4.0 million KRW - - Sustainable management report response: 33.3 million KRW

(3.1.1.29) Description of response

EcoVadis evaluates companies based on reports and evidence in four areas: environment, labor and human rights, ethics, and sustainable procurement, issuing scorecards through sustainability analysts. Similarly, preparation for CDP requires following a comparable process. Therefore, it's essential to prepare adequately for both evaluations.
[Add row]

(3.1.2) Provide the amount and proportion of your financial metrics from the reporting year that are vulnerable to the substantive effects of environmental risks.

Climate change

(3.1.2.1) Financial metric

Select from:
☑ CAPEX

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

680900000

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:
☑ 1-10%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in 1.2)

217200000

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ Less than 1%

(3.1.2.6) Amount of CAPEX in the reporting year deployed towards risks related to this environmental issue

898100000

(3.1.2.7) Explanation of financial figures

Hyosung Chemical invested 680.9 million KRW in facility costs for greenhouse gas reduction and 217.2 million KRW for preventive repairs against physical risks. In the 2023 cash flow statement, the total CAPEX (capital expenditures for asset acquisition) was 59,641.9 million KRW. Consequently, the total financial metric ratio vulnerable to transition risk is 1.1% (680.9 million KRW / 59,641.9 million KRW 100), while the ratio vulnerable to physical risk is 0.36% (217.2 million KRW / 59,641.9 million KRW 100).

Water

(3.1.2.1) Financial metric

Select from:

☑ CAPEX

(3.1.2.2) Amount of financial metric vulnerable to transition risks for this environmental issue (unit currency as selected in 1.2)

0

(3.1.2.3) % of total financial metric vulnerable to transition risks for this environmental issue

Select from:

☑ Less than 1%

(3.1.2.4) Amount of financial metric vulnerable to physical risks for this environmental issue (unit currency as selected in 1.2)

273000000

(3.1.2.5) % of total financial metric vulnerable to physical risks for this environmental issue

Select from:

☑ Less than 1%

(3.1.2.6) Amount of CAPEX in the reporting year deployed towards risks related to this environmental issue

273000000

(3.1.2.7) Explanation of financial figures

Hyosung Chemical undertakes three activities to comply with water-related environmental regulations. The company invests in emission facilities, maintains a TMS for accurate measurements, and ensures the upkeep of these facilities. In 2023, Hyosung Chemical installed pH meters and oil detectors at stormwater discharge points to reduce non-point source pollutants, managed the TMS, and maintained drainage systems. Hyosung Chemical executed an amount of 273,000,000 won in 2023 with the corresponding expenses.
[Add row]

(3.2) Within each river basin, how many facilities are exposed to substantive effects of water-related risks, and what percentage of your total number of facilities does this represent?

Row 1

(3.2.1) Country/Area & River basin

Republic of Korea

☑ Naktong

(3.2.2) Value chain stages where facilities at risk have been identified in this river basin

Select all that apply

☑ Direct operations

(3.2.3) Number of facilities within direct operations exposed to water-related risk in this river basin

1

(3.2.4) % of your organization’s total facilities within direct operations exposed to water-related risk in this river basin

Select from:

☑ 1-25%

(3.2.10) % organization’s total global revenue that could be affected

Select from:

☑ 81-90%

(3.2.11) Please explain

Among all of Hyosung Chemical's facilities, the revenue share of products produced at the Yongyeon plant accounts for 81-90%. Therefore, the Yongyeon plant is classified as a significant facility, and it is considered to be at substantial risk due to its proximity to the Nakdong River. In fact, an analysis of water risk at the Yongyeon plant using WRI's water risk analysis tool confirmed a risk level of 'medium to high'.
[Add row]

(3.3) In the reporting year, was your organization subject to any fines, enforcement orders, and/or other penalties for water-related regulatory violations?

(3.3.1) Water-related regulatory violations

Select from:

☑ No

(3.3.3) Comment

Hyosung Chemical discloses compliance with water-related regulations annually through the 'Environmental Information Disclosure System' in accordance with domestic disclosure regulations, and as of 2023, there have been no violations reported.
[Fixed row]

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

Select from:
☑ Yes

(3.5.1) Select the carbon pricing regulation(s) which impact your operations.

Select all that apply
☑ Korea ETS

(3.5.2) Provide details of each Emissions Trading Scheme (ETS) your organization is regulated by.

Korea ETS

(3.5.2.1) % of Scope 1 emissions covered by the ETS

37

(3.5.2.2) % of Scope 2 emissions covered by the ETS

63

(3.5.2.3) Period start date

12/31/2022

(3.5.2.4) Period end date

12/30/2023

(3.5.2.5) Allowances allocated

860860

(3.5.2.6) Allowances purchased

0

(3.5.2.7) Verified Scope 1 emissions in metric tons CO2e

319258

(3.5.2.8) Verified Scope 2 emissions in metric tons CO2e

548088

(3.5.2.9) Details of ownership

Select from:

☑ Facilities we own and operate

(3.5.2.10) Comment

The reported Scope 1 emissions include emissions from flaring stacks. However, when submitting to the Korea ETS, emissions from flaring stacks are not included. Therefore, for the year 2023, there are surplus emissions allowances compared to the government allocation, so no additional allowances need to be purchased. [Fixed row]

(3.5.4) What is your strategy for complying with the systems you are regulated by or anticipate being regulated by?

Hyosung Chemical's response strategy to Korea ETS carbon pricing system is as follows.1) Establishing strategy for GHG reduction and enhancing governanceHyosung Chemical made the strategic system for green management to comply with the national NDCs in 2019. And in 2021, the existing greenhouse gas reduction target was raised to the goal of reducing greenhouse gas emissions by 14.5% compared to 2018 by 2030 and the strategic direction was set as the following: 'reduction of greenhouse gas emissions, commercialization of low-carbon technology through development of eco-friendly technology, creation of an eco-friendly corporate culture, and establishment of stakeholder trust through environmental information disclosure '. And it implements company-widely green management in all domestic workplaces. The detailed promotion works include commitment to GHG emission reduction when using products, expansion of recycling and reuse and decline in subsidiary materials use such as water and utility.2) Monitoring and sharing of K-ETS trendsThe green management team of Hyosung Chemical participates in the government's explanation meetings and discussions, meanwhile, and suggests opinions to run ETS smoothly through the industry association. The K-ETS related major contents are reported to the EHS Committee as well as shared with environmental safety teams of each plan.Hyosung Chemical reports on emissions every year and makes the responding measures after analyzing the allocation deficiency according to the ETS. It also regularly

monitors the price trend in the emission market and supports the purchase, if necessary.3) Implementing GHG reduction activities and measuring performanceHyosung Chemical established the 2030 GHG reduction plan (14.5 % reduction compared to 2018) to comply with vison for 2030 green management and implements detailed reduction activities to realize it. It monitors the current status of emissions from each plant, specifies the current status and also establishes and implements activity plans for GHG reduction (replacement of facilities, improvement of processes, et cetera).

(3.6) Have you identified any environmental opportunities which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future?

	Environmental opportunities identified
Climate change	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized
Water	*Select from:* ☑ Yes, we have identified opportunities, and some/all are being realized

[Fixed row]

(3.6.1) Provide details of the environmental opportunities identified which have had a substantive effect on your organization in the reporting year, or are anticipated to have a substantive effect on your organization in the future.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Energy source

☑ Participation in carbon market

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Republic of Korea

(3.6.1.8) Organization specific description

Hyosung Chemical has been a company subject to the allocation of emission allowances and has implemented the allocated allowances from the second ETS planning phase (20182020). During the second phase, the total emissions of Hyosung Chemical was larger than the allocations, some deficiency in allowances occurred so that additionally purchased allocations. However, it has simultaneously made efforts to be recognized its performance through the steady reduction activities and to get reduce the additional purchasing cost of allowances. As the production increases, Hyosung Chemical was properly allocated the expected allowances during the third ETS planning phase. As the results of the lessening export due to COVID-19, it is expected to have opportunities to sell its remaining allocations based on the performance of energy reduction activities. When the '2030 reduction target (14.5 % reduction by 2030)' of Hyosung Chemical based on the allocated allowances for the third ETS planning phase (20212025), the GHG emissions are expected to be reduced by 228,652 tons. In 2023, Hyosung Chemical had 21,103 tons of remaining carbon credits from its allocation, of which 5,280 tons were sold at a price of 8,690 KRW per ton. The remaining 15,823 tons were carried over to the 2024 allocation. If GHG reduction activities are actively pursued, it is expected that generating surplus profits through participation in the emissions trading system during the third planning period will be possible.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Reduced direct costs

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ Virtually certain (99–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Hyosung Chemical has assessed the financial impact of generating surplus profits from the sale of carbon credits resulting from greenhouse gas reductions during the third planning period of the domestic emissions trading system. Based on the allocation results and internal estimates of expected emissions, it is anticipated that if the greenhouse gas reduction targets are met, approximately 150,000 tons of surplus emissions will be available over the remaining two years of the third planning period (2024-2025). Additionally, further surpluses are expected due to changes in facility allocations and proactive reduction activities. As of 2023, about 21,103 tons of carbon credits remain, of which 5,280 tons were sold, generating revenue of approximately 46 million KRW. The remaining 15,823 tons were carried over to 2024. Assuming an internal carbon price of 14,000 KRW per ton, the estimated revenue from the sale of carbon credits in 2024-2025 would result in a potential financial impact of 2.42 billion KRW.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

1730000000

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

2420000000

(3.6.1.23) Explanation of financial effect figures

Hyosung Chemical has assessed the financial impact of generating surplus profits from the sale of carbon credits resulting from greenhouse gas reductions during the third planning period of the domestic emissions trading system. As of 2023, approximately 21,000 tons of surplus carbon credits are expected, with an anticipated

annual surplus of 76,000 tons for 2024-2025. Applying a carbon price of 10,000 to 14,000 KRW per ton, the potential financial impact is estimated to be between 1.73 billion and 2.42 billion KRW (note: for the short term from 2023 to 2025).

(3.6.1.24) Cost to realize opportunity

680900000

(3.6.1.25) Explanation of cost calculation

In 2023, a total of 680.9 million KRW was spent to respond to risks, encompassing various activities. This includes 17.9 million KRW for third-party verification of emissions reporting and 663 million KRW for greenhouse gas reduction activities. [Reduction activities] - 564 million KRW for raw material recovery at Yongyeon Plant 1 - 24 million KRW for operational efficiency improvements through dew point control at Yongyeon Plant 3 - 24 million KRW for capacity reduction at the Gumi Plant - 1 million KRW for temperature control system improvements - 64 million KRW for applying air conditioning inverters in the electrical room at the Ok-san Plant

(3.6.1.26) Strategy to realize opportunity

Hyosung Chemical prioritizes carbon emission reduction activities through risk management. Since May 2022, a corporate carbon reduction task force (TFT) has been established under the ESG management department, with the ESG management team serving as the secretariat and including plant managers and engineering team leaders from each facility as team members. Quarterly meetings are held, and the activities are reported to the CEO. A total of 65 reduction improvement initiatives have been identified across the facilities, with 44 improvements completed to date, resulting in a total reduction of 88,000 tons through energy usage optimization. The remaining 21 initiatives are being reviewed for their effectiveness (economic viability) for potential investment in 2025-2026. While facility-specific reduction activities through process optimization have limitations, the factory improvement team aims to achieve the 2030 reduction target of over 200,000 tons per year. They have identified measures to reduce steam usage through energy audits, implement hydrogen combined heat and power generation, and apply amine wet CO2 capture technology, resulting in a total potential reduction of 172,000 tons. Economic feasibility is under evaluation, and new ideas will continue to be explored.

Water

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp1

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Products and services

☑ Increased sales of existing products and services

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Republic of Korea

(3.6.1.6) River basin where the opportunity occurs

Select all that apply

☑ Han-Gang (Han River)

(3.6.1.8) Organization specific description

Hyosung Chemical's Anyang plant is located near the Anyang Stream, which connects to the Han River. In response to the worsening water scarcity caused by climate change, Hyosung Chemical is actively developing and commercializing membrane water treatment system technology at the Anyang plant. A membrane functions as a 'filter' that allows only desired substances to pass through while blocking others. The membrane water treatment system developed by Hyosung Chemical uses hollow fiber with a pore size of 0.03 μm. Since starting the development of the 'immersed water treatment technology' in 2012, the company has received membrane environmental technology certifications for the 'pressurized membrane filtration water treatment technology' and the 'two-stage immersed water treatment system,' currently maintaining a total of two certifications.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Short-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ More likely than not (50–100%)

(3.6.1.12) Magnitude

Select from:

☑ Medium

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

The domestic water industry market size was approximately 36 trillion won in 2017, with the construction market (including renovation) at 6.7 trillion won, the manufacturing market at 21 trillion won, and the operation market at 7.8 trillion won. Domestic infrastructure construction is expected to see improvements such as the introduction of advanced filtration systems, and the operation market is anticipated to expand. Additionally, trends in water treatment technology indicate that traditional treatment methods are being replaced by membrane technologies due to the increased need for stable effluent quality and ease of operation. Currently, the adoption rate of membrane technology is below 1% for drinking water and about 7% for wastewater, but a high growth rate of 16% per year is expected. Hyosung Chemical is investing in commercializing membrane technology, and the domestic water treatment membrane market is projected to reach 190 billion won in 2022 and approximately 332 billion won by 2026. In particular, the activation of wastewater reuse and seawater desalination projects is expected to lead to significant growth in the industrial water market. Our company aims to achieve sales of 16.6 billion won, which corresponds to 5% of the market size projected for 2026.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.17) Anticipated financial effect figure in the short-term - minimum (currency)

0

(3.6.1.18) Anticipated financial effect figure in the short-term – maximum (currency)

16600000000

(3.6.1.23) Explanation of financial effect figures

Hyosung Chemical is investing in commercializing membrane technology, and the domestic water treatment membrane market is projected to reach 190 billion won in

2022 and approximately 332 billion won by 2026. In particular, the activation of wastewater reuse and seawater desalination projects is expected to lead to significant growth in the industrial water market. Our company aims to achieve sales of 16.6 billion won, which corresponds to 5% of the market size projected for 2026.

(3.6.1.24) Cost to realize opportunity

260000000

(3.6.1.25) Explanation of cost calculation

Hyosung Chemical has developed water purification technologies, starting with "immersed water treatment technology," followed by "pressurized membrane filtration technology" and "two-stage immersed water treatment systems," all of which have received environmental technology certification. The company installed energy-saving water treatment facilities at the Goheung Hohyeong Water Treatment Plant, and the pressurized membrane filtration products, which enhance raw water recovery rates, have been implemented at the Jindo Hwaedong Water Treatment Plant and the Paju wastewater reuse facility. Future applications are planned for the Jeju Gangjeong and Topyeong water treatment plants. Additionally, the pressurized membrane filtration technology is also applicable for seawater desalination and is set to be implemented in the pre-treatment facility for seawater desalination at the Jeju Chuja Water Treatment Plant. To support these initiatives, Hyosung Chemical invests annually in research and development.

(3.6.1.26) Strategy to realize opportunity

As of 2024, Hyosung Chemical is planning and executing KRW 260 million in various research and facility investments.

Climate change

(3.6.1.1) Opportunity identifier

Select from:

☑ Opp2

(3.6.1.3) Opportunity type and primary environmental opportunity driver

Markets

☑ Increased availability of products with reduced environmental impact [other than certified products]

(3.6.1.4) Value chain stage where the opportunity occurs

Select from:

☑ Direct operations

(3.6.1.5) Country/area where the opportunity occurs

Select all that apply

☑ Republic of Korea

(3.6.1.8) Organization specific description

As customer companies request Hyosung Chemical, an intermediate manufacturer of final products, for eco-friendly material use, GHG reduction in product production and low carbon products according to market trends. Hyosung Chemical developed with the original technology and successfully commercialized an eco-friendly polymer new material, Polyketone (POKETONE). It is an eco-friendly material harmless to humans based on the stronger shock durability twice than PA (Polyamide) and PBT (polybuthylene terephthalate) and the highest chemical durability among ENPLA (engineering plastics) materials and so finally obtained the global certifications like FDA (Food & Drug Administration), KTW (Kunststoffe und Trinkwasser). Polyketone is used in various component materials like automobile fuel lines, internal and external materials, electric and electronic components, pipes et cetera and contributes to carbon emissions reduction by replacing existing materials with eco-friendly ones based on the excellent property of matter. It developed and has sold eco-friendly tableware with 'ESG and GK Co.' since September 2019. In addition, in 2022, Hyosung Chemical supplied 61.5 tons of polyketone product to the Korea National Railway as railway parts. Hyosung Chemical has manufactured a variety of eco-friendly material products through continuous development and investment applied product invests in the development and investment of products using eco-friendly materials.

(3.6.1.9) Primary financial effect of the opportunity

Select from:

☑ Increased revenues resulting from increased demand for products and services

(3.6.1.10) Time horizon over which the opportunity is anticipated to have a substantive effect on the organization

Select all that apply

☑ Medium-term

(3.6.1.11) Likelihood of the opportunity having an effect within the anticipated time horizon

Select from:

☑ More likely than not (50–100%)

(3.6.1.12) Magnitude

Select from:

☑ High

(3.6.1.14) Anticipated effect of the opportunity on the financial position, financial performance and cash flows of the organization in the selected future time horizons

Hyosung Chemical calculated the financial impact on the development of new products and services through R&D and innovation that may occur at the direct operation site, assuming sales increase due to the introduction of polyketone, an eco-friendly material of Hyosung Chemical. The size of global market of engineering plastics was KRW 66 trillion in 2015 and is predicted to grow steadily by 5 % more every year. It is predicted to reach KRW 159 trillion in 2026. In 2026, Hyosung Chemical set '30 % more in the global market share' as the goal and spurs the technology development. When Hyosung Chemical achieved the goal of market share, its sales are expected to be approximately KRW 19.8 trillion.

(3.6.1.15) Are you able to quantify the financial effects of the opportunity?

Select from:

☑ Yes

(3.6.1.19) Anticipated financial effect figure in the medium-term - minimum (currency)

78700000000

(3.6.1.20) Anticipated financial effect figure in the medium-term - maximum (currency)

118900000000

(3.6.1.23) Explanation of financial effect figures

In 2023, the sales revenue of polyketone reached 55.3 billion KRW, and for 2024, we plan to achieve a revenue of 79.3 billion KRW through aggressive market expansion and an increase in high-value product sales. We are making continuous investments in R&D and are working to improve our products for automotive applications, aiming to expand sales and secure profits through the development of high-value products. If we expect a sales increase of over 30% annually, this would mean a 43% increase in revenue from 2023 to 2024. By 2026, revenue is projected to reach 134 billion KRW, an increase of approximately 78.7 billion KRW compared to 2023, and by 2027, it is expected to reach 174.2 billion KRW, an increase of approximately 118.9 billion KRW compared to 2023. (Note: Mid-term projections for 2026-2027.)

(3.6.1.24) Cost to realize opportunity

1331000000

(3.6.1.25) Explanation of cost calculation

A total of 1.3 million KRW was used for green certification, and 1,330 million KRW was allocated for R&D to develop automotive applications, enter the aftermarket, and create high value-added applications for expanding product sales.

(3.6.1.26) Strategy to realize opportunity

Due to the increased availability of products that reduce environmental impact, polyketone products made from carbon monoxide are gaining recognition as eco-friendly green technology certified products. These products are expanding their applications to industrial materials, consumer goods, and recreational items. With ongoing R&D investments (1,330 million KRW in 2023 and a planned 1,288 million KRW in 2024), efforts to improve these products aim to aggressively increase market share in existing markets while also developing applications for automotive uses to establish a long-term sales base. Planned expansions include: - Electric vehicle applications (506 tons) - Increased sales to domestic automotive specialty compounds (144 tons) - Entry into the aftermarket (215 tons) Additionally, the company plans to secure sales and profits through the development of new applications (tunnel segments, MIPS helmet head protection, etc.) and high-value applications (3D printing materials, mining components, EVOH substitute films, etc.). Polyketone products are managed as a separate business unit, ensuring that sales profitability is prioritized.
[Add row]

(3.6.2) Provide the amount and proportion of your financial metrics in the reporting year that are aligned with the substantive effects of environmental opportunities.

Climate change

(3.6.2.1) Financial metric

Select from:
☑ OPEX

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in 1.2)

45883200

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:
☑ Less than 1%

(3.6.2.4) Explanation of financial figures

Hyosung Chemical sold remaining carbon credits in the emissions trading market, as its emissions were below the allocated quota for the reporting year. In 2023, a total of 21,103 tons remained, with 5,280 tons sold at a price of 8,690 KRW per ton. The remaining 15,823 tons were carried over to the 2024 allocation. - Carbon Credit Sales Amount: 45,883,200 KRW 5,280 tons 8,690 KRW - Total Revenue in 2023 Standalone Financial Statements: 2,011,884 million KRW - The total ratio of financial metrics aligned with opportunities related to climate change issues: 0.002% (45.8million KRW/2,011,884million KRW X 100)

Water

(3.6.2.1) Financial metric

Select from:

☑ Revenue

(3.6.2.2) Amount of financial metric aligned with opportunities for this environmental issue (unit currency as selected in 1.2)

0

(3.6.2.3) % of total financial metric aligned with opportunities for this environmental issue

Select from:

☑ Less than 1%

(3.6.2.4) Explanation of financial figures

Hyosung Chemical is investing in commercializing membrane technology.
[Add row]

C4. Governance

(4.1) Does your organization have a board of directors or an equivalent governing body?

(4.1.1) Board of directors or equivalent governing body

Select from:

☑ Yes

(4.1.2) Frequency with which the board or equivalent meets

Select from:

☑ Quarterly

(4.1.3) Types of directors your board or equivalent is comprised of

Select all that apply

☑ Executive directors or equivalent

☑ Independent non-executive directors or equivalent

(4.1.4) Board diversity and inclusion policy

Select from:

☑ Yes, and it is publicly available

(4.1.5) Briefly describe what the policy covers

The company strives to establish the following criteria for enhancing diversity and expertise, enabling the board of directors to make important decisions while considering the interests of various stakeholders: Gender: To improve gender diversity on the board, ensure that at least 20% of the external director candidates are women. Nationality: To build a governance structure that aligns with global standards, identify external director candidates from diverse cultural, environmental, and lifestyle backgrounds. Experience: Consider relevant industry experience while avoiding bias towards specific backgrounds and origins. Others: Exclude exclusivity in diversity aspects such as race, religion, and ethnicity, and reflect diversity from an inclusive perspective.

(4.1.6) Attach the policy (optional)

4.1_Diversity and Inclusion Policy.pdf
[Fixed row]

(4.1.1) Is there board-level oversight of environmental issues within your organization?

	Board-level oversight of this environmental issue	Primary reason for no board-level oversight of this environmental issue	Explain why your organization does not have board-level oversight of this environmental issue
Climate change	*Select from:* ☑ Yes	*Select from:*	*Rich text input [must be under 2500 characters]*
Water	*Select from:* ☑ Yes	*Select from:*	*Rich text input [must be under 2500 characters]*
Biodiversity	*Select from:* ☑ No, but we plan to within the next two years	*Select from:* ☑ Not an immediate strategic priority	*Hyosung Chemical considers reducing carbon emissions as its top priority.*

[Fixed row]

(4.1.2) Identify the positions (do not include any names) of the individuals or committees on the board with accountability for environmental issues and provide details of the board's oversight of environmental issues.

Climate change

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply
☑ Chief Executive Officer (CEO)

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Other policy applicable to the board, please specify **:**Description for the Green Management Section on the Hyosung Chemicals Website

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding the assessment process for dependencies, impacts, risks, and opportunities

☑ Overseeing the setting of corporate targets

☑ Overseeing and guiding public policy engagement

☑ Approving and/or overseeing employee incentives

(4.1.2.7) Please explain

The CEO is the highest decision-maker of the ESG Management Promotion Committee and also serves as the chair of the board of directors. The ESG Management Promotion Committee ultimately approves activities related to climate change issues (including sustainable management vision, oversight and guidance on business strategy development, setting greenhouse gas reduction targets, critical strategies related to environmental regulations, and oversight and guidance on value chain engagement) as well as business investment plans and budget formulation, and reports regularly to the board of directors. In 2023, the board of directors held a total of four quarterly meetings, during which the following environmental issues were reported: Q1. ESG Materiality Assessment Items Q2. ESG Responses to External Stakeholders Q3. Operation of Internal Carbon Pricing System and Environmental Protection Activities Q4. Plan for Key ESG Activities

Water

(4.1.2.1) Positions of individuals or committees with accountability for this environmental issue

Select all that apply

☑ Chief Executive Officer (CEO)

(4.1.2.2) Positions' accountability for this environmental issue is outlined in policies applicable to the board

Select from:

☑ Yes

(4.1.2.3) Policies which outline the positions' accountability for this environmental issue

Select all that apply

☑ Other policy applicable to the board, please specify **:**Description for the Green Management Section on the Hyosung Chemicals Website

(4.1.2.4) Frequency with which this environmental issue is a scheduled agenda item

Select from:

☑ Scheduled agenda item in some board meetings – at least annually

(4.1.2.5) Governance mechanisms into which this environmental issue is integrated

Select all that apply

☑ Reviewing and guiding the assessment process for dependencies, impacts, risks, and opportunities

☑ Overseeing the setting of corporate targets

☑ Overseeing and guiding public policy engagement

☑ Approving and/or overseeing employee incentives

(4.1.2.7) Please explain

The CEO is the highest decision-maker of the ESG Management Promotion Committee and also serves as the chair of the board of directors. The ESG Management Promotion Committee ultimately approves activities related to climate change issues (including sustainable management vision, oversight and guidance on business strategy development, setting greenhouse gas reduction targets, critical strategies related to environmental regulations, and oversight and guidance on value chain engagement) as well as business investment plans and budget formulation, and reports regularly to the board of directors. In 2023, the board of directors held a total of four quarterly meetings, during which the following environmental issues were reported: Q1. ESG Materiality Assessment Items Q2. ESG Responses to External Stakeholders Q3. Operation of Internal Carbon Pricing System and Environmental Protection Activities Q4. Plan for Key ESG Activities
[Fixed row]

(4.2) Does your organization's board have competency on environmental issues?

Climate change

(4.2.1) Board-level competency on this environmental issue

Select from:

☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply

☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience

☑ Executive-level experience in a role focused on environmental issues

☑ Active member of an environmental committee or organization

Water

(4.2.1) Board-level competency on this environmental issue

Select from:

☑ Yes

(4.2.2) Mechanisms to maintain an environmentally competent board

Select all that apply

☑ Having at least one board member with expertise on this environmental issue

(4.2.3) Environmental expertise of the board member

Experience

☑ Executive-level experience in a role focused on environmental issues

☑ Active member of an environmental committee or organization

[Fixed row]

(4.3) Is there management-level responsibility for environmental issues within your organization?

	Management-level responsibility for this environmental issue	Primary reason for no management-level responsibility for environmental issues	Explain why your organization does not have management-level responsibility for environmental issues
Climate change	*Select from:* ☑ Yes	*Select from:*	*Rich text input [must be under 2500 characters]*
Water	*Select from:* ☑ Yes	*Select from:*	*Rich text input [must be under 2500 characters]*
Biodiversity	*Select from:* ☑ No, but we plan to within the next two years	*Select from:* ☑ Not an immediate strategic priority	*Hyosung Chemical considers reducing carbon emissions as its top priority.*

[Fixed row]

(4.3.1) Provide the highest senior management-level positions or committees with responsibility for environmental issues (do not include the names of individuals).

Climate change

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing value chain engagement related to environmental issues

Strategy and financial planning

☑ Developing a business strategy which considers environmental issues

☑ Managing annual budgets related to environmental issues

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Quarterly

(4.3.1.6) Please explain

CEO is the chairperson in the EHS Committee. The EHS Committee works for making decision for the green management implementation to comply with regulations inside and outside, to identify environmental issues and to conduct countermeasures to environmental risks. The green management of Hyosung Chemical includes responses to climate change, development of eco-friendly products as well as Korea ETS. Hyosung Chemical reports on climate change related issues every 4 weeks at the PU (Performance Unit) meeting concerning the ones specified by plant managers, the persons in charge of environment, safety and health of all domestic business sites and the environmental safety team of each business site. The matters needing a decision making is reported to the EHS Committee, a consultative group for the primary decision making of green management at a lower level than the board. Some agendas need to be reflected in management plans such as company-wide strategy for R&D and decision makings. The EHS Committee considers the importance of each issue after reviewing those agendas and then

receives the final approval from the board. Since April 2021, Hyosung Chemical has expanded and restructured the EHS Committee, integrating it with the CSR Committee, to form the ESG Management Promotion Committee, with the CEO as the chairman. This committee drives not only environmental, safety, and health initiatives but also social and governance aspects. It holds quarterly meetings to select and present significant agenda items for consideration or reporting to the Board of Directors, including in 2023.

Water

(4.3.1.1) Position of individual or committee with responsibility

Executive level

☑ Chief Executive Officer (CEO)

(4.3.1.2) Environmental responsibilities of this position

Dependencies, impacts, risks and opportunities

☑ Assessing environmental dependencies, impacts, risks, and opportunities

☑ Managing environmental dependencies, impacts, risks, and opportunities

Engagement

☑ Managing value chain engagement related to environmental issues

Strategy and financial planning

☑ Developing a business strategy which considers environmental issues

☑ Managing annual budgets related to environmental issues

Other

☑ Providing employee incentives related to environmental performance

(4.3.1.4) Reporting line

Select from:

☑ Reports to the board directly

(4.3.1.5) Frequency of reporting to the board on environmental issues

Select from:

☑ Quarterly

(4.3.1.6) Please explain

CEO is the chairperson in the EHS Committee. The EHS Committee works for making decision for the green management implementation to comply with regulations inside and outside, to identify environmental issues and to conduct countermeasures to environmental risks. Hyosung Chemical's green management includes water-related aspects such as water usage, wastewater discharge, and the release of water pollutants. Hyosung Chemical reports on climate change related issues every 4 weeks at the PU (Performance Unit) meeting concerning the ones specified by plant managers, the persons in charge of environment, safety and health of all domestic business sites and the environmental safety team of each business site. The matters needing a decision making is reported to the EHS Committee, a consultative group for the primary decision making of green management at a lower level than the board. Some agendas need to be reflected in management plans such as company-wide strategy for R&D and decision makings. The EHS Committee considers the importance of each issue after reviewing those agendas and then receives the final approval from the board. Since April 2021, Hyosung Chemical has expanded and restructured the EHS Committee, integrating it with the CSR Committee, to form the ESG Management Promotion Committee, with the CEO as the chairman. This committee drives not only environmental, safety, and health initiatives but also social and governance aspects. It holds quarterly meetings to select and present significant agenda items for consideration or reporting to the Board of Directors, including in 2023.
[Add row]

(4.5) Do you provide monetary incentives for the management of environmental issues, including the attainment of targets?

Climate change

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:

☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

25

(4.5.3) Please explain

Among the ESG management KPIs of each plant manager at Hyosung Chemical, there are factors such as reducing carbon emissions by finding ways to reduce

greenhouse gases. Hyosung Chemical provides monetary incentives in the form of financial incentives based on the results of goal achievement. This can be done through a proportional method, where a payment rate based on the evaluation grade is multiplied by the base monthly salary, or through a fixed amount method, where a predetermined sum is paid.

Water

(4.5.1) Provision of monetary incentives related to this environmental issue

Select from:

☑ Yes

(4.5.2) % of total C-suite and board-level monetary incentives linked to the management of this environmental issue

15

(4.5.3) Please explain

Among the ESG management KPIs of Hyosung Chemical's ESG management and green management executives, there are the discovery of water-related improvement controls and improvement of evaluation scores from evaluation agencies. Hyosung Chemical provides monetary incentives in the form of a fixed rate method that multiplies the basic monthly salary by the payment rate by evaluation grade based on the results of achieving the target, or a fixed amount method that pays a certain amount.
[Fixed row]

(4.5.1) Provide further details on the monetary incentives provided for the management of environmental issues (do not include the names of individuals).

Climate change

(4.5.1.1) Position entitled to monetary incentive

Board or executive level

☑ Chief Operating Officer (COO)

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

☑ Bonus – set figure

(4.5.1.3) Performance metrics

Emission reduction

☑ Implementation of an emissions reduction initiative

☑ Reduction in absolute emissions

Resource use and efficiency

☑ Energy efficiency improvement

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Short-Term Incentive Plan, or equivalent, only (e.g. contractual annual bonus)

(4.5.1.5) Further details of incentives

Among the ESG management KPIs of ESG management and Green Management executives at Hyosung Chemical, there is reducing carbon emissions through greenhouse gas reduction activities. Hyosung Chemical provides monetary incentives in the form of financial incentives based on the results of goal achievement. This can be done through a proportional method, where a payment rate based on the evaluation grade is multiplied by the base monthly salary, or through a fixed amount method, where a predetermined sum is paid.

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

The executive in charge of ESG management and green management at Hyosung Chemical is responsible for overseeing the overall ESG management of the company, and carbon emission reduction through greenhouse gas reduction activities is key performance indicator managed by the executive. Therefore, if the executive achieves their targets, they can receive incentives and earn bonus points in executive evaluations. This incentivizes them to play a significant role in reducing the overall greenhouse gas emissions and energy usage of Hyosung Chemical.

Water

(4.5.1.1) Position entitled to monetary incentive

Facility/Unit/Site management

☑ Business unit manager

(4.5.1.2) Incentives

Select all that apply

☑ Bonus - % of salary

☑ Bonus – set figure

(4.5.1.3) Performance metrics

Targets

☑ Organization performance against an environmental sustainability index

Resource use and efficiency

☑ Improvements in water efficiency – direct operations

(4.5.1.4) Incentive plan the incentives are linked to

Select from:

☑ Short-Term Incentive Plan, or equivalent, only (e.g. contractual annual bonus)

(4.5.1.5) Further details of incentives

The KPIs for the executive in charge of ESG management at Hyosung Chemical include improvements in green management indicators related to water, such as water usage and water pollution substances. Additionally, the evaluation scores from ESG rating agencies resulting from these improvements are included in the KPIs

(4.5.1.6) How the position's incentives contribute to the achievement of your environmental commitments and/or climate transition plan

Since the KPIs for the executive in charge of ESG management at Hyosung Chemical include water-related indicators, the ESG Management Promotion Committee,

which meets every quarter with the management team to share performance across various areas, aims to present improved metrics. This will naturally lead to greater attention to water efficiency and risk management in order to enhance ESG evaluation scores.
[Add row]

(4.6) Does your organization have an environmental policy that addresses environmental issues?

	Does your organization have any environmental policies?
	Select from: ☑ Yes

[Fixed row]

(4.6.1) Provide details of your environmental policies.

Row 1

(4.6.1.1) Environmental issues covered

Select all that apply

☑ Climate change

☑ Water

(4.6.1.2) Level of coverage

Select from:

☑ Organization-wide

(4.6.1.3) Value chain stages covered

Select all that apply

☑ Direct operations

☑ Upstream value chain

☑ Downstream value chain

(4.6.1.4) Explain the coverage

Environmental Policy applies to all employees within the Hyosung Chemicals' financial consolidation scope, which includes headquarters, domestic and overseas production and sales corporations and branches, and subsidiaries. Even when interacting with business partners, agencies, and outsourcing partners, employees shall encourage compliance with this Policy. However, if the recommended actions in this Policy conflict with the laws of the relevant country, the laws of the country in question shall take precedence.

(4.6.1.5) Environmental policy content

Environmental commitments

☑ Commitment to a circular economy strategy

☑ Commitment to comply with regulations and mandatory standards

☑ Commitment to stakeholder engagement and capacity building on environmental issues

Water-specific commitments

☑ Commitment to control/reduce/eliminate water pollution

☑ Commitment to water stewardship and/or collective action

Social commitments

☑ Adoption of the UN International Labour Organization principles

☑ Commitment to respect internationally recognized human rights

(4.6.1.6) Indicate whether your environmental policy is in line with global environmental treaties or policy goals

Select all that apply

☑ Yes, in line with the Paris Agreement

☑ Yes, in line with Sustainable Development Goal 6 on Clean Water and Sanitation

(4.6.1.7) Public availability

Select from:

☑ Publicly available

(4.6.1.8) Attach the policy

4.6.1 Environmental, Biodiversity,Human-Rights -Management-Policy_EN.pdf
[Add row]

(4.10) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

(4.10.1) Are you a signatory or member of any environmental collaborative frameworks or initiatives?

Select from:

☑ Yes

(4.10.2) Collaborative framework or initiative

Select all that apply

☑ Task Force on Climate-related Financial Disclosures (TCFD)

(4.10.3) Describe your organization's role within each framework or initiative

TCFD is a reputable global framework supported by government agencies, financial institutions, and companies, providing recommendations for climate-related disclosures. Hyosung Chemicals supports TCFD and its recommendations, and in accordance with these guidelines, discloses relevant financial information and climate-related information through its sustainability management report.
[Fixed row]

(4.11) In the reporting year, did your organization engage in activities that could directly or indirectly influence policy, law, or regulation that may (positively or negatively) impact the environment?

(4.11.1) External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the environment

Select all that apply

☑ Yes, we engaged directly with policy makers

(4.11.2) Indicate whether your organization has a public commitment or position statement to conduct your engagement activities in line with global environmental treaties or policy goals

Select from:

☑ Yes, we have a public commitment or position statement in line with global environmental treaties or policy goals

(4.11.3) Global environmental treaties or policy goals in line with public commitment or position statement

Select all that apply

☑ Paris Agreement

☑ Sustainable Development Goal 6 on Clean Water and Sanitation

(4.11.4) Attach commitment or position statement

4.11 TCFD.pdf

(4.11.5) Indicate whether your organization is registered on a transparency register

Select from:

☑ Yes

(4.11.6) Types of transparency register your organization is registered on

Select all that apply

☑ Mandatory government register

(4.11.7) Disclose the transparency registers on which your organization is registered & the relevant ID numbers for your organization

Transparency Register Name: List of companies subject to allocation of emission trading system NGMS. Organization ID: Hyosung Chemicals In accordance with Article 31 of the Political Fund Act, foreigners, corporations or organizations at home and abroad cannot donate political funds, and there is no legal lobbying system in Republic of Korea. However, the companies can freely express their opinions on policies through public hearings, meetings, and surveys held by the Ministry of Environment.

(4.11.8) Describe the process your organization has in place to ensure that your external engagement activities are consistent with your environmental commitments and/or transition plan

In order to respond to K-ETS efficiently, Hyosung Chemical has strengthened the cooperation with the government and supply networks, customer companies in the entire value chain. To achieve the government's greenhouse gas reduction goals, it is necessary to continuously improve the efficiency of the Korean Emissions Trading Scheme (K-ETS). Hyosung Chemical actively participates in the activity data survey and public hearings conducted by the government to develop a new methodology for allocating Benchmark (BM) allowances in the upcoming 4th planning period. Hyosung Chemical's participation aims to contribute to the establishment of BM allocation coefficients and ensure that the allocation methodology is effectively designed. Internally, Hyosung Chemical establishes strategies for GHG reduction and enhances governance by monitoring K-ETS trends and each pant implements activities for GHG reduction. As the climate change related risk management of the networks gets more important, it adds the item such as energy use and recycling waste in the environment part of the assessment of cooperative companies and gives additional points to those companies who reinforce their ability of climate change through the assessment. It annually provides the reliable information based on the PAS 2050 as film customers demand for the information on carbon emissions by a product unit and participates in EcoVadis program to answer sincerely. The results of the above activities are reflected in Hyosung Chemical's climate change response strategy, and in 2021, to meet the industrial sector target of the Nationally Determined Contributions (NDC), the greenhouse gas quantitative target of 'Green Management Vision 2030' was updated from 20.5% emission reduction compared to 2017, to 14.5% compared to 2018. The engagement activity with the government, supply networks and customers is a crucial factor for the green management of Hyosung Chemical so that Hyosung Chemical reflects them in the internal green management depending on changes in policies and markets.
[Fixed row]

(4.11.1) On what policies, laws, or regulations that may (positively or negatively) impact the environment has your organization been engaging directly with policy makers in the reporting year?

Row 1

(4.11.1.1) Specify the policy, law, or regulation on which your organization is engaging with policy makers

The Korean government has enacted and implemented the ‘Act on Carbon Neutrality and Green Growth to Respond to the Climate Crisis’ and ‘Act on the Allocation and Trading of Greenhouse Gas Emission Permits’, 'Water Environment Conservation Act'. Hyosung Chemicals has been a subject of Korea ETS. Also, for system improvement and efficient operation, the government has annually held presentations and hearings about system management. Hyosung has participated in them to suggest various opinions.

(4.11.1.2) Environmental issues the policy, law, or regulation relates to

Select all that apply
☑ Climate change

☑ Water

(4.11.1.3) Focus area of policy, law, or regulation that may impact the environment

Financial mechanisms (e.g., taxes, subsidies, etc.)

☑ Emissions trading schemes

(4.11.1.4) Geographic coverage of policy, law, or regulation

Select from:

☑ National

(4.11.1.5) Country/area/region the policy, law, or regulation applies to

Select all that apply

☑ Republic of Korea

(4.11.1.6) Your organization's position on the policy, law, or regulation

Select from:

☑ Support with no exceptions

(4.11.1.8) Type of direct engagement with policy makers on this policy, law, or regulation

Select all that apply

☑ Discussion in public forums

☑ Participation in working groups organized by policy makers

☑ Responding to consultations

(4.11.1.9) Funding figure your organization provided to policy makers in the reporting year relevant to this policy, law, or regulation (currency)

75864000

(4.11.1.10) Explain the relevance of this policy, law, or regulation to the achievement of your environmental commitments and/or transition plan, how this has informed your engagement, and how you measure the success of your engagement

1. As a method for measuring engagement performance, we prepare and submit the GHG emission calculation plan and the GHG emissions report annually within the designated timeframe. 2. The government's reduction plan for industrial sector GHG emissions aims for a 11.4% decrease by 2030 compared to 2018. Our company has established and is implementing a GHG reduction plan of 14.5%. Performance is measured based on the achievement of this GHG reduction plan. 3. As a method of measuring engagement performance, we evaluate whether water-related indicators are disclosed to the Environmental Information Disclosure System within the deadline every year.

(4.11.1.11) Indicate if you have evaluated whether your organization's engagement on this policy, law, or regulation is aligned with global environmental treaties or policy goals

Select from:

☑ Yes, we have evaluated, and it is aligned

(4.11.1.12) Global environmental treaties or policy goals aligned with your organization's engagement on this policy, law or regulation

Select all that apply

☑ Paris Agreement

☑ Sustainable Development Goal 6 on Clean Water and Sanitation

[Add row]

(4.12) Have you published information about your organization's response to environmental issues for this reporting year in places other than your CDP response?

Select from:

☑ Yes

(4.12.1) Provide details on the information published about your organization's response to environmental issues for this reporting year in places other than your CDP response. Please attach the publication.

Row 1

(4.12.1.1) Publication

Select from:

☑ In mainstream reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

☑ Water

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Strategy

☑ Emissions figures

☑ Other, please specify **:**Status of eco-friendly certification

(4.12.1.6) Page/section reference

Strategy 299302 page Emissions figures 134135 page Others, Status of eco-friendly certification 301302 page

(4.12.1.7) Attach the relevant publication

4.12.1 In mainstream reports 2023 (Kor).pdf

(4.12.1.8) Comment

Please refer to the attached document

Row 2

(4.12.1.1) Publication

Select from:

☑ In voluntary sustainability reports

(4.12.1.3) Environmental issues covered in publication

Select all that apply

☑ Climate change

☑ Water

(4.12.1.4) Status of the publication

Select from:

☑ Complete

(4.12.1.5) Content elements

Select all that apply

☑ Governance

☑ Risks & Opportunities

☑ Strategy

☑ Emissions figures

☑ Emission targets

(4.12.1.6) Page/section reference

Governance 121, 129 page Risks & Opportunities 127 page Strategy 120, 122 page Emissions figures 138, 140 page Emission targets 128 page _ Carbon Emission Reduction Tasks and Target Reduction Amount

(4.12.1.7) Attach the relevant publication

4.12.1 SR Report_2023_EN.pdf

(4.12.1.8) Comment

Please refer to the attached document
[Add row]

C5. Business strategy

(5.1) Does your organization use scenario analysis to identify environmental outcomes?

Climate change

(5.1.1) Use of scenario analysis

Select from:

☑ Yes

(5.1.2) Frequency of analysis

Select from:

☑ Not defined

Water

(5.1.1) Use of scenario analysis

Select from:

☑ No, but we plan to within the next two years

(5.1.3) Primary reason why your organization has not used scenario analysis

Select from:

☑ Not an immediate strategic priority

(5.1.4) Explain why your organization has not used scenario analysis

Hyosung Chemical is prioritizing the analysis of climate change scenarios but has not yet conducted an analysis of water-related scenarios. However, within the next two years, they plan to raise management's awareness of the need for water-related scenario analysis.
[Fixed row]

(5.1.1) Provide details of the scenarios used in your organization’s scenario analysis.

Climate change

(5.1.1.1) Scenario used

Physical climate scenarios

☑ RCP 8.5

(5.1.1.2) Scenario used SSPs used in conjunction with scenario

Select from:

☑ No SSP used

(5.1.1.3) Approach to scenario

Select from:

☑ Quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Chronic physical

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ Unknown

(5.1.1.7) Reference year

2006

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2100

(5.1.1.9) Driving forces in scenario

Local ecosystem asset interactions, dependencies and impacts

☑ Climate change (one of five drivers of nature change)

Regulators, legal and policy regimes

☑ Global regulation

☑ Global targets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

The physical scenario assumes an expected disaster if efforts to respond to climate change are insufficient and the achievement of reduction targets and strategies fails. The Korea Meteorological Administration calculated future climate change forecast data from 2006 to 2100 according to the IPCC's RCP scenario after past climate reproduction experiments (1979-2005) based on the Korean Peninsula area. As a result of the analysis, it was confirmed that the global temperature is continuously rising, and the magnitude of the impact on the company may vary depending on the difference in temperature increase. RCP 8.5 assumes that the temperature on the Korean Peninsula will rise 4.7 by 2100 considering various variables, and RCP 8.5 predicts that the climate index will change, such as a 93.4 day increase (36.5 days 129.9 days) in Korea and an average precipitation increase of 14% (12%) compared to the present. [Analysis] Extreme climate change in RCP 8.5 can cause various accidents and problems in Hyosung Chemicals's business sector, such as property and human damage, loss and loss of products, and deterioration in the quality of products produced. In particular, due to the nature of the 'engineering plastics' product producing process, active responses based on scenario analysis are needed because problems such as poor quality of the product due to flooding and leakage. To actively respond to the expected damage under the RCP 8.5 scenario, the company recognized climate change as a major issue and set a goal of reducing greenhouse gases by 14.5% by 2030 compared to 2018 to contribute to curbing global warming. In the future, we will monitor continuous greenhouse gas emissions and national greenhouse gas reduction scenarios, apply them to the establishment of reduction goals for 2030-2050, and actively participate in global greenhouse gas reduction.

(5.1.1.11) Rationale for choice of scenario

Hyosung Chemical, headquartered in South Korea, used the RCP 8.5 high-carbon scenario provided by the Korea Meteorological Administration to analyze the

physical impact of climate change across the company.

Climate change

(5.1.1.1) Scenario used

Climate transition scenarios

☑ Customized publicly available climate transition scenario, please specify **:**IPCC 1.5ºC scenario

(5.1.1.3) Approach to scenario

Select from:

☑ Quantitative

(5.1.1.4) Scenario coverage

Select from:

☑ Organization-wide

(5.1.1.5) Risk types considered in scenario

Select all that apply

☑ Market

(5.1.1.6) Temperature alignment of scenario

Select from:

☑ 1.5°C or lower

(5.1.1.7) Reference year

2018

(5.1.1.8) Timeframes covered

Select all that apply

☑ 2050

(5.1.1.9) Driving forces in scenario

Regulators, legal and policy regimes

☑ Global regulation

☑ Global targets

Macro and microeconomy

☑ Domestic growth

☑ Globalizing markets

(5.1.1.10) Assumptions, uncertainties and constraints in scenario

To comply with the NDC reporting obligations under the Paris Agreement and respond to climate change, the Republic of Korea has established the "2030 NDC" and the "2050 Carbon Neutral Scenario," aligning with the 1.5 scenario presented by the IPCC. The key parameters used in the scenario include population trends, GDP growth rate trends, international oil prices, and industrial structure outlooks, which have been used to project energy demand and greenhouse gas emissions until 2050. It is expected that energy demand will decrease by 5.0% in 2050 compared to 2018 and an increase in energy demand is expected from new technologies such as CCUS and hydrogen. In terms of final energy, consumption of fossil fuels that emit greenhouse gases is expected to decrease significantly, and demand for electricity, renewable energy, and hydrogen is expected to increase significantly. In the case of greenhouse gas emissions, the net emissions in 2050 were set to 0 in the scenario in consideration of energy projections and the introduction of reduction measures. [Analysis] Hyosung Chemical analyzed the 2030 NDC and 2050 carbon neutral scenarios in the Republic of Korea. According to the scenarios, the projected energy demand in the industrial sector, to which Hyosung Chemical belongs, is expected to be 139.3 million TOE, similar to 148.7 million TOE in 2018. In addition, during the process of achieving carbon neutrality, a significant portion of fossil fuel consumption in the industrial sector is expected to be replaced by electricity, resulting in a projected overall greenhouse gas emissions reduction to 51.1 million tons, an 80.4% reduction compared to 260.5 million tons in 2018. Hyosung Chemical also predicted future BAU emissions through regression analysis of factors such as its energy use, sales trends, and economic growth rate, and set the existing target of 14.5% reduction by 2030 compared to 2018 as an company-wide goal. And we plan to achieve its 2050 carbon neutral scenario industry sector goals by analyzing additional scenarios and establishing a transition plan.

(5.1.1.11) Rationale for choice of scenario

Hyosung Chemical intends to analyze the publicly transition scenario of the Republic of Korea, where its business is located, to prevent risks derived from the analysis of physical climate change scenarios and incorporate them into its business strategy.
[Add row]

(5.1.2) Provide details of the outcomes of your organization’s scenario analysis.

Climate change

(5.1.2.1) Business processes influenced by your analysis of the reported scenarios

Select all that apply

☑ Risk and opportunities identification, assessment and management

☑ Strategy and financial planning

☑ Target setting and transition planning

(5.1.2.2) Coverage of analysis

Select from:

☑ Organization-wide

(5.1.2.3) Summarize the outcomes of the scenario analysis and any implications for other environmental issues

In line with the international community's response to climate change, the Korean government first announced "2050 Carbon Neutral" in October 2020, and later declared the "2050 Carbon Neutral Vision" in December 2020. Since then, in December 2021, the government submitted Korea's raised "2030 National Greenhouse Gas Reduction Goals (NDC)" to the secretariat of the UNFCCC. The emission trading system operated by the government in relation to the establishment of the government's greenhouse gas reduction goal is expected to be directly linked to the 2050 carbon neutral goal and to be an effective means of implementation to achieve the national greenhouse gas reduction targets, Hyosung Chemical has established the 2030 GHG reduction target (14.5% reduction by 2030 compared to 2018). As Hyosung Chemical has been included in the emission trading system allocation target since 2018, it is obligated to report its emissions every year. However, in the emission trading system, emission credits are allocated every year, and if Hyosung Chemical emits more greenhouse gas than the allocated emission credits, there is a cost risk of purchasing emission credits for the shortfall. The government has continuously increased the paid allocation ratio (3% for the 2nd planning period, 10% for the 3rd planning period) to achieve the raised national NDC target (14.5% reduction in 2030 compared to 2018), and there is concern that it will increase further and expand the paid allocation targets. Therefore, it is expected that Hyosung Chemical will need to solve the problem of insufficient emission allowances by achieving the goal of reducing greenhouse gas through low-carbon product development, etc. as it establishes a reduction goal in line with the national NDC goal. Hyosung Chemical has been obligated to report and reduce emissions as a company subject to the allocation of the emission trading system since 2018. Currently, Hyosung Chemical is implementing the emission trading system for the third planned period, and as the petrochemical and electronic materials sectors, which are business areas of Hyosung Chemical, continue to grow and develop, it is expected that there will be a shortage of allowances. The estimated number of credits allocated for the 3rd planned period is 4,457,013 tons, but the estimated emission amount for the same period is expected to be 4,703,582 tons. The amount of reduction due to the planned reduction activities during the same period is 44,392 tons, and it is expected that an additional 437,192 tons of emission credits will be ultimately required. In this case, it is estimated that the debt from the purchase of emission credits will be added by about KRW 13.553,000,000 (assuming KRW 31,000/ton) for the entire period of the 3rd plan. Therefore, Hyosung Chemical has established an internal greenhouse gas reduction target that is at the level of the national NDC target and is carrying out greenhouse gas reduction activities to achieve a 14.5% reduction compared to 2018 by 2030 and plans to

continue its activities in the future. Hyosung Chemical established a mid- to long-term roadmap for responding to climate change according to the scenario analysis results, and in 2022, it first established a greenhouse gas inventory centered on manufacturing subsidiaries and parent company. By 2025, it aims to expand this effort to include Scope 1 to 3 emissions of major subsidiaries by 2025 to enhance the company-wide greenhouse gas inventory management.
[Fixed row]

(5.2) Does your organization's strategy include a climate transition plan?

(5.2.1) Transition plan

Select from:

☑ No, but we are developing a climate transition plan within the next two years

(5.2.15) Primary reason for not having a climate transition plan that aligns with a 1.5°C world

Select from:

☑ Lack of internal resources, capabilities, or expertise (e.g., due to organization size)

(5.2.16) Explain why your organization does not have a climate transition plan that aligns with a 1.5°C world

Hyosung Chemical holds quarterly ESG Management Promotion Committees to enhance its ESG expertise each year, and it plans to present its low-carbon transition plan as a resolution at the annual shareholders' meeting within the next two years. When formulating management strategies, Hyosung Chemical utilizes qualitative climate change scenario analyses, including NDCs, and plans to incorporate quantitative analyses alongside the qualitative scenario analyses within the next two years.
[Fixed row]

(5.3) Have environmental risks and opportunities affected your strategy and/or financial planning?

(5.3.1) Environmental risks and/or opportunities have affected your strategy and/or financial planning

Select from:

☑ Yes, both strategy and financial planning

(5.3.2) Business areas where environmental risks and/or opportunities have affected your strategy

Select all that apply

☑ Products and services

☑ Upstream/downstream value chain

[Fixed row]

(5.3.1) Describe where and how environmental risks and opportunities have affected your strategy.

Products and services

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

☑ Water

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

Hyosung Chemical's polyketone is the world's first engineering plastic independently developed by the company, considering climate change risks. It is anticipated that plastics with high carbon emissions during production will gradually be phased out. According to the verified Life Cycle Assessment (LCA) of polyketone, the product carbon emissions are 3.08 kg-CO2eq per kg, which is lower compared to other engineering plastics. Additionally, the sustainable polymer material manufacturing technology for polyketone, utilizing carbon monoxide and olefins, has received green technology certification from the Ministry of Trade, Industry and Energy. Therefore, Hyosung Chemical is leveraging the opportunity to reduce carbon emissions during manufacturing compared to other engineering plastics, expanding the applications of polyketone as a sustainable material in automotive parts and consumer goods. As the risk of water pollution increases, the need for clean water becomes more critical. Hyosung Chemical aims to turn this risk into an opportunity by investing in membrane technology for commercialization. The company has developed various water purification technologies, starting with the "immersion-type water purification technology," followed by "pressurized membrane filtration water treatment technology" and "two-stage immersion-type water purification system," all of which have received environmental new technology certification.

Upstream/downstream value chain

(5.3.1.1) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.1.2) Environmental issues relevant to the risks and/or opportunities that have affected your strategy in this area

Select all that apply

☑ Climate change

☑ Water

(5.3.1.3) Describe how environmental risks and/or opportunities have affected your strategy in this area

The frequency of ESG-related requests from downstream value chain partners, such as customers, is steadily increasing for Hyosung Chemical. In 2021, there were a total of 2 ESG inquiries, which rose to 14 in 2022 and reached 33 in 2023. Approximately 40% of these inquiries pertained to general ESG topics, including information related to carbon emissions, water usage, and compliance with water quality regulations. About 30% of the inquiries were focused on understanding Hyosung Chemical's current status regarding carbon emissions reduction and requests for further reductions. Customers also expect the company to manage these issues throughout its upstream value chain. In response to these risks, Hyosung Chemical diligently manages climate change and water-related areas. Regarding climate change, a Carbon Emission Reduction Task Force (TFT) is operated quarterly, with representatives from all business sites participating to explore and implement carbon reduction measures. Additionally, the ESG Management Promotion Committee, which includes all ESG-related executives, addresses performance and plans related to water usage and pollutants. To transform these risks into opportunities, Hyosung Chemical strives to receive high ratings from various ESG evaluation agencies. In 2023, the company was awarded a comprehensive A grade by KCGS, a leading ESG evaluation agency in South Korea, and received an A- in the CDP Climate Change category and a Silver rating from Ecovadis.
[Add row]

(5.3.2) Describe where and how environmental risks and opportunities have affected your financial planning.

Row 1

(5.3.2.1) Financial planning elements that have been affected

Select all that apply

☑ Revenues

(5.3.2.2) Effect type

Select all that apply

☑ Risks

☑ Opportunities

(5.3.2.3) Environmental issues relevant to the risks and/or opportunities that have affected these financial planning elements

Select all that apply

☑ Climate change

☑ Water

(5.3.2.4) Describe how environmental risks and/or opportunities have affected these financial planning elements

Hyosung Chemical's polyketone is the world's first engineering plastic independently developed by the company, taking climate change risks into account. It is anticipated that plastics with high carbon emissions during production will gradually be phased out. According to the verified Life Cycle Assessment (LCA) of polyketone, the carbon emissions are 3.08 kg-CO2eq per kg, which is lower than that of other engineering plastics. Leveraging this advantage, Hyosung Chemical expects its polyketone sales in 2024 to improve by 40% compared to 2023. As the risk of water pollution increases, the need for clean water becomes more critical. Hyosung Chemical is investing in converting this risk into an opportunity by commercializing membrane technology. The company has developed various water purification technologies, starting with the "immersion-type water purification technology," followed by "pressurized membrane filtration water treatment technology" and "two-stage immersion-type water purification system," all of which have received environmental new technology certification.
[Add row]

(5.4) In your organization’s financial accounting, do you identify spending/revenue that is aligned with your organization’s climate transition?

	Identification of spending/revenue that is aligned with your organization’s climate transition
	Select from: ☑ No, but we plan to in the next two years

[Fixed row]

(5.5) Does your organization invest in research and development (R&D) of low-carbon products or services related to your sector activities?

	Investment in low-carbon R&D	Comment
	Select from: ☑ No	*Due to deteriorating financial conditions, Hyosung Chemical was unable to invest in low-carbon R&D in 2023.*

[Fixed row]

(5.9) What is the trend in your organization's water-related capital expenditure (CAPEX) and operating expenditure (OPEX) for the reporting year, and the anticipated trend for the next reporting year?

(5.9.1) Water-related CAPEX (+/- % change)

-58

(5.9.2) Anticipated forward trend for CAPEX (+/- % change)

958

(5.9.3) Water-related OPEX (+/- % change)

5.58

(5.9.4) Anticipated forward trend for OPEX (+/- % change)

-1.27

(5.9.5) Please explain

Hyosung Chemical establishes an annual environmental investment plan to minimize pollutant emissions. In 2023, Hyosung Chemical invested a total of 1 billion KRW to reduce non-point source pollutants, including the installation of pH meters and oil detectors at rainwater discharge outlets. In 2024, Hyosung Chemical plans to increase its investment to 4.7 billion KRW for the construction of a high-concentration desulfurization wastewater treatment system and the establishment of an early detection system for water quality pollutants at rainwater discharge outlets.
[Fixed row]

(5.10) Does your organization use an internal price on environmental externalities?

	Use of internal pricing of environmental externalities	Environmental externality priced
	Select from: ☑ Yes	*Select all that apply* ☑ Carbon

[Fixed row]

(5.10.1) Provide details of your organization's internal price on carbon.

Row 1

(5.10.1.1) Type of pricing scheme

Select from:
☑ Shadow price

(5.10.1.2) Objectives for implementing internal price

Select all that apply
☑ Drive low-carbon investment
☑ Identify and seize low-carbon opportunities

(5.10.1.3) Factors considered when determining the price

Select all that apply

☑ Alignment with the price of allowances under an Emissions Trading Scheme

(5.10.1.4) Calculation methodology and assumptions made in determining the price

Hyosung Chemical is a K-ETS target company and is currently subject to regulation under the 3rd plan period (21-25 years). Therefore, Hyosung Chemical is setting its internal carbon price by reflecting the allocated emission price of K-ETS.

(5.10.1.5) Scopes covered

Select all that apply

☑ Scope 1

☑ Scope 2

(5.10.1.6) Pricing approach used – spatial variance

Select from:

☑ Uniform

(5.10.1.8) Pricing approach used – temporal variance

Select from:

☑ Evolutionary

(5.10.1.9) Indicate how you expect the price to change over time

The internal carbon price operated by Hyosung Chemical is set at the same price as the KAU emission trading amount in the reporting year and is applied to all domestic business sites. Therefore, the internal carbon price also changes according to the annual KAU trading amount fluctuation trend, and the internal carbon price is set as the closing price as of the first business day of October each year. The internal carbon price set by Hyosung Chemical for 2023 (reporting year) is KRW 14,000/tCO2.

(5.10.1.10) Minimum actual price used (currency per metric ton CO2e)

14000

(5.10.1.11) Maximum actual price used (currency per metric ton CO2e)

14000

(5.10.1.12) Business decision-making processes the internal price is applied to

Select all that apply

☑ Capital expenditure

☑ Risk management

☑ Opportunity management

(5.10.1.13) Internal price is mandatory within business decision-making processes

Select from:

☑ Yes, for all decision-making processes

(5.10.1.14) % total emissions in the reporting year in selected scopes this internal price covers

100

(5.10.1.15) Pricing approach is monitored and evaluated to achieve objectives

Select from:

☑ Yes

(5.10.1.16) Details of how the pricing approach is monitored and evaluated to achieve your objectives

When establishing management plans by setting an internal price for carbon emissions, the investment in new or expanded carbon-emitting facilities will be reflected as a "cost," while existing carbon reduction facilities will be reflected as a "savings effect." The goal is to ensure that carbon emissions are incorporated into investment decision-making. Thus, during the review of facility investments, a separate evaluation of the carbon price based on greenhouse gas emissions will be conducted alongside the existing economic feasibility analysis. For facility investments that increase carbon emissions (new or expanded facilities), the carbon price will be added to the costs in the economic evaluation. For facility investments that reduce carbon emissions (replacement of old facilities, solar power, low-carbon fuel conversion, etc.), the carbon price will be added as a savings effect in the economic evaluation. The internal carbon price is designated based on the closing price of the K-ETS allocated emission rights on the first business day of October each year.
[Add row]

(5.11) Do you engage with your value chain on environmental issues?

	Engaging with this stakeholder on environmental issues	Environmental issues covered
Suppliers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Customers	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Investors and shareholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water
Other value chain stakeholders	*Select from:* ☑ Yes	*Select all that apply* ☑ Climate change ☑ Water

[Fixed row]

(5.11.1) Does your organization assess and classify suppliers according to their dependencies and/or impacts on the environment?

Climate change

(5.11.1.1) Assessment of supplier dependencies and/or impacts on the environment

Select from:

☑ Yes, we assess the dependencies and/or impacts of our suppliers

(5.11.1.2) Criteria for assessing supplier dependencies and/or impacts on the environment

Select all that apply

☑ Contribution to supplier-related Scope 3 emissions

(5.11.1.3) % Tier 1 suppliers assessed

Select from:

☑ 1-25%

(5.11.1.4) Define a threshold for classifying suppliers as having substantive dependencies and/or impacts on the environment

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments. In 2023, a total of 759 suppliers transacted with Hyosung Chemical, among which 47 raw material suppliers, accounting for 6.19%, underwent assessments. The transaction amount with these 47 suppliers was 1,051,858 million KRW, representing approximately 72.88% of the total transaction amount of 1,443,346 million KRW for the year.

(5.11.1.5) % Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

Select from:

☑ 1-25%

(5.11.1.6) Number of Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

47

Water

(5.11.1.1) Assessment of supplier dependencies and/or impacts on the environment

Select from:

☑ Yes, we assess the dependencies and/or impacts of our suppliers

(5.11.1.2) Criteria for assessing supplier dependencies and/or impacts on the environment

Select all that apply

☑ Impact on water availability

☑ Impact on pollution levels

(5.11.1.3) % Tier 1 suppliers assessed

Select from:

☑ 1-25%

(5.11.1.4) Define a threshold for classifying suppliers as having substantive dependencies and/or impacts on the environment

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments. In 2023, a total of 759 suppliers transacted with Hyosung Chemical, among which 47 raw material suppliers, accounting for 6.19%, underwent assessments. The transaction amount with these 47 suppliers was 1,051,858 million KRW, representing approximately 72.88% of the total transaction amount of 1,443,346 million KRW for the year.

(5.11.1.5) % Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

Select from:

☑ 1-25%

(5.11.1.6) Number of Tier 1 suppliers meeting the thresholds for substantive dependencies and/or impacts on the environment

47
[Fixed row]

(5.11.2) Does your organization prioritize which suppliers to engage with on environmental issues?

Climate change

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ Yes, we prioritize which suppliers to engage with on this environmental issue

(5.11.2.2) Criteria informing which suppliers are prioritized for engagement on this environmental issue

Select all that apply

☑ In line with the criteria used to classify suppliers as having substantive dependencies and/or impacts relating to climate change

(5.11.2.4) Please explain

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments, as these suppliers contribute significantly to the company's upstream Scope 3 emissions. In 2023, a total of 759 suppliers transacted with Hyosung Chemical, among which 47 raw material suppliers, accounting for 6.19%, underwent assessments. The transaction amount with these 47 suppliers was 1,051,858 million KRW, which represents approximately 72.88% of the total transaction amount of 1,443,346 million KRW for the year.

Water

(5.11.2.1) Supplier engagement prioritization on this environmental issue

Select from:

☑ Yes, we prioritize which suppliers to engage with on this environmental issue

(5.11.2.2) Criteria informing which suppliers are prioritized for engagement on this environmental issue

Select all that apply

☑ In line with the criteria used to classify suppliers as having substantive dependencies and/or impacts relating to water

(5.11.2.4) Please explain

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments, as suppliers with higher transaction volumes tend to use more water in the production of products sold to Hyosung Chemical, thereby having a greater impact on water resources. In 2023, a total of 759 suppliers transacted with Hyosung Chemical, among which 47 raw material suppliers, accounting for 6.19%, underwent assessments. The transaction amount with these 47 suppliers was 1,051,858 million KRW, representing approximately 72.88% of the total transaction amount of 1,443,346 million KRW for the year.
[Fixed row]

(5.11.5) Do your suppliers have to meet environmental requirements as part of your organization’s purchasing process?

Climate change

(5.11.5.1) Suppliers have to meet specific environmental requirements related to this environmental issue as part of the purchasing process

Select from:

☑ Yes, environmental requirements related to this environmental issue are included in our supplier contracts

(5.11.5.2) Policy in place for addressing supplier non-compliance

Select from:

☑ Yes, we have a policy in place for addressing non-compliance

(5.11.5.3) Comment

The Code of Conduct for Partners includes defined environmental standards. These environmental standards commit partners to meet the environmental criteria for all products and services they provide and to minimize environmental impacts. The specific implementation details are as follows: 1. Obtain all legally required permits and stay informed about the latest regulatory amendments and comply with them. 2. Strive to reduce the use of resources and energy in processes. 3. Thoroughly manage hazardous substances that are harmful to human health or the environment. 4. Manage air pollutants and control facilities used in processes. 5. Minimize water usage in processes and manage discharges within established limits. If a supplier fails to meet these requirements, Hyosung Chemical will issue warnings and conduct guidance management for the supplier. Additionally, support programs utilizing a fund established to help suppliers meet environmental issues may be implemented to enhance the suppliers' capabilities. While there have been no cases yet, if improvements are not made within a certain timeframe, Hyosung Chemical may suspend transactions with the supplier.

Water

(5.11.5.1) Suppliers have to meet specific environmental requirements related to this environmental issue as part of the purchasing process

Select from:

☑ Yes, environmental requirements related to this environmental issue are included in our supplier contracts

(5.11.5.2) Policy in place for addressing supplier non-compliance

Select from:

☑ Yes, we have a policy in place for addressing non-compliance

(5.11.5.3) Comment

The Code of Conduct for Partners includes defined environmental standards. These environmental standards commit partners to meet the environmental criteria for all products and services they provide and to minimize environmental impacts. The specific implementation details are as follows: 1. Obtain all legally required permits and stay informed about the latest regulatory amendments and comply with them. 2. Strive to reduce the use of resources and energy in processes. 3. Thoroughly manage hazardous substances that are harmful to human health or the environment. 4. Manage air pollutants and control facilities used in processes. 5. Minimize water usage in processes and manage discharges within established limits. If a supplier fails to meet these requirements, Hyosung Chemical will issue warnings and conduct guidance management for the supplier. Additionally, support programs utilizing a fund established to help suppliers meet environmental issues may be implemented to enhance the suppliers' capabilities. While there have been no cases yet, if improvements are not made within a certain timeframe, Hyosung Chemical may suspend transactions with the supplier.
[Fixed row]

(5.11.6) Provide details of the environmental requirements that suppliers have to meet as part of your organization’s purchasing process, and the compliance measures in place.

Climate change

(5.11.6.1) Environmental requirement

Select from:

☑ Disclosure of GHG emissions to your organization (Scope 1 and 2)

(5.11.6.2) Mechanisms for monitoring compliance with this environmental requirement

Select all that apply

☑ Supplier self-assessment

(5.11.6.3) % tier 1 suppliers by procurement spend required to comply with this environmental requirement

Select from:

☑ 1-25%

(5.11.6.4) % tier 1 suppliers by procurement spend in compliance with this environmental requirement

Select from:

☑ 100%

(5.11.6.7) % tier 1 supplier-related scope 3 emissions attributable to the suppliers required to comply with this environmental requirement

Select from:

☑ 100%

(5.11.6.8) % tier 1 supplier-related scope 3 emissions attributable to the suppliers in compliance with this environmental requirement

Select from:

☑ 100%

(5.11.6.9) Response to supplier non-compliance with this environmental requirement

Select from:

☑ Retain and engage

(5.11.6.10) % of non-compliant suppliers engaged

Select from:

☑ None

(5.11.6.11) Procedures to engage non-compliant suppliers

Select all that apply

☑ Assessing the efficacy and efforts of non-compliant supplier actions through consistent and quantified metrics

☑ Providing information on appropriate actions that can be taken to address non-compliance

(5.11.6.12) Comment

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments. In 2023, a total of 759 suppliers transacted with Hyosung Chemical, among which 47 raw material suppliers, accounting for 6.19%, underwent assessments. The transaction amount with these 47 suppliers was 1,051,858 million KRW, representing approximately 72.88% of the total transaction amount of

1,443,346 million KRW for the year, and all these suppliers complied with the environmental standards required by Hyosung Chemical. The Code of Conduct for Partners includes defined environmental standards. These standards commit partners to meet the environmental criteria for all products and services they provide and to minimize environmental impacts. If a supplier fails to meet these requirements, Hyosung Chemical will issue warnings and conduct guidance management for the supplier. Additionally, support programs utilizing a fund established to help suppliers address environmental issues may be implemented to enhance their capabilities. While there have been no cases yet, if improvements are not made within a certain timeframe, Hyosung Chemical may suspend transactions with the supplier.

Water

(5.11.6.1) Environmental requirement

Select from:

☑ Waste and resource reduction and material circularity

(5.11.6.2) Mechanisms for monitoring compliance with this environmental requirement

Select all that apply

☑ Supplier self-assessment

(5.11.6.3) % tier 1 suppliers by procurement spend required to comply with this environmental requirement

Select from:

☑ 1-25%

(5.11.6.4) % tier 1 suppliers by procurement spend in compliance with this environmental requirement

Select from:

☑ 100%

(5.11.6.5) % tier 1 suppliers with substantive environmental dependencies and/or impacts related to this environmental issue required to comply with this environmental requirement

Select from:

☑ 100%

(5.11.6.6) % tier 1 suppliers with substantive environmental dependencies and/or impacts related to this environmental issue that are in compliance with this environmental requirement

Select from:

☑ 100%

(5.11.6.9) Response to supplier non-compliance with this environmental requirement

Select from:

☑ Retain and engage

(5.11.6.10) % of non-compliant suppliers engaged

Select from:

☑ None

(5.11.6.11) Procedures to engage non-compliant suppliers

Select all that apply

☑ Assessing the efficacy and efforts of non-compliant supplier actions through consistent and quantified metrics

☑ Providing information on appropriate actions that can be taken to address non-compliance

(5.11.6.12) Comment

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments. In 2023, a total of 759 suppliers transacted with Hyosung Chemical, among which 47 raw material suppliers, accounting for 6.19%, underwent assessments. The transaction amount with these 47 suppliers was 1,051,858 million KRW, representing approximately 72.88% of the total transaction amount of 1,443,346 million KRW for the year, and all these suppliers complied with the environmental standards required by Hyosung Chemical. The Code of Conduct for Partners includes defined environmental standards. These standards commit partners to meet the environmental criteria for all products and services they provide and to minimize environmental impacts. If a supplier fails to meet these requirements, Hyosung Chemical will issue warnings and conduct guidance management for the supplier. Additionally, support programs utilizing a fund established to help suppliers address environmental issues may be implemented to enhance their capabilities. While there have been no cases yet, if improvements are not made within a certain timeframe, Hyosung Chemical may suspend transactions with the supplier.
[Add row]

(5.11.7) Provide further details of your organization’s supplier engagement on environmental issues.

Climate change

(5.11.7.2) Action driven by supplier engagement

Select from:

☑ Emissions reduction

(5.11.7.3) Type and details of engagement

Capacity building

☑ Provide training, support and best practices on how to measure GHG emissions

☑ Provide training, support and best practices on how to mitigate environmental impact

Information collection

☑ Collect GHG emissions data at least annually from suppliers

(5.11.7.4) Upstream value chain coverage

Select all that apply

☑ Tier 1 suppliers

(5.11.7.5) % of tier 1 suppliers by procurement spend covered by engagement

Select from:

☑ 51-75%

(5.11.7.6) % of tier 1 supplier-related scope 3 emissions covered by engagement

Select from:

☑ 100%

(5.11.7.9) Describe the engagement and explain the effect of your engagement on the selected environmental action

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments. The company distributes ESG self-assessment questionnaires to these suppliers, allowing them to conduct their own evaluations. Hyosung Chemical then analyzes the scores obtained to identify any shortcomings. Based on this assessment, the company will implement support programs aimed at strengthening the environmental management capabilities of the suppliers.

(5.11.7.10) Engagement is helping your tier 1 suppliers meet an environmental requirement related to this environmental issue

Select from:

☑ Yes, please specify the environmental requirement **:**Establishment of environmental management policy

(5.11.7.11) Engagement is helping your tier 1 suppliers engage with their own suppliers on the selected action

Select from:

☑ No

Water

(5.11.7.2) Action driven by supplier engagement

Select from:

☑ Total water withdrawal volumes reduction

(5.11.7.3) Type and details of engagement

Capacity building

☑ Provide training, support and best practices on how to mitigate environmental impact

Information collection

☑ Collect water quality information at least annually from suppliers (e.g., discharge quality, pollution incidents, hazardous substances)

☑ Collect water quantity information at least annually from suppliers (e.g., withdrawal and discharge volumes)

(5.11.7.4) Upstream value chain coverage

Select all that apply

☑ Tier 1 suppliers

(5.11.7.5) % of tier 1 suppliers by procurement spend covered by engagement

Select from:

☑ 51-75%

(5.11.7.7) % tier 1 suppliers with substantive impacts and/or dependencies related to this environmental issue covered by engagement

Select from:

☑ 100%

(5.11.7.9) Describe the engagement and explain the effect of your engagement on the selected environmental action

Hyosung Chemical selects raw material suppliers with annual transaction amounts exceeding 100 million KRW as candidates for social responsibility management assessments. The company distributes ESG self-assessment questionnaires to these suppliers, allowing them to conduct their own evaluations. Hyosung Chemical then analyzes the scores obtained to identify any shortcomings. Based on this assessment, the company will implement support programs aimed at strengthening the environmental management capabilities of the suppliers.

(5.11.7.10) Engagement is helping your tier 1 suppliers meet an environmental requirement related to this environmental issue

Select from:

☑ Yes, please specify the environmental requirement **:**Establishment of environmental management policy

(5.11.7.11) Engagement is helping your tier 1 suppliers engage with their own suppliers on the selected action

Select from:

☑ No

[Add row]

(5.11.9) Provide details of any environmental engagement activity with other stakeholders in the value chain.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Customers

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 1-25%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ 1-25%

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Hyosung Chemical responds annually to ESG inquiries from its clients. Customers communicate environmental requests related to climate change and water management as part of their supply chain management. In 2021, the company received a total of 2 requests, in 2022 it received 14 requests, and in 2023, the number rose to 33. This shows a clear trend of increasing requests each year.

(5.11.9.6) Effect of engagement and measures of success

As of 2023, out of a total of 1,400 customers, 23 have submitted ESG inquiries related to climate change to Hyosung Chemical. The company responds to all inquiries in a timely manner, and the absence of complaints from customers indicates that it is effectively addressing their concerns.

Water

(5.11.9.1) Type of stakeholder

Select from:

☑ Customers

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ Less than 1%

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Hyosung Chemical responds annually to ESG inquiries from its clients. Customers communicate environmental requests related to climate change and water management as part of their supply chain management. In 2021, the company received a total of 2 requests, in 2022 it received 14 requests, and in 2023, the number rose to 33. This shows a clear trend of increasing requests each year.

(5.11.9.6) Effect of engagement and measures of success

As of 2023, out of a total of 1,400 customers, 20 have submitted ESG inquiries related to water to Hyosung Chemical. The company responds to all inquiries in a timely manner, and the absence of complaints from customers indicates that it is effectively addressing their concerns.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Investors and shareholders

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ Unknown

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Hyosung Chemical publishes an annual sustainability management report to share information about product certifications, environmental initiatives, progress, and achievements with external investors and shareholders. Additionally, the company responds annually to ESG assessments from domestic evaluation agency KCGS and international agency EcoVadis, with the assessment grades disclosed on the respective agency websites. External investors and shareholders incorporate Hyosung Chemical's evaluation grades into their decision-making processes.

(5.11.9.6) Effect of engagement and measures of success

Whether the sustainability management report was published on the website and disclosed on DART serves as a metric for evaluating the success of engagement. Based on its 2023 ESG management performance, Hyosung Chemical published the sustainability management report and made it publicly available. Additionally, the evaluation grades from ESG assessment agencies serve as indicators to measure the effectiveness of engagement. In 2023, Hyosung Chemical received an overall A grade, the second highest, in the KCGS ESG evaluation, and was listed in the top 20% with a Silver rating in the EcoVadis assessment.

Water

(5.11.9.1) Type of stakeholder

Select from:

☑ Investors and shareholders

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ Unknown

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Hyosung Chemical publishes an annual sustainability management report to share information about product certifications, environmental initiatives, progress, and achievements with external investors and shareholders. Additionally, the company responds annually to ESG assessments from domestic evaluation agency KCGS and international agency EcoVadis, with the assessment grades disclosed on the respective agency websites. External investors and shareholders incorporate Hyosung Chemical's evaluation grades into their decision-making processes.

(5.11.9.6) Effect of engagement and measures of success

Whether the sustainability management report was published on the website and disclosed on DART serves as a metric for evaluating the success of engagement. Based on its 2023 ESG management performance, Hyosung Chemical published the sustainability management report and made it publicly available. Additionally, the evaluation grades from ESG assessment agencies serve as indicators to measure the effectiveness of engagement. In 2023, Hyosung Chemical received an overall A grade, the second highest, in the KCGS ESG evaluation, and was listed in the top 20% with a Silver rating in the EcoVadis assessment.

Climate change

(5.11.9.1) Type of stakeholder

Select from:

☑ Other value chain stakeholder, please specify **:**employees

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Educate and work with stakeholders on understanding and measuring exposure to environmental risks

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.4) % stakeholder-associated scope 3 emissions

Select from:

☑ None

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Before informing external parties such as suppliers and customers about Hyosung Chemical's ESG management status and engaging with them, it is essential to first communicate the company's ESG performance to its employees. To facilitate this, the ESG management team publishes a monthly ESG newsletter that distributes key ESG news related to environment, society, and governance, as well as updates on the team's activities, to all employees.

(5.11.9.6) Effect of engagement and measures of success

To increase employee interest and engagement with the monthly ESG newsletter, the ESG management team conducts a quiz event each quarter with prizes. The quiz questions are based on the content of the ESG newsletter, successfully generating significant interest among employees.

Water

(5.11.9.1) Type of stakeholder

Select from:

☑ Other value chain stakeholder, please specify **:**employees

(5.11.9.2) Type and details of engagement

Education/Information sharing

☑ Educate and work with stakeholders on understanding and measuring exposure to environmental risks

☑ Share information about your products and relevant certification schemes

☑ Share information on environmental initiatives, progress and achievements

(5.11.9.3) % of stakeholder type engaged

Select from:

☑ 100%

(5.11.9.5) Rationale for engaging these stakeholders and scope of engagement

Before informing external parties such as suppliers and customers about Hyosung Chemical's ESG management status and engaging with them, it is essential to first communicate the company's ESG performance to its employees. To facilitate this, the ESG management team publishes a monthly ESG newsletter that distributes key ESG news related to environment, society, and governance, as well as updates on the team's activities, to all employees.

(5.11.9.6) Effect of engagement and measures of success

To increase employee interest and engagement with the monthly ESG newsletter, the ESG management team conducts a quiz event each quarter with prizes. The quiz questions are based on the content of the ESG newsletter, successfully generating significant interest among employees.
[Add row]

(5.13) Has your organization already implemented any mutually beneficial environmental initiatives due to CDP Supply Chain member engagement?

	Environmental initiatives implemented due to CDP Supply Chain member engagement	Primary reason for not implementing environmental initiatives	Explain why your organization has not implemented any environmental initiatives
	Select from: ☑ No, but we plan to within the next two years	*Select from:* ☑ Lack of internal resources, capabilities, or expertise (e.g., due to organization size)	*Due to organization size*

[Fixed row]

C6. Environmental Performance - Consolidation Approach

(6.1) Provide details on your chosen consolidation approach for the calculation of environmental performance data.

Climate change

(6.1.1) Consolidation approach used

Select from:

☑ Operational control

(6.1.2) Provide the rationale for the choice of consolidation approach

Hyosung Chemicals is a participant in the national emissions trading system, and its greenhouse gas emissions are reported based on the emission facilities related to the production of products under its operational control. Additionally, overseas subsidiaries (Vinachemical, Chaozhou Film) and the affiliated company Shinwa Intertek Co., Ltd. (in which it holds a 20% stake) report greenhouse gas emissions under Scope 3 Category 15 investments.

Water

(6.1.1) Consolidation approach used

Select from:

☑ Operational control

(6.1.2) Provide the rationale for the choice of consolidation approach

It was prepared based on emission facilities over which the company has operational control, in compliance with domestic laws and regulations.

Plastics

(6.1.1) Consolidation approach used

Select from:

☑ Operational control

(6.1.2) Provide the rationale for the choice of consolidation approach

It was prepared based on emission facilities over which the company has operational control, in compliance with domestic laws and regulations.

Biodiversity

(6.1.1) Consolidation approach used

Select from:

☑ Operational control

(6.1.2) Provide the rationale for the choice of consolidation approach

It was prepared based on emission facilities over which the company has operational control, in compliance with domestic laws and regulations.
[Fixed row]

C7. Environmental performance - Climate Change

(7.1) Is this your first year of reporting emissions data to CDP?

Select from:

☑ No

(7.1.1) Has your organization undergone any structural changes in the reporting year, or are any previous structural changes being accounted for in this disclosure of emissions data?

(7.1.1.1) Has there been a structural change?

Select all that apply

☑ Yes, an acquisition

☑ Yes, other structural change, please specify **:**Closure of business sites

(7.1.1.2) Name of organization(s) acquired, divested from, or merged with

1. acquisition: The membrane manufacturing department of Hyosung Anyang Plant 2. Closure of business sites: Daejeon Plant of Hyosung Chemicals

(7.1.1.3) Details of structural change(s), including completion dates

1. The membrane manufacturing department of Hyosung Anyang Plant has been transferred to Hyosung Chemical Co., Ltd. Anyang Plant and added to the organizational boundary. The completion date is December 1, 2023. 2. The Daejeon Plant has been closed as of October 26, 2023, and has been excluded from the organizational boundary.
[Fixed row]

(7.1.2) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?

(7.1.2.1) Change(s) in methodology, boundary, and/or reporting year definition?

Select all that apply

☑ Yes, a change in methodology

☑ Yes, a change in boundary

(7.1.2.2) Details of methodology, boundary, and/or reporting year definition change(s)

Change in methodology: When calculating Scope 3, the emission coefficient have updated compared to last year. Change in boundary: 1. The membrane manufacturing department of Hyosung Anyang Plant has been transferred to Hyosung Chemical Co., Ltd. Anyang Plant and added to the organizational boundary. The completion date is December 1, 2023. 2. The Daejeon Plant has been closed as of October 26, 2023, and has been excluded from the organizational boundary. [Fixed row]

(7.1.3) Have your organization’s base year emissions and past years’ emissions been recalculated as a result of any changes or errors reported in 7.1.1 and/or 7.1.2?

(7.1.3.1) Base year recalculation

Select from:

☑ No, because the impact does not meet our significance threshold

(7.1.3.3) Base year emissions recalculation policy, including significance threshold

Hyosung Chemical's GHG target is to reduce emissions by 14.5% from 2018 levels by 2030. This target includes only Scope 1 and Scope 2 emissions, which are reported based on materiality criteria. The impacts of changes are not due to errors, so the emissions for the base year and previous years will not be recalculated. The Anyang Plant was transferred on December 1, 2023, and its emissions were only reflected in the 2023 totals. The Daejeon Plant was closed on October 26, 2023, and emissions were calculated up to the date of closure.

(7.1.3.4) Past years’ recalculation

Select from:

☑ No

[Fixed row]

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

Select all that apply

☑ ISO 14064-1

☑ The Greenhouse Gas Protocol: Scope 2 Guidance

☑ IPCC Guidelines for National Greenhouse Gas Inventories, 2006

☑ Korea GHG and Energy Target Management System Operating Guidelines

☑ The Greenhouse Gas Protocol: Corporate Value Chain (Scope 3) Standard

☑ The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)

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

	Scope 2, location-based	Scope 2, market-based	Comment
	Select from: ☑ We are reporting a Scope 2, location-based figure	*Select from:* ☑ 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	*The Korean power market is a single regional-based market supplied by KEPCO, and there is no private power market.*

[Fixed row]

(7.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1, Scope 2 or Scope 3 emissions that are within your selected reporting boundary which are not included in your disclosure?

Select from:

☑ No

(7.5) Provide your base year and base year emissions.

Scope 1

(7.5.1) Base year end

12/31/2018

(7.5.2) Base year emissions (metric tons CO2e)

316146.249

(7.5.3) Methodological details

Emissions were calculated using the Korea GHG and Energy Target Management System Operating Guidelines and the IPCC default emission factors for the energy used (LNG, LPG, gasoline, etc.).

Scope 2 (location-based)

(7.5.1) Base year end

12/31/2018

(7.5.2) Base year emissions (metric tons CO2e)

546520.938

(7.5.3) Methodological details

Emissions from purchased electricity have been calculated according to the Korea GHG and Energy Target Management System Operating Guidelines.

Scope 3 category 1: Purchased goods and services

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

1366791.597

(7.5.3) Methodological details

Among the raw materials that account for over 99% of Hyosung Chemical's PU purchases, emissions were calculated based on those for which emission factors can be confirmed (representing over 99.5% of the total purchase quantity). For water usage, calculations were based on the usage at Hyosung Chemical's facilities subject to environmental information disclosure in 2022. Emission calculation: annual purchase quantity GHG emission factor at the production stage (kgCO2-eq). The emission factors prioritize the domestic coefficients from the Ministry of Environment's carbon footprint labeling (as of August 2, 2021). If this data is not available, the global coefficients from Ecoinvent are used.

Scope 3 category 2: Capital goods

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

3.933

(7.5.3) Methodological details

Emissions from laptops, PCs, monitors, and printers purchased and used by Hyosung Chemical were calculated (only for products purchased in 2022). Emission calculation: (individual computer & laptop purchase quantity (ea) individual GHG emission factor (kgCO2/ea). For the emission factors, the latest available factor is prioritized based on the expiration date of the certification, and within the same period, the larger factor is used conservatively.

Scope 3 category 3: Fuel-and-energy-related activities (not included in Scope 1 or 2)

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

84362.349

(7.5.3) Methodological details

GHG emissions generated during the extraction, production, and transportation processes of the fuel purchased and consumed. Emission calculation: (monthly usage GHG emission factor (kgCO2-eq). The emission factors are based on the Ministry of Environment's carbon footprint labeling assessment coefficients (as of August 2, 2021).

Scope 3 category 4: Upstream transportation and distribution

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

938.591

(7.5.3) Methodological details

Emissions were calculated for the transportation of raw materials purchased by Hyosung Chemical (cut-off items in Category 1). Only domestic transportation of raw materials was included, and pipeline transportation was excluded from the calculation. Emission calculation: (monthly raw material transportation distance (km) raw material weight (ton) individual GHG emission factor (kgCO2/ton.km). The emission factors are based on the Ministry of Environment's carbon footprint labeling assessment coefficients (as of August 2, 2021).

Scope 3 category 5: Waste generated in operations

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

4447.107

(7.5.3) Methodological details

Emissions from waste generated at Hyosung Chemical's facilities subject to environmental information disclosure, including Gongdeok Building and Banpo Building, were calculated. 1) Waste emissions were estimated based on waste performance reporting data, categorized by disposal method. 2) For facility waste, methods such as intermediate processing waste manufacturing, repair and reuse, raw material manufacturing, and direct product manufacturing were assumed to be recycling. 3) For municipal waste, information on generation and disposal rates for the city and district where each building is located was used. For recycling and other disposal

methods where the process is unclear, only landfill and incineration were applied. 4) For recycling methods not found in the emission factor database, it was assumed that there are no GHG emissions. Emission calculation: (total waste emissions (kg) GHG emission factor by disposal method (kgCO2/kg). The emission factors are based on the Ministry of Environment's carbon footprint labeling assessment coefficients (as of August 2, 2021).

Scope 3 category 6: Business travel

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

344.428

(7.5.3) Methodological details

1. International Business Trips This includes the international travel records of all employees. - Data is managed for the distance to the representative airport of the respective country and city of the business trip. - The travel distance was initially calculated based on Appendix B of the Environmental Labeling Certification Guidelines, and for countries without specified distances in the appendix, the aviation distance was calculated using the site 'http://www.gcmap.com.' - If multiple countries were visited, distances were calculated in the order recorded in the ERP, assuming a return to Incheon Airport. - However, entries marked as 'other' among cities of multiple countries were excluded, and for single-country trips, the representative city of that country was assumed. Emission calculation: ((distance of each employee's international trip (km)) GHG emission factor (kg-CO2/person.km). The emission factors are based on the EPA, GHG Emission Factor Hub (April 2022). 2. Domestic Business Trips This includes all domestic business trips of Hyosung Chemical employees (using transportation means owned and operated by third parties, such as KTX, buses, flights, and SoCar). - Standard regional distances were applied to estimate emissions. However, ERP trip distance data with missing departure/arrival information or marked as 'other' was used. - For transportation means like 'rental cars' and 'local transportation costs,' trips within the destination were excluded from the calculation, as they do not represent travel between departure and arrival points. - 'Toll fees' were also excluded from the calculation to avoid duplication with private vehicle use. Emission calculation: ((distance of each employee's domestic trip (person/km) GHG emission factor (kg-CO2/person.km). The emission factors are based on the EPA, GHG Emission Factor Hub (April 2022).

Scope 3 category 9: Downstream transportation and distribution

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

52910.822

(7.5.3) Methodological details

Emissions were calculated for the transportation of products sold by Hyosung Chemical overseas. For returned products, which occur at various stages such as before dispatch, prior to shipping, during transportation, and after transportation, it is difficult to assess the details. Therefore, all returns marked with negative weight are calculated as positive weight for transportation. Emission calculation: (raw material transportation distance (km) raw material weight (ton) individual GHG emission factor (kgCO2/ton.km). The emission factors are based on the Ministry of Environment's carbon footprint labeling assessment coefficients (as of August 2, 2021).

Scope 3 category 12: End of life treatment of sold products

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

811223.27

(7.5.3) Methodological details

*It is assumed that the products sold by Hyosung Chemical are treated as 'mixed waste plastic' based on the proportion of disposal methods (incineration, recycling, and recovery) both domestically and internationally. * Among the products sold by each PU (POK, PP/DH, TPA, Neochem, Optical Film, Film), all products except for Neochem, which recovers gas cylinders, are assumed to be disposed of as mixed waste plastic. Emission calculation: (monthly sales weight of products (ton) individual GHG emission factor (kgCO2/ton). The emission factors are based on the Ministry of Environment's carbon footprint labeling assessment coefficients (as of August 2, 2021).*

Scope 3 category 15: Investments

(7.5.1) Base year end

12/30/2022

(7.5.2) Base year emissions (metric tons CO2e)

553600.653

(7.5.3) Methodological details

Emissions were calculated for the corporations listed in the 2022 business report under 'Status of Investments in Other Corporations (Detailed).' However, for overseas facilities, domestic Tier 2 coefficients are used for parameters applicable to emission calculations. Emission calculation: (emissions of each company (tCO2-eq) ownership percentage (%).
[Fixed row]

(7.6) What were your organization’s gross global Scope 1 emissions in metric tons CO2e?

Reporting year

(7.6.1) Gross global Scope 1 emissions (metric tons CO2e)

319258.155

(7.6.3) Methodological details

The 'activity data-based approach' was used for emission calculations. Emissions were calculated based on energy used (LNG, LPG, gasoline, etc.) in accordance with the Korea GHG and Energy Target Management System Operating Guidelines and the IPCC default emission factors, focusing on domestic facilities. Emissions from subsidiaries were reported under Scope 3, Category 15. Third-party verification was conducted for the calculated greenhouse gas emissions, which were then reported to the government. For the reporting year of Hyosung Chemical (2023), the total Scope 1 emissions were calculated to be 319,258.155 tCO2eq.
[Fixed row]

(7.7) What were your organization’s gross global Scope 2 emissions in metric tons CO2e?

Reporting year

(7.7.1) Gross global Scope 2, location-based emissions (metric tons CO2e)

548088.196

(7.7.2) Gross global Scope 2, market-based emissions (metric tons CO2e) (if applicable)

0

(7.7.4) Methodological details

The 'activity data-based approach' was used for emission calculations. Emissions from purchased electricity have been calculated based on domestic facilities in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. Although steam is also used, the greenhouse gas emissions from steam produced from waste heat are zero. Emissions from subsidiaries are reported under Scope 3, Category 15. Third-party verification was conducted for the calculated greenhouse gas emissions, which were then reported to the government. For the reporting year of Hyosung Chemical (2023), the total Scope 2 emissions were calculated to be 548,088.196 tCO2eq.
[Fixed row]

(7.8) Account for your organization’s gross global Scope 3 emissions, disclosing and explaining any exclusions.

Purchased goods and services

(7.8.1) Evaluation status

Select from:
☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

1251563.071

(7.8.3) Emissions calculation methodology

Select all that apply
☑ Average data method

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

0

(7.8.5) Please explain

*Raw materials and water usage purchased by Hyosung Chemical * Emissions were calculated for raw materials that account for over 99% of Hyosung Chemical's purchases, focusing on those for which emission factors can be confirmed (representing over 99.4% of the total purchase quantity). * For water usage, calculations*

*were based on the usage at Hyosung Chemical's facilities subject to environmental information disclosure in 2023. * The emission factors prioritize domestic coefficients from the Ministry of Environment's carbon footprint labeling, and if this data is not available, global coefficients from Ecoinvent are used.*

Capital goods

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

70.163

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

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

0

(7.8.5) Please explain

*Select the number of laptops, PC units, and monitors purchased and used in 2023 from Hyosung Chemical. * If there is no emission factor for the same product, apply the higher emission factor from other products of the same brand. * If there is no updated certification, apply the emission factor of products with expired environmental performance label certification.*

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

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

86188.98

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

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

0

(7.8.5) Please explain

*(Upstream of purchased fuel) Greenhouse gas emissions resulting from the extraction, production, and transportation processes of the fuel purchased and consumed. * Apply the upstream emission factors for each fuel as specified by the Ministry of Environment's carbon performance label.*

Upstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

1555.517

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Distance-based method

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

0

(7.8.5) Please explain

*Calculate the emissions from the transportation of raw materials purchased by Hyosung Chemical (excluding items cut off in Category 1, with the exception of pipeline transportation). * Apply the emission factors specified by the Ministry of Environment’s carbon performance label.*

Waste generated in operations

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

4513.434

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Waste-type-specific method

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

0

(7.8.5) Please explain

*Calculate the waste emissions generated at the Hyosung Chemical facilities subject to environmental information disclosure, specifically the Gongdeok Building and the Banpo Building. * The calculations are based on waste performance reporting data and are categorized according to waste treatment methods. * For facility waste, if the treatment methods include intermediate processing waste manufacturing, repair and reuse, raw material manufacturing, or direct product manufacturing, it is assumed to be recycled. * For municipal waste, generation and treatment ratio information for the city and district where each building is located is utilized; for 'recycling' and 'other' treatment methods where the processes are unclear, only 'landfill' and 'incineration' will be applied. * The emission factors specified by the Ministry of Environment’s carbon performance label are applied, and any recycling not confirmed in the database is assumed to have no greenhouse gas emissions associated with it.*

Business travel

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

412.648

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Distance-based method

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

0

(7.8.5) Please explain

*1. Overseas Business Trips of All Employees * Data is managed for the countries (cities) of business trips, and distances are calculated based on the representative airports of those countries and cities. * Trip distances are initially calculated according to Appendix B of the environmental performance label certification guidelines; for countries without specified distances in the appendix, distances are determined using the aviation distance website 'http://www.gcmap.com.' * For trips with multiple stopover countries, distances are calculated in the order recorded in the ERP, assuming a return to Incheon Airport. * However, items listed as 'other' among the cities of various countries are excluded, and for single-country trips, the representative city of that country is assumed. 2. Domestic Business Trips of All Employees (using transportation methods owned and operated by third parties, such as KTX, buses, flights, and SoCar) * Emission calculations are based on standard distances by region. However, ERP trip distance data that is missing departure/arrival information or marked as 'other' is applied. * For transportation methods like 'rental cars' and 'local transportation costs,' trips are excluded if they are calculated based on movement within the destination rather than between 'departure and arrival.' * For 'toll fees,' since they may overlap with personal vehicle usage, they are excluded from the calculation. 3. The emission factors for both overseas and domestic trips are based on the EPA and the GHG Emission Factor Hub (April 2022).*

Employee commuting

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

The emissions from employee commuting are included in Scope 1. Therefore, there is no need for separate emissions calculations in this category, and it has been excluded from the emissions calculation scope.

Upstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

For rental vehicles, emissions are included in Category 1. There are no upstream emissions from leased assets that are not included in Scope 1 or 2 calculations.

Downstream transportation and distribution

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

65291.93

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Distance-based method

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

0

(7.8.5) Please explain

*1. Calculate the emissions from the transportation of products sold by Hyosung Chemical overseas. * For returned products, emissions occur at various stages such as before shipment, prior to loading, during transport, and after transport. Due to the difficulty in detailed tracking, all returns indicated as (-) weight are calculated as () weight for transportation emissions. 2. Calculate the emissions from the transportation of products sold by Hyosung Chemical domestically (domestic and local). * 'Domestic' refers to sales to domestic companies. * 'Local' refers to sales to domestic companies that export the products overseas. 3. The emission factors are based on the Ministry of Environment's carbon performance label.*

Processing of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Production products include chips, films, and gases (such as PP, TPA, PET film, NF3, etc.), which are considered intermediate goods and go through multiple stages to be made into final products (such as packaging materials and pipes). Due to the variety of additional processing steps for sold products and the differing processing processes for each customer, emissions calculations for this category must be excluded.

Use of sold products

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Production products include chips, films, and gases (such as PP, TPA, PET film, NF3, etc.), which are considered intermediate goods and go through multiple stages to be made into final products (such as packaging materials and pipes). Due to the variety of additional processing steps for sold products and the differing processing processes for each customer, emissions calculations for this category must be excluded.

End of life treatment of sold products

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

741432.739

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Average data method

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

0

(7.8.5) Please explain

It is assumed that products sold by Hyosung Chemical are treated as 'mixed waste plastics' based on the proportions of disposal methods (incineration, recycling, and reuse) used domestically and internationally. The emission factors applied are based on the Ministry of Environment's carbon performance label.

Downstream leased assets

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

There are no emissions calculations possible for this category as leased assets are not operated.

Franchises

(7.8.1) Evaluation status

Select from:

☑ Not relevant, explanation provided

(7.8.5) Please explain

Since it is not in the form of a franchise business, emissions calculations for this category are not possible.

Investments

(7.8.1) Evaluation status

Select from:

☑ Relevant, calculated

(7.8.2) Emissions in reporting year (metric tons CO2e)

703691.382

(7.8.3) Emissions calculation methodology

Select all that apply

☑ Methodology for direct use phase emissions, please specify

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

100

(7.8.5) Please explain

*Emissions are calculated for the three corporations listed under 'Status of Investments in Other Companies (Detailed)' in the 2022 business report, reflecting their ownership percentages (%). * Shin-Hwa Intertech Co., Ltd. has not yet disclosed emissions for 2023, so the emissions for 2022 that are publicly available are used, reflecting an ownership percentage of 20%. * For Hyosung Vina Chemicals Co., Ltd., emissions are calculated based on the energy usage data received, using domestic Tier 2 coefficients for the applied parameters. (Ownership percentage: 100%) * Hyosung Film (Quzhou) Co., Ltd. is excluded from emissions calculations starting from December 2023 when the plant begins operation. (Ownership percentage: 100%)*

Other (upstream)

(7.8.1) Evaluation status

Select from:

☑ Not evaluated

(7.8.5) Please explain

Not applied.

Other (downstream)

(7.8.1) Evaluation status

Select from:

☑ Not evaluated

(7.8.5) Please explain

Not applied.
[Fixed row]

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

	Verification/assurance status
Scope 1	*Select from:* ☑ Third-party verification or assurance process in place

	Verification/assurance status
Scope 2 (location-based or market-based)	*Select from:* ☑ Third-party verification or assurance process in place
Scope 3	*Select from:* ☑ Third-party verification or assurance process in place

[Fixed row]

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

Row 1

(7.9.1.1) Verification or assurance cycle in place

Select from:

☑ Annual process

(7.9.1.2) Status in the current reporting year

Select from:

☑ Complete

(7.9.1.3) Type of verification or assurance

Select from:

☑ Reasonable assurance

(7.9.1.4) Attach the statement

7.9.1 2023 HYOSUNG CHEMICAL GHG Verification OPinion_ Scope1,2.pdf

(7.9.1.5) Page/section reference

1

(7.9.1.6) Relevant standard

Select from:

☑ Korean GHG and energy target management system

(7.9.1.7) Proportion of reported emissions verified (%)

100

[Add row]

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

Row 1

(7.9.2.1) Scope 2 approach

Select from:

☑ Scope 2 location-based

(7.9.2.2) Verification or assurance cycle in place

Select from:

☑ Annual process

(7.9.2.3) Status in the current reporting year

Select from:

☑ Complete

(7.9.2.4) Type of verification or assurance

Select from:

☑ Reasonable assurance

(7.9.2.5) Attach the statement

7.9.1 2023 HYOSUNG CHEMICAL GHG Verification OPinion_ Scope1,2.pdf

(7.9.2.6) Page/ section reference

1

(7.9.2.7) Relevant standard

Select from:

☑ Korean GHG and energy target management system

(7.9.2.8) Proportion of reported emissions verified (%)

100
[Add row]

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

Row 1

(7.9.3.1) Scope 3 category

Select all that apply

☑ Scope 3: Investments
☑ Scope 3: Capital goods
☑ Scope 3: Business travel
☑ Scope 3: End-of-life treatment of sold products
☑ Scope 3: Upstream transportation and distribution
☑ Scope 3: Downstream transportation and distribution

☑ Scope 3: Purchased goods and services

☑ Scope 3: Waste generated in operations

☑ Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2)

(7.9.3.2) Verification or assurance cycle in place

Select from:

☑ Annual process

(7.9.3.3) Status in the current reporting year

Select from:

☑ Complete

(7.9.3.4) Type of verification or assurance

Select from:

☑ Limited assurance

(7.9.3.5) Attach the statement

7.9.3 2023 HYOSUNG CHEMICAL GHG Verification OPinion_ Scope3.pdf

(7.9.3.6) Page/section reference

12

(7.9.3.7) Relevant standard

Select from:

☑ ISO14064-3

(7.9.3.8) Proportion of reported emissions verified (%)

100

[Add row]

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

Select from:

☑ Decreased

(7.10.1) 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 renewable energy consumption

(7.10.1.1) Change in emissions (metric tons CO2e)

21.588

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

0.0024

(7.10.1.4) Please explain calculation

*The change in greenhouse gas emissions in 2023 compared to 2022 is due to the decrease in self-generated solar power consumption. The electricity produced from solar power increased by 46.991 MWh in 2023. When multiplied by the national power emission factor (0.45941 tCO2eq/MWh), this results in a reduction of 21.588 tCO2eq in greenhouse gas emissions. The total greenhouse gas emissions for 2022 (Scope 1 Scope 2) were 892,064.500 tCO2eq, so the change in emissions rate is calculated as 21.588 / 892,064.500 * 100 0.00242%.*

Other emissions reduction activities

(7.10.1.1) Change in emissions (metric tons CO2e)

1397

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

0.1566

(7.10.1.4) Please explain calculation

*The change in greenhouse gas emissions in 2023 compared to 2022 is due to changes in reduction activities. The amount of greenhouse gas reduction from these activities in 2023 is 1,927.000 tCO2eq, indicating a reduction of 1,397 tCO2eq compared to the previous year. The total greenhouse gas emissions for 2022 (Scope 1 Scope 2) were 892,064.500 tCO2eq, so the change in emissions rate is calculated as 1,397 / 892,064.500 * 100 0.1566%.*

Acquisitions

(7.10.1.1) Change in emissions (metric tons CO2e)

1144.694

(7.10.1.2) Direction of change in emissions

Select from:

☑ Increased

(7.10.1.3) Emissions value (percentage)

0.1283

(7.10.1.4) Please explain calculation

Hyosung Co., Ltd. acquired the Membrane Filter manufacturing facility (partial) at the Anyang plant on January 15, 2024. According to the national succession of rights and obligations, the emissions for 2023 were reported by the company, resulting in an increase of 1,144.694 tons of greenhouse gas emissions compared to the previous year. The total greenhouse gas emissions for 2022 (Scope 1 Scope 2) were 892,064.500 tCO2eq, so the change in emissions rate is calculated as

*1,144.694 / 892,064.500 * 100 0.1283%.*

Change in output

(7.10.1.1) Change in emissions (metric tons CO2e)

24718.149

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

2.7709

(7.10.1.4) Please explain calculation

*The change in greenhouse gas emissions in 2023 compared to 2022 due to fluctuations in production volume is a decrease of 24,718.149 tCO2eq. The total greenhouse gas emissions for 2022 (Scope 1 Scope 2) were 892,064.500 tCO2eq, so the change in emissions rate is calculated as 24,718.149 / 892,064.500 * 100 2.77089%.*

Other

(7.10.1.1) Change in emissions (metric tons CO2e)

1241.986

(7.10.1.2) Direction of change in emissions

Select from:

☑ Decreased

(7.10.1.3) Emissions value (percentage)

0.1392

(7.10.1.4) Please explain calculation

*As of October 26, 2023, the Daejeon plant has been closed. As a result of the closure, greenhouse gas emissions have decreased by 1,241.986 tons compared to the previous year. The total greenhouse gas emissions for 2022 (Scope 1 Scope 2) were 892,064.500 tCO2eq, so the change in emissions rate is calculated as 1,241.986 / 892,064.500 * 100 0.1392%.*
[Fixed row]

(7.10.2) Are your emissions performance calculations in 7.10 and 7.10.1 based on a location-based Scope 2 emissions figure or a market-based Scope 2 emissions figure?

Select from:
☑ Location-based

(7.12) Are carbon dioxide emissions from biogenic carbon relevant to your organization?

Select from:
☑ No

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

Select from:
☑ Yes

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

Row 1

(7.15.1.1) Greenhouse gas

Select from:
☑ CO2

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

318885.282

(7.15.1.3) GWP Reference

Select from:

☑ IPCC Second Assessment Report (SAR - 100 year)

Row 2

(7.15.1.1) Greenhouse gas

Select from:

☑ CH4

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

170.368

(7.15.1.3) GWP Reference

Select from:

☑ IPCC Second Assessment Report (SAR - 100 year)

Row 3

(7.15.1.1) Greenhouse gas

Select from:

☑ N2O

(7.15.1.2) Scope 1 emissions (metric tons of CO2e)

202.505

(7.15.1.3) GWP Reference

Select from:

☑ IPCC Second Assessment Report (SAR - 100 year)

[Add row]

(7.16) Break down your total gross global Scope 1 and 2 emissions by country/area.

	Scope 1 emissions (metric tons CO2e)	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Republic of Korea	*319258.155*	*548088.196*	*0*

[Fixed row]

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

Select all that apply

☑ By activity

(7.17.3) Break down your total gross global Scope 1 emissions by business activity.

	Activity	Scope 1 emissions (metric tons CO2e)
Row 1	*Mobile Combustion*	*693.196*
Row 2	*Stationary Combustion*	*267306.053*
Row 3	*Processing Emissions*	*22762.044*

	Activity	Scope 1 emissions (metric tons CO2e)
Row 4	*Waste Disposal*	*28492.715*
Row 5	*Wastewater Treatment*	*4.147*

[Add row]

(7.19) Break down your organization’s total gross global Scope 1 emissions by sector production activity in metric tons CO2e.

	Gross Scope 1 emissions, metric tons CO2e	Comment
Chemicals production activities	*319258.155*	*Hyosung Chemical's Scope 1 emissions are the amount released in the production of chemical products.*

[Fixed row]

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

Select all that apply

☑ By activity

(7.20.3) Break down your total gross global Scope 2 emissions by business activity.

	Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Row 1	*Electricity*	*548088.196*	*0*
Row 2	*Steam*	*0*	*0*

[Add row]

(7.21) Break down your organization's total gross global Scope 2 emissions by sector production activity in metric tons CO2e.

	Scope 2, location-based, metric tons CO2e	Comment
Chemicals production activities	*548088.196*	*Hyosung Chemical's Scope 2 emissions are the amount released in the production of chemical products.*

[Fixed row]

(7.22) Break down your gross Scope 1 and Scope 2 emissions between your consolidated accounting group and other entities included in your response.

Consolidated accounting group

(7.22.1) Scope 1 emissions (metric tons CO2e)

207243.751

(7.22.2) Scope 2, location-based emissions (metric tons CO2e)

496448.031

(7.22.4) Please explain

Hyosung Chemical has two subsidiaries: Hyosung Vina Chemicals Co., Ltd. and Hyosung Film (Quzhou) Co., Ltd., for which greenhouse gas emissions were calculated using the operational control approach. However, Hyosung Film (Quzhou) will start operations in December 2023, so it is excluded from emissions calculations. Shin-Hwa Intertech Co., Ltd. is an associated company with a 20% ownership stake, and emissions are calculated using the equity approach. For Shin-Hwa Intertech, the most recent publicly available emissions data (2022 emissions) from the Ministry of Environment was used. Since the emissions for Scope 1 and 2 are not separately identified, the emissions were assigned entirely to Scope 2, considering that the electric and electronic industries typically have a higher proportion of Scope 2 emissions.

All other entities

(7.22.1) Scope 1 emissions (metric tons CO2e)

0

(7.22.2) Scope 2, location-based emissions (metric tons CO2e)

0

(7.22.4) Please explain

Not applied.
[Fixed row]

(7.23) Is your organization able to break down your emissions data for any of the subsidiaries included in your CDP response?

Select from:
☑ Not relevant as we do not have any subsidiaries

(7.25) Disclose the percentage of your organization's Scope 3, Category 1 emissions by purchased chemical feedstock.

Row 1

(7.25.1) Purchased feedstock

Select from:

☑ Ammonia

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

0.08

(7.25.3) Explain calculation methodology

Ammonia and NF3 (nitrogen trifluoride) are used as main raw materials, and the emission factors are based on the Ministry of Environment's carbon performance label evaluation coefficients (as of August 2, 2021).

Row 2

(7.25.1) Purchased feedstock

Select from:

☑ Methanol

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

0.02

(7.25.3) Explain calculation methodology

Methanol is used as an auxiliary material in POK and Optical TAC Film, and the emission factors are based on the Ministry of Environment's carbon performance label evaluation coefficients (as of August 2, 2021).

Row 3

(7.25.1) Purchased feedstock

Select from:

☑ Propylene (FCC)

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

4.76

(7.25.3) Explain calculation methodology

Propylene is used as the main raw material for PP (polypropylene), and the emission factors are based on the Ministry of Environment's carbon performance label evaluation coefficients (as of August 2, 2021).

Row 4

(7.25.1) Purchased feedstock

Select from:

☑ Propane liquid

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

56.02

(7.25.3) Explain calculation methodology

Propane liquid is used as the main raw material for PP (polypropylene), and the emission factors are based on Ecoinvent v3.9.1, market for propane, GLO (IPCC 2021, climate change, GWP100).

Row 5

(7.25.1) Purchased feedstock

Select from:

☑ Other (please specify) **:**Terephthalic acid, Polycaprolactam

(7.25.2) Percentage of Scope 3, Category 1 tCO2e from purchased feedstock

38.99

(7.25.3) Explain calculation methodology

Other raw materials include p-xylene, which is primarily used as a raw material for TPA; ethylene, which is used for POK and PP; HF for NF3; and terephthalic acid and polycaprolactam for films. The emission factors are based on Ecoinvent v3.9.1, market for propane, GLO (IPCC 2021, climate change, GWP100), and the Ministry of Environment's carbon performance label evaluation coefficients (as of August 2, 2021).
[Add row]

(7.25.1) Disclose sales of products that are greenhouse gases.

Carbon dioxide (CO2)

(7.25.1.1) Sales, metric tons

0

(7.25.1.2) Comment

Hyosung Chemical does not sell this product.

Methane (CH4)

(7.25.1.1) Sales, metric tons

0

(7.25.1.2) Comment

Hyosung Chemical does not sell this product.

Nitrous oxide (N2O)

(7.25.1.1) Sales, metric tons

0

(7.25.1.2) Comment

Hyosung Chemical does not sell this product.

Hydrofluorocarbons (HFC)

(7.25.1.1) Sales, metric tons

0

(7.25.1.2) Comment

Hyosung Chemical does not sell this product.

Perfluorocarbons (PFC)

(7.25.1.1) Sales, metric tons

0

(7.25.1.2) Comment

Hyosung Chemical does not sell this product.

Sulphur hexafluoride (SF6)

(7.25.1.1) Sales, metric tons

0

(7.25.1.2) Comment

Hyosung Chemical does not sell this product.

Nitrogen trifluoride (NF3)

(7.25.1.2) Comment

Hyosung Chemical sells NEOCHEM, a NF3 product, but the sales volume is not disclosed because it is a business secret.
[Fixed row]

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

Row 1

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 1

(7.26.4) Allocation level

Select from:

☑ Facility

(7.26.5) Allocation level detail

Your company's allocation of greenhouse gas emissions was based on the facilities involved in the production of the product, based on the statement on GHG emissions.

(7.26.6) Allocation method

Select from:

☑ Allocation based on the market value of products purchased

(7.26.9) Emissions in metric tonnes of CO2e

4.87

(7.26.10) Uncertainty (±%)

7

(7.26.11) Major sources of emissions

The major source of emissions allocated to your company is 'indirect emissions (external electricity use').

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Your company's allocation of greenhouse gas emissions was based on the emission facilities involved in the production of the products over which we have operational control, and there are no major exclusions.

(7.26.14) Where published information has been used, please provide a reference

Hyosung Chemical's total carbon emissions have been disclosed in the sustainability management report, but the total carbon emissions of Neochem PU have not been made public.

Row 2

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: location-based

(7.26.4) Allocation level

Select from:

☑ Facility

(7.26.5) Allocation level detail

Your company’s allocation of greenhouse gas emissions was based on the facilities involved in the production of the product, based on the statement on GHG emissions.

(7.26.6) Allocation method

Select from:

☑ Allocation based on the market value of products purchased

(7.26.9) Emissions in metric tonnes of CO2e

36023

(7.26.10) Uncertainty (±%)

7

(7.26.11) Major sources of emissions

The major source of emissions allocated to your company is 'indirect emissions (external electricity use’).

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Your company’s allocation of greenhouse gas emissions was based on the emission facilities involved in the production of the products over which we have operational control, and there are no major exclusions.

(7.26.14) Where published information has been used, please provide a reference

Hyosung Chemical's total carbon emissions have been disclosed in the sustainability management report, but the total carbon emissions of Neochem PU have not been made public.

Row 3

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 1

(7.26.4) Allocation level

Select from:

☑ Facility

(7.26.5) Allocation level detail

Your company's allocation of greenhouse gas emissions was based on the facilities involved in the production of the product, based on the statement on GHG emissions.

(7.26.6) Allocation method

Select from:

☑ Allocation based on the market value of products purchased

(7.26.9) Emissions in metric tonnes of CO2e

0.86

(7.26.10) Uncertainty (±%)

7

(7.26.11) Major sources of emissions

The major source of emissions allocated to your company is 'indirect emissions (external electricity use').

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Your company's allocation of greenhouse gas emissions was based on the emission facilities involved in the production of the products over which we have operational control, and there are no major exclusions.

(7.26.14) Where published information has been used, please provide a reference

Hyosung Chemical's total carbon emissions have been disclosed in the sustainability management report, but the total carbon emissions of Neochem PU have not been made public.

Row 4

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: location-based

(7.26.4) Allocation level

Select from:

☑ Facility

(7.26.5) Allocation level detail

Your company’s allocation of greenhouse gas emissions was based on the facilities involved in the production of the product, based on the statement on GHG emissions.

(7.26.6) Allocation method

Select from:

☑ Allocation based on the market value of products purchased

(7.26.9) Emissions in metric tonnes of CO2e

6383

(7.26.10) Uncertainty (±%)

7

(7.26.11) Major sources of emissions

The major source of emissions allocated to your company is 'indirect emissions (external electricity use’).

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Your company’s allocation of greenhouse gas emissions was based on the emission facilities involved in the production of the products over which we have operational control, and there are no major exclusions.

(7.26.14) Where published information has been used, please provide a reference

Hyosung Chemical's total carbon emissions have been disclosed in the sustainability management report, but the total carbon emissions of Neochem PU have not

been made public.

Row 5

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 1

(7.26.4) Allocation level

Select from:

☑ Facility

(7.26.5) Allocation level detail

Your company's allocation of greenhouse gas emissions was based on the facilities involved in the production of the product, based on the statement on GHG emissions.

(7.26.6) Allocation method

Select from:

☑ Allocation based on the market value of products purchased

(7.26.9) Emissions in metric tonnes of CO2e

1.27

(7.26.10) Uncertainty (±%)

7

(7.26.11) Major sources of emissions

The major source of emissions allocated to your company is 'indirect emissions (external electricity use').

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Your company's allocation of greenhouse gas emissions was based on the emission facilities involved in the production of the products over which we have operational control, and there are no major exclusions.

(7.26.14) Where published information has been used, please provide a reference

Hyosung Chemical's total carbon emissions have been disclosed in the sustainability management report, but the total carbon emissions of Neochem PU have not been made public.

Row 6

(7.26.1) Requesting member

Select from:

(7.26.2) Scope of emissions

Select from:

☑ Scope 2: location-based

(7.26.4) Allocation level

Select from:

☑ Facility

(7.26.5) Allocation level detail

Your company’s allocation of greenhouse gas emissions was based on the facilities involved in the production of the product, based on the statement on GHG emissions.

(7.26.6) Allocation method

Select from:

☑ Allocation based on the market value of products purchased

(7.26.9) Emissions in metric tonnes of CO2e

9362

(7.26.10) Uncertainty (±%)

7

(7.26.11) Major sources of emissions

The major source of emissions allocated to your company is 'indirect emissions (external electricity use’).

(7.26.12) Allocation verified by a third party?

Select from:

☑ No

(7.26.13) Please explain how you have identified the GHG source, including major limitations to this process and assumptions made

Your company’s allocation of greenhouse gas emissions was based on the emission facilities involved in the production of the products over which we have operational control, and there are no major exclusions.

(7.26.14) Where published information has been used, please provide a reference

Hyosung Chemical's total carbon emissions have been disclosed in the sustainability management report, but the total carbon emissions of Neochem PU have not

been made public.
[Add row]

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

Row 1

(7.27.1) Allocation challenges

Select from:

☑ We face no challenges

(7.27.2) Please explain what would help you overcome these challenges

We face no challenges
[Add row]

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

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

Select from:

☑ No

(7.28.3) Primary reason for no plans to develop your capabilities to allocate emissions to your customers

Select from:

☑ Not an immediate strategic priority

(7.28.4) Explain why you do not plan to develop capabilities to allocate emissions to your customers

This is enough for now.
[Fixed row]

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

Select from:
☑ More than 5% but less than or equal to 10%

(7.30) 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)	*Select from:* ☑ Yes
Consumption of purchased or acquired electricity	*Select from:* ☑ Yes
Consumption of purchased or acquired heat	*Select from:* ☑ No
Consumption of purchased or acquired steam	*Select from:* ☑ Yes
Consumption of purchased or acquired cooling	*Select from:* ☑ No
Generation of electricity, heat, steam, or cooling	*Select from:* ☑ Yes

[Fixed row]

(7.30.1) Report your organization's energy consumption totals (excluding feedstocks) in MWh.

Consumption of fuel (excluding feedstock)

(7.30.1.1) Heating value

Select from:

☑ HHV (higher heating value)

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

679053.42

(7.30.1.4) Total (renewable and non-renewable) MWh

679053.42

Consumption of purchased or acquired electricity

(7.30.1.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

1193024.71

(7.30.1.4) Total (renewable and non-renewable) MWh

1193024.71

Consumption of purchased or acquired steam

(7.30.1.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

0

(7.30.1.3) MWh from non-renewable sources

45352.4

(7.30.1.4) Total (renewable and non-renewable) MWh

45352.4

Consumption of self-generated non-fuel renewable energy

(7.30.1.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

213.89

(7.30.1.4) Total (renewable and non-renewable) MWh

213.89

Total energy consumption

(7.30.1.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.1.2) MWh from renewable sources

213.89

(7.30.1.3) MWh from non-renewable sources

1917430.52

(7.30.1.4) Total (renewable and non-renewable) MWh

1917644.41
[Fixed row]

(7.30.3) Report your organization’s energy consumption totals (excluding feedstocks) for chemical production activities in MWh.

Consumption of fuel (excluding feedstocks)

(7.30.3.1) Heating value

Select from:

☑ HHV (higher heating value)

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

72668

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

606385.42

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

679053.42

Consumption of purchased or acquired electricity

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

1193024.71

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

1193024.71

Consumption of purchased or acquired steam

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

0

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

45352.4

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

0

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

45352.4

Consumption of self-generated non-fuel renewable energy

(7.30.3.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

213.89

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

213.89

Total energy consumption

(7.30.3.1) Heating value

Select from:
☑ Unable to confirm heating value

(7.30.3.2) MWh consumed from renewable sources inside chemical sector boundary

213.89

(7.30.3.3) MWh consumed from non-renewable sources inside chemical sector boundary (excluding recovered waste heat/gases)

1311045.1

(7.30.3.4) MWh consumed from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary

606385.42

(7.30.3.5) Total MWh (renewable + non-renewable + MWh from recovered waste heat/gases) consumed inside chemical sector boundary

1917644.41
[Fixed row]

(7.30.6) 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	*Select from:* ☑ Yes
Consumption of fuel for the generation of heat	*Select from:* ☑ Yes
Consumption of fuel for the generation of steam	*Select from:* ☑ Yes
Consumption of fuel for the generation of cooling	*Select from:* ☑ No
Consumption of fuel for co-generation or tri-generation	*Select from:* ☑ No

[Fixed row]

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

Sustainable biomass

(7.30.7.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.8) Comment

Not used.

Other biomass

(7.30.7.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.8) Comment

Not used.

Other renewable fuels (e.g. renewable hydrogen)

(7.30.7.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.8) Comment

Not used.

Coal

(7.30.7.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.8) Comment

Not used.

Oil

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

927.02

(7.30.7.3) MWh fuel consumed for self-generation of electricity

138.74

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.8) Comment

Use of petroleum-based fuels.

Gas

(7.30.7.1) Heating value

Select from:
☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

678067.57

(7.30.7.3) MWh fuel consumed for self-generation of electricity

7237.85

(7.30.7.4) MWh fuel consumed for self-generation of heat

368034.95

(7.30.7.5) MWh fuel consumed for self-generation of steam

302794.77

(7.30.7.8) Comment

Use of petroleum-based fuels.

Other non-renewable fuels (e.g. non-renewable hydrogen)

(7.30.7.1) Heating value

Select from:

☑ Unable to confirm heating value

(7.30.7.2) Total fuel MWh consumed by the organization

0

(7.30.7.3) MWh fuel consumed for self-generation of electricity

0

(7.30.7.4) MWh fuel consumed for self-generation of heat

0

(7.30.7.5) MWh fuel consumed for self-generation of steam

0

(7.30.7.8) Comment

Not used.

Total fuel

(7.30.7.1) Heating value

Select from:

☑ HHV

(7.30.7.2) Total fuel MWh consumed by the organization

678994.58

(7.30.7.3) MWh fuel consumed for self-generation of electricity

7376.58

(7.30.7.4) MWh fuel consumed for self-generation of heat

368034.95

(7.30.7.5) MWh fuel consumed for self-generation of steam

302794.77

(7.30.7.8) Comment

Use of petroleum-based fuels.
[Fixed row]

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

Electricity

(7.30.9.1) Total Gross generation (MWh)

7590.47

(7.30.9.2) Generation that is consumed by the organization (MWh)

7590.47

(7.30.9.3) Gross generation from renewable sources (MWh)

213.89

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

213.89

Heat

(7.30.9.1) Total Gross generation (MWh)

368014.56

(7.30.9.2) Generation that is consumed by the organization (MWh)

368014.56

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Steam

(7.30.9.1) Total Gross generation (MWh)

302794.77

(7.30.9.2) Generation that is consumed by the organization (MWh)

302794.77

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0

Cooling

(7.30.9.1) Total Gross generation (MWh)

0

(7.30.9.2) Generation that is consumed by the organization (MWh)

0

(7.30.9.3) Gross generation from renewable sources (MWh)

0

(7.30.9.4) Generation from renewable sources that is consumed by the organization (MWh)

0
[Fixed row]

(7.30.11) Provide details on electricity, heat, steam, and cooling your organization has generated and consumed for chemical production activities.

Electricity

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

7590.47

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

7590.47

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

213.89

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

7237.85

Heat

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

368014.56

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

368014.56

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

0

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

336575.25

Steam

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

302794.77

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

302794.77

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

0

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

269810.16

Cooling

(7.30.11.1) Total gross generation inside chemicals sector boundary (MWh)

0

(7.30.11.2) Generation that is consumed inside chemicals sector boundary (MWh)

0

(7.30.11.3) Generation from renewable sources inside chemical sector boundary (MWh)

0

(7.30.11.4) Generation from waste heat/gases recovered from processes using fuel feedstocks inside chemical sector boundary (MWh)

0
[Fixed row]

(7.30.16) Provide a breakdown by country/area of your electricity/heat/steam/cooling consumption in the reporting year.

Republic of Korea

(7.30.16.1) Consumption of purchased electricity (MWh)

1193024.71

(7.30.16.2) Consumption of self-generated electricity (MWh)

7864.89

(7.30.16.4) Consumption of purchased heat, steam, and cooling (MWh)

45352.4

(7.30.16.5) Consumption of self-generated heat, steam, and cooling (MWh)

670809.34

(7.30.16.6) Total electricity/heat/steam/cooling energy consumption (MWh)

1917051.34
[Fixed row]

(7.31) Does your organization consume fuels as feedstocks for chemical production activities?

Select from:
☑ Yes

(7.31.1) Disclose details on your organization's consumption of feedstocks for chemical production activities.

Row 1

(7.31.1.1) Fuels used as feedstocks

Select from:
☑ Propane liquid

(7.31.1.2) Total consumption

631.59

(7.31.1.3) Total consumption unit

Select from:

☑ thousand metric tons

(7.31.1.4) Inherent carbon dioxide emission factor of feedstock, metric tons CO2 per consumption unit

2.99

(7.31.1.5) Heating value of feedstock, MWh per consumption unit

12.86

(7.31.1.6) Heating value

Select from:

☑ LHV

(7.31.1.7) Comment

The carbon dioxide emission factors and the heating values of the raw materials were calculated using the Tier 2 country-specific heating values and emission factors from the 'Guidelines on Emission Reporting and Verification for the Korean Greenhouse Gas Emission Trading System' [Appendix 12].
[Add row]

(7.31.2) State the percentage, by mass, of primary resource from which your chemical feedstocks derive.

Oil

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

Natural Gas

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

Coal

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

Biomass

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

Waste (non-biomass)

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

Fossil fuel (where coal, gas, oil cannot be distinguished)

(7.31.2.1) Percentage of total chemical feedstock (%)

100

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

Unknown source or unable to disaggregate

(7.31.2.1) Percentage of total chemical feedstock (%)

0

(7.31.2.2) Direction of change in percentage of total chemical feedstock from previous year

Select from:

☑ No change

[Fixed row]

(7.39) Provide details on your organization’s chemical products.

Row 1

(7.39.1) Output product

Select from:

☑ Other, please specify **:**Polypropylene

(7.39.2) Production (metric tons)

594873

(7.39.3) Capacity (metric tons)

600000

(7.39.4) Direct emissions intensity (metric tons CO2e per metric ton of product)

0.16

(7.39.5) Electricity intensity (MWh per metric ton of product)

0.37

(7.39.6) Steam intensity (MWh per metric ton of product)

0

(7.39.7) Steam/ heat recovered (MWh per metric ton of product)

0

(7.39.8) Comment

Hyosung Chemical's main representative product is polypropylene. The production volume for 2023 is 594,873 tons. The emissions from the indirect energy used to

produce PP (such as LNG and off-gas) total 93,590.08 tons. The total electricity consumption is 222,774.032 MWh, which includes 7,076.863 MWh generated from direct energy, self-generated solar power, and waste heat power generation. No external steam was used, so it is zero.
[Add row]

(7.45) 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.

Row 1

(7.45.1) Intensity figure

4.311e-7

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

867346.35

(7.45.3) Metric denominator

Select from:
☑ unit total revenue

(7.45.4) Metric denominator: Unit total

2011883834521

(7.45.5) Scope 2 figure used

Select from:
☑ Location-based

(7.45.6) % change from previous year

10.54

(7.45.7) Direction of change

Select from:

☑ Increased

(7.45.8) Reasons for change

Select all that apply

☑ Change in output

(7.45.9) Please explain

*Hyosung Chemical has established the factors affecting greenhouse gas intensity as 'emissions (numerator) and revenue (denominator).' In 2023, the CO2e per revenue increased by 10.54% compared to the previous year due to a decrease in production volume. * 2022 intensity (tCO2e/total revenue (won) 892,064.499 / 2,287,412,310.278 0.0000003900 * 2023 intensity (tCO2e/total revenue (won) 867,346.351 / 2,011,883,834,521 0.0000004311*
[Add row]

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

Select all that apply

☑ Absolute target

(7.53.1) Provide details of your absolute emissions targets and progress made against those targets.

Row 1

(7.53.1.1) Target reference number

Select from:

☑ Abs 1

(7.53.1.2) Is this a science-based target?

Select from:

☑ No, but we anticipate setting one in the next two years

(7.53.1.5) Date target was set

10/20/2021

(7.53.1.6) Target coverage

Select from:

☑ Organization-wide

(7.53.1.7) Greenhouse gases covered by target

Select all that apply

☑ Methane (CH4)

☑ Nitrous oxide (N2O)

☑ Carbon dioxide (CO2)

☑ Perfluorocarbons (PFCs)

☑ Hydrofluorocarbons (HFCs)

☑ Sulphur hexafluoride (SF6)

(7.53.1.8) Scopes

Select all that apply

☑ Scope 1

☑ Scope 2

(7.53.1.9) Scope 2 accounting method

Select from:

☑ Location-based

(7.53.1.11) End date of base year

12/30/2018

(7.53.1.12) Base year Scope 1 emissions covered by target (metric tons CO2e)

316146.25

(7.53.1.13) Base year Scope 2 emissions covered by target (metric tons CO2e)

546520.94

(7.53.1.31) Base year total Scope 3 emissions covered by target (metric tons CO2e)

0.000

(7.53.1.32) Total base year emissions covered by target in all selected Scopes (metric tons CO2e)

862667.190

(7.53.1.33) Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1

100

(7.53.1.34) Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2

100

(7.53.1.53) Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes

100

(7.53.1.54) End date of target

12/30/2030

(7.53.1.55) Targeted reduction from base year (%)

14.5

(7.53.1.56) Total emissions at end date of target covered by target in all selected Scopes (metric tons CO2e)

737580.447

(7.53.1.57) Scope 1 emissions in reporting year covered by target (metric tons CO2e)

319258.155

(7.53.1.58) Scope 2 emissions in reporting year covered by target (metric tons CO2e)

548088.196

(7.53.1.77) Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)

867346.351

(7.53.1.78) Land-related emissions covered by target

Select from:

☑ No, it does not cover any land-related emissions (e.g. non-FLAG SBT)

(7.53.1.79) % of target achieved relative to base year

-3.74

(7.53.1.80) Target status in reporting year

Select from:

☑ Underway

(7.53.1.82) Explain target coverage and identify any exclusions

Hyosung Chemical has established absolute targets for Scope 1 2 emissions, and there are no excluded emission sources in this scope. Additionally, land-related emissions are not included within the target boundary.

(7.53.1.83) Target objective

As a global company focused on businesses that have a significant impact on climate change, Hyosung Chemical is making various efforts across its management to minimize the effects of climate change. The company aims for sustainable growth by fulfilling various requirements, including: - Achieving the national goal of carbon neutrality by 2050 - Strengthening carbon regulations in the international community (such as the EU CBAM and the U.S. Clean Competition Act) - Addressing stakeholders' demands for reducing carbon emissions and increasing the use of renewable energy - Growing investor interest in climate change response efforts -

Preventing financial risks due to rising domestic carbon credit prices.

(7.53.1.84) Plan for achieving target, and progress made to the end of the reporting year

In the reporting year, Hyosung Chemical is undertaking activities to achieve its reduction targets. To achieve greater reductions, the company plans to implement fuel switching, process improvements, energy efficiency enhancements, and an increase in the use of recycled raw materials. For reduction amounts that are challenging to achieve through internal energy-saving efforts alone, the company is pursuing long-term measures, such as entering into third-party Power Purchase Agreements (PPAs) for renewable energy produced domestically and purchasing carbon credits. The plan is to gradually increase the share of renewable energy in its operations.

(7.53.1.85) Target derived using a sectoral decarbonization approach

Select from:

☑ No

[Add row]

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

Select all that apply

☑ No other climate-related targets

(7.55) 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.

Select from:

☑ Yes

(7.55.1) 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*	*`Numeric input*
To be implemented	*0*	*0*
Implementation commenced	*0*	*0*
Implemented	*20*	*1397*
Not to be implemented	*0*	*`Numeric input*

[Fixed row]

(7.55.2) Provide details on the initiatives implemented in the reporting year in the table below.

Row 1

(7.55.2.1) Initiative category & Initiative type

Energy efficiency in production processes

☑ Process optimization

(7.55.2.2) Estimated annual CO2e savings (metric tonnes CO2e)

1927

(7.55.2.3) Scope(s) or Scope 3 category(ies) where emissions savings occur

Select all that apply

☑ Scope 2 (location-based)

(7.55.2.4) Voluntary/Mandatory

Select from:

☑ Voluntary

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

752494197

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

663000000

(7.55.2.7) Payback period

Select from:

☑ <1 year

(7.55.2.8) Estimated lifetime of the initiative

Select from:

☑ Ongoing

(7.55.2.9) Comment

In 2023, the number of completed energy-saving activities through process efficiency improvements is 20, with a total expected energy savings of 4,194,505 kWh. Applying an electricity rate of 179.4 won/kWh, the annual energy cost savings amount to 752,494,197 won. Major activities include improvements to the air conditioning in the rectifier room, adjustments to the operating hours of the Waste KF Pump, adjustments to the number of operating units, optimization of lighting system efficiency, load reduction on the distillation column, and improvements to the operating conditions of the Coater Dryer.
[Add row]

(7.55.3) What methods do you use to drive investment in emissions reduction activities?

Row 1

(7.55.3.1) Method

Select from:

☑ Dedicated budget for other emissions reduction activities

(7.55.3.2) Comment

Hyosung Chemical annually makes an investment budget for GHG reduction and energy efficiency investment. The budget contains all energy efficiency projects including facilities replacement, change of energy source and process improvements. Of the total emissions, greenhouse gas emissions from direct emissions account for 36% and indirect emissions account for 64%, so activities are being carried out to reduce fuel use and power consumption together.
[Add row]

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

Select from:

☑ No, I am not providing data

(7.74) Do you classify any of your existing goods and/or services as low-carbon products?

Select from:

☑ Yes

(7.74.1) Provide details of your products and/or services that you classify as low-carbon products.

Row 1

(7.74.1.1) Level of aggregation

Select from:

☑ Product or service

(7.74.1.2) Taxonomy used to classify product(s) or service(s) as low-carbon

Select from:

☑ No taxonomy used to classify product(s) or service(s) as low carbon

(7.74.1.3) Type of product(s) or service(s)

Other

☑ Other, please specify **:**POKETONE(polyketone polymer for engineering plastic)

(7.74.1.4) Description of product(s) or service(s)

Hyosung Chemical's low-carbon product is the world's first commercialized Polyketone, and POKETONE used as a raw material for engineering plastics. POKETONE is a material produced using carbon monoxide and olefin or carbon monoxide and ethylene and propylene. It has obtained FDA and green certifications, and has excellent performance such as high chemical resistance, high impact resistance, and high abrasion resistance. Hyosung Chemical carried out LCA for POKETONE in 2020 and LCA Critical Review in 2021 to secure the reliability of carbon emission in the entire process of POKETONE.

(7.74.1.5) Have you estimated the avoided emissions of this low-carbon product(s) or service(s)

Select from:

☑ Yes

(7.74.1.6) Methodology used to calculate avoided emissions

Select from:

☑ Other, please specify **:**Life Cycle Assessment(LCA) according to ISO14040, ISO14044 and Eco-profiles and Environment Declarations Version 2.0 Methodology and PCR of Plastic Europe

(7.74.1.7) Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Select from:

☑ Cradle-to-gate

(7.74.1.8) Functional unit used

Production of 1t of POKETONE pellets

(7.74.1.9) Reference product/service or baseline scenario used

Production of 1t of PA6

(7.74.1.10) Life cycle stage(s) covered for the reference product/service or baseline scenario

Select from:

☑ Cradle-to-gate

(7.74.1.11) Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

3.62

(7.74.1.12) Explain your calculation of avoided emissions, including any assumptions

POKETONE of Hyosung Chemical confirmed greenhouse gas emissions of 3.08 kg CO2e/kg in the Cradle-to-gate life cycle through LCA and LCA Critical Review. PA6 was used as the most used of the five general-purpose engineering plastics, and according to Plastic Europe's Eco-profiles and Environment Declarations Version 2.0, which was also applied to POKETONE LCA, PA6 produced 6.70 kgCO2e/kg of carbon emissions in the same life cycle. Accordingly, the difference between the two emission coefficients, 3.62tCO2e/t (6.70-3.08), was calculated as the expected avoidance emission. However, since PA6 emission is the industry average data, it may vary by manufacturer, and when comparing the carbon emission of POKETONE with other engineering plastics other than PA6, the avoided emission may be reduced.

(7.74.1.13) Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

2.747
[Add row]

(7.79) Has your organization canceled any project-based carbon credits within the reporting year?

Select from:

☑ No

C9. Environmental performance - Water security

(9.1) Are there any exclusions from your disclosure of water-related data?

Select from:

☑ No

(9.2) Across all your operations, what proportion of the following water aspects are regularly measured and monitored?

Water withdrawals – total volumes

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's production team monitors water withdrawals monthly using flow meters, and the environmental safety team compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water withdrawals – volumes by source

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's production team monitors water withdrawals by source monthly using flow meters, and the environmental safety team compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water withdrawals quality

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's production team monitors water withdrawals quality monthly, classifying the sourced water into categories such as filtered water and pure water. The environmental safety team compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis.

Water discharges – total volumes

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water discharges monthly using flow meters and compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water discharges – volumes by destination

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water discharges by destination monthly using flow meters and compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water discharges – volumes by treatment method

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water discharges by treatment method monthly using flow meters and compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water discharge quality – by standard effluent parameters

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water discharge quality monthly, focusing on the concentrations of water pollutants such as BOD, COD, TOC, and SS. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water discharge quality – emissions to water (nitrates, phosphates, pesticides, and/or other priority substances)

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water discharge quality monthly, focusing on the concentrations of water pollutants such as BOD, COD, TOC, and SS. Additionally, the ESG Management team discloses these figures once a year through the sustainability management report.

Water discharge quality – temperature

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Continuously

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team continuously monitors water discharge temperature using a remote sensing system.

Water consumption – total volume

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water consumption monthly and compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

Water recycled/reused

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Each factory's environmental safety team monitors water reuse/recycling volumes monthly and compiles these figures to share with the ESG Management Promotion Committee, which includes all ESG-related executives, on a quarterly basis. Additionally, once a year, the ESG Management team discloses these figures through the sustainability management report.

The provision of fully-functioning, safely managed WASH services to all workers

(9.2.1) % of sites/facilities/operations

Select from:

☑ 100%

(9.2.2) Frequency of measurement

Select from:

☑ Monthly

(9.2.3) Method of measurement

Conduct direct monitoring using measuring instruments

(9.2.4) Please explain

Water quality hygiene experts visit each site monthly to check the water quality in facilities such as restrooms and cafeterias.
[Fixed row]

(9.2.2) What are the total volumes of water withdrawn, discharged, and consumed across all your operations, how do they compare to the previous reporting year, and how are they forecasted to change?

Total withdrawals

(9.2.2.1) Volume (megaliters/year)

7017.54

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ Lower

(9.2.2.5) Primary reason for forecast

Select from:

☑ Facility closure

(9.2.2.6) Please explain

Hyosung Chemical's Daejeon plant suspended operations in the fourth quarter of 2023.

Total discharges

(9.2.2.1) Volume (megaliters/year)

1513.66

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ Lower

(9.2.2.5) Primary reason for forecast

Select from:

☑ Facility closure

(9.2.2.6) Please explain

Hyosung Chemical's Daejeon plant suspended operations in the fourth quarter of 2023.

Total consumption

(9.2.2.1) Volume (megaliters/year)

7244.43

(9.2.2.2) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.2.3) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.2.4) Five-year forecast

Select from:

☑ Lower

(9.2.2.5) Primary reason for forecast

Select from:

☑ Facility closure

(9.2.2.6) Please explain

Hyosung Chemical's Daejeon plant suspended operations in the fourth quarter of 2023.
[Fixed row]

(9.2.4) Indicate whether water is withdrawn from areas with water stress, provide the volume, how it compares with the previous reporting year, and how it is forecasted to change.

(9.2.4.1) Withdrawals are from areas with water stress

Select from:

☑ Yes

(9.2.4.2) Volume withdrawn from areas with water stress (megaliters)

287.99

(9.2.4.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.4.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.4.5) Five-year forecast

Select from:

☑ Lower

(9.2.4.6) Primary reason for forecast

Select from:

☑ Facility closure

(9.2.4.7) % of total withdrawals that are withdrawn from areas with water stress

4.10

(9.2.4.8) Identification tool

Select all that apply

☑ WRI Aqueduct

(9.2.4.9) Please explain

Using the WRI Aqueduct tool to assess water stress in the regions where Hyosung Chemical's facilities are located, it was found that the Oksan and Daejeon plants are categorized as having 'high' water stress. However, since the Daejeon plant has ceased operations in the fourth quarter of 2023, water withdrawal from areas of water stress is expected to decrease over the next five years.
[Fixed row]

(9.2.7) Provide total water withdrawal data by source.

Fresh surface water, including rainwater, water from wetlands, rivers, and lakes

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Hyosung Chemical does not withdraw water from that source.

Brackish surface water/Seawater

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Hyosung Chemical does not withdraw water from that source.

Groundwater – renewable

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

82.14

(9.2.7.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.7.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.7.5) Please explain

Hyosung Chemical's Yongyeon 2 Plant and Daejeon Plant withdrew 31.48 ML and 50.66 ML of groundwater, respectively.

Groundwater – non-renewable

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Hyosung Chemical does not withdraw water from that source.

Produced/Entrained water

(9.2.7.1) Relevance

Select from:

☑ Not relevant

(9.2.7.5) Please explain

Hyosung Chemical does not withdraw water from that source.

Third party sources

(9.2.7.1) Relevance

Select from:

☑ Relevant

(9.2.7.2) Volume (megaliters/year)

6935.39

(9.2.7.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.7.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.7.5) Please explain

Excluding the amount withdrawn from groundwater, all of Hyosung Chemical's water withdrawal volume is sourced from third parties.
[Fixed row]

(9.2.8) Provide total water discharge data by destination.

Fresh surface water

(9.2.8.1) Relevance

Select from:
☑ Not relevant

(9.2.8.5) Please explain

It is unrelated to Hyosung Chemical's discharge destination.

Brackish surface water/seawater

(9.2.8.1) Relevance

Select from:
☑ Not relevant

(9.2.8.5) Please explain

It is unrelated to Hyosung Chemical's discharge destination.

Groundwater

(9.2.8.1) Relevance

Select from:

☑ Not relevant

(9.2.8.5) Please explain

It is unrelated to Hyosung Chemical's discharge destination.

Third-party destinations

(9.2.8.1) Relevance

Select from:

☑ Relevant

(9.2.8.2) Volume (megaliters/year)

1513.66

(9.2.8.3) Comparison with previous reporting year

Select from:

☑ About the same

(9.2.8.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.8.5) Please explain

Hyosung Chemical discharges all wastewater through municipal treatment plants. For example, the Yongyeon Plant located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'
[Fixed row]

(9.2.9) Within your direct operations, indicate the highest level(s) to which you treat your discharge.

Tertiary treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

Hyosung Chemical discharges all wastewater directly through municipal treatment plants without any separate treatment processes For example, the Yongyeon Plant located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'

Secondary treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

Hyosung Chemical discharges all wastewater directly through municipal treatment plants without any separate treatment processes For example, the Yongyeon Plant located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'

Primary treatment only

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

Hyosung Chemical discharges all wastewater directly through municipal treatment plants without any separate treatment processes For example, the Yongyeon Plant

located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'

Discharge to the natural environment without treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

Hyosung Chemical discharges all wastewater directly through municipal treatment plants without any separate treatment processes For example, the Yongyeon Plant located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'

Discharge to a third party without treatment

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Relevant

(9.2.9.2) Volume (megaliters/year)

1513.66

(9.2.9.3) Comparison of treated volume with previous reporting year

Select from:

☑ About the same

(9.2.9.4) Primary reason for comparison with previous reporting year

Select from:

☑ Increase/decrease in business activity

(9.2.9.5) % of your sites/facilities/operations this volume applies to

Select from:

☑ 100%

(9.2.9.6) Please explain

Hyosung Chemical discharges all wastewater directly through municipal treatment plants without any separate treatment processes For example, the Yongyeon Plant located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'

Other

(9.2.9.1) Relevance of treatment level to discharge

Select from:

☑ Not relevant

(9.2.9.6) Please explain

Hyosung Chemical discharges all wastewater directly through municipal treatment plants without any separate treatment processes For example, the Yongyeon Plant located in Ulsan discharges into the 'Yongyeon Sewage Treatment Plant,' the Oksan Plant in Cheongju discharges into the 'Ochang Science and Industry Complex Wastewater Treatment Plant,' and the Gumi Plant in Gumi discharges into the 'Gumi Sewage Treatment Plant.'
[Fixed row]

(9.2.10) Provide details of your organization’s emissions of nitrates, phosphates, pesticides, and other priority substances to water in the reporting year.

(9.2.10.1) Emissions to water in the reporting year (metric tons)

2.8

(9.2.10.2) Categories of substances included

Select all that apply

☑ Nitrates

☑ Phosphates

(9.2.10.4) Please explain

Hyosung Chemical's environmental safety teams at each plant monitor water discharge quality monthly, focusing on the concentrations of water pollutants such as BOD, COD, TOC, SS, T-P, and T-N. As of 2023, T-N, which corresponds to nitrates, was discharged at a total of 2.5 tons across all facilities, while T-P, which corresponds to phosphates, amounted to 0.3 tons.
[Fixed row]

(9.3) In your direct operations and upstream value chain, what is the number of facilities where you have identified substantive water-related dependencies, impacts, risks, and opportunities?

Direct operations

(9.3.1) Identification of facilities in the value chain stage

Select from:

☑ Yes, we have assessed this value chain stage and identified facilities with water-related dependencies, impacts, risks, and opportunities

(9.3.2) Total number of facilities identified

6

(9.3.3) % of facilities in direct operations that this represents

Select from:

☑ 51-75

(9.3.4) Please explain

The survey was conducted only at facilities that have production capabilities among all the sites located in the country.

Upstream value chain

(9.3.1) Identification of facilities in the value chain stage

Select from:

☑ No, we have not assessed this value chain stage for facilities with water-related dependencies, impacts, risks, and opportunities, but we are planning to do so in the next 2 years

(9.3.4) Please explain

It is still lower in priority.
[Fixed row]

(9.3.1) For each facility referenced in 9.3, provide coordinates, water accounting data, and a comparison with the previous reporting year.

Row 1

(9.3.1.1) Facility reference number

Select from:

☑ Facility 5

(9.3.1.2) Facility name (optional)

Gumi Plant

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Republic of Korea

☑ Naktong

(9.3.1.8) Latitude

36.090641

(9.3.1.9) Longitude

128.407533

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

174.98

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ About the same

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

174.98

(9.3.1.21) Total water discharges at this facility (megaliters)

7.12

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ About the same

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

7.12

(9.3.1.27) Total water consumption at this facility (megaliters)

174.98

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ About the same

(9.3.1.29) Please explain

Water withdeawals, discharges and consumption were similar compared to the previous year.

Row 2

(9.3.1.1) Facility reference number

Select from:

☑ Facility 1

(9.3.1.2) Facility name (optional)

Yongyeon 1 Plant

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Republic of Korea

☑ Naktong

(9.3.1.8) Latitude

35.483134

(9.3.1.9) Longitude

129.353262

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

3463.93

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ About the same

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

3237.04

(9.3.1.21) Total water discharges at this facility (megaliters)

110.96

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ About the same

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

110.96

(9.3.1.27) Total water consumption at this facility (megaliters)

3463.93

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ About the same

(9.3.1.29) Please explain

Water withdeawals, discharges and consumption were similar compared to the previous year.

Row 3

(9.3.1.1) Facility reference number

Select from:

☑ Facility 6

(9.3.1.2) Facility name (optional)

Daejeon Plant

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals only

(9.3.1.6) Reason for no withdrawals and/or discharges

The facility has closed, making it difficult to verify the discharge data.

(9.3.1.7) Country/Area & River basin

Republic of Korea

☑ Other, please specify **:**Gum-River

(9.3.1.8) Latitude

36.443127

(9.3.1.9) Longitude

127.402784

(9.3.1.10) Located in area with water stress

Select from:

☑ Yes

(9.3.1.13) Total water withdrawals at this facility (megaliters)

111.33

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ About the same

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

50.66

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

60.67

(9.3.1.27) Total water consumption at this facility (megaliters)

111.33

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ About the same

(9.3.1.29) Please explain

Water withdeawals, discharges and consumption were similar compared to the previous year.

Row 4

(9.3.1.1) Facility reference number

Select from:

☑ Facility 4

(9.3.1.2) Facility name (optional)

Oksan Plant

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Republic of Korea

☑ Other, please specify **:**Miho River

(9.3.1.8) Latitude

36.700357

(9.3.1.9) Longitude

127.373944

(9.3.1.10) Located in area with water stress

Select from:

☑ Yes

(9.3.1.13) Total water withdrawals at this facility (megaliters)

176.66

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ About the same

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

176.66

(9.3.1.21) Total water discharges at this facility (megaliters)

23

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ About the same

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

23

(9.3.1.27) Total water consumption at this facility (megaliters)

176.66

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ About the same

(9.3.1.29) Please explain

Water withdeawals, discharges and consumption were similar compared to the previous year.

Row 5

(9.3.1.1) Facility reference number

Select from:

☑ Facility 2

(9.3.1.2) Facility name (optional)

Yongyeon 2 Plant

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Republic of Korea

☑ Naktong

(9.3.1.8) Latitude

35.481032

(9.3.1.9) Longitude

129.354194

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

3059.48

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ About the same

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

31.48

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

3028

(9.3.1.21) Total water discharges at this facility (megaliters)

1294.58

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ About the same

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

1294.58

(9.3.1.27) Total water consumption at this facility (megaliters)

3059.48

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ About the same

(9.3.1.29) Please explain

Water withdeawals, discharges and consumption were similar compared to the previous year.

Row 6

(9.3.1.1) Facility reference number

Select from:

☑ Facility 3

(9.3.1.2) Facility name (optional)

Yongyeon 3 Plant

(9.3.1.3) Value chain stage

Select from:

☑ Direct operations

(9.3.1.4) Dependencies, impacts, risks, and/or opportunities identified at this facility

Select all that apply

☑ Dependencies

☑ Impacts

☑ Risks

☑ Opportunities

(9.3.1.5) Withdrawals or discharges in the reporting year

Select from:

☑ Yes, withdrawals and discharges

(9.3.1.7) Country/Area & River basin

Republic of Korea

☑ Naktong

(9.3.1.8) Latitude

35.481688

(9.3.1.9) Longitude

129.35698

(9.3.1.10) Located in area with water stress

Select from:

☑ No

(9.3.1.13) Total water withdrawals at this facility (megaliters)

249.28

(9.3.1.14) Comparison of total withdrawals with previous reporting year

Select from:

☑ About the same

(9.3.1.15) Withdrawals from fresh surface water, including rainwater, water from wetlands, rivers and lakes

0

(9.3.1.16) Withdrawals from brackish surface water/seawater

0

(9.3.1.17) Withdrawals from groundwater - renewable

0

(9.3.1.18) Withdrawals from groundwater - non-renewable

0

(9.3.1.19) Withdrawals from produced/entrained water

0

(9.3.1.20) Withdrawals from third party sources

249.28

(9.3.1.21) Total water discharges at this facility (megaliters)

78.01

(9.3.1.22) Comparison of total discharges with previous reporting year

Select from:

☑ About the same

(9.3.1.23) Discharges to fresh surface water

0

(9.3.1.24) Discharges to brackish surface water/seawater

0

(9.3.1.25) Discharges to groundwater

0

(9.3.1.26) Discharges to third party destinations

78.01

(9.3.1.27) Total water consumption at this facility (megaliters)

249.28

(9.3.1.28) Comparison of total consumption with previous reporting year

Select from:

☑ About the same

(9.3.1.29) Please explain

Water withdeawals, discharges and consumption were similar compared to the previous year.
[Add row]

(9.3.2) For the facilities in your direct operations referenced in 9.3.1, what proportion of water accounting data has been third party verified?

Water withdrawals – total volumes

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water withdrawals – volume by source

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water withdrawals – quality by standard water quality parameters

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water discharges – total volumes

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water discharges – volume by destination

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water discharges – volume by final treatment level

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water discharges – quality by standard water quality parameters

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.

Water consumption – total volume

(9.3.2.1) % verified

Select from:

☑ 76-100

(9.3.2.2) Verification standard used

Hyosung Chemical has been verified by the verification agency 'Econine Co., Ltd.' in accordance with the AA1000 AccountAbility Principles (AA1000 AP) 2018 and GRI Standards 2021 principles.
[Fixed row]

(9.4) Could any of your facilities reported in 9.3.1 have an impact on a requesting CDP supply chain member?

Select from:

☑ This is confidential

(9.5) Provide a figure for your organization’s total water withdrawal efficiency.

(9.5.1) Revenue (currency)

2011883834521

(9.5.2) Total water withdrawal efficiency

286693604.10

(9.5.3) Anticipated forward trend

Since Hyosung Chemical is a company that produces petrochemical products, it currently focuses heavily on reducing carbon emissions due to high levels of carbon output. However, as the importance of water risk becomes increasingly recognized, the management is expected to gradually show more interest in water risks, particularly water withdrawal efficiency, leading to an increase in investment costs. Therefore, the company's water withdrawal efficiency is expected to improve over time.
[Fixed row]

(9.6) Do you calculate water intensity for your activities in the chemical sector?

Select from:
☑ Yes

(9.6.1) For your top five products by production weight/volume, provide the following water intensity information associated with your activities in the chemical sector.

Row 1

(9.6.1.1) Product type

Bulk organic chemicals
☑ Polymers

(9.6.1.2) Product name

PP

(9.6.1.3) Water intensity value (m3/denominator)

4.91

(9.6.1.4) Numerator: water aspect

Select from:

☑ Total water consumption

(9.6.1.5) Denominator

Select from:

☑ Ton

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ This is our first year of measurement

(9.6.1.7) Please explain

The production volumes of each product are confidential and cannot be disclosed.

Row 2

(9.6.1.1) Product type

Bulk organic chemicals

☑ Polymers

(9.6.1.2) Product name

TPA

(9.6.1.3) Water intensity value (m3/denominator)

7.04

(9.6.1.4) Numerator: water aspect

Select from:

☑ Total water consumption

(9.6.1.5) Denominator

Select from:

☑ Ton

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ This is our first year of measurement

(9.6.1.7) Please explain

The production volumes of each product are confidential and cannot be disclosed.

Row 3

(9.6.1.1) Product type

Bulk organic chemicals

☑ Polymers

(9.6.1.2) Product name

Polyketone

(9.6.1.3) Water intensity value (m3/denominator)

22.6

(9.6.1.4) Numerator: water aspect

Select from:

☑ Total water consumption

(9.6.1.5) Denominator

Select from:

☑ Ton

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ This is our first year of measurement

(9.6.1.7) Please explain

The production volumes of each product are confidential and cannot be disclosed.

Row 4

(9.6.1.1) Product type

Bulk organic chemicals

☑ Polymers

(9.6.1.2) Product name

Film

(9.6.1.3) Water intensity value (m3/denominator)

5.08

(9.6.1.4) Numerator: water aspect

Select from:

☑ Total water consumption

(9.6.1.5) Denominator

Select from:

☑ Ton

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ This is our first year of measurement

(9.6.1.7) Please explain

The production volumes of each product are confidential and cannot be disclosed.

Row 5

(9.6.1.1) Product type

Bulk organic chemicals

☑ Polymers

(9.6.1.2) Product name

TAC Film

(9.6.1.3) Water intensity value (m3/denominator)

20.97

(9.6.1.4) Numerator: water aspect

Select from:

☑ Total water consumption

(9.6.1.5) Denominator

Select from:

☑ Ton

(9.6.1.6) Comparison with previous reporting year

Select from:

☑ This is our first year of measurement

(9.6.1.7) Please explain

The production volumes of each product are confidential and cannot be disclosed.
[Add row]

(9.13) Do any of your products contain substances classified as hazardous by a regulatory authority?

(9.13.1) Products contain hazardous substances

Select from:

☑ No

(9.13.2) Comment

There are no products classified as hazardous among Hyosung Chemical's offerings. Before shipping, the responsible department conducts quality assurance (QA) and quality control (QC) to ensure that harmful substances are not present in the products.
[Fixed row]

(9.14) Do you classify any of your current products and/or services as low water impact?

(9.14.1) Products and/or services classified as low water impact

Select from:

☑ No, but we plan to address this within the next two years

(9.14.3) Primary reason for not classifying any of your current products and/or services as low water impact

Select from:

☑ Important but not an immediate business priority

(9.14.4) Please explain

Hyosung Chemical, as a petrochemical manufacturing company, is a significant emitter of carbon emissions. Therefore, the company prioritizes the production of products that generate lower carbon emissions during manufacturing rather than focusing solely on products that have minimal water impact.
[Fixed row]

(9.15) Do you have any water-related targets?

Select from:

☑ No, but we plan to within the next two years

(9.15.3) Why do you not have water-related target(s) and what are your plans to develop these in the future?

(9.15.3.1) Primary reason

Select from:

☑ Important but not an immediate business priority

(9.15.3.2) Please explain

Hyosung Chemical, as a petrochemical manufacturing company, is a significant emitter of carbon emissions. Therefore, the company prioritizes reducing carbon emissions over water-related goals.
[Fixed row]

C13. Further information & sign off

(13.1) Indicate if any environmental information included in your CDP response (not already reported in 7.9.1/2/3, 8.9.1/2/3/4, and 9.3.2) is verified and/or assured by a third party?

	Other environmental information included in your CDP response is verified and/or assured by a third party
	Select from: ☑ Yes

[Fixed row]

(13.1.1) Which data points within your CDP response are verified and/or assured by a third party, and which standards were used?

Row 1

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Climate change

☑ Water

(13.1.1.2) Disclosure module and data verified and/or assured

Identification, assessment, and management of dependencies, impacts, risks, and opportunities

☑ Identification, assessment, and management processes

(13.1.1.3) Verification/assurance standard

General standards

☑ AA1000AS

☑ Other general verification standard, please specify :AA1000AP(2018)

(13.1.1.4) Further details of the third-party verification/assurance process

Hyosung Chemical officially declared its support for TCFD in October 2022, and in the 2023 Sustainability Report, it specified the governance structure related to climate change in accordance with the TCFD recommendation and received third-party verification.

Row 2

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Climate change

☑ Water

(13.1.1.2) Disclosure module and data verified and/or assured

Governance

☑ Other data point in module 4, please specify :Hyosung Chemical's environmental management governance structure

(13.1.1.3) Verification/assurance standard

General standards

☑ AA1000AS

☑ Other general verification standard, please specify :AA1000AP(2018)

(13.1.1.4) Further details of the third-party verification/assurance process

Hyosung Chemical officially declared its support for TCFD in October 2022, and in the 2023 Sustainability Report, it specified the governance structure related to climate change in accordance with the TCFD recommendation and received third-party verification.

Row 3

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Climate change

☑ Water

(13.1.1.2) Disclosure module and data verified and/or assured

Business strategy

☑ Other data point in module 5, please specify **:**Hyosung Chemical's response strategy

(13.1.1.3) Verification/assurance standard

General standards

☑ AA1000AS

☑ Other general verification standard, please specify **:**AA1000AP

(13.1.1.4) Further details of the third-party verification/assurance process

Hyosung Chemical officially declared its support for TCFD in October 2022, and in the 2023 Sustainability Report, it specified the governance structure related to climate change in accordance with the TCFD recommendation and received third-party verification.

Row 4

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Climate change

(13.1.1.2) Disclosure module and data verified and/or assured

Environmental performance – Climate change

☑ Base year emissions

☑ Year on year change in absolute emissions (Scope 1 and 2)

(13.1.1.3) Verification/assurance standard

Climate change-related standards

☑ ISO 14064-3

(13.1.1.4) Further details of the third-party verification/assurance process

Hyosung Chemical is a participant in the Korean emissions trading scheme, and the greenhouse gas emissions and energy usage of each business site and emission facility were verified by a third party based on the verification criteria of the Korean emissions trading scheme, following ISO 14064-3.

Row 5

(13.1.1.1) Environmental issue for which data has been verified and/or assured

Select all that apply

☑ Water

(13.1.1.2) Disclosure module and data verified and/or assured

Environmental performance – Water security

☑ Water consumption– total volume

☑ Water discharges– total volumes

☑ Water withdrawals– total volumes

☑ Water withdrawals – volumes by source

☑ Emissions to water in the reporting year

☑ Water discharges – volumes by destination

☑ Water discharges – volumes by treatment method

☑ Volume withdrawn from areas with water stress (megaliters)

(13.1.1.3) Verification/assurance standard

General standards

☑ AA1000AS

☑ Other general verification standard, please specify :AA1000AP

(13.1.1.4) Further details of the third-party verification/assurance process

Hyosung Chemical specified quantitative data related to water in its 2023 sustainability management report and underwent third-party verification.
[Add row]

(13.3) Provide the following information for the person that has signed off (approved) your CDP response.

(13.3.1) Job title

CEO & President, Hyosung Chemical Corp.

(13.3.2) Corresponding job category

Select from:

☑ Chief Executive Officer (CEO)
[Fixed row]

(13.4) Please indicate your consent for CDP to share contact details with the Pacific Institute to support content for its Water Action Hub website.

Select from:

☑ No