

## C0. Introduction

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### C0.1

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

• Since its establishment in 1952 under the founding philosophy of 'contributing to the nation and society', Hanwha Corporation has continued its growth over the last seven decades. Hanwha Corporation focuses on its operation in three divisions: Global, Engineering & Construction, and Momentum, is the parent company of Hanwha Group and has been realizing sustainable growth by entering the global market.

- **(Hanwha Global)** Hanwha Global provides chemical technology-based solutions. With its success in the development of the nation's first dynamite, Hanwha Global has supplied safe and high-quality explosives to both domestic and global industries, which has resulted in not only leading the global market but also boasting its world-class technology and safety. Building on our business capacities accumulated for over fifty years, Hanwha Global has a stable profit foundation with its core businesses such as inorganic chemicals, machinery, and explosives. Furthermore, Hanwha Global has engaged in various projects and discovered a new source of profits by leveraging our outstanding global network and strived to set up its own base in promising industries through the technical tie-up.

- **(Hanwha Momentum)** Hanwha Momentum has produced a variety of high-value-added mechanical equipment through its continued technological enhancement and innovation with heat technology, automation technology, and vacuum deposition technology. Also, Hanwha Momentum leads logistics innovation at production sites by combining Smart Factory and automation facilities in the Industry 4.0 era. Hanwha Corporation/Momentum is moving to become a global leader in mechanical equipment through constant R&D and innovation to provide a total engineering solution for the development of human society.

- **(Hanwha E&C)** Hanwha E&C is a global construction company with an extensive construction experience in the fields of building, civil engineering, and plants, state-of-the-art technologies, and network. With an aim of Green Infra Developer, Hanwha E&C has continued to grow into a large-scale complex developer and a leader of energy business. Hanwha Corporation/E&C is an expert in the complex development field that combine housing, culture, work, leisure, commerce, and social infrastructure beyond simple buildings, and has global competitiveness in the housing business represented by the premium residential brand Forena, chemical and power generation plants centered on the Middle East and domestic industrial complexes. The company is also preparing for the upcoming era of carbon zero through wind power generation projects and hydrogen energy projects that are expanding their business areas to the sea.

### C0.2

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#### (C0.2) State the start and end date of the year for which you are reporting data and indicate whether you will be providing emissions data for past reporting years.

##### Reporting year

###### Start date

January 1 2022

###### End date

December 31 2022

##### Indicate if you are providing emissions data for past reporting years

Yes

##### Select the number of past reporting years you will be providing Scope 1 emissions data for

1 year

##### Select the number of past reporting years you will be providing Scope 2 emissions data for

1 year

##### Select the number of past reporting years you will be providing Scope 3 emissions data for

1 year

### C0.3

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#### (C0.3) Select the countries/areas in which you operate.

Republic of Korea

### C0.4

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

KRW

C0.5

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

Operational control

C0.8

(C0.8) Does your organization have an ISIN code or another unique identifier (e.g., Ticker, CUSIP, etc.)?

Indicate whether you are able to provide a unique identifier for your organization	Provide your unique identifier
Yes, an ISIN code	ISIN code : KR7000880005

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual or committee	Responsibilities for climate-related issues
Other C-Suite Officer	<p>1. Structure and role of BoD on climate change</p> <ul style="list-style-type: none"> <li>(Structure) Board of directors (BoD) is the highest decision-making body of Hanwha Corporation. With the BoD at center, Hanwha established the governance to make both professional and objective decisions on climate change, eco-friendly policies and strategies. Hanwha reports its quarterly ESH</li> <li>(Environment/Safety/Health) management plans and climate change response risks to the BoD which deliberates and decides on climate change response strategies and eco-friendly policies. For climate change response strategies and Net Zero goal achievement, Hanwha has established ESG committee since March 2021 under the BoD to determine eco-friendly policy goals and activities to strengthen implementation capacity of the committee. The committee is made up of members including outside directors (1 internal director, 3 external directors) to make an independent and professional deliberation on compliance and ESG matters.</li> <li>(Role) For climate change response strategies and Net Zero goal achievement, Hanwha has established ESG committee since March 2021 under the BoD to deliberate eco-friendly policy goals and activities to respond to climate change risks and reduce discharge of hazardous substances. Under the ESG Committee, the ESG council is formed consisting of persons in charge of each ESG module including the Chief Safety &amp; Environment Officer (CSO) by division, a team leader of Environment Safety Health Organization, and working level employees. The council, based on the company-wide ESG implementation direction, examines and manages climate change issues and implementation tasks by division and business.</li> </ul> <p>2. Case on climate change related decisions</p> <p>In 2021, ESG Committee reviewed and approved a carbon neutrality plan called Hanwha Carbon Neutrality 2040. In 2022, the committee re-examined and approved a strategy, Hanwha Net zero 2040 as a result of the reorganization of divisions. With a slogan Movement for Tomorrow, Hanwha Corporation established the governance to secure the new growth engine by setting up GHG emission reduction measures such as installation of solar power generation equipment in the office and production plants and creating an eco-friendly industry portfolio.</p>

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	<p>Reviewing and guiding annual budgets</p> <p>Overseeing major capital expenditures</p> <p>Overseeing and guiding employee incentives</p> <p>Reviewing and guiding strategy</p> <p>Overseeing and guiding the development of a transition plan</p> <p>Monitoring the implementation of a transition plan</p> <p>Overseeing the setting of corporate targets</p> <p>Monitoring progress towards corporate targets</p> <p>Reviewing and guiding the risk management process</p>	<Not Applicable>	<p>1. BoDs’s supervision system on climate issue</p> <p>(Structure) Board of directors (BoD) is the highest decision-making body of Hanwha Corporation. With the BoD at center, Hanwha established the governance to make both professional and objective decisions on climate change, eco-friendly policies and strategies. Hanwha reports its quarterly ESH (Environment/Safety/Health) management plans and climate change response risks to the BoD which deliberates and decides on climate change response strategies and eco-friendly policies. For climate change response strategies and Net Zero goal achievement, Hanwha has established ESG committee since March 2021 under the BoD which deliberates eco-friendly policy goals and activities to respond to climate change risks and reduce discharge of hazardous substances.</p> <p>(Reporting frequency) The regular meetings of ESG committee are held on a quarterly basis but the meetings can also be held whenever it becomes necessary. Under the ESG Committee, the ESG council is formed consisting of persons in charge of each ESG module including the Chief Safety &amp; Environment Officer (CSO) by division, a team leader of Environment Safety Health Organization, and working level employees. The council, based on the company-wide ESG implementation direction, monitors climate change issues and detailed tasks by division and reports them to the ESG Committee on a quarterly basis.</p> <p>Under the ESG Committee, the ESG council is formed, including the Chief Safety &amp; Environment Officer (CSO) by division, a team leader of Environment Safety Health Organization, and working level employees. The council, based on the company-wide ESG implementation direction, monitors climate change issues and detailed tasks by division and reports them to the ESG Committee on a quarterly basis.</p> <p>(Subjects to report) The ESG committee reviews mainly policy goals and activities in response to climate change risks: the annual budget and its guidelines such as GHG emission reduction plan; transition plans including performance on GHG reduction and ET status; goal setting on climate; and implementation status monitoring.</p> <p>2. Reporting system on climate change issues</p> <p>(Agenda to report) The ESG Committee presents issues that have a significant financial or social and environmental impact as an agenda to report in compliance with item C2.1b, Hanwha’s ‘severe evaluation’ criteria.</p> <p>(Reporting case) Hanwha Corporation led by ESG Committee under the BoD sets up a strategic direction in response to climate change and makes a final review and decide important agenda to switch to a low-carbon economy. In 2022, Hanwha held eight meetings on the agenda related to climate change and environment to discuss green bond issuance, environment-friendly investment and ESG management performance by division such as Hanwha Global, Hanwha Construction &amp; Engineering, and Hanwha Momentum.</p>

**C1.1d**

**(C1.1d) Does your organization have at least one board member with competence on climate-related issues?**

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues	Primary reason for no board-level competence on climate-related issues	Explain why your organization does not have at least one board member with competence on climate-related issues and any plans to address board-level competence in the future
Row 1	Yes	<ul style="list-style-type: none"> <li>Expertise evaluation criteria for BoD</li> </ul> <p>Hanwha Corporation complies with a fair and transparent process to appoint directors at a general meeting of shareholders. For internal directors, Hanwha selects one with the most appropriate management capacity out of candidates who were trained over the long term by HR, report him/her to the general meeting, and appoints the one as director based on his/her overall evaluation of capacity, understanding of the corporate management, expertise and experiences.</p> <p>Hanwha Corporation considers competence on climate-related issues as a criteria to evaluate expertise when appointing members (directors) of the ESG committee (BoD), a highest decision-making body for climate change.</p> <p>A candidate’s competence relevant to climate change is evaluated for his/her job experience and professionalism in renewable energy (solar power, wind, etc.) a core industry related to climate change based on his/her understanding of Hanwha’s industries.</p> <ul style="list-style-type: none"> <li>Board member selection result</li> </ul> <p>To appoint members of the BoD, Hanwha Corporation assessed in-house experts whether they have experiences in industries and in particular whether they have expertise to evaluate future growth strategies in response to climate change such areas as renewable energy (solar power, wind, etc.). By doing so, Hanwha appointed directors of the BoD for climate change and environment fields.</p>	<Not Applicable>	<Not Applicable>

**C1.2**

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

**Position or committee**

Other C-Suite Officer, please specify (Chief Safety & Environment Officer)

**Climate-related responsibilities of this position**

- Managing annual budgets for climate mitigation activities
- Managing major capital and/or operational expenditures related to low-carbon products or services (including R&D)
- Providing climate-related employee incentives
- Developing a climate transition plan
- Implementing a climate transition plan
- Integrating climate-related issues into the strategy
- Setting climate-related corporate targets
- Monitoring progress against climate-related corporate targets
- Assessing climate-related risks and opportunities
- Managing climate-related risks and opportunities

**Coverage of responsibilities**

<Not Applicable>

**Reporting line**

Reports to the board directly

**Frequency of reporting to the board on climate-related issues via this reporting line**

Quarterly

**Please explain**

1. Responsibility on climate change

Under the ESG Committee of Hanwha Corporation, the ESG council is formed, including the Chief Safety & Environment Officer (CSO) by division, a team leader of Environment Safety Health Organization, and working level employees. The council, based on the company-wide ESG implementation direction, examines and manages climate change issues and implementation tasks by division and business. In 2023, The council separated the environmental management module consisting of each division's environmental responsibility from the existing environment safety module to promote practical improvement tasks to cope with climate change.

2. Reporting and monitoring process on climate change issues

Hanwha Corporation has actively engaged in dealing with climate change with the CSO (Chief Safety & Environment Officer) at the center. The council including the CSO identifies all areas of ESG such as climate change risk in accordance with an evaluation list more than once and assesses them based on the probability of occurrence (short-, mid-, long-term) and risk impact (strategic importance, urgency, management impact) for materiality. Executives responsible for each module submit the risk assessment result to the ESG Committee which determines ESG risks to be managed at the company-wide level.

**C1.3**

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

	Provide incentives for the management of climate-related issues	Comment
Row 1	Yes	

**C1.3a**

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

**Entitled to incentive**

Other C-Suite Officer

**Type of incentive**

Monetary reward

**Incentive(s)**

Bonus - % of salary

**Performance indicator(s)**

Achievement of climate transition plan KPI  
Progress towards a climate-related target  
Achievement of a climate-related target  
Implementation of an emissions reduction initiative  
Reduction in absolute emissions  
Energy efficiency improvement  
Increased share of renewable energy in total energy consumption

**Incentive plan(s) this incentive is linked to**

Both Short-Term and Long-Term Incentive Plan

**Further details of incentive(s)**

Hanwha Corporation led by CSO (Chief Safety & Environment Officer) is responding actively to climate change issues. The CSO is given KPIs of external ESG assessment, CDP grades and outcome of GHG emission reduction. As well, through the KPI related financial compensation, Hanwha Corporation is systemically managing the corporation by linking goals and their achievements with the response to performance of executives and managers.

**Explain how this incentive contributes to the implementation of your organization's climate commitments and/or climate transition plan**

Hanwha Corporation declared in 2021 its 'Hanwha Net Zero 2040' carbon neutrality goal and plan, a transition plan aimed at 100% reduction by 2040, in line with international moves to limit global temperature rise to within 1.5 °C of pre-industrial levels.

With the goal of 'Hanwha Net Zero 2040', Hanwha Corporation is promoting sustainable growth of itself and the society by discovering low-carbon eco-friendly businesses, reducing greenhouse gas, and actively switching to a renewable energy ecosystem. To this end, Hanwha Corporation is also proactively responding to domestic and foreign environmental regulations such as regulations on GHG emissions, increase in carbon tax, and expanding the introduction of renewable energy.

Hanwha Corporation reports the activities of the semi-annual ESG council so that the implementation status of the transition plan can be regularly reviewed at the board level. In addition, each environment safety health organization under the direct control of the CEO of each division and CSO (Chief Safety & Environment Officer) play a role in establishing environment and safety systems and plans for domestic and foreign sites and responding to issues. ESH (Environment, Safety, Health) strategies, goals, detailed action plans, and performance indicators established by the environment safety and health organization are applied to sites under the management of the environment safety team organized by division. Therefore, Hanwha Corporation reflects systemically goals and implementation performances to attain the transition plan into CSO's KPIs to manage the company systemically.

**C2. Risks and opportunities**

**C2.1**

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

Yes

**C2.1a**

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

	From (years)	To (years)	Comment
Short-term	0	1	
Medium-term	1	8	~2030
Long-term	8	18	~2040

**C2.1b**

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

**1. Criteria for substantive financial or strategic impact**

- **(Evaluation Overview)** Hanwha Corporation introduced 'double materiality assessment'. This approach considers both external social/environmental factors affecting the corporate financial status, and positive and negative impacts of the company's management actions on the outside to clearly understand stakeholders and social needs and expectations surrounding the corporate management environment and to derive important ESG issues that reflect all financial, social and environmental impacts.

- **(Definition)** ① Significant financial impacts are defined when expenses or gains and losses of more than KRW 5 billion are involved. ② Significant social and environmental impacts are defined when they influence Hanwha Corporation's goal of 2040 Net-zero seriously.

- **(Assessment method)** Hanwha Corporation concludes the financial, social, and environmental impacts through international standard requirement review, media analysis, bench marking analysis, and internal management issue analysis, and assess them based on the probability of occurrence and risk impact (strategic importance, urgency, management impact) for materiality. The probability of occurrence and risk impact are categorized into grades I, II, and III. If it is graded I, then it is defined as significant strategic impact and requires company-wide actions.

**2. Quantitative indicators used to define significant financial or strategic impacts**

• **(Financial impact indicators)** The quantifiable indicators used to define substantive financial impact include operation costs, internal carbon price, GHG emissions, energy usage, and investment costs for improving energy efficiency. Hanwha Corporation defines significant financial impacts in the case of financial impact of more than 5 billion won, the case will be brought to the agenda of the board meeting as a material issue.' If the impact is less than 5 billion won, it is defined as 'general financial issue.' CSO makes final decision after collecting opinions from the ESG council.

• **(Social & environmental indicators)** The quantifiable indicators used to define substantive social and environmental impacts include the probability of occurrence and risk impact (strategic importance, urgency, management impact). If the probability of occurrence is 80% or more or the risk impact is defined as grade I, the board brings the case to the meeting as a 'material issue' and makes a decision.

**C2.2**

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

**Value chain stage(s) covered**

Direct operations  
Upstream  
Downstream

**Risk management process**

Integrated into multi-disciplinary company-wide risk management process

**Frequency of assessment**

More than once a year

**Time horizon(s) covered**

Short-term  
Medium-term  
Long-term

**Description of process**

1. Overview on the climate change risk and opportunity identification process

- (Process) Hanwha Corporation established the regulation on corporate sustainability management risk and operates the relevant process to respond more efficiently to climate-related issues such as physical and environmental aspects of various laws and regulations, market changes and demands from stake holders and to create a stable business environment. The ESG council assess risks of the all ESG areas including climate-related issues in compliance with the assessment list more than once a year. An identified issue is assessed and graded into I, II and III (short-, medium- and long-term) and risk impact (strategic importance, urgency, operational impact). The executive in charge of each risk module will submit the assessment result to the ESG committee which reviews and determines ESG risks to be treated at the company level. The regular assessment is performed once a year but in case where any new business or service is launched or any changes are made to existing products, or any change are made according to market changes or other external factors, or changes to response strategy are made, or accidents occurs, then the assessments are to be made as often as it becomes necessary. As ESG issues have increased recently, the risk assessment is conducted more than once a year. The risk grades are categorized into grade I-III, and the executive in charge of the module establishes an action plan to identify the target completion period, person in charge, and required resources for improvement and then performs response activities.

- (Value chain stages) Hanwha Corporation identifies risks and opportunities related to climate change by considering the overall value chain stage of the business, not only at the production plants/construction sites but also at the upstream and downstream stages of supplying raw materials and delivering products.

- (Time horizons) Hanwha Corporation announced Hanwha Net Zero 2040, a transition plan, and established Hanwha Net Zero 2040 Roadmap to systematically implement and achieve its goals. In accordance with the implementation of the roadmap and time criteria in item C2.1a, Hanwha manages risk and opportunity factors that may affect in the short term (0-1 year), the mid-term (1-8 years) and the long-term (8-18 years) through an assessment process.

2. Decision-making process in response to climate change

● Identification process

Identify key issues such as review of international standard requirements, media analysis, benchmarking analysis, and internal management issue analysis  
The ESG council identifies climate change risks and opportunities more than at least once a year.

● Assessment process

Assess major issues based on the probability of occurrence and risk impact (strategic importance, urgency, management impact) for materiality.  
The probability of occurrence and risk impact for each issue are categorized into grades I, II, and III. If the issue is graded I, then it is defined as material strategic impact and selected as the issue requiring company-wide actions. Then, it is integrated into the company-wide risk identification, evaluation, assessment and management process.

● Reporting process

(BoD) The quarterly meeting is held to deliberate issues with high materiality based on the materiality evaluation criteria.  
(ESG Committee) deliberates climate and eco-friendly policies professionally and objectively (reduction plan on GHG emission, ET status, etc.).  
(ESG council) consisting a team leader of Environment Safety Health Organization, and working level employees reviews quarterly performance and plans, selects tasks to improve climate changes by sector and manages their status.

● Response process

The ESG council, a working group of ESG, separates the environmental management module from the existing environment safety module to carry out tasks for practical improvement tasks to respond to climate change.

**C2.2a**

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

Relevance & inclusion	Please explain

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	<ul style="list-style-type: none"> <li>● Regulation on ETS (Emission Trading System)</li> <li>- (Status) Hanwha Corporation has participated in the K-ETS since its Onsan Plant was appointed as allocation target company in 2015 in accordance with Act on Low Carbon Green Growth. As the range of the target expanded to all business units of Hanwha Corporation from 2021, beginning of the phase 3(2021-2025), it has been increasingly important to calculate a more accurate emission amount of GHG and supply and demand of credits.</li> <li>- (Impact) When an allocation target company regulated under the K-ETS exceeds its allocation, the company is faced with increased direct cost as a result of carbon credit purchase or with financial risk due to fine imposed. As of 2022, Hanwha Corporation was assigned a total of 54,687 tons of carbon credit. Assuming that Hanwha exceeded 10% of its allocation, the company needs to purchase the excess in the K-ETS market. The financial impact of this purchase is calculated at KRW 136,181,567 (applied KRW 24,902 per KAU, Hanwha's internal carbon price in 2022).</li> <li>- (Response) As a target company under K-ETS by the government, Hanwha Corporation is must not exceed its allocations to avoid additional financial impacts and need investment into reducing GHG emissions and energy use. Hanwha has controlled emissions more strictly than granted allocations and strengthened its reduction target. To this end, we continued to make efforts to reduce greenhouse gas emissions in 2022, including the review of investment for the installation of solar power facilities and improving production process efficiency. In addition, Hanwha formed an exclusive team to analyze the K-ETS market on a regular basis, monitor the price of carbon credits, and sell and purchase carbon credits in the K-ETS market so that we can establish a management strategy for the credits through methods of, carrying over, borrowing, purchase, sale, etc.</li> </ul>
Emerging regulation	Relevant, always included	<ul style="list-style-type: none"> <li>● Renewable Energy Regulation (RE100)</li> <li>- (Status) Faced with the global climate crisis, governments and companies around the world declared the carbon neutrality by 2050 to limit global temperature increases to within 1.5 °C compared to pre-industrial levels and have implemented reduction activities. In line with the international movement, Hanwha Corporation declared 'Hanwha Net Zero 2040', a carbon-neutrality goal and plan to reduce GHG emissions by around 65% by 2030 and 100% by 2040. The conversion to eco-friendly energy is essential to achieve the carbon neutral goal, and the requirements of RE100 under the low-carbon conversion plan have recently increased, thereby many companies are participating at home and abroad.</li> <li>- (Impact) Accordingly, the demand for RE100 by stakeholders is increasing, which, in turn, is affecting investment institutions and clients. If Hanwha Corporation adheres to fossil fuel energy without responding to RE100, there is a risk of divestment by investment institutions and loss of customers.</li> <li>- (Response) In this regard, Hanwha Corporation established a strategy to secure renewable energy source with an aim to join K-RE100 within 2023 to meet requirements of RE100. To achieve its 100% of renewable energy conversion rate by 2040, Hanwha plans to take sector/plant specific transition measures (solar power facility installment for self-consumption, PPA contracts, REC purchase, etc.)</li> </ul>
Technology	Relevant, always included	<ul style="list-style-type: none"> <li>● Renewable Energy and Wind/Plastic Technologies</li> <li>- (Status) Since Paris Agreement, major countries around the world have strengthened their response to climate change issues and established action plans to reduce GHG emissions. To this end, there has been growing demands for renewable energy to substitute existing resources such as oils and coals for a sustainable future.</li> <li>- (Impact) Developing renewable energy technology is recognized as a great opportunity and risk as the technology development is in line with Hanwha Group's growth vision. Not only are energy-related policies and markets changing rapidly, but the use of renewable energy power is essential to achieve the Net Zero goal. In order to respond quickly to these changes, the ratio of renewable energy power use at the workplaces should be increased and efforts to improve energy efficiency should be expanded. In addition, it is necessary to find and operate a business that can secure competitiveness by shifting the existing fossil fuel-based business structure into a renewable energy business structure such as wind power and solar power.</li> <li>- (Response) Hanwha Corporation intends to establish and implement a plan to achieve K-RE100 and join the K-RE100 in 2023. In addition, it is expanding its business area to eco-friendly and low-carbon energy by increasing R&amp;D investment into secondary batteries and solar cells/modules to convert to renewable energy. Furthermore, it is constantly striving to prevent resource depletion and environmental pollution by advancing into renewable energy generation projects such as the construction of land and offshore wind power complexes. Currently, Hanwha has completed the construction of the Yeongyang Wind Power Complex and the Jeju Sumang Wind Power Complex and is on the construction of Yangyang Suri Land Wind Power Generation (about 94 MW). In addition, the company is actively expanding the development of renewable energy (wind) power complexes by promoting large-scale offshore wind power generation projects.</li> </ul>
Legal	Relevant, always included	<ul style="list-style-type: none"> <li>● Establishment and Revisions of ESG laws, regulation and systems</li> <li>- (Status) Domestic and international regulations on climate changes such as ETS and carbon border tax have been strengthened to attain carbon neutrality goals. Because the range of regulations has recently expanded to ESG including climate change, a greater range of corporate activities is controlled under legal regulations thereby corporate responsibilities and risks are increasing.</li> <li>- (Impact) If we do not proactively respond to the revision of ESG disclosures, including K-ETS and climate change, there is a risk of violating legality. If an offense occurs in the sale of K-ETS, a fine of up to 100 million won or a prison term of up to three years may be imposed, which may have a significant impact on the maintenance of the business.</li> <li>- (Response) Imposition of fines and occurrence of legality risk due to violating the law and regulations may have significant impact not only on the company's ESG assessment results but also on its reputation. Thus, we regularly and frequently review and reflect establishments and amendments of ESG related laws and regulations including climate change into our risk assessment process. Since Hanwha actively has responded to the laws and regulations related to climate change systematically, the company has never experienced any problem or illegality under climate-change related laws and regulations, and we strongly believe we continue to do so in the future through our well managed system.</li> </ul>
Market	Relevant, always included	<ul style="list-style-type: none"> <li>● Decreasing sales of internal combustion engine vehicle due to changes into EVs</li> <li>- (Status) As increasing number of major countries declared carbon neutrality, existing internal combustion engine (ICE) vehicles have been converted into eco-friendly vehicles such as electric vehicles (EVs) to reduce GHG emissions in the transportation sector. The UK (2030), Those countries who banned sales of ICE vehicles include France (2040), Germany (2030), the Netherlands (2030), and Norway (2025).</li> <li>- (Impact) Hanwha is operating the assembly line installation business of internal combustion engines or ICE (engine, mission), and the sales of this business are decreasing continuously year by year. Accordingly, changes in external environment including market situations (changes in supply and demand of the ICE market caused by climate-change, the scale of raw materials that increase GHG emission efficiency, and EV market growth potential) and changes in response strategy are included in our risk assessment process a type.</li> <li>- (Response) Hanwha Corporation contributes to responding to climate change issues through business conversions such as secondary batteries and EV battery production facilities to compensate for sales losses. In addition, Hanwha secures technology and competitiveness through continuous R&amp;D resulting in a sharply rising sales every year. The company plans to increase this sales portion to around 20% out of the total sales by 2030. Also, in response to the growth of the market, the company developed facilities to produce secondary batteries, the most important part of EVs. Starting with the establishment of a secondary battery center in November 2019, it has expanded its market beyond domestic and foreign automakers to global battery companies by upgrading the existing secondary battery production facilities and securing a variety of product lineups with customized R&amp;D.</li> </ul>
Reputation	Relevant, always included	<ul style="list-style-type: none"> <li>● Increased corporate reputation risk due to increasing demand for disclosure and assessment of non-financial information</li> <li>- (Status) Recently there has been a growing demand for non-financial information on climate change to encourage corporations to evaluate and respond to impacts of climate change. Since climate change not only affects a corporate's financial aspect but also its non-financial aspect, corporations are required to recognize they have to share climate change related issue with investors, clients, and the society.</li> <li>- (Impact) Therefore, clients, stakeholders and investors of Hanwha Corporation are demanding the disclosure of information related to ESG management and climate change issues in accordance with international standards. ESG is directly connected with a corporation's existence and reputation, not only in Korea but globally. Non-financial information together with financial information is used as main measuring tool for investment, and ESG assessment result will have effect on funding and financing made by investors.</li> <li>- (Response) Hanwha Corporation recognizes reputation as a risk and manages it more efficiently and any effect related to climate change response that may damage company's reputation are included in risk assessment to be examined and assessed. In particular, climate change issues are highly and sensitively recognized worldwide, we are recognizing the issues as an item which we should have control of to maintain corporation's brand value and reputation. Also, since National Pension and other main financial organizations are investing based on how companies respond to ESG and climate change such as KCGS(Korea Institute of Corporate Governance and Sustainability) etc., and clients and stakeholders are increasingly demanding to disclose non-financial information, Hanwha actively discloses the information on climate change issues. Hanwha disclosed information related to climate change in 2021 through rejoining the CDP Climate Change program, and is striving to maintain its reputation by appropriately responding to climate-related information disclosure, a non-financial information element, through the release of reports in accordance with the TCFD framework.</li> </ul>

	Relevance & inclusion	Please explain
Acute physical	Relevant, always included	<ul style="list-style-type: none"> <li>Increased risk due to extreme weather conditions such as torrential rain, floods and wildfires</li> </ul> <p>- (Status) As the frequency and intensity of abnormal weather conditions increase due to global warming, so does the risk of companies gradually due to climate change. As a result, climate change is affecting various industries and sites of Hanwha, including physical damage such as facility destruction, production suspension, and supply chain suspension.</p> <p>- (Impact) Hanwha recognizes natural disasters caused by climate change such as drought, heatwave, torrential rain, sea level rise as a risk. As our plants and offices are located in mountainous areas and coastal areas that are easily affected by wildfire, heavy rain and floods from climate change, we always monitor acute physical environment changes and assess the risk to prepare for action plans. In particular, construction sites and manufacturing sites may suffer direct damages due to abnormal weather conditions: increased construction and operating costs because of suspension or delay of construction; recovery costs due to physical damage to manufacturing sites; and financial loss resulting from problems in raw and sub materials supply and product delivery.</p> <p>- (Response) Hanwha set up an emergency response system for disasters and damages which are recognized as risks due to climate change and the company has prepared various countermeasures to supplement facilities such as one for soil loss prevention in response to abnormal weather conditions and to diversify supply channels for a stable raw material procurement. Typical natural disastrous situations, which may have huge effect on business, include flood by rapid flooding, the road closure and factory building destruction by landslides in mountainous areas and flooding caused by sea level rise in coastal areas. Due to torrential rains in the past, we had a situation where the soil surrounding the explosives manufacturing facilities was washed away so we had to address it at a cost of about KRW 100 million. In response, all workplaces of Hanwha established an emergency response system that takes the past cases and weather forecasts into account. We are also responding to emergency situations by constructing extra facilities to prevent natural disasters (floodwalls, and water pumps, etc.) In addition, we are maintaining the emergency response system to normalize the operation of companies as soon as possible through regularly held emergency training.</p>
Chronic physical	Relevant, always included	<ul style="list-style-type: none"> <li>Increased risk due to long-term weather conditions such as change of average precipitation and rise of average temperature</li> </ul> <p>- (Status) The long-term global warming is expected to have various impacts on maintaining our business: a stable water supply due to change in average precipitation; sea level rise and damaged facilities due to long-term rise of average temperature; and increased heating and cooling operation cost due to proper control of temperature and humidity.</p> <p>- (Impact) We are faced with the risk of difficulty in supplying water to business sites due to shortage of water caused by change of average precipitation, which in turn can lead to increase in operational cost and decline in water quality causing poor product quality, with further potential sales drop followed by. Our company considers the risk of chronic physical environmental changes same as the acute physical changes and we check and assess the risks from the perspective of operational costs and product quality. The extreme weather caused by climate change is intensifying over the long-term. Climate change issues including short-term physical environmental changes can have a significant impact on maintaining our business.</p> <p>- (Response) Some facilities of Hanwha Corporation use underground water. If precipitation decreases, the amount of underground water available may decrease or it may be difficult to meet water quality standards. Accordingly, Hanwha continues to monitor and make investment into a sustainable water resource management. The company has secured reliability of pipes for industrial wastewater and wastewater buried inside the facilities by conducting periodic leak and responded to long-term physical environmental changes by expanding new facilities to reduce water use.</p>

## C2.3

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

Yes

### C2.3a

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

#### Identifier

Risk 1

#### Where in the value chain does the risk driver occur?

Direct operations

#### Risk type & Primary climate-related risk driver

Current regulation	Carbon pricing mechanisms
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#### Primary potential financial impact

Increased direct costs

#### Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

#### Company-specific description

Hanwha Corporation operates a process of identifying-evaluating-responding to risks including regulatory aspects and risks that may arise at not only sites directly operated by Hanwha but also all stages of the value chain including upstream and downstream due to climate change. Hanwha assesses the risks considering financial, social and environmental impact in compliance with item C2.1b, Hanwha's materiality assessment criteria. As a result of analysis on the risks in terms of regulation, Korea Emission Trading System (K-ETS) is the biggest risk for Hanwha. The K-ETS is a regulation that affects all business units directly operated by Hanwha Corporation. The Korean government has enforced the K-ETS since 2015 to regulate and manage GHG emission of companies that emit GHG a lot. Direct costs are increasing due to reduction activities such as "internal reduction discovery and investment in the workplace," "expanding the use of renewable energy," and "eco-friendly fuel conversion" promoted by Hanwha. If the level exceeds the limit, companies have to purchase shortage in the K-ETS market. If they fail to do it, they are faced with fine of less than three times the average market price of the carbon credit within the range of KRW 100,000 per ton. The government has increased paid allocation ratio of the K-ETS by phase [phase 2 (2018-2020): 3%/ phase 3 (2021-2025): 10%]. This directly have had a huge impact on Hanwha which was designated as allocation target during the phase 3(2021-2025).

Through the internal identification process, Hanwha Corporation evaluated the risks that may arise from stricter regulations of the ETS and identified them as risks that have a significant short-term impact on both 'financial impact' and 'social and environmental impact'. From the phase 1 (2015-2017), Onsan Plant was appointed as allocation target company and has participated in the K-ETS. Currently under phase 3 (2021-2025), the range of target expanded to all locations directly operated by Hanwha Corporation. As the Korean government declared in 2020 Carbon Neutrality by 2050 and increased Nationally Determined Contribution (NDC) in 2021, the demand for GHG emission reduction by companies regulated under the K-ETS is expected to increase definitively, which will be reflected into companies by increasing the paid allocation ratio and adjusting the pre-allocation. This will impose a significant risk on Hanwha Corporation which is regulated by the K-ETS.

#### Time horizon

Short-term

**Likelihood**

Virtually certain

**Magnitude of impact**

High

**Are you able to provide a potential financial impact figure?**

Yes, a single figure estimate

**Potential financial impact figure (currency)**

136181567

**Potential financial impact figure – minimum (currency)**

&lt;Not Applicable&gt;

**Potential financial impact figure – maximum (currency)**

&lt;Not Applicable&gt;

**Explanation of financial impact figure**

- Financial impact: KRW 136,181,567

- Description: If emission level exceeds the allocation by the ETS, the company is faced with financial risk due to fine imposed thereof or increased direct costs for additional purchasing carbon credits. With 10% of paid allocation applied during the phase 3, Hanwha is preparing action plans to keep its emission level below 90% against its 2022 allocation (54,687 KAU). Hanwha is promoting a variety of activities: energy use efficiency through process improvement; energy use reduction with high-efficiency energy facility equipment; increase in the installation of self power generation facilities (solar power) in the workplace; REC purchase (Renewable Energy Certificate); and eco-friendly fuel conversion. Despite such efforts for GHG emission reduction, companies have to purchase carbon credits through the ETS market if the limit exceeds. In case where emission exceeds the allocation as mentioned above, the additional purchasing cost of carbon credit is accounted as "emission debt" in the financial statements. Assuming that Hanwha failed to achieve 10% of paid allocation ratio out of 54,687 tons, Hanwha's financial impact is calculated at KRW 136,181,567.

\* \* Financial impact calculation base: Allocation of 2022 (54,687 KAU) x nonachievement rate (10%) x internal carbon credit price of 2022 (KRW 24,902/KAU) = KRW 136,181,567

**Cost of response to risk**

1398524131

**Description of response and explanation of cost calculation**

- (Situation) Hanwha Corporation is a company subject to ETS regulations. From 2021, the third planning period, the subject of regulation has expanded from business sites to company-wide, and the obligation to manage and reduce GHG emissions has strengthened for all Hanwha business sites.

- (Task) Hanwha Corporation should periodically monitor Korean and overseas policies and ETS prices, calculate the amount required for ETS, and identify and manage risks to cope with the risk of strengthening GHG emissions reporting obligation.

- (Action) Hanwha Corporation has established the 'Hanwha Net Zero 2040' target and a stricter reduction target than ETS regulations. To implement such, the company is promoting sustainable growth through low-carbon eco-friendly businesses, greenhouse gas reduction activities, and an active transition to a renewable energy ecosystem.

- (Result) Hanwha Corporation is actively implementing company-wide activities to reduce GHG emissions and achieve the 'Net Zero 2040' target. To improve energy efficiency, the company is promoting Operation Excellence(OE), an activity to enhance productivity for each business unit. As part of OE activities, automation items related to energy efficiency and greenhouse gas reduction are being developed, and implementation effects are being analyzed and managed. In particular, five power and fuel use reduction items were developed through OE activities at Boeun Plant in 2022, and gradual application of automation technologies proved to be effective in saving energy.

In 2022, with the efforts toward reduction within each business division, Hanwha Corporation reduced greenhouse gases by 249,001 tCO<sub>2</sub>eq, including reductions resulting from the CDM project. The company executed a total of KRW 1,398,524,131 in management costs. It also plans to join the K-RE100 starting in 2023 to transition from electricity to renewable energy. The company is further considering various procurement measures, such as "direct investment, green premium, PPA, etc." to procure renewable energy in numerous methods. As such, Hanwha Corporation will continue its efforts to reduce greenhouse gases to achieve the 'Net Zero 2040' target and plans to achieve Net Zero by replacing most of its emissions with greenhouse gas reduction technologies by 2040.

\* Basis of the calculation : Investment amount on environment (KRW 1,300,000,000) + Environmental cost (KRW 98,524,131) = KRW 1,398,524,131

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

Yes

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

Opp1

**Where in the value chain does the opportunity occur?**

Upstream

**Opportunity type**

Products and services

**Primary climate-related opportunity driver**

Development and/or expansion of low emission goods and services

### Primary potential financial impact

Increased revenues resulting from increased demand for products and services

### Company-specific description

Recently, the international community has increased demands not only for GHG reduction but also for recycling and reduction of waste. In this regard, major international societies such as the EU have enacted regulations to include renewable raw materials in plastic production and the Korean government has recently revised guidelines through Implementation Plans for K-circular Economy (the Ministry of Environment and the Ministry of Trade, Industry & Energy) so that reduction effect of waste plastic recycling can be recognized as carbon credits. Hanwha Corporation is developing energy generation technology using waste plastic, and through this technology, Hanwha identifies securing competitiveness on the "plastic recycling market" and expanding market share as major opportunity factors.

Hanwha Corporation legally treats waste generated during the operating process in accordance with the Waste Management Act and the Integrated Management of Environmental Pollution Facilities Act. In addition, Hanwha is making efforts to reduce the environmental impact caused by waste and to increase the recycling rate by minimizing waste generation while maximizing resource circulation such as increased recycling rate. In particular, Hanwha Momentum has developed a recycling technology for plastic waste generated at homes and industrial sites based on its low-temperature pyrolysis technology capability and operates a pilot plant for empirical tests. Hanwha Corporation forecasts the global plastic recycling market will be KRW 54.4 trillion in 2026 from the mid-term perspective. With an assumption of Hanwha's domestic share (0.1%) against the global plastic recycling market and 2.5% to 3% of Hanwha's share in the domestic market, it is expected to have more than KRW 1.36 billion of financial impact on Hanwha. In this regard, we evaluated the impact of the technology on facilities according to time horizons such as short, medium, and long-term based on importance evaluation criteria, and identified both "financial impact and "social and environmental impact" as very important opportunity factors for the company in the mid-term.

### Time horizon

Medium-term

### Likelihood

Very likely

### Magnitude of impact

High

### Are you able to provide a potential financial impact figure?

Yes, an estimated range

### Potential financial impact figure (currency)

<Not Applicable>

### Potential financial impact figure – minimum (currency)

1360000000

### Potential financial impact figure – maximum (currency)

1632000000

### Explanation of financial impact figure

- Financial impact : KRW 1,360,000,000 - 1,632,000,000

- Description : As the demand for low-carbon products and services such as waste plastic recycling increases, it is possible to secure market share and improve sales through the development of related products and technologies. Because Hanwha Momentum also plans to develop, distribute, and spread plastic recycling technology through low-temperature pyrolysis of waste plastics, the momentum division can expect opportunity cost ranging from KRW 1,360,000,000 to KRW 1,632,000,000 from a mid-term perspective (~2026) with an assumption of Hanwha's domestic share (0.1%) against the global plastic recycling market and 2.5% to 3% of Hanwha's share in the domestic market.

\* Financial impact calculation base : Plastic market for 2026 (KRW 54,400,000,000,000) x domestic share (0.1%) x Hanwha's share (2.5% ~ 3%) = KRW 1,360,000,000 ~ 1,632,000,000

### Cost to realize opportunity

1086000000

### Strategy to realize opportunity and explanation of cost calculation

- (Situation) As the sense of crisis over climate change grows, efforts to reduce GHG emissions as well as waste are in full swing in the international community. As such, domestic and foreign demands for low-carbon products and services such as waste plastic recycling are expanding, and the market for low carbon products is expected to grow continuously in the mid- and long-term. Therefore, it is important to develop related technologies and secure competitiveness to revitalize recycling of waste plastic.

- (Task) According to the results of the study, it has been confirmed that one ton of waste plastic can be thermally decomposed without incineration and its carbon dioxide emissions can be decreased by up to 2.7 tons more. Market & Market, a global market research company, forecasted that the global plastic recycling market will grow from \$27.9 billion (about KWR 34.6601 trillion won) in 2020 to \$43.5 billion (about KWR 54.4 trillion) in 2026. Hanwha Momentum plans to reduce carbon emissions by developing waste plastic recycling technology and increase sales thanks to the increased market demand.

- (Action). Hanwha Momentum is developing a technology to recycle plastic waste and put it into petrochemical processes to make new plastics. The momentum division operates a pilot pant for empirical test to research and develop mechanical facilities that recycle petroleum into fuels such as oil.

- (Result). Hanwha Momentum signed an MOU on "Project to Revitalize Waste Plastic Pyrolysis" with Chungcheongbuk-do in 2021 to achieve 2050 Carbon Neutrality and to specify the "creation of Chungbuk-type urban oil fields." The momentum division led and established a waste plastic collection and selection model, a pyrolysis clean oil market development model, and an independent operation model. Also, the division established a plan to distribute and spread clean fuel from 2025 after production technology commercialization and business demonstrations. To this end, Hanwha is conducting a pilot test in waste plastic recycling facilities using idle sites of its subsidiaries of Gunsan. With its investment of KRW 672,000,000 into the facilities in Gunsan for pilot test in 2021, Hanwha invested KRW 1,086,000,000 in 2022 for waste plastic recycling facilities.

\* Opportunity cost calculation base: investment amount for plastic recycling facilities in 2022 = KRW 1,086,000,000

### Comment

## C3. Business Strategy

C3.1

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**(C3.1) Does your organization’s strategy include a climate transition plan that aligns with a 1.5°C world?**

**Row 1**

**Climate transition plan**

Yes, we have a climate transition plan which aligns with a 1.5°C world

**Publicly available climate transition plan**

Yes

**Mechanism by which feedback is collected from shareholders on your climate transition plan**

We do not have a feedback mechanism in place, but we plan to introduce one within the next two years

**Description of feedback mechanism**

<Not Applicable>

**Frequency of feedback collection**

<Not Applicable>

**Attach any relevant documents which detail your climate transition plan (optional)**

**Explain why your organization does not have a climate transition plan that aligns with a 1.5°C world and any plans to develop one in the future**

<Not Applicable>

**Explain why climate-related risks and opportunities have not influenced your strategy**

<Not Applicable>

C3.2

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

	<b>Use of climate-related scenario analysis to inform strategy</b>	<b>Primary reason why your organization does not use climate-related scenario analysis to inform its strategy</b>	<b>Explain why your organization does not use climate-related scenario analysis to inform its strategy and any plans to use it in the future</b>
Row 1	Yes, qualitative and quantitative	<Not Applicable>	<Not Applicable>

C3.2a

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

Climate-related scenario		Scenario analysis coverage	Temperature alignment of scenario	Parameters, assumptions, analytical choices
Physical climate scenarios	RCP 8.5	Company-wide	<Not Applicable>	<p>Climate change scenario analysis modelling</p> <p>Hanwha Corporation has analyzed RCP 8.5 scenario, WRI assessment, and a physical scenario in areas of Boeum and Onsan where Hanwha Global facilities are located and in areas of Asan and Changwon where Hanwha division of Momentum facilities are located by using 2022 Korea Climate Change Outlook Report published by the National Institute of Meteorological Sciences(NIMS).</p> <p>Parameters and assumption</p> <p>Hanwha Corporation based RCP 8.5 scenario which has the highest GHG concentration of RCP scenarios to analyze the physical scenario from the conservative perspective and reflected economic growth changes into the analysis. Parameters we used in the scenario analysis include GHG concentration in the atmosphere, economic growth rate, population growth, and GDP growth rate, etc.</p> <p>Analysis Result</p> <p>Hanwha Corporation analyzed physical scenarios for all facilities by setting years 2030 and 2040 as time ranges from now to mid- to long-term perspective considering the "Hanwha Net Zero 2040" goal. The analysis result shows that in terms of Water stress(Future base), Asan plant and Onsan plant were evaluated as "High" grade, and their area were defined as important for water management for stable production. Also, according to the 2022 Korea Climate Change Outlook Report published by NIMS, the current average temperature in Korea is expected to rise by 6.3 degrees from 11.9 degrees to 18.2 degrees from 2080 to 2100. The frequency and intensity of abnormal weather conditions are expected to increase due to the rise in the average temperature. Construction sites may suffer damages in construction cost and operation cost as a result of suspension/delay of construction because of abnormal weather conditions such as typhoons, floods and forest fires. When physical damage arises in manufacturing sites, Hanwha is expected to suffer significant impacts such as recovery costs, sales loss due to production suspension and financial loss resulting from problems in raw and sub materials supply and product delivery. Thus, Hanwha plans to minimize financial and operational risks by identifying risk factors and their degrees through physical risk analysis that can affect the certain region when receiving and proposing new business orders. To this end, Hanwha is actively responding to identified risk factors, such as establishing an emergency response system for disasters and damages, and continuously monitoring on abnormal climate conditions.</p>
Transition scenarios	IEA NZE 2050	Company-wide	<Not Applicable>	<p>Establishment of 'Hanwha Net Zero 2040' transition plan</p> <p>Hanwha Corporation made its analysis with IEA NZE2050 scenario to respond to climate change risks. This scenario is referred to as Net Zero by 2050 initiative by IEA, which concentrates on countries around the world seeking to reduce GHG emissions to zero and limit global temperature rise to within 1.5°C to combat climate change.</p> <p>Parameters and assumption</p> <p>IEA NZE2050 scenario focuses more on renewable energy such as solar power and wind power while depending less on nuclear power. Thus, we have chosen this scenario as we can review our strategy on renewable energy more effectively. The main assumptions are nuclear energy and CCUS will be converted into wind power and solar PV system by 2030 and Korea has a basic energy plan (9th) with its power generation capacity upto 35% increase. And we have analyzed IEA NZE 2050 scenario putting sales and investment as parameters with an assumption of continuous maintenance/increase of sales (total revenue of KRW 50 trillion in recent three years in a row; sales increase of 3.75% compared to previous year of 2021); and new investment resulting in increase of sales and GHG emissions.</p> <p>Analysis result</p> <p>Faced with global climate crisis, Hanwha Corporation along with governments and companies around the world has declared and carbon neutrality by 2050 and implemented reduction activities to limit the global temperature increase to within 1.5 °C compared to pre- industrialization. In line with the international movement, Hanwha in 2021 declared its 'Hanwha Net Zero 2040', a carbon-neutrality goal and plan to reduce emissions by about 65% by 2030 and 100% by 2040.</p> <p>In 2022, Hanwha re-established a detailed plan to reach the 'Hanwha Net Zero 2040' carbon neutrality goal as a result of the reorganization of divisions. We advanced environmental goals and strategies for each division for Scope 1 and 2 and set up the enterprise-wide environmental goals and strategies covering all divisions. In addition, we established a strategy to secure renewable energy with the goal of joining K-RE100 within 2023, and plan to take transition measures (installation of solar power facilities for self-consumption, PPA contracts, REC purchase, etc.) by 2040 customized for each division and facility. Along with this, in 2023, we intend to start to upgrade scope 3 GHG calculation system to identify the status of emissions in the supply chain and articulate the reduction plan.</p>

C3.2b

**(C3.2b) Provide details of the focal questions your organization seeks to address by using climate-related scenario analysis, and summarize the results with respect to these questions.**

**Row 1**

**Focal questions**

Impact of climate change on attaining Hanwha Net Zero 2040

Hanwha Corporation, with an aim of Hanwha Net Zero 2040, has driven a sustainable growth for itself and the society by discovering low-carbon-based business areas reducing GHG emissions, and actively switching to a renewable energy-based ecosystem with solar power, etc. To this end, Hanwha is also piloting in-house charging facilities to promote K-EV100 and make effort to convert vehicles at its domestic operations into EVs by 2030. Furthermore, Hanwha is strengthening its eco-friendly business portfolio such as green hydrogen business, battery manufacturing facilities, and renewable energy plants to expand eco-friendly and low-carbon-based business areas.

However, based on the RCP 8.5 scenario, the physical scenario analysis of major domestic production plants and construction sites such as Asan Plant, Changwon Plant, Boeun Plant, and Onsan Plant showed a large increase in heat wave days and temperature. The increase in the number of heat wave days and the increase in average temperature are expected to have a significant impact on Hanwha's goal achievement of Hanwha Net Zero 2040 as they will cause increased power consumption and decreased facility efficiency. Especially for Hanwha E&C which has a lot of outdoor work, the rise in the number of heatwave days delays the construction period and causes the resulting increased energy use. Also, the company consumes more electricity and energy to store/use its chemical products and raw materials of Hanwha Global that must require constant appropriate temperature and humidity.

Hanwha Corporation made its analysis on a physical scenario (RCP 8.5) and a transition scenario (IEA NZE2050) to find out impact of climate change on its Hanwha Net Zero 2040 goal. Through the physical scenario analysis, Hanwha forecasted climate change in the region and examined its level of effect on the region where its major production plants are located. Afterward, based on the transition scenario, IEA NZE 2050, the company reviewed its GHG emission reduction measures and strategies as a result of a temperature rise.

**Results of the climate-related scenario analysis with respect to the focal questions**

Hanwha analyzed impacts until the year 2100 to consider the mid to long term risks due to climate change based on the RCP 8.5 scenario. As a result of the analysis, the number of days of heat waves was different nearly three times from the second half of the 21st century (~2100). In particular, in Gyeongsangnam-do, where Onsan Plant is located, Jeju, Gwangju, and Gyeonggi-do, the analysis showed that the number of heat wave days increased by more than five times by 2050. In addition, the analysis forecasted the cumulative power cost due to changes in the average temperature rose by more than 6% to KRW 278 billion by 2050 against the RCP 2.6.

Abnormal weather conditions such as heat waves, typhoons, and floods caused by climate change are expected to have a serious impact on Hanwha Corporation's overall value chain. High temperature and humidity can reduce work efficiency of workers at construction sites and affect the operation of construction equipment and machines due to overheating and engine failures. This causes an increase in energy use due to delays in the construction period and a decrease in the energy efficiency of the facility.

According to the physical scenario analysis, Hanwha Corporation, to minimize damages due to extreme weather conditions which are expected to increase by 2050, has set up an emergency response system for disasters and damages so that the company can cope with construction plant disruptions and delays caused by climate change. It has also secured a stable raw material procurement by diversifying supply channels to prevent a possible financial loss resulting from problems in raw and sub materials supply and product delivery.

Hanwha Corporation is taking various actions with an aim of Hanwha Net Zero 2040 in compliance with IEA NZE 2050 standards: Hanwha is reducing energy consumption by replacing high energy efficiency equipment; expanding self power generation equipment (solar power) in the office and production plant facilities; and switching to eco-friendly fuels such as electricity, hydrogen and biomass. By 2040 2030, the company plans to purchase direct/indirect PPA contracts or REC together to reach GHG reduction by 100% against the 2019 level. In addition, the company intends to have more various wind power business operation experiences of Yeongyang Wind Power Complex (22 3.45WM-plants), Jeju Sumang Wind Power Complex (7 3.6 MW-plants) and Yangyang Suri Land Wind Power Generation (about 94 MW).and apply related technologies.

**C3.3**

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	<ul style="list-style-type: none"> <li>Expansion of eco-friendly business area</li> </ul> <p>- Hanwha Corporation is promoting sustainable growth of itself and the society by discovering low-carbon eco-friendly businesses, reducing GHG emissions, and actively switching to a renewable energy ecosystem with a goal of Hanwha Net Zero 2040. Hanwha is strengthening its eco-friendly business portfolio such as battery manufacturing facilities and renewable energy plants to expand eco-friendly and low-carbon-based business areas. In 2022, Hanwha issued green bonds worth KRW 150 billion to actively invest into secondary battery production facilities and solar power generation. Through these strategic responses, Hanwha is securing its new growth engines while contributing to addressing the climate crisis.</p> <p>- (Global) Is establishing an infra business to import and distribute clean ammonia and low carbon product supply businesses such as LOW GWP NO GAS manufacturing business.</p> <p>- (Momentum) constructs and operates renewable energy plants, supplies specialized equipment for the entire process of manufacturing secondary batteries and research projects on waste recycling.</p> <p>- (E&amp;C) Developed renewable energy (wind power) power complexes (constructed and operates Yeongyang Wind Power Complex and Jeju Sumang Wind Power Complex and Yangyang Suri Land Wind Power Generation (about 94 MW) and is promoting large-scale offshore wind power generation projects.</p>
Supply chain and/or value chain	Yes	<ul style="list-style-type: none"> <li>Implementation of green purchasing policy</li> </ul> <p>- Hanwha Corporation strives to minimize the negative impact of corporate activities by procuring raw materials and purchasing goods under the principles of eco-friendliness, safety and health. Global division is making efforts to prevent resources waste and environmental pollution in accordance with the guidelines on managing green purchase and eco-friendly packaging materials considering environmental aspects. Accordingly, Hanwha manages eco-friendly purchase performance. In addition, E&amp;C division purchases not only quality products but also green products at the same time that have little impact on the environment and human body when buying products or services such as office supplies, office equipment, and construction materials. In particular, the division prevents waste of energy and resources, reduces GHG emissions and environmental pollution by expanding the purchase of raw and sub materials such as RMC (ready-mixed concrete), insulators, and plaster boards that have obtained environmental mark certification.</p>
Investment in R&D	Yes	<ul style="list-style-type: none"> <li>Development of plastic waste recycling technology</li> </ul> <p>Plastic waste from homes and industries is considered a major cause of environmental pollution. Hanwha Corporation is developing technology that can recycle plastic waste. We operate a pilot plant to conduct demonstration experiments on mechanical equipment that uses recycled oil as fuel extracted from plastic waste through low temperature pyrolysis.</p> <p>As a result, Hanwha is conducting a pilot test in waste plastic recycling facilities using idle sites of its subsidiaries in Gunsan. To this end, the company invested KRW 672,000,000 in 2021. In 2023, the company strives to complete development of the waste-derived fuel facility with additional investment. Based on plastic recycling technologies, the company continues to contribute to waste recycling and environmental conservation.</p> <p>Hanwha Engineering &amp; Construction and the Korea Energy Research Institute participated in the "Technomics Audition," a state-participating science and technology management hosted by the Ministry of Science and ICT and organized by the National Institute of Science and Technology (NST). We won the Minister of Science and ICT Award for 'waste plastic energy conversion plant' technology. It has signed a business MOU to develop eco-friendly technologies that process waste plastic and convert it into hydrogen fuel or chemical fuel from 2022. This not only reduces waste and carbon emissions by shifting from landfill and incineration-oriented waste plastic treatment to pyrolysis, but also contributes to the expansion of the high value-added recycling market by selling hydrogen and chemical fuels produced. Hanwha Co., Ltd. will continue to lead the transition to a carbon-neutral society by expanding innovative eco-friendly technology development.</p>
Operations	Yes	<ul style="list-style-type: none"> <li>Energy efficiency activities by facility</li> </ul> <p>Hanwha Global division has implemented Operation Excellence (OE), a productivity increase activity for each business to improve energy efficiency. As part of OE activity, the division identifies automation items related to energy efficiency and GHG emission reduction and analyzes and manages implementation effects. In particular, through the OE activities at Boeun Plant in 2022, the company discovered five items to reduce power and fuel consumption and applied automation technologies such as EHT (Electric Heat Tracing) blocking system and installation of circulation pump timers to the facilities gradually to save energy thereby brought energy saving effect.</p> <p>Onsan Plant saves energy by converting waste heat energy generated during the nitric acid manufacturing process into steam energy and using it in the manufacturing process. The use of steam produced by waste heat energy greatly contributes to reducing net GHG emissions at the plant with 'zero' GHG emissions, and in 2022, it generated economic profits by selling 166 TJ of residual steam energy. In addition, the plant prevented its energy by controlling the temperature of heating and cooling systems in the facilities and removing factors of steam waste. Furthermore, the plant continues to improve energy use efficiency in the facilities by replacing power-efficient LED lights.</p>

**C3.4**

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

	Financial planning elements that have been influenced	Description of influence
Row 1	Revenues Direct costs Capital expenditures	<ul style="list-style-type: none"> <li>Revenues – Sales through eco-friendly businesses</li> </ul> <p>Hanwha Corporation estimates eco-friendly sales based on projects that meet the Korean-style green classification system (K-Taxonomy) standards. In 2022, Momentum division separated the projects to supply solar cells, modules, and secondary battery manufacturing facilities necessary to produce renewable energy into green economic activities and then calculated eco-friendly sales. Hanwha plans to continuously discover and expand businesses that meet the green classification system for eco-friendly management. Momentum division's eco-friendly sales reached KRW 381 billion in 2022.</p> <ul style="list-style-type: none"> <li>Direct cost – Environmental investment performance</li> </ul> <p>Hanwha corporation continues to invest in improving facilities and technologies to better the workplace environment for the safety of executives and employees and the prevention of environmental pollution. In 2022, Hanwha made environmental investments to improve air pollution prevention facilities, install waste storages, replace high-efficiency facilities to boost energy efficiency, and to replace old diesel vehicles to reduce air pollutant emissions, and etc.. Through this, the company is improving environmental efficiency and creating a pleasant and safe workplace. As a result of these environmental investments, it made a total of KRW 1.34 billion of investment in 2022 and established a plan to conduct environmental investments of KRW 3.385 billion in 2023, an increase of about 1.5 times.</p> <ul style="list-style-type: none"> <li>Capital expenditures – Environmental expenses due to facility operation</li> </ul> <p>To prevent pollution in the community and environmental destructions caused by the operation of its facilities, Hanwha Corporation manages expenditures for environmental preservation such as resource conservation, recycling, and post-treatment. In 2022, Hanwha spent about KRW 19 billion on environmental management, including the installation of scattering dust control facilities, the installation of waste separation &amp; storage facilities, the use of low-noise and low-vibration construction machines, and the installation of noise vibration reduction facilities. Hanwha will continue to increase environment-related expenditures to minimize the impact of environmental pollution caused by corporate activities on various stakeholders, including residents, and to ensure sustainable operation of businesses. In 2023, KRW 25.443 billion of budget was set aside for environmental-related expenditure an increase of about 33% from KRW 19.68 billion in 2022.</p>

**C3.5**

**(C3.5) 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	Indicate the level at which you identify the alignment of your spending/revenue with a sustainable finance taxonomy
Row 1	Yes, we identify alignment with our climate transition plan	<Not Applicable>

**C3.5a**

**(C3.5a) Quantify the percentage share of your spending/revenue that is aligned with your organization's climate transition.**

**Financial Metric**

Revenue/Turnover

**Type of alignment being reported for this financial metric**

Alignment with our climate transition plan

**Taxonomy under which information is being reported**

<Not Applicable>

**Objective under which alignment is being reported**

<Not Applicable>

**Amount of selected financial metric that is aligned in the reporting year (unit currency as selected in C0.4)**

1300000000

**Percentage share of selected financial metric aligned in the reporting year (%)**

6.8

**Percentage share of selected financial metric planned to align in 2025 (%)**

8

**Percentage share of selected financial metric planned to align in 2030 (%)**

10

**Describe the methodology used to identify spending/revenue that is aligned**

In response to global climate crisis, Hanwha Corporation affirmed its commitment to eco-friendly management by declaring its 'Hanwha Net Zero 2040.' Hanwha is actively investing into such environment-friendly businesses as renewable energy, low-carbon technology, and energy efficiency to minimize negative environmental impacts on all stages of the corporate value chain. Hanwha is promoting sustainable growth of itself and the society by discovering low-carbon eco-friendly businesses, reducing GHG emissions, and actively switching to a renewable energy ecosystem.

Hanwha Corporation has minimized its financial loss by proactively responding to domestic and international environmental regulations such as regulations on GHG emissions, increase in carbon surtaxes, and expanding the introduction of renewable energy. Hanwha is also piloting in-house charging facilities to promote K-EV100, and make effort to convert vehicles at its domestic operations into EVs by 2030 with current 15 in-house EVs (3% of all vehicles). Furthermore, Hanwha Corporation is strengthening its eco-friendly business portfolio such as clean ammonia, battery manufacturing facilities, and renewable energy plants to expand environment-friendly and low-carbon-based business areas. As all divisions of Global, Momentum and E&C are expected to increase investment for climate change to attain the carbon neutrality goal in accordance with Hanwha Net Zero 2040 Roadmap in the future, this ratio of the total CAPEX is expected to rise continuously. The company manages the ratio of CAPEX as the ratio of environmental investment into the total environmental-related expenditure, and forecasts the ratio is expected to gradually increase to implement the transition plan.

**C4. Targets and performance**

**C4.1**

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

Absolute target

**C4.1a**

**(C4.1a) Provide details of your absolute emissions target(s) and progress made against those targets.**

**Target reference number**

Abs 1

**Is this a science-based target?**

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

**Target ambition**

<Not Applicable>

**Year target was set**

2020

**Target coverage**

Company-wide

**Scope(s)**

Scope 1

Scope 2

**Scope 2 accounting method**

Location-based

**Scope 3 category(ies)**

<Not Applicable>

**Base year**

2019

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

106768

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

40113

**Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 4: Upstream transportation and distribution emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 5: Waste generated in operations emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 6: Business travel emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 7: Employee commuting emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 8: Upstream leased assets emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 10: Processing of sold products emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 11: Use of sold products emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 13: Downstream leased assets emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 14: Franchises emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 15: Investments emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (upstream) emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (downstream) emissions covered by target (metric tons CO2e)**

<Not Applicable>

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

<Not Applicable>

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

146881

**Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1**

100

**Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2**

100

**Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1:**

**Purchased goods and services (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 4: Upstream transportation and distribution covered by target as % of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 5: Waste generated in operations emissions covered by target as % of total base year emissions in Scope 3, Category 5: Waste generated in operations (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 6: Business travel emissions covered by target as % of total base year emissions in Scope 3, Category 6: Business travel (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 7: Employee commuting covered by target as % of total base year emissions in Scope 3, Category 7: Employee commuting (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 8: Upstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 8: Upstream leased assets (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target as % of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 10: Processing of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 10: Processing of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 11: Use of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 11: Use of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 13: Downstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 13: Downstream leased assets (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 14: Franchises emissions covered by target as % of total base year emissions in Scope 3, Category 14: Franchises (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 15: Investments emissions covered by target as % of total base year emissions in Scope 3, Category 15: Investments (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (upstream) emissions covered by target as % of total base year emissions in Scope 3, Other (upstream) (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (downstream) emissions covered by target as % of total base year emissions in Scope 3, Other (downstream) (metric tons CO2e)**

<Not Applicable>

**Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)**

<Not Applicable>

**Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes**

4

**Target year**

2030

**Targeted reduction from base year (%)**

65.5

**Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]**

50673.945

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

20368

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

43895

**Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 4: Upstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 5: Waste generated in operations emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 6: Business travel emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 7: Employee commuting emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 8: Upstream leased assets emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 9: Downstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 10: Processing of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 11: Use of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 12: End-of-life treatment of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 13: Downstream leased assets emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 14: Franchises emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 15: Investments emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Other (upstream) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Other (downstream) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

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

64263

**Does this target cover any land-related emissions?**

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

**% of target achieved relative to base year [auto-calculated]**

85.8751990693406

**Target status in reporting year**

Revised

**Please explain target coverage and identify any exclusions**

We have set Net Zero goals for all Scope 1 and 2 facilities, and we disclose our mid-term goals when setting Net Zero goals.

**Plan for achieving target, and progress made to the end of the reporting year**

In order to achieve carbon neutrality, Hanwha set a goal of reducing about 65% compared to 2019 as a mid-term goal, and redefined detailed plans by division. In addition, to achieve this, the company is establishing a strategy to secure renewable energy with the goal of joining the K-RE100 in 2023. It plans to convert to 100% of renewable energy by 2040 by utilizing the installation of self-consumption solar power facilities, PPA contracts, and REC purchases, and through this, it plans to achieve 2040 Carbon Neutrality goal.

**List the emissions reduction initiatives which contributed most to achieving this target**

<Not Applicable>

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**Target reference number**

Abs 2

**Is this a science-based target?**

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

**Target ambition**

<Not Applicable>

**Year target was set**

2020

**Target coverage**

Company-wide

**Scope(s)**

Scope 1

Scope 2

**Scope 2 accounting method**

Location-based

**Scope 3 category(ies)**

<Not Applicable>

**Base year**

2019

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

106768

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

40113

**Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 4: Upstream transportation and distribution emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 5: Waste generated in operations emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 6: Business travel emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 7: Employee commuting emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 8: Upstream leased assets emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 10: Processing of sold products emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 11: Use of sold products emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 13: Downstream leased assets emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 14: Franchises emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 15: Investments emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Other (upstream) emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Other (downstream) emissions covered by target (metric tons CO2e)**

&lt;Not Applicable&gt;

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

&lt;Not Applicable&gt;

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

146881

**Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1**

100

**Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2**

100

**Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1: Purchased goods and services (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 4: Upstream transportation and distribution covered by target as % of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 5: Waste generated in operations emissions covered by target as % of total base year emissions in Scope 3, Category 5: Waste generated in operations (metric tons CO2e)**

&lt;Not Applicable&gt;

**Base year Scope 3, Category 6: Business travel emissions covered by target as % of total base year emissions in Scope 3, Category 6: Business travel (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 7: Employee commuting covered by target as % of total base year emissions in Scope 3, Category 7: Employee commuting (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 8: Upstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 8: Upstream leased assets (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target as % of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 10: Processing of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 10: Processing of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 11: Use of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 11: Use of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 13: Downstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 13: Downstream leased assets (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 14: Franchises emissions covered by target as % of total base year emissions in Scope 3, Category 14: Franchises (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 15: Investments emissions covered by target as % of total base year emissions in Scope 3, Category 15: Investments (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (upstream) emissions covered by target as % of total base year emissions in Scope 3, Other (upstream) (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (downstream) emissions covered by target as % of total base year emissions in Scope 3, Other (downstream) (metric tons CO2e)**

<Not Applicable>

**Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)**

<Not Applicable>

**Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes**

4

**Target year**

2040

**Targeted reduction from base year (%)**

100

**Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]**

0

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

20368

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

43895

**Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 4: Upstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 5: Waste generated in operations emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 6: Business travel emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 7: Employee commuting emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 8: Upstream leased assets emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 9: Downstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 10: Processing of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 11: Use of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 12: End-of-life treatment of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 13: Downstream leased assets emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 14: Franchises emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 15: Investments emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Other (upstream) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Other (downstream) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

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

64263

**Does this target cover any land-related emissions?**

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

**% of target achieved relative to base year [auto-calculated]**

56.2482553904181

**Target status in reporting year**

Revised

**Please explain target coverage and identify any exclusions**

We have set Net Zero goals for all Scope 1 and 2 facilities, and we disclose our mid-term goals when setting Net Zero goals.

**Plan for achieving target, and progress made to the end of the reporting year**

In order to achieve carbon neutrality, Hanwha set a goal of reducing about 65% by 2030 compared to 2019 as a mid-term goal, and redefined detailed plans by division. In addition, to achieve this, the company is establishing a strategy to secure renewable energy with the goal of joining the K-RE100 in 2023. It plans to convert to 100% of renewable energy by 2040 by utilizing the installation of self-consumption solar power facilities, PPA contracts, and REC purchases, and through this, it plans to achieve 2040 Carbon Neutrality goal.

**List the emissions reduction initiatives which contributed most to achieving this target**

<Not Applicable>

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**Target reference number**

Abs 3

**Is this a science-based target?**

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

**Target ambition**

<Not Applicable>

**Year target was set**

2022

**Target coverage**

Company-wide

**Scope(s)**

Scope 3

**Scope 2 accounting method**

<Not Applicable>

**Scope 3 category(ies)**

Category 1: Purchased goods and services

Category 11: Use of sold products

Category 15: Investments

**Base year**

2021

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

<Not Applicable>

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

<Not Applicable>

**Base year Scope 3, Category 1: Purchased goods and services emissions covered by target (metric tons CO2e)**

1636330

**Base year Scope 3, Category 2: Capital goods emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 4: Upstream transportation and distribution emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 5: Waste generated in operations emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 6: Business travel emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 7: Employee commuting emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 8: Upstream leased assets emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 10: Processing of sold products emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 11: Use of sold products emissions covered by target (metric tons CO2e)**

1567664

**Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 13: Downstream leased assets emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 14: Franchises emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 15: Investments emissions covered by target (metric tons CO2e)**

666598

**Base year Scope 3, Other (upstream) emissions covered by target (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (downstream) emissions covered by target (metric tons CO2e)**

<Not Applicable>

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

3870591

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

3870591

**Base year Scope 1 emissions covered by target as % of total base year emissions in Scope 1**

<Not Applicable>

**Base year Scope 2 emissions covered by target as % of total base year emissions in Scope 2**

<Not Applicable>

**Base year Scope 3, Category 1: Purchased goods and services emissions covered by target as % of total base year emissions in Scope 3, Category 1:**

**Purchased goods and services (metric tons CO2e)**

42

**Base year Scope 3, Category 2: Capital goods emissions covered by target as % of total base year emissions in Scope 3, Category 2: Capital goods (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions covered by target as % of total base year emissions in Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 4: Upstream transportation and distribution covered by target as % of total base year emissions in Scope 3, Category 4: Upstream transportation and distribution (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 5: Waste generated in operations emissions covered by target as % of total base year emissions in Scope 3, Category 5: Waste generated in operations (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 6: Business travel emissions covered by target as % of total base year emissions in Scope 3, Category 6: Business travel (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 7: Employee commuting covered by target as % of total base year emissions in Scope 3, Category 7: Employee commuting (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 8: Upstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 8: Upstream leased assets (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 9: Downstream transportation and distribution emissions covered by target as % of total base year emissions in Scope 3, Category 9: Downstream transportation and distribution (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 10: Processing of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 10: Processing of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 11: Use of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 11: Use of sold products (metric tons CO2e)**

40

**Base year Scope 3, Category 12: End-of-life treatment of sold products emissions covered by target as % of total base year emissions in Scope 3, Category 12: End-of-life treatment of sold products (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 13: Downstream leased assets emissions covered by target as % of total base year emissions in Scope 3, Category 13: Downstream leased assets (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 14: Franchises emissions covered by target as % of total base year emissions in Scope 3, Category 14: Franchises (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Category 15: Investments emissions covered by target as % of total base year emissions in Scope 3, Category 15: Investments (metric tons CO2e)**

17

**Base year Scope 3, Other (upstream) emissions covered by target as % of total base year emissions in Scope 3, Other (upstream) (metric tons CO2e)**

<Not Applicable>

**Base year Scope 3, Other (downstream) emissions covered by target as % of total base year emissions in Scope 3, Other (downstream) (metric tons CO2e)**

<Not Applicable>

**Base year total Scope 3 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)**

99

**Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes**

96

**Target year**

2030

**Targeted reduction from base year (%)**

20

**Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]**

3096472.8

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

<Not Applicable>

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

<Not Applicable>

**Scope 3, Category 1: Purchased goods and services emissions in reporting year covered by target (metric tons CO2e)**

1743325

**Scope 3, Category 2: Capital goods emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 4: Upstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 5: Waste generated in operations emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 6: Business travel emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 7: Employee commuting emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 8: Upstream leased assets emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 9: Downstream transportation and distribution emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 10: Processing of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 11: Use of sold products emissions in reporting year covered by target (metric tons CO2e)**

1701867

**Scope 3, Category 12: End-of-life treatment of sold products emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 13: Downstream leased assets emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 14: Franchises emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Category 15: Investments emissions in reporting year covered by target (metric tons CO2e)**

735911

**Scope 3, Other (upstream) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Scope 3, Other (downstream) emissions in reporting year covered by target (metric tons CO2e)**

<Not Applicable>

**Total Scope 3 emissions in reporting year covered by target (metric tons CO2e)**

4181103

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

4181103

**Does this target cover any land-related emissions?**

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

**% of target achieved relative to base year [auto-calculated]**

-40.1117038715793

**Target status in reporting year**

Revised

**Please explain target coverage and identify any exclusions**

Hanwha calculates and reports 12 out of 15 Scope3 categories, and sets and manages goals for "Categories 1, 11, and 15," which account for 99% of emissions.

**Plan for achieving target, and progress made to the end of the reporting year**

Scope 3 emissions have a significant impact as it accounts for 96% of its total emissions of Hanwha. Accordingly, in order to reduce Scope 3 emissions, Hanwha calculates and manages emissions for "categories 1, 11, and 15" which are major sources of emissions. In order to reduce the Scope3 emissions, Hanwha will conduct the ESG evaluation on the supply chain and conduct engagement activities to reduce GHG emissions. In addition, the company will try to convert sold products into low-carbon ones, and in case of investment institutions, we plan to carry out engagements to switch them into eco-friendly ones.

**List the emissions reduction initiatives which contributed most to achieving this target**

<Not Applicable>

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## C4.2

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

Net-zero target(s)

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## C4.2c

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**(C4.2c) Provide details of your net-zero target(s).**

**Target reference number**

NZ1

**Target coverage**

Company-wide

**Absolute/intensity emission target(s) linked to this net-zero target**

Abs1

Abs2

**Target year for achieving net zero**

2040

**Is this a science-based target?**

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

**Please explain target coverage and identify any exclusions**

We have set Net Zero goals for all Scope 1 and 2 facilities, and we disclose our mid-term goals when setting Net Zero goals.

**Do you intend to neutralize any unabated emissions with permanent carbon removals at the target year?**

Yes

**Planned milestones and/or near-term investments for neutralization at target year**

Hanwha set a carbon neutrality goal of Net Zero 2040 and to achieve this goal, the company redefined detailed plans by division. It advanced environmental goals and strategies for each division for Scope 1 and 2 and established environmental goals and strategies for the whole company covering all divisions. In addition, Hanwha established a strategy to secure renewable energy with the aim of joining the K-RE100 within 2023 and achieve 100% of renewable energy conversion by 2040 in consideration of the characteristics of each division and facility. In the future, we plan to actively expand activities such as installation of self-consumption solar power facilities, PPA contracts, and REC purchases.

**Planned actions to mitigate emissions beyond your value chain (optional)**

C4.3

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

Yes

C4.3a

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	2	318
To be implemented*	8	1024
Implementation commenced*	2	69
Implemented*	2	36
Not to be implemented	0	0

C4.3b

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

**Initiative category & Initiative type**

Energy efficiency in production processes	Process optimization
---	----------------------

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

28

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

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

7000000

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

0

**Payback period**

<1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

Reduce power usage by changing the way you drive

**Initiative category & Initiative type**

Low-carbon energy generation	Solar PV
------------------------------	----------

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

8

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

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

2140146

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

40000000

**Payback period**

16-20 years

**Estimated lifetime of the initiative**

21-30 years

**Comment**

Reduce greenhouse gas emissions by replacing electricity use by installing self-generation facilities (solar power) in the workplace.

## C4.3c

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

Method	Comment
Compliance with regulatory requirements/standards	Hanwha is regulated by the ETS thereby it is inevitable to reduce GHG emissions. Accordingly, Hanwha identifies items related to energy efficiency and GHG emission reduction, analyzes and manages implementation effect. For instance, Boeun Plant has discovered five energy reduction activities through Operation Excellence (OE) and through this, the Plant applied automation technologies such as EHT (Electric Heat Tracing) blocking system and installation of circulation pump timers to facilities gradually. As such, Hanwha discovers and applies items for GHG reduction every year and through this, the company plans to take a step closer to achieving its own goal of 2040 Net Zero in compliance with the ETS.

## C4.5

### (C4.5) Do you classify any of your existing goods and/or services as low-carbon products?

Yes

## C4.5a

### (C4.5a) Provide details of your products and/or services that you classify as low-carbon products.

#### Level of aggregation

Product or service

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

The EU Taxonomy for environmentally sustainable economic activities

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

Other	Other, please specify (solar cells, solar modules)
-------	--

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

Renewable energy is included in mitigating climate change, one of the EU Taxonomy's six environmental goals.

Hanwha manufactures specialized equipment of solar cells and modules in line with the EU Taxonomy's basic guidelines, and contributes greatly to lowering GHG emissions generated during the stage of use based on high-quality and high-efficiency cell and module equipment manufacturing technology.

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

Yes

#### Methodology used to calculate avoided emissions

Other, please specify (calculate non-renewable energy avoidance emissions as a result of renewable energy use)

#### Life cycle stage(s) covered for the low-carbon product(s) or services(s)

Use stage

#### Functional unit used

KW

#### Reference product/service or baseline scenario used

When producing the same amount of electricity, GHG reduction is calculated based on the difference of reductions between fossil fuels and renewable energy.

#### Life cycle stage(s) covered for the reference product/service or baseline scenario

Use stage

#### Estimated avoided emissions (metric tons CO2e per functional unit) compared to reference product/service or baseline scenario

5795

#### Explain your calculation of avoided emissions, including any assumptions

Hanwha supplies manufacturing equipment such as solar cells and modules necessary for generating renewable energy. Thus, when solar cells and modules are supplied, they are installed and run by renewable energy. As such, fossil fuels are converted into renewable energy at the stage of use by specialized equipment of solar cells and modules provided by Hanwha, resulting in GHG reduction. Therefore, Hanwha calculated GHG avoidance emissions generated by the company in 2022 as follows:

\* Method of avoidance emissions calculation = Quantity of solar cell and module equipment sold in 2022 × rated capacity × average operating hours × average #operating days

#### Revenue generated from low-carbon product(s) or service(s) as % of total revenue in the reporting year

9.82

## C5. Emissions methodology

### C5.1

**(C5.1) Is this your first year of reporting emissions data to CDP?**

No

**C5.1a**

**(C5.1a) 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?**

**Row 1**

**Has there been a structural change?**

Yes, a divestment  
Yes, a merger

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

Due to physical division of the Defense Division and merger of the E&C Division in November 2022, Hanwha Corporation changed its organizational boundaries to three divisions of Global, Momentum, and E&C from this year and Information is disclosed to the CDP based on the changed organizational boundary.

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

N/A

**C5.1b**

**(C5.1b) Has your emissions accounting methodology, boundary, and/or reporting year definition changed in the reporting year?**

	Change(s) in methodology, boundary, and/or reporting year definition?	Details of methodology, boundary, and/or reporting year definition change(s)
Row 1	Yes, a change in boundary	Due to physical division of the Defense Division and merger of the E&C Division in November 2022, Hanwha Corporation changed its organizational boundaries to three divisions of Global, Momentum, and E&C from this year and Information is disclosed to the CDP based on the changed organizational boundary.

**C5.1c**

**(C5.1c) Have your organization's base year emissions and past years' emissions been recalculated as a result of any changes or errors reported in C5.1a and/or C5.1b?**

	Base year recalculation	Scope(s) recalculated	Base year emissions recalculation policy, including significance threshold	Past years' recalculation
Row 1	Yes	Scope 1 Scope 2, location-based Scope 3	Due to physical division of the Defense Division and merger of the E&C Division in November 2022, Hanwha Corporation changed its organizational boundaries to three divisions of Global, Momentum, and E&C from this year. Accordingly, the emissions for the base year of Scope 1, 2, and 3 were changed to emissions of "three divisions of Global, Momentum, and E&C." In addition, when comparing 2022 emissions to 2021, 2021 emissions were adjusted based on the changed "three divisions of Global, Momentum, and E&C" boundaries.	Yes

**C5.2**

**(C5.2) Provide your base year and base year emissions.**

**Scope 1**

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

106768

**Comment**

**Scope 2 (location-based)**

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

40113

**Comment**

**Scope 2 (market-based)**

**Base year start**

January 1 2019

**Base year end**

December 31 2019

**Base year emissions (metric tons CO2e)**

0

**Comment**

**Scope 3 category 1: Purchased goods and services**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

1636330

**Comment**

**Scope 3 category 2: Capital goods**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

318

**Comment**

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

2354

**Comment**

**Scope 3 category 4: Upstream transportation and distribution**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

6112

**Comment**

**Scope 3 category 5: Waste generated in operations**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

5630

**Comment**

**Scope 3 category 6: Business travel**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

2383

**Comment**

**Scope 3 category 7: Employee commuting**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

2135

**Comment**

**Scope 3 category 8: Upstream leased assets**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

**Scope 3 category 9: Downstream transportation and distribution**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

2509

**Comment**

**Scope 3 category 10: Processing of sold products**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

**Scope 3 category 11: Use of sold products**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

1567664

**Comment**

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

2399

**Comment**

**Scope 3 category 13: Downstream leased assets**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

18310

**Comment**

**Scope 3 category 14: Franchises**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

**Scope 3 category 15: Investments**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

666598

**Comment**

**Scope 3: Other (upstream)**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

**Scope 3: Other (downstream)**

**Base year start**

January 1 2021

**Base year end**

December 31 2021

**Base year emissions (metric tons CO2e)**

0

**Comment**

**C5.3**

---

**(C5.3) Select the name of the standard, protocol, or methodology you have used to collect activity data and calculate emissions.**

IPCC Guidelines for National Greenhouse Gas Inventories, 2006  
ISO 14064-1  
Korea GHG and Energy Target Management System Operating Guidelines

**C6. Emissions data**

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**C6.1**

---

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

**Reporting year**

**Gross global Scope 1 emissions (metric tons CO2e)**  
20368

**Start date**  
January 1 2022

**End date**  
December 31 2022

**Comment**

**Past year 1**

**Gross global Scope 1 emissions (metric tons CO2e)**  
24553

**Start date**  
January 1 2021

**End date**  
December 31 2021

**Comment**

C6.2

---

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

**Row 1**

**Scope 2, location-based**  
We are reporting a Scope 2, location-based figure

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

**Comment**

C6.3

---

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

**Reporting year**

**Scope 2, location-based**  
43895

**Scope 2, market-based (if applicable)**  
<Not Applicable>

**Start date**  
January 1 2022

**End date**  
December 31 2022

**Comment**

**Past year 1**

**Scope 2, location-based**  
40269

**Scope 2, market-based (if applicable)**  
<Not Applicable>

**Start date**  
January 1 2021

**End date**  
December 31 2021

**Comment**

C6.4

---

**(C6.4) 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?**

No

**(C6.5) Account for your organization's gross global Scope 3 emissions, disclosing and explaining any exclusions.****Purchased goods and services****Evaluation status**

Relevant, calculated

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

1743325

**Emissions calculation methodology**

Hybrid method

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

0

**Please explain**

"Hanwha Co., Ltd. calculates GHG emissions generated from purchasing raw and subsidiary materials, falling under Scope 3 Category 1 (purchased products and services).

The amount of emission is calculated by applying the following two methods.

- Case1 : Quantity of products purchased × LCA emissions factor
- Case2 : Cost of purchased products × Unit consumption rate per industry"

**Capital goods****Evaluation status**

Relevant, calculated

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

349

**Emissions calculation methodology**

Hybrid method

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

0

**Please explain**

Hanwha Co., Ltd. calculates the GHG emissions generated from purchasing chairs, monitors, and desktops for each business site in 2022, falling under Scope 3 Category 2 (capital goods).

The amount of emission is calculated by applying the following two methods.

- Case1 : Quantity of products purchased × LCA emissions factor
- Case2 : Cost of purchased products × Unit consumption rate per industry

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

Relevant, calculated

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

3705

**Emissions calculation methodology**

Fuel-based method

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

0

**Please explain**

Hanwha Co., Ltd. calculated GHG emissions using the GHG emission factors of pre- and manufacturing stages for fuels purchased, falling under Scope 3 Category 3.

The amount of emission is calculated by applying the following calculation method.

- Energy consumption × emission factors in the production stage

**Upstream transportation and distribution****Evaluation status**

Relevant, calculated

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

8568

**Emissions calculation methodology**

Hybrid method

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

0

**Please explain**

Hanwha Co., Ltd. calculated GHG emissions from transportation and distribution services purchased, falling under Scope 3 Category 4 (upstream transportation and logistics).

The amount of emission is calculated by applying the following two methods.

- Upstream transportation:  $\sum (\text{distance traveled} \div \text{fuel economy}) \times \text{emission factor}$
- ERP data (Category 1,2,4) : Transportation cost × unit consumption rate per transportation cost

## Waste generated in operations

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

8196

### Emissions calculation methodology

Waste-type-specific method

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

0

### Please explain

Hanwha Co., Ltd. calculated the amount of waste according to the type of waste generated at domestic business sites and the disposal method, falling under Scope 3 Category 5 (waste generated at business sites).

The amount of emission is calculated by applying the following calculation method.

- Waste throughput × emission factors by waste disposal method

## Business travel

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

5829

### Emissions calculation methodology

Distance-based method

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

0

### Please explain

Hanwha Co., Ltd. calculated GHG emission by applying emission factors for each public transportation mode for the distance traveled and the number of people traveled, falling under Scope 3 Category 6 (business trips).

The amount of emission is calculated by applying the following calculation method.

- Distance traveled by public transportation × number of people × emission factor by public transport

## Employee commuting

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

2341

### Emissions calculation methodology

Distance-based method

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

0

### Please explain

Hanwha Co., Ltd. calculated the number of people using public transportation based on statistical data for all employees, falling under Scope 3 Category 7 (employee commuting), and calculated GHG emissions by considering the distance traveled, the number of working days, and the emission factors for each public transportation mode. The amount of emission is calculated by applying the following calculation method.

- Number of employees × Average daily travel distance by transportation mode × Number of working days × emission factor

## Upstream leased assets

### Evaluation status

Not relevant, explanation provided

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

When calculating Hanwha's Scope 1 and 2, all leased assets are included. Thus, Scope 3 emissions are 0 because it is included in Scope 1 and 2.

## Downstream transportation and distribution

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

2760

### Emissions calculation methodology

Distance-based method

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

0

### Please explain

Hanwha Co., Ltd. calculated the GHG emissions generated during the transportation and distribution of the products sold, falling under Scope 3 Category 9 (downstream transportation and distribution).

The amount of emission is calculated by applying the following calculation method.

-  $\Sigma$  (distance traveled ÷ level of fuel efficiency) × emission factor

## Processing of sold products

### Evaluation status

Not relevant, explanation provided

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Since Hanwha mainly produces finished products, processing of the sold products does not occur. In addition, some intermediate products exist in the chemical sector, but GHG emissions are not calculated under the WBCSD, Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain because they have various scopes of application and customer structures. Therefore, emissions of sold products during the processing stage are reported as zero.

## Use of sold products

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

1701867

### Emissions calculation methodology

Hybrid method

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

37

### Please explain

Hanwha Co., Ltd. calculated the GHG emissions generated in Scope 3 Category 11 (use of sold products) by considering the products sold, the emission factor per building floor area, and the electricity consumption of the products sold. The emission calculation method is calculated by applying the following three methods.

- Case 1 : Product sold × emission factor

- Case 2 : Total floor area of building × Emission factor used per floor area

- Case 3 : Electricity usage of sold products × emission factor

## End of life treatment of sold products

### Evaluation status

Relevant, calculated

### Emissions in reporting year (metric tons CO<sub>2</sub>e)

5967

### Emissions calculation methodology

Waste-type-specific method

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

0

### Please explain

Hanwha Co., Ltd. calculated the GHG emissions generated under Scope 3 Category 12 (disposal of sold products) by considering the emission factor per building floor area, the weight of the products sold, and the disposal method. The amount of emission is calculated by applying the following two methods.

- Case 1 : Total floor area of building × Waste emission factor per building floor area

- Case 2 : Weight of the product sold × Emission factor by waste disposal method

## Downstream leased assets

### Evaluation status

Relevant, calculated

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

18063

### Emissions calculation methodology

Average spend-based method

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

0

### Please explain

Hanwha Co., Ltd. calculated the GHG emissions generated under Scope 3 Category 13 (disposal of sold products) by considering the amount-based emission factor derived from rental costs.

The amount of emission is calculated by applying the following calculation method.

- Downstream rental cost × amount-based emission factor

## Franchises

### Evaluation status

Not relevant, explanation provided

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

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

Hanwha does not operate a franchise-type business. Thus, Scope3 emissions from investment are zero.

## Investments

### Evaluation status

Relevant, calculated

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

735911

### Emissions calculation methodology

Average spend-based method

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

0

### Please explain

Hanwha Co., Ltd. calculated the GHG emissions generated by applying emission factors specific to each industry, based on the investment amount falling under Scope 3 Category 15 (Investment).

The amount of emission is calculated by applying the following calculation method.

- Investment amount × industry emission factor

## Other (upstream)

### Evaluation status

Not relevant, explanation provided

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

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

N/A

## Other (downstream)

### Evaluation status

Not relevant, explanation provided

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

<Not Applicable>

### Emissions calculation methodology

<Not Applicable>

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

<Not Applicable>

### Please explain

N/A

C6.5a

---

(C6.5a) Disclose or restate your Scope 3 emissions data for previous years.

Past year 1

Start date

January 1 2021

End date

December 31 2021

Scope 3: Purchased goods and services (metric tons CO2e)

1636330

Scope 3: Capital goods (metric tons CO2e)

318

Scope 3: Fuel and energy-related activities (not included in Scopes 1 or 2) (metric tons CO2e)

2354

Scope 3: Upstream transportation and distribution (metric tons CO2e)

6112

Scope 3: Waste generated in operations (metric tons CO2e)

5630

Scope 3: Business travel (metric tons CO2e)

2383

Scope 3: Employee commuting (metric tons CO2e)

2135

Scope 3: Upstream leased assets (metric tons CO2e)

0

Scope 3: Downstream transportation and distribution (metric tons CO2e)

2509

Scope 3: Processing of sold products (metric tons CO2e)

0

Scope 3: Use of sold products (metric tons CO2e)

1567664

Scope 3: End of life treatment of sold products (metric tons CO2e)

2399

Scope 3: Downstream leased assets (metric tons CO2e)

18310

Scope 3: Franchises (metric tons CO2e)

0

Scope 3: Investments (metric tons CO2e)

666598

Scope 3: Other (upstream) (metric tons CO2e)

0

Scope 3: Other (downstream) (metric tons CO2e)

0

Comment

C6.7

---

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

No

C6.10

---

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

**Intensity figure**

1.09e-8

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

64263

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

5913467000000

**Scope 2 figure used**

Location-based

**% change from previous year**

4

**Direction of change**

Decreased

**Reason(s) for change**

Change in renewable energy consumption  
Other emissions reduction activities

**Please explain**

Hanwha's sales increased by about 4% in 2022 compared to 2021, while GHG emissions fell by only about 1% from 64,822tCO2eq in 2021 to 64,067tCO2eq in 2022. Accordingly, GHG emission by won unit decreased by about 4%. Hanwha reduced about 36tCO2eq of GHG emissions in 2022 by improving energy efficiency of production process and running solar power facilities. More information on GHG reduction activities can be found at C4.3b. As such, Hanwha continues to actively participate in GHG reduction every year and thereby the won unit of GHG compared to sales has decreased.

**C7. Emissions breakdowns**

**C7.1**

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

Yes

**C7.1a**

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

Greenhouse gas	Scope 1 emissions (metric tons of CO2e)	GWP Reference
CO2	13923	IPCC Second Assessment Report (SAR - 100 year)
CH4	19	IPCC Second Assessment Report (SAR - 100 year)
N2O	6426	IPCC Second Assessment Report (SAR - 100 year)

**C7.2**

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

Country/area/region	Scope 1 emissions (metric tons CO2e)
Republic of Korea	20368

**C7.3**

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

By facility

**C7.3b**

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

Facility	Scope 1 emissions (metric tons CO2e)	Latitude	Longitude
Hanwha LPG station	0	36.5415	127.3367
Hanwha Gangwon branch	284	37.4701	129.0603
Hanwha Head office(Global Division)	470	37.5677	126.9823
Hanwha Construction Site	1718	37.5677	126.9823
Hanwha Gyeongsang branch	7	35.1563	128.9754
Hanwha Gumi plant	4	36.1101	128.3834
Hanwha Daegu-Gyeongbuk business office	4	35.7938	128.3087
Hanwha Boeun plant	8697	36.5667	127.6315
Hanwha Head office(E&C Division)	717	37.5674	126.9856
Hanwha Seobu Branch	10	37.5674	126.9856
Hanwha Specialty Chemical Research Center	0	36.3824	127.3477
Hanwha Signature Tower	30	37.5675	126.9885
Hanwha Asan 1 plant	32	36.9131	127.0611
Hanwha Asan 2 plant	2	36.8939	127.021
Hanwha Youngnam center	0	35.1563	128.9758
Hanwha Onsan plant	7901	35.414	129.3386
Hanwha Corporation Talent Management Institute	0	37.8579	127.3691
Hanwha Jecheon business office	215	37.1757	128.2927
Hanwha Changwon plant	266	35.1984	128.6989
Hanwha Cheonan business office	6	36.7586	127.1279
Hanwha Taebaek business office	5	37.1745	128.9887
Hanwha Future Technology Research Center	0	36.4034	127.3667

**C7.5**

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

Country/area/region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Republic of Korea	43895	0

**C7.6**

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

By facility

**C7.6b**

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

Facility	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Hanwha LPG station	24	0
Hanwha Gangwon branch	38	0
Hanwha Head office	887	0
Hanwha Construction Site	17144	0
Hanwha Gyeongsang branch	7	0
Hanwha Gumi plant	1680	0
Hanwha Daegu-Gyeongbuk office	10	0
Hanwha Boeun plant	5353	0
Hanwha Head office	439	0
Hanwha Seobu Branch	20	0
Hanwha Specialty Chemical Research Center	0	0
Hanwha Signature Tower	236	0
Hanwha Asan 1 plant	2324	0
Hanwha Asan 2 plant	700	0
Hanwha Youngnam center	8	0
Hanwha Onsan plant	12483	0
Hanwha Corporation Talent Management Institute	10	0
Hanwha Jecheon business office	41	0
Hanwha Changwon plant	926	0
Hanwha Cheonan business office	12	0
Hanwha Taebaek business office	14	0
Hanwha Defence R&D Institute	1539	0

**C7.7**

**(C7.7) Is your organization able to break down your emissions data for any of the subsidiaries included in your CDP response?**

No

**C7.9**

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

Decreased

**C7.9a**

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

	Change in emissions (metric tons CO2e)	Direction of change in emissions	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	8	Decreased	0.01	Hanwha is making great efforts to spread renewable energy. Solar power was installed at Boeun Plant, which reduced a total of 8tCO2e of GHG in 2022. As such, Hanwha is participating in reducing GHG through the installation of solar power, and plans to continue to expand the installation of solar power facilities in the future. Emissions reduced by solar energy in 2022 account for 0.01% of the total emissions in 2021 and the calculation criteria are as follows: → GHG reduction ratio = {2022 reduction (8tCO2eq) ÷ 2021 GHG emissions (64,822tCO2eq)} × 100 = 0.01% reduced
Other emissions reduction activities	28	Decreased	0.04	Hanwha reduced electricity consumption by improving the operation method and reduced Scope 2 emissions by about 28tCO2eq in 2022. The company is making much effort to reduce GHG emissions by applying efficiency and new technology methods. In addition, it is actively implementing GHG reduction activities such as "reducing fuel costs by improving boiler operation efficiency and using oxidizing agent recycling pumps." Through these various GHG reduction activities, Hanwha reduced a total of 28tCO2 of GHG in 2022, which is 0.04% less than GHG emissions in 2021. The criteria for calculating GHG reduction ratio are as follows: → GHG reduction ratio = {2022 reduction (28tCO2eq) ÷ 2021 GHG emissions (64,822tCO2eq)} × 100 = 0.04% reduced
Divestment		<Not Applicable >		
Acquisitions		<Not Applicable >		
Mergers		<Not Applicable >		
Change in output		<Not Applicable >		
Change in methodology		<Not Applicable >		
Change in boundary		<Not Applicable >		
Change in physical operating conditions		<Not Applicable >		
Unidentified		<Not Applicable >		
Other		<Not Applicable >		

## C7.9b

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

Location-based

## C8. Energy

### C8.1

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

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

### C8.2

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

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

C8.2a

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	58199	58199
Consumption of purchased or acquired electricity	<Not Applicable>	0	94892	94892
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	908	908
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	18	<Not Applicable>	18
Total energy consumption	<Not Applicable>	18	153999	154017

C8.2b

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

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

C8.2c

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

**Sustainable biomass**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**Other biomass**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**Other renewable fuels (e.g. renewable hydrogen)**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**Coal**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

353

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

353

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**Oil**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

49667

**MWh fuel consumed for self-generation of electricity**

9

**MWh fuel consumed for self-generation of heat**

12760

**MWh fuel consumed for self-generation of steam**

36898

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**Gas**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

8179

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

1217

**MWh fuel consumed for self-generation of steam**

6962

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

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

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

0

**MWh fuel consumed for self-generation of electricity**

0

**MWh fuel consumed for self-generation of heat**

0

**MWh fuel consumed for self-generation of steam**

0

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**Total fuel**

**Heating value**

HHV

**Total fuel MWh consumed by the organization**

58199

**MWh fuel consumed for self-generation of electricity**

9

**MWh fuel consumed for self-generation of heat**

14330

**MWh fuel consumed for self-generation of steam**

43860

**MWh fuel consumed for self-generation of cooling**

<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**

<Not Applicable>

**Comment**

**C8.2d**

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

	Total Gross generation (MWh)	Generation that is consumed by the organization (MWh)	Gross generation from renewable sources (MWh)	Generation from renewable sources that is consumed by the organization (MWh)
Electricity	18	18	18	18
Heat	0	0	0	0
Steam	0	0	0	0
Cooling	0	0	0	0

C8.2g

(C8.2g) Provide a breakdown by country/area of your non-fuel energy consumption in the reporting year.

Country/area

Republic of Korea

Consumption of purchased electricity (MWh)

94892

Consumption of self-generated electricity (MWh)

18

Is this electricity consumption excluded from your RE100 commitment?

<Not Applicable>

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

908

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

0

Total non-fuel energy consumption (MWh) [Auto-calculated]

95818

C9. Additional metrics

C9.1

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

C10. Verification

C10.1

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

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

C10.1a

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

Verification or assurance cycle in place

Annual process

Status in the current reporting year

Complete

Type of verification or assurance

Reasonable assurance

Attach the statement

Scope1&2\_AS\_GHG\_(주)한화\_En\_2022\_R3.pdf

Page/ section reference

p.1

Relevant standard

ISO14064-1

Proportion of reported emissions verified (%)

100

C10.1b

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

**Scope 2 approach**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Reasonable assurance

**Attach the statement**

Scope1&2\_AS\_GHG\_(주)한화\_En\_2022\_R3.pdf

**Page/ section reference**

p.1

**Relevant standard**

ISO14064-1

**Proportion of reported emissions verified (%)**

100

---

### C10.1c

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

**Scope 3 category**

Scope 3: Purchased goods and services

Scope 3: Capital goods

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

Scope 3: Upstream transportation and distribution

Scope 3: Waste generated in operations

Scope 3: Business travel

Scope 3: Employee commuting

Scope 3: Investments

Scope 3: Downstream transportation and distribution

Scope 3: Use of sold products

Scope 3: End-of-life treatment of sold products

Scope 3: Downstream leased assets

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Complete

**Type of verification or assurance**

Limited assurance

**Attach the statement**

Scope3\_AS\_GHG\_한화\_PRJN-571922-2023-AST-EN\_Scope 3(2022).pdf

**Page/section reference**

p.1~2

**Relevant standard**

ISO14064-3

**Proportion of reported emissions verified (%)**

100

---

### C10.2

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

Yes

### C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C1. Governance	Other, please specify (ESG Management Promotion System)	GRI Standards / SASB / TCFD	- BoD on climate change & roles of the management - Roles and KPIs of a person responsible for climate change 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf
C2. Risks and opportunities	Other, please specify (Climate change Risks and opportunities)	GRI Standards / SASB / TCFD	- Climate change risks & opportunities - Opportunities/risk factors the organization is faced regarding climate change in short/mid/long term 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf
C3. Business strategy	Other, please specify (Business Strategy for Climate Change)	GRI Standards / SASB / TCFD	- Description on flexibility of management strategy in consideration of climate change related scenarios - Scenario analysis due to climate change, business strategies & financial plans 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf
C4. Targets and performance	Emissions reduction activities	GRI Standards / SASB / TCFD	- Description on goals used in the organization to manage climate change risks and opportunities and their performance against the goals - GHG reduction goals and their performance 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf
C8. Energy	Energy consumption	GRI Standards / SASB / TCFD	- Energy use and its management in 2022 - Internal & external energy consumption & energy intensity 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf
C9. Additional metrics	Other, please specify (Additional metrics)	GRI Standards / SASB / TCFD	- Water use status, waste treatment status, air pollutants emission 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf

2023\_(주)한화\_지속가능경영보고서\_최종 발간자료\_용량 압축.pdf

**C11. Carbon pricing**

**C11.1**

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

Yes

**C11.1a**

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

Korea ETS

**C11.1b**

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

**Korea ETS**

**% of Scope 1 emissions covered by the ETS**

100

**% of Scope 2 emissions covered by the ETS**

100

**Period start date**

January 1 2022

**Period end date**

December 31 2022

**Allowances allocated**

54687

**Allowances purchased**

0

**Verified Scope 1 emissions in metric tons CO<sub>2</sub>e**

20372

**Verified Scope 2 emissions in metric tons CO<sub>2</sub>e**

43796

**Details of ownership**

Facilities we own and operate

**Comment**

Onsan Plant of Hanwha Corporation is regulated under the K-ETS as it was appointed as allocation target company in accordance with Act on GHG Credit Rights Allocation and Trade from phase 1 (2015-2017). Also from 2021, beginning of the phase 3 (2021-2015) all business units are to be under the K-ETS when more than one facility at a company is appointed as the allocation target. Thus, Hanwha calculates and reports GHG emissions of all its business units while managing its designated facilities by the K-ETS. In this regard, carbon credits allocated are applied to only the target company while emission of Scope 1 and 2 are applied to the total amount of emissions.

**C11.1d**

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

**1. Strategy established to respond to ETS**

- **(Response strategy)** As a target company under the ETS in Korea, Hanwha Corporation, led by the safety and environment department, monitors and manages GHG emissions through the GHG inventory in the internal computer system every month. An excellent GHG emission reduction practice is shared in all production plants. Also, Hanwha verifies the financial impact of its KOC sales and KAU purchases by monitoring domestic GHG emission prices and trading trends every month. In response to regulation of the K-ETS, Hanwha has established target-based reduction strategy of Hanwha Net Zero 2040. Hanwha has implemented detailed tasks such as the CDM project in and out of the country, facility equipment replacement with high-efficiency, and improvement of energy efficiency to reach its reduction goal. The company intends to discover more projects by continuously monitoring the trend of the CDM project for an opportunity.

- **(Implementation period)** From the phase 1 (2015-2017), Onsan Plant was appointed as allocation target company and has participated in the K-ETS. From the phase 3 (2021-2025), the target expanded to all business units of Hanwha Corporation. Hanwha formed an exclusive team to analyze the K-ETS market on a regular basis, monitor the price of carbon credits, and establish the strategy on carbon credit management through methods of auction, balance carried forward, loan, carrying over, borrowing, purchase, sale, etc.

- **(Response result)** Onsan Plant of Hanwha Global division secured carbon credits from its performance on GHG emission reduction through the CDM project every year and has reduced about 250,000 tons of emission in 2022. In 2021, as investment on nitric acid plants was fixed, the Global division plans to continue the emission reduction activities by installing N<sub>2</sub>O reducing facility in our new nitric acid plants. In 2022, the division issued green bonds worth about KRW150 billion to finance the eco-friendly business.

**2. Case of strategy application**

- **(Carbon neutrality & RE100 goal establishment)** As the Korean government has enhanced the regulation by reducing GHG allocation given to corporations to fulfill the requirements of Paris Agreement, the trend is that free GHG emission allocation has been decreased while paid one has been increased. In this regard, it is expected that the carbon credits will be scarce from phase 4 in such a trend even if we try our best to play our part in reduction activities. Thus, we plan to join to K-RE100 within 2023. In addition, when we build new or additional buildings or facilities, we make efforts to review a possible solar power generation at the investment stage and reduce indirect GHG emissions by saving power consumption. Hanwha also has secured new growth engines by expanding carbon neutral-based business areas and establishing a foundation for green growth industries such as clean ammonia supply system, battery manufacturing facilities, and renewable energy plants. Through this, the company intends to reduce emissions by 65.6% in 2030 (compared to 2019) and achieve carbon neutrality by 2040.

- **(Introduction of internal carbon pricing)** Hanwha Corporation employed an internal carbon pricing system to calculate GHG emissions and shortage/excess of carbon credits, to make internal decisions, to make an internal decision and to measure performances as the company conducted businesses. Hanwha employed an internal carbon pricing system to calculate GHG emissions and shortage/excess of carbon credits as the company conducted businesses and use the price in making internal decisions and measuring performances. The company uses the average KAU unit of the previous year for the internal carbon price, and in 2022, it applied KRW 24,902/tCO<sub>2</sub>, the average unit of Hanwha's internal carbon price of 2022 to calculate quantitative effect as a result of GHG emission reduction activities such as solar power generation facility investment.

**C11.2**

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**(C11.2) Has your organization canceled any project-based carbon credits within the reporting year?**

No

## C11.3

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

Yes

### C11.3a

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**(C11.3a) Provide details of how your organization uses an internal price on carbon.**

**Type of internal carbon price**

Shadow price

**How the price is determined**

Alignment with the price of allowances under an Emissions Trading Scheme

**Objective(s) for implementing this internal carbon price**

Drive energy efficiency

Drive low-carbon investment

Identify and seize low-carbon opportunities

**Scope(s) covered**

Scope 1

Scope 2

**Pricing approach used – spatial variance**

Uniform

**Pricing approach used – temporal variance**

Evolutionary

**Indicate how you expect the price to change over time**

- Increase expected in carbon credit price caused by stricter regulations

Hanwha Corporation sets the internal carbon price taking the ETS market price trend into consideration. Hanwha considers that the carbon credit price is on the increase in mid to long term and relevant-regulations would be strengthened. Thus, the company applied KRW 24,902 for the internal carbon price through its internal decision.

**Actual price(s) used – minimum (currency as specified in C0.4 per metric ton CO2e)**

23402

**Actual price(s) used – maximum (currency as specified in C0.4 per metric ton CO2e)**

24902

**Business decision-making processes this internal carbon price is applied to**

Capital expenditure

Risk management

Opportunity management

**Mandatory enforcement of this internal carbon price within these business decision-making processes**

Yes, for some decision-making processes, please specify (Use when investing in greenhouse gas reduction)

**Explain how this internal carbon price has contributed to the implementation of your organization's climate commitments and/or climate transition plan**

- Boost to invest into GHG emission reduction with the introduction of internal carbon pricing system

Hanwha Corporation employed an internal carbon pricing system to calculate GHG emissions and shortage/excess of carbon credits as the company conducted businesses to make internal decisions, and to measure performances. Also, Hanwha considers the internal carbon price to analyze economic feasibility on the introduction of the internal reduction technology. In 2022, the company analyzed the economic feasibility on the installation of solar power facility. FY1, it applied the average KAU unit for the internal carbon price in connection with the K-ETS price. In 2022, it applied KRW 24,902, the internal carbon price.

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## C12. Engagement

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### C12.1

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

Yes, our suppliers

Yes, other partners in the value chain

### C12.1a

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

**Type of engagement**

Engagement & incentivization (changing supplier behavior)

**Details of engagement**

Run an engagement campaign to educate suppliers about climate change  
Climate change performance is featured in supplier awards scheme

**% of suppliers by number**

8.6

**% total procurement spend (direct and indirect)**

50

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

37.6

**Rationale for the coverage of your engagement**

● Purpose

Hanwha Corporation is composed of three business divisions: Global, Momentum, and Construction. As the business divisions are diverse, the supply chain management has gained more importance for sustainable business activities in each division. Therefore, it is important to secure a rapid and stable supply chain of base materials and raw materials through close cooperation with suppliers. In 2022, Hanwha Corporation strengthened verification of its partners and discovered and expanded new partners for sustainable supply chain management. To this end, Hanwha evaluated new and the existing partners comprehensively in environmental areas such as energy consumption, GHG management, and environmental management; financial capabilities; construction and delivery capabilities; bidding performance; and field and headquarters evaluation thereby selected outstanding partners.

● Selection criteria

Hanwha Corporation preemptively prevents possible risks by conducting regular evaluations of partners in accordance with the ISO's company evaluation procedures. The evaluation is largely divided into five areas and are conducted on environmental/safety/social evaluation, management capability, production capacity, quality control and cooperation every year. In 2022, Hanwha conducted a regular evaluation on 1,933 primary partners with an average transaction amount of more than a certain amount over the past three years out of 4,225 (Tier1 + non-Tier1), then suspended transactions with 125 of them due to credit rating downgrade and company shut down. Hanwha is establishing a stable and sustainable supply chain by verifying capabilities of its partners and evaluating the sustainability of transactions.

- The ratio of the number of suppliers subject to engagement(%): calculated based on the number of partners who have engaged in engagement among all partners  
Number of key partners subject to engagement (362) ÷ Total number of primary partners (4,225) × 100 = 8.6%

- The ratio of total procurement costs(%): calculated as procurement costs of key partners subject to engagement among all primary partners  
Procurement costs of key partners subject to engagement (about KRW 2 billion) ÷ Total partners engagement procurement costs (about KRW 4 billion) × 100 = 50%

**Impact of engagement, including measures of success**

● Criteria and method for performance

- (Performance criteria) Hanwha Corporation conducts Partner ESG Evaluation to establish a stable raw material and product supply system of partners and strengthen ESG capabilities. Hanwha manages the evaluation grade in four stages: Best, Excellent, Good, and Low. Since 2021, the company has added 60 major ESG management items, including environment, safety, and society, to measure the degree of social and environmental impact assessment of its partners in its regular assessments.. Through this, we have raised awareness of the importance of ESG practice to partners and have asked and supported them to manage and improve their sustainability risks.

\* (Environment area evaluation items) Environmental permits & report, water resources management, pollution prevention & resource saving, energy consumption & GHG management, hazardous materials & waste, regulations on chemicals, and environmental management

- (Performance method) Hanwha Corporation bases the proportion of its partners who received Best- Excellent grades as a performance measurement method for ESG capacity building. Hanwha implements follow-up measures to encourage its partners to establish environmental management strategies and systems to improve their environmental evaluation.

● Case

Hanwha Corporation conducted ESG management consulting to 31 of its partners who received Best and Excellent grades in its regular evaluation in 2022. In addition, the company helped them to strengthen their ability to recognize ESG risks and manage them on their own by providing customized solutions based on each partner's ESG results and feedback they received.

- (Target) 31 partners with Best or Excellent grades were selected on the regular partner evaluation in 2022

- (Content) Diagnosis and survey on status of E, S, and G areas such as eco-friendly investment, safety management, information protection, shared growth, ESG management disclosure, etc., and diagnosis content by ESG field

- (Results)

Concluded matters for improvement as a result of consulting on how to improve insufficient items such as environmental understanding and ethical management. Identified excellent areas as a result of consulting on how to maintain excellent items such as safety management and accounting transparency.

**Comment**

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**C12.1d**

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**C12.1d) Give details of your climate-related engagement strategy with other partners in the value chain.**

**• Other partners in the value chain (definition & target)**

- Hanwha Corporation defines other partners in the value chain related to climate change as 'employees'. By setting engagement target as executives and employees, Hanwha is enhancing 'employees' understanding of the response to and necessity of climate change and encouraging their active participation in various activities and behavioral changes. By participating in the climate change engagement, the company intends to give all executives and employees a sense of responsibility and mission for climate change and to produce positive results to achieve common goals.

**•Climate change engagement strategy and case (specific description)**

- **(Engagement strategy)** Hanwha Corporation is striving to reduce the environmental impact of waste by minimizing the generation of waste during the manufacturing process and maximizing resource circulation such as increasing recycling rate. In particular, Hanwha is carrying out various engagements for executives and employees to strengthen resource circulation activities and improve resource use efficiency.

- **(Engagement case)** Hanwha E&C produced "Forena Uniform" by upcycling waste plastic and provided it to all construction sites to raise eco-friendly awareness to executives and employees. Forena uniform is a project based on the ideas of young employees in the E&C division. Not only its 100% recycled polyester can contribute to a virtuous cycle of resources, but also its simpler fiber manufacturing process than that of general materials can decrease energy use by about 60% and reduce carbon dioxide emissions. Hanwha will continue to seek various eco-friendly activities that can be practiced at construction sites for a sustainable tomorrow.

**C12.2**

**(C12.2) Do your suppliers have to meet climate-related requirements as part of your organization's purchasing process?**

No, but we plan to introduce climate-related requirements within the next two years

**C12.3**

**(C12.3) Does your organization engage in activities that could either directly or indirectly influence policy, law, or regulation that may impact the climate?**

**Row 1**

**External engagement activities that could directly or indirectly influence policy, law, or regulation that may impact the climate**

Yes, we engage directly with policy makers

Yes, our membership of/engagement with trade associations could influence policy, law, or regulation that may impact the climate

Yes, we fund organizations or individuals whose activities could influence policy, law, or regulation that may impact the climate

**Does your organization have a public commitment or position statement to conduct your engagement activities in line with the goals of the Paris Agreement?**

Yes

**Attach commitment or position statement(s)**

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

● Establishment & announcement of 2040 carbon neutrality plan

Hanwha Corporation plans to achieve Net Zero of all GHG emissions by establishing a roadmap for the 2040 carbon neutrality goal. The company established the response system to climate change and defined financial impacts related to climate change in accordance with the TCFD recommendation as it conducted its corporate activities and disclosed its carbon information.

● Implementation strategy on major carbon neutrality

In order to achieve the 2040 Carbon Neutrality goal, Hanwha established strategies not only to manage GHG emissions in the business units but also to increase the efficiency and circulation rate of various resources, including energy. Environment Safety Health Organization oversees responses to climate change and conducts engagements. Under the Organization, a safety & environment team by workplace examines and improves climate change risk factors and manages performance indicators for climate change so that climate change strategies defined by the Organization can be implemented. The council monitors climate change strategy goals and performance results, and reports material issues to the ESG Committee on a quarterly basis. Through the company-wide importance assessment, Hanwha identifies key risks across the company and carries out management-critical ESG initiative plans and activities reviewed by the Strategy/ESG Committee and, if necessary, reflects them into its mid- to long-term strategic direction. As such, an organization's climate change strategy is managed while maintaining consistency across the company through company-wide importance assessment and discussions of the management including the CSO.

**Primary reason for not engaging in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate**

<Not Applicable>

**Explain why your organization does not engage in activities that could directly or indirectly influence policy, law, or regulation that may impact the climate**

<Not Applicable>

**C12.3a**

**(C12.3a) On what policy, law, or regulation that may impact the climate has your organization been engaging directly with policy makers in the reporting year?**

**Specify the policy, law, or regulation on which your organization is engaging with policy makers**

Emission Trading System

**Category of policy, law, or regulation that may impact the climate**

Climate change mitigation

**Focus area of policy, law, or regulation that may impact the climate**

Climate-related reporting

Climate-related targets

**Policy, law, or regulation geographic coverage**

National

**Country/area/region the policy, law, or regulation applies to**

Republic of Korea

**Your organization's position on the policy, law, or regulation**

Support with no exceptions

**Description of engagement with policy makers**

Nominated as a target company under K-ETS as per Act on Low Carbon Green Growth (currently Carbon Neutrality Act) in June 2012, Hanwha Corporation has monitored GHG emissions in its all business units.

From the phase 1 (2015-2017), Onsan Plant was appointed as allocation target company and has participated in the K-ETS. From the phase 3 (2021-2025), the target expanded to all business units of Hanwha Corporation. Hanwha formed an exclusive team to analyze the K-ETS market on a regular basis, monitor the price of carbon credits, and establish the strategy on carbon credit management through methods of auction, carrying over, borrowing, purchase, sale, etc.

**Details of exceptions (if applicable) and your organization's proposed alternative approach to the policy, law or regulation**

<Not Applicable>

**Have you evaluated whether your organization's engagement on this policy, law, or regulation is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

**Please explain whether this policy, law or regulation is central to the achievement of your climate transition plan and, if so, how?**

In 2020, the South Korean government declared its goal of achieving carbon neutrality by 2050. The country aims to reduce GHG emissions by 40% (291 million tons) from 2018 (727.6 million tons) to less than 436.6 million tons by 2030. Due to the nature of Korea's emissions, in which the industrial and power generation sectors account for a high proportion of the total emissions, it is important to reduce GHG emissions in the industrial sectors such as Hanwha to reach the carbon neutral goal.

The Korean government is encouraging companies that emit large amount of GHG to manage GHG emissions, to develop technologies to reduce emissions or improve energy efficiency. ETS is considered an important policy tool for companies to reduce GHG emissions and respond to climate change and has been introduced in many countries and regions. Hanwha Corporation has been designated as an allocation target company in its all business units since the third planning period, contributing to GHG emission reduction and sustainable economic development.

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**C12.3b**

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**(C12.3b) Provide details of the trade associations your organization is a member of, or engages with, which are likely to take a position on any policy, law or regulation that may impact the climate.**

**Trade association**

Other, please specify (Korea Construction Environment Association)

**Is your organization's position on climate change policy consistent with theirs?**

Consistent

**Has your organization attempted to influence their position in the reporting year?**

No, we did not attempt to influence their position

**Describe how your organization's position is consistent with or differs from the trade association's position, and any actions taken to influence their position**

Korea Construction Environment Association values awareness of and response to climate change and is making the following efforts to ensure the sustainability and environmental protection of the construction industry.

- (Establishment of climate change response policy) Korea Construction Environment Association has established policies related to climate change to help member companies respond to climate change and realize a sustainable management. The Association develops guidelines and directions on climate change response and encourages appropriate actions and compliance with regulations in the construction industry.

- (Climate change impact assessment) Korea Construction Environment Association recommends an evaluation that considers the impact of climate change on construction projects. The Association contributes to strengthening the adequacy of construction projects and disaster response plans through climate prediction and risk assessment as a result of climate change.

- (Development & distribution of eco-friendly technology) Korea Construction Environment Association supports development and distribution of eco-friendly and energy efficiency technologies to cope with climate change. The Association reduces carbon footprints of the construction industry and promotes sustainable construction activities by utilizing renewable energy, energy saving technologies and carbon emission reduction technologies.

Hanwha Corporation, as a member of Korea Construction Environment Association, actively supports activities such as establishing climate change response policies and raising awareness of climate change. Therefore, the company did not try to affect the position of the Korea Construction Environment Association.

**Funding figure your organization provided to this trade association in the reporting year (currency as selected in C0.4)**

1000000

**Describe the aim of your organization's funding**

Starting with Construction Environment Association in 1995, Korea Construction Environment Association was registered as a corporation under the Ministry of Environment in January 2012 to share information, foster professionals, and spread excellent facilities/management cases thereby upgrade level of environment management in the construction industry. The construction industry has long been recognized as the main culprit of environmental destruction. However, as environmental issues such as carbon neutrality, fine dust, and waste recycling have recently become national issues, the industry is also striving to prevent environmental damage during construction work, develop eco-friendly buildings and renewable energy, and implement environment-friendly projects.

The banquet cost paid by Hanwha is used as an operating cost for various activities promoted by the Association.

**Have you evaluated whether your organization's engagement with this trade association is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

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**C12.3c**

**(C12.3c) Provide details of the funding you provided to other organizations or individuals in the reporting year whose activities could influence policy, law, or regulation that may impact the climate.**

**Type of organization or individual**

Governmental institution

**State the organization or individual to which you provided funding**

Guem-River Basin Environmental Office

Guem-River Basin Environmental Office is a government agency to manage and preserve Guem-River basin.

The Office carries out a variety of tasks such as water resource management, river conservation, river ecosystem protection, and environmental improvement in the Geum-River basin.

Through these tasks, the Office is in pursuit of sustainable development and natural environment conservation in the basin at the same time.

**Funding figure your organization provided to this organization or individual in the reporting year (currency as selected in C0.4)**

2649240

**Describe the aim of this funding and how it could influence policy, law or regulation that may impact the climate**

- Contribution to GHG reduction by increasing carbon sinks such as tree planting

In order to protect the ecosystem around its production plants, Hanwha Corporation selected mountains, rivers, and seas near the plant facilities, and all employees have conducted natural environment purification campaigns such as 'one company, one river, one forest.' In 2021, Boeun Plant of Hanwha Global division signed a MOU with Guem River Basin Environmental Office to 'cultivate 'one forest with one company' for carbon neutrality and planted 50 elm trees in an area of about 1,300 square meters. In 2022, the division carried out tree maintenance and management activities such as tree irrigation/pruning and trimming and will continue to make efforts for nature conservation so that young trees can make a thick forest.

To achieve carbon neutrality goal, it is important to expand carbon sinks and try to reduce GHG emissions at the same time thereby absorb and store additional GHG emissions. One can increase carbon sinks by protecting and nurturing natural processes such as forests and marine plants. In this regard, Hanwha Corporation has been contributing to reaching the 2050 Carbon Neutrality goal set by the Korean government by growing carbon sinks in forests and rivers nearby its production plants through the 'one company, one river, one forest' campaign promoted together with Guem River Basin Environmental Office.

**Have you evaluated whether this funding is aligned with the goals of the Paris Agreement?**

Yes, we have evaluated, and it is aligned

## C12.4

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

### Publication

In mainstream reports

### Status

Complete

### Attach the document

2023\_(주)한화\_사업보고서(2023.03.21).pdf

### Page/Section reference

- Governance : P.804,807~808
- Strategy : P. 82~88, 899~900,
- Emission figures: P.690~691
- Other metrics(Greenhouse gas emission Liability: P. 308,585
- Other, please specify(Activities to reduced GHG emissions) : P.82~84
- Other, please specify(CER from Clean Development Mechanism): P.900

### Content elements

Governance  
Strategy  
Emissions figures  
Emission targets  
Other metrics  
Other, please specify (Greenhouse Gas Reduction Achievement Direction)

### Comment

### Publication

In voluntary sustainability report

### Status

Complete

### Attach the document

2023\_(주)한화\_지속가능경영보고서\_최종 발간자료\_용량 압축.pdf

### Page/Section reference

- Governance : P.14, 27
- Strategy : P.29
- Risk & Opportunities : P.21, 28, 29
- Emissions figures : P.32, P.89
- Emission targets : P.31
- Other metrics : p.29
- Other : P.82~84, 900

### Content elements

Governance  
Strategy  
Risks & opportunities  
Emissions figures  
Emission targets  
Other metrics  
Other, please specify (Activities to reduce GHG emissions, CER from Clean Development Mechanism)

### Comment

## C12.5

**(C12.5) Indicate the collaborative frameworks, initiatives and/or commitments related to environmental issues for which you are a signatory/member.**

	Environmental collaborative framework, initiative and/or commitment	Describe your organization's role within each framework, initiative and/or commitment
Row 1	Pledge to Net Zero RE100 Task Force on Climate-related Financial Disclosures (TCFD)	<ul style="list-style-type: none"> <li>Participation in global initiatives on climate change</li> </ul> <p>since 2021. Hanwha Corporation has participated in the Carbon Information Disclosure (CDP) - Climate Change to establish GHG reduction goals that meet global standards and to manage risks caused by climate change and was granted grade B in the 2022 evaluation.</p> <p>- (TCFD) Hanwha has actively participated in global initiatives to respond to climate change, such as supporting TCFD recommendations, and disclosed information on "governance-strategy-risk-management-indicators and goals" in accordance with TCFD recommendations. Hanwha will continue to actively disclose its activities to respond to climate change, communicate transparently with stakeholders, and establish itself as a global leader that leads eco-friendly management for the future global environment.</p> <p>- (UN SDGs) Hanwha Corporation voluntarily publishes its sustainability report in line with UN SDGs every year and transparently discloses detailed information on corporate strategies, governance, goals, and reduction status related to climate change.</p> <p>- (RE100) Hanwha declared its goal of 2040 Net Zero to the international community. To achieve this goal, it is essential to expand the use of renewable energy and convert into eco-friendly energy. Therefore, the company is considering joining the RE100 and will push for joining the RE100 after a specific roadmap for renewable energy conversion is established.</p>

**C15. Biodiversity**

**C15.1**

**(C15.1) Is there board-level oversight and/or executive management-level responsibility for biodiversity-related issues within your organization?**

	Board-level oversight and/or executive management-level responsibility for biodiversity-related issues	Description of oversight and objectives relating to biodiversity	Scope of board-level oversight
Row 1	No, but we plan to have both within the next two years	<Not Applicable>	<Not Applicable>

**C15.2**

**(C15.2) Has your organization made a public commitment and/or endorsed any initiatives related to biodiversity?**

	Indicate whether your organization made a public commitment or endorsed any initiatives related to biodiversity	Biodiversity-related public commitments	Initiatives endorsed
Row 1	Yes, we have endorsed initiatives only	<Not Applicable>	SDG

**C15.3**

**(C15.3) Does your organization assess the impacts and dependencies of its value chain on biodiversity?**

**Impacts on biodiversity**

**Indicate whether your organization undertakes this type of assessment**

Yes

**Value chain stage(s) covered**

Direct operations  
Upstream  
Downstream

**Portfolio activity**

<Not Applicable>

**Tools and methods to assess impacts and/or dependencies on biodiversity**

CBD – Global Biodiversity Framework

**Please explain how the tools and methods are implemented and provide an indication of the associated outcome(s)**

Hanwha Corporation has tried to preserve the natural environment of the nearby area where its production plants are located and minimize the impact of nearby plants and animals from corporate activities through biodiversity and ecosystem protection activities.

In order to evaluate the impact of our corporate activities on biodiversity, Hanwha Global Division's Boeun plant began an ecological survey on areas outside the plant in 2022. Three branches were selected starting from the stream of Heukcheon passing through Boeun plant, and changes in flora, terrestrial animals, and inland water animals will be monitored over four seasons at each branch. Boeun plant will conduct ecological surveys annually and will further discover and implement new activities such as removing ecologically disturbing species to preserve biodiversity based on the results of the survey.

Hanwha E&C conducts an environmental impact assessment to understand the status of nearby fauna and flora at the site opening stage. Hanwha has established preservation measures for legally protected species found in the assessment results and taken measures to manage ecologically disturbing species. As part of this, the company applies design and construction methods to maintain the topographical environment and biodiversity as much as possible by preemptively analyzing the impact on the ecosystem from the time of establishment of the construction plan. Mainly, the company carries out ecological conservation activities such as alternative habitat preparation, tree transplantation, ecological migration channel set up and green space development, and plans to minimize negative impacts on the ecosystem through sufficient preliminary investigations and measures in the future.

**Dependencies on biodiversity**

**Indicate whether your organization undertakes this type of assessment**

No, but we plan to within the next two years

**Value chain stage(s) covered**

<Not Applicable>

**Portfolio activity**

<Not Applicable>

**Tools and methods to assess impacts and/or dependencies on biodiversity**

<Not Applicable>

**Please explain how the tools and methods are implemented and provide an indication of the associated outcome(s)**

<Not Applicable>

**C15.4**

**(C15.4) Does your organization have activities located in or near to biodiversity- sensitive areas in the reporting year?**

No

**C15.5**

**(C15.5) What actions has your organization taken in the reporting year to progress your biodiversity-related commitments?**

	Have you taken any actions in the reporting period to progress your biodiversity-related commitments?	Type of action taken to progress biodiversity- related commitments
Row 1	Yes, we are taking actions to progress our biodiversity-related commitments	Land/water protection Species management

**C15.6**

**(C15.6) Does your organization use biodiversity indicators to monitor performance across its activities?**

	Does your organization use indicators to monitor biodiversity performance?	Indicators used to monitor biodiversity performance
Row 1	Yes, we use indicators	State and benefit indicators

**C15.7**

**(C15.7) Have you published information about your organization’s response to biodiversity-related issues for this reporting year in places other than in your CDP response? If so, please attach the publication(s).**

Report type	Content elements	Attach the document and indicate where in the document the relevant biodiversity information is located
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments Governance Impacts on biodiversity Details on biodiversity indicators	p.33, 41  (p.31) Conducted a biodiversity ecological survey on the region outside the company for the first time) (p.41) Biodiversity conservation activities 2023_(주)한화_지속가능경영보고서_최종 발간자료_용량 압축.pdf

**C16. Signoff**

**C-FI**

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

**C16.1**

**(C16.1) Provide details for the person that has signed off (approved) your CDP climate change response.**

	Job title	Corresponding job category
Row 1	CEO	Chief Executive Officer (CEO)

**SC. Supply chain module**

**SC0.0**

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

•Since its establishment in 1952 under the founding philosophy of ‘contributing to the nation and society’, Hanwha Corporation has continued its growth over the last seven decades. Hanwha Corporation focuses on its operation in three divisions: Global, Engineering & Construction, and Momentum, is the parent company of Hanwha Group and has been realizing sustainable growth by entering the global market.

-(**Hanwha Momentum**) Hanwha Momentum has produced a variety of high-value-added mechanical equipment through its continued technological enhancement and innovation with heat technology, automation technology, and vacuum deposition technology. Also, Hanwha Momentum leads logistics innovation at production sites by combining Smart Factory and automation facilities in the Industry 4.0 era. Hanwha Corporation/Momentum is moving to become a global leader in mechanical equipment through constant R&D and innovation to provide a total engineering solution for the development of human society

**SC0.1**

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

	Annual Revenue
Row 1	573800000000

**SC1.1**

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

**Requesting member**

Samsung Display Co.,Ltd

**Scope of emissions**

Scope 1

**Scope 2 accounting method**

<Not Applicable>

**Scope 3 category(ies)**

<Not Applicable>

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

300.335

**Uncertainty (±%)**

5

**Major sources of emissions**

LNG, LPG, diesel, gasoline

**Verified**

Yes

**Allocation method**

Allocation based on the energy content of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

**Unit for market value or quantity of goods/services supplied**

Please select

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

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**Requesting member**

Samsung Display Co.,Ltd

**Scope of emissions**

Scope 2

**Scope 2 accounting method**

Location-based

**Scope 3 category(ies)**

<Not Applicable>

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO2e**

5425.897

**Uncertainty (±%)**

5

**Major sources of emissions**

electricity

**Verified**

Yes

**Allocation method**

Allocation based on the energy content of products purchased

**Market value or quantity of goods/services supplied to the requesting member**

**Unit for market value or quantity of goods/services supplied**

Please select

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

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SC1.2

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

SC1.3

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

Allocation challenges	Please explain what would help you overcome these challenges
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SC1.4

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

Yes

SC1.4a

(SC1.4a) Describe how you plan to develop your capabilities.

SC2.1

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

SC2.2

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

Yes

SC2.2a

(SC2.2a) Specify the requesting member(s) that have driven organizational-level emissions reduction initiatives, and provide information on the initiatives.

SC4.1

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

No, I am not providing data

Submit your response

In which language are you submitting your response?

English

Please confirm how your response should be handled by CDP

	I understand that my response will be shared with all requesting stakeholders	Response permission
Please select your submission options	Yes	Public

Please confirm below

I have read and accept the applicable Terms