Hankook Tire & Technology Co., Ltd. - Climate Change 2022

C0. Introduction

C0.1

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

Hankook Tire & Technology Co., Ltd. is Korea's first tire manufacturer, growing together with Korea's tire industry. It is the No. 1 tire company in Korea that currently sells the largest number of automobile tires in the region.

Moreover, with four regional headquarters, thirty sales branches, five R&D centers and eight production sites around the world, the company sells its products in over 180 countries, ranking world's 7th-largest tire manufacturer in terms of sales. It is a global company with more than 80% of its total sales in overseas markets. Hankook Tire & Technology, loved by its customers for its exceptional quality and customer satisfaction, will continue to develop an environmentally-friendly technology and carry out diverse activities that can contribute to the local community, to share and give back the love from the customers and continue to achieve healthy and sustainable growth.

[Ref. 1] Our official corporate name was changed to further enhance our technology-based innovation to reach out to our customer from May 8, 2019. (from "Hankook Tire Co., Ltd." to "Hankook Tire & Technology Co., Ltd.") However, we use both the previous and current names to maintain brand value.

[Ref. 2] Tennessee Plant was newly included in the organizational boundaries since 2018.

C0.2

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

	Start date	End date	Indicate if you are providing emissions data for past reporting years	Select the number of past reporting years you will be providing emissions data for
Reporting year	January 1 2021	December 31 2021	No	<Not Applicable>

C0.3

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

China
Hungary
Indonesia
Republic of Korea
United States of America

C0.4

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

KRW

C0.5

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

Operational control

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	KR7161390000

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Board Chair	(i) Job title: Chairman of the Board of Directors, Chairman of the ESG Committee in the Board (ii) Position in the corporate structure: President & CEO(Chief Executive Officer) (iii) Explanation: In order to expedite the internal decision-making process and increase efficiency, the Board of Directors at Hankook Tire & Technology operates the ESG Committee to handle more delicate, key issues while activities of the Board of Directors focuses on other matters pertaining to responsible management. The ESG Committee is composed of directors within the company, led CEO at Hankook Tire & Technology. The Committee deliberate on and resolve matters related to company-wide risk management issues including climate change issues.

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 – all meetings	Reviewing and guiding strategy Reviewing and guiding major plans of action Reviewing and guiding risk management policies Reviewing and guiding business plans Other, please specify (Company-wide risk management issues)	<Not Applicable>	Hankook Tire & Technology changed the existing Management Committee to the ESG Committee in March 2021 to prevent potential risks in overall corporate management and solidify corporate sustainability. The previous Management Committee only performed deliberation and decisions on general management and finance matters, while the new ESG Committee additionally plays the role of monitoring sustainability risk in all non-financial areas including climate change and environmental issues, along with decision making. Meetings are classified as either ordinary meetings or extraordinary meetings. Ordinary meetings in principle are held on the third or fourth Monday of every month. However, if there are unavoidable circumstances, an ordinary meeting may be rescheduled to another date with prior notice. Extraordinary meetings are held when required.

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	The board of directors of Hankook Tire & Technology (HKT) consists of 3 inside directors and 4 outside directors. 1 inside director supervises the ESG management of HKT, and the ESG Team is supervised directly by the inside director. Under the current director's supervision, the Mid- to Long- Term ESG Strategy and the Carbon Neutrality Roadmap were established, and orders to review possible implementation method of RE100. The monitoring and instructions on the issues related to climate change are evidences that the member has capable of responding to such issues. The climate change-related leadership of the corresponding director has continuously made an impact on the board of directors.	<Not Applicable>	<Not Applicable>

C1.2

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

Name of the position(s) and/or committee(s)	Reporting line	Responsibility	Coverage of responsibility	Frequency of reporting to the board on climate-related issues
Chief Executive Officer (CEO)	<Not Applicable>	Both assessing and managing climate-related risks and opportunities	<Not Applicable>	Annually

C1.2a

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

To ensure that our ESG initiatives are undertaken in an integrated manner across the board, Hankook Tire & Technology operate the ESG Strategy Committee which is chaired by CEO and seven ESG Steering Committees under the ESG Strategy Committee. Through regular reporting and review, we strive to make achievements in accordance with the established plan. The ESG Strategy Committee meeting attended by the CEO, heads of each regional headquarters, and executives is held every February or March to review critical issues discussed by ESG Steering Committees in the previous year, share changing ESG trends at home and abroad, and make decisions on future directions. The decisions are delivered to supervising team of each ESG Steering Committee for their active operation. The ESG Steering Committees, the key elements of Hankook's ESG initiatives, play a role in connecting our ESG initiatives with daily operation of employees in core managerial areas upon the responsibility of seven directors of each division/department. The Climate Change Committee, which is one of ESG steering committees, chaired by Machinery Engineering Department director monitors climate change risks and opportunities in a quarterly basis and the chairperson makes decisions on related issues. Furthermore, critical agendas discussed during the ESG Strategy Committee are presented to the ESG Committee, and critical information is promptly shared to members of the board of directors.

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	Climate-related issues are a major incentive factor, especially in Korea and Hungary, because GHG emission trading systems are also in operation.

C1.3a

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

Entitled to incentive	Type of incentive	Activity incentivized	Comment
Chief Executive Officer (CEO)	Monetary reward	Emissions reduction target Energy reduction project Efficiency target	The CEO is eligible to be rewarded with monetary incentives, including compensations(salary increase and performance bonus, etc.) if they achieve annual predetermined targets related to production cost efficiency, including improving energy efficiency.
Executive officer	Monetary reward	Emissions reduction project Energy reduction target Efficiency target	Early in the year, the Vice President of Machinery Engineering Department and Plant Managers were instructed to submit reports about achieving energy efficiency and energy reduction objectives as a CEO task, and performances and achievements shall be reflected and considered in annual performance assessment and incentive determination (*CEO task: Critical tasks the CEO will directly receive reports and directly manage).
Environment/Sustainability manager	Monetary reward	Emissions reduction target Energy reduction project Efficiency target	Early in the year, Environment/Sustainability manager were instructed to submit reports about achieving energy efficiency and energy reduction objectives as a CEO task, and performances and achievements shall be reflected and considered in annual performance assessment and incentive determination (*CEO task: Critical tasks the CEO will directly receive reports and directly manage).

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	5	Short term in plan establishment and risk assessment is defined as up to 5 years.
Medium-term	5	10	Mid term in plan establishment and risk assessment is defined as between 5 to 10 years.
Long-term	10	30	Long term in plan establishment and risk assessment is defined as between 10 to 30 years.

C2.1b

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

Hankook Tire & Technology (HKT) identifies and evaluates issues or risks that can influence business or stakeholders. The issue pool is formed with the issues that are thought to be important outside and an analysis of the internal environment, and priority is derived by putting together the interest of stakeholders and business importance. If the financial influence of a related business issue is at least KRW 300 million, the issue is evaluated as a risk candidate, while specific standard values are not set for business opportunities. Contents of importance assessments and major initiatives are announced in an ESG report every year.

C2.2

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

Value chain stage(s) covered
Direct operations
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
Climate-related risks and opportunities are identified and assessed by the Climate Change Committee, Supplier Committee, or the Product Environment Committee under the supervision of the ESG Steering Committee. In the case of the risk that is expected to greatly impact corporate management as a result of risk assessment, it becomes a task of each committee, and initiatives of the corresponding tasks are brought up in the agenda of the ESG Strategy Committee, whose chairperson is the CEO, and go through the decision-making process of the top management regarding response methods. Reports made to the ESG Strategy Committee will then be reported to the board of directors and will undergo its approval procedure.

C2.2a

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

	Relevance & inclusion	Please explain
Current regulation	Relevant, always included	(i) Risk Type Example: All worksites in Korea and Hungary plant are mandated to submit allowances equal to its GHG emissions annually as a designated company. There is a potential risk in purchasing outstanding allowances from other designated companies if GHG emissions exceed the distributed allowances. If we fail to secure lacking allowances, a fine that is many times more than the market price might be imposed on us. (ii) Explanation of Inclusion in Climate-related Risk Assessment: In order to respond to the emission trading system, we pre-evaluate the estimated GHG emission of the corresponding year and establish emission credits purchase or sales plan in advance. We always monitor trends and market issues in the emission trading system, and make decisions related to greenhouse gas reduction activities in consideration of internal carbon prices. The implementation and issues of the emission trading system are periodically reported to the Managing Director, and are managed as a major agenda item by the Climate Change Committee.
Emerging regulation	Relevant, always included	(i) Risk Type Example: With the interest in climate change increasing, it is possible that climate-related regulations will be strengthened or new regulations introduced. Governments of each country are reinforcing emission regulations on companies and products sold/imported to the country to achieve the Nationally Determined Contribution, and they are also establishing and mandating sustainability standards. Furthermore, while the EU Carbon Border Adjustment Mechanism (CBAM), which is scheduled to be in effect, does not include tire as a subject, but as there is possibility that it may be included as a subject, matters related to such are being monitored at all times. Such risk may act as a trade barrier or an element raising production cost, resulting in the increase of burdens the company is required to invest in responding to the system and stakeholders. (ii) Explanation of Inclusion in Climate-related Risk Assessment: Trends and new issues related to climate change are periodically being reported to the Managing Director, and agendas expected to impact the business of HKT are handled at the ESG Strategy Committee. Details related to the recent EU supply chain due diligence regulation were shared during the ESG Strategy Committee, and response measure development and monitoring are being conducted according to the instructions made by the CEO.
Technology	Relevant, always included	(i) Risk Type Example: With the global trend in climate changes, long-term endeavors are required to reduce greenhouse gas emissions, and expenses made in relation to such endeavors are expected to increase. General energy reduction initiatives, such as shift to low-carbon fuel, introduction of high-efficiency equipment and waste heat recovery, are already being implemented in HKT plants, and there is additional need to discover and invest in innovative technologies which can further reduce greenhouse gas emission. For example, end-of-life tire pyrolytic facilities can recycle end-of-life tires, recover tire resources and reuse them as fuel. This technology is expected to reduce greenhouse gas emission and save energy in the overall value chain, but its economic feasibility and stability still need to be assessed. In addition, as the demand for using eco friendly raw materials from stakeholders is increasing, there is also a need to conduct R&D for raw materials. (ii) Explanation of Inclusion in Climate-related Risk Assessment: Energy reduction plans and the implementation status are controlled by the Climate Change Committee, and details are shared by them. In case of the use of sustainable materials, the details are handled by the Product Environment Committee. Business feasibility review for new technologies are conducted by each hosting team, and emission reduction due to technologies and internal carbon price related matters are handled with the cooperation of the ESG Team. Finally reviewed details are submitted to the CEO in a report form and undergo the decision making procedure.
Legal	Relevant, always included	(i) Risk Type Example: If the promotion of tires on sale is made without thorough verification of fuel efficiency while driving, customers can litigate for reasons such as false advertising. (ii) Explanation of Inclusion in Climate-related Risk Assessment: This risk type are transferred to the Legal Team through LAMP(Legal Affairs Management Portal), an in-house legal risk management portal system, and are assessed in an internal legal consulting process for response methods.
Market	Relevant, always included	(i) Risk Type Example: Future public transportation system may innovate itself based on the national carbon neutrality strategy. In the case of Korea, the government established strategies to promote public transportation and expand high-speed railway network to reduce greenhouse gases generated by the transportation sector. In addition, shifts in market paradigm and change in customer behaviors, such as the expansion of car-sharing and development of micro mobility market, will lead to reduced demand in passenger cars in the long-term, resulting in a financially negative impact on HKT sales. (ii) Explanation of Inclusion in Climate-related Risk Assessment: HKT is making various efforts to diversify its business portfolio to secure future competitiveness. A new affiliate was launched to review possibilities of new businesses to conduct various tasks related to the changing market, such as market surveying and business item explorations. The corresponding affiliate is supervised by the CEO, and related agendas are discussed and decided by the board of directors.
Reputation	Relevant, always included	(i) Risk Type Example: (a) Unless companies actively address rapidly growing demands for climate change disclosure and GHG emissions reduction from global investors, companies have the potential to lose investments from investors or their share price could decrease. Hankook Tire & Technology has also been requested such demands by several stakeholders including investors, and we have been active in dealing with them by disclosing our climate change strategy and performance through CDP, DJSI, and sustainability reports to avoid reputational risks, which can reduce our stock price. (b) Furthermore, NGOs are aggressively demanding more climate change measures. If a company that exerts or is alleged to have exerted a harmful influence upon our climate and fails to make efforts to correct its operational processes, the company's reputation would rapidly be harmed. This alleged behavior would have a negative impact on public consumption of the company's products in the short term, regardless of whether such allegations were true. If companies actually engage in actions that are harmful to the climate, it will take a long time to recover their damaged reputation. (ii) Explanation of Inclusion in Climate-related Risk Assessment: This risk type are regularly monitored and assessed by the ESG team, which is in charge of responding to stakeholders related to climate change management.
Acute physical	Relevant, always included	(i) Risk Type Example: Natural disasters with severe damage, such as hurricanes, typhoons and flooding due to climate change, can inflict damage on properties and can impact the supply chain of materials and products. This will make the company suffer from negative financial impacts, such as restoring manufacturing plants and logistics centers, reinforcing flooding prevention facilities, and sales decrease due to facility shutdowns. (ii) Explanation of Inclusion in Climate-related Risk Assessment: This risk type are brought up in the agenda of the Climate Change Committee or the product environment Committee and assessed. In the case of the risk that is expected to greatly influence corporate management as a result of risk assessment, it is brought up in the agenda of the ESG Strategy Committee, whose chairperson is the CEO, and go through the decision-making process of the top management regarding response methods.
Chronic physical	Relevant, always included	(i) Risk Type Example: (a) Climate change has the potential to negatively impact the climate of the South-East Asia and consequently reduce the production of natural rubber, potentially leading to an increase in Hankook's procurement costs. (b) If snowfall decreases due to global warming, sales of winter tires will be reduced, causing the winter tire market to shrink. (c) When global desertification accelerates due to global warming, conventional tires can drive in less areas, and thus sales of tires may be greatly reduced. (ii) Explanation of Inclusion in Climate-related Risk Assessment: This risk type are brought up in the agenda of the Climate Change Committee or the product environment Committee and assessed. In the case of the risk that is expected to greatly influence corporate management as a result of risk assessment, it is brought up in the agenda of the ESG Strategy Committee, whose chairperson is the CEO, and go through the decision-making process of the top management regarding response methods.

C2.3

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

Yes

C2.3a

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

Identifier

Risk 1

Where in the value chain does the risk driver occur?

Direct operations

Risk type & Primary climate-related risk driver

Current regulation	Carbon pricing mechanisms

Primary potential financial impact

Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification

<Not Applicable>

Company-specific description

The Korea plant and Hungary plant of HKT are obligated to comply with the Emission Trading System. If the amount of greenhouse gas emission exceeds the amount allocated by the governments, the corresponding plant shall purchase emission credits from the Emission Trading market or from another company. In the case of Korea, the plant's free allocation ratio decreased to 90% since the start of Phase 3 (2021-2025) in 2021, and the Korean government implemented measures, such as reducing the overall allocation amount, to achieve the NDC. In the case of Hungary, the country implemented Phase 4 (2021-2030) by joining the EU-ETS. The free allocation ratio of EU-ETS is 30%, and it is scheduled to decrease starting in 2027 and will reach 0% by 2030. Due to this, the Hungary plant purchased additional credits in 2021, and the Korea plant is expected to make expenses starting from 2023.

Time horizon
Short-term

Likelihood
Virtually certain

Magnitude of impact
Medium-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)
30974288000

Potential financial impact figure – maximum (currency)
41992272000

Explanation of financial impact figure
The financial impact figure is defined as the projected emission credit purchase cost. The projected emission credit purchase by the Korea plant in Phase 3 (2021-2025) is approximately 73,000 tCO2, and if the price per tCO2 of emission credits is 25,000-30,000 KRW, the projected purchase cost is approximately 1,825,000,000-2,555,000,000 KRW. In the case of Hungary plant, the projected emission credit purchase in Phase 4 (2021-2030) is approximately 319,900 tCO2, and if the price per tCO2 of emission credits is 68-92 EUR, the projected purchase cost is approximately 29,149,000,000 -39,437,000,000KRW. Therefore, the projected total emission credit purchase cost is 30,974,288,000 -41,992,272,000 KRW.

Cost of response to risk
1545890000

Description of response and explanation of cost calculation
Various measures are implemented to minimize the risk associated with the Emission Trading System. First, efforts are being made through professional consulting to smoothly respond to the Emission Trading System. By quickly acquiring and fully understanding information on policy trends, legal amendments, market information and recent issues, various requirements of the system are controlled without issues and the risk of failing to fulfill duties is minimized. In addition, independent assurance agencies are verifying scope 1 and 2 data to enhance transparency. Costs related to such efforts are projected to be approximately 60,000,000 KRW. Second, various activities are being implemented to reduce greenhouse gas emission in worksites. Replacing old equipment, improving operation methods, controlling leakage amounts and introducing renewable energy are activities implemented to reduce energy usage, and before such activities are implemented, investment decisions are made taking account of the internal carbon price and energy reduction amount. Annual costs related to such activities are projected to be 1,485,000,000 KRW, and this amount is scheduled to continuously be expanded. Third, HKT registered as a member of the exchange market to conveniently purchase and sell emission credits. As failing to purchase or sell emission credits directly lead to losses, HKT directly engages with the market to minimize related risks. Therefore, the projected total cost is 1,545,890,000 KRW

Comment

Identifier
Risk 2

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

Risk type & Primary climate-related risk driver

Emerging regulation	Enhanced emissions-reporting obligations

Primary potential financial impact
Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
With the recently ESG disclosure requirement becoming the centerpiece of attention, the integration of disclosure requirements regarding sustainable management information centering the EU began in full-scale in 2021. Accordingly, the mandatory disclosure requirement is expected to be in effect in 2024-2026, and it is expected to be in effect in Korea in 2025. Major aspects of the requirement are expected to strengthen risk assessment concerning climate change and the impact of such risks on financial statements, and reflect the assessment in business strategies. In the case of data, the Scope 3 emission report is expected to be strengthened. The strengthened mandatory reports regarding climate change will result in increased costs for companies to respond to mandatory regulations, and the expanded information disclosure scope will affect company reputation.

Time horizon
Medium-term

Likelihood
Virtually certain

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
10000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure is defined as the fines imposed for failing to comply with the disclosure requirement. Since negative financial impacts due to negative ESG performance disclosure, such as difficulties in investment attraction, are mainly considered in reputation risk, the financial impacts of poor ESG assessment are not considered in the corresponding sector. According to the "Act On The Promotion Of Information Security Industry" of the Korean government, violations of the disclosure requirements are subject to fines, and the fine is defined to be up to 10,000,000 KRW. It is possible for such penalty to be included in future ESG disclosure agendas.

Cost of response to risk
40540000

Description of response and explanation of cost calculation
The calculation assumed additional labor and operation costs invested for climate change related items of the ESG disclosure as risk response costs. In addition to the indices already being managed, Scope 3 emissions, analysis of risks and opportunities associated with climate change and business strategy supplementation are items expected to be reinforced, and they are calculated taking account of the annual investment based on experts of the internal ESG Team. The projected cost is approximately 40,540,000 KRW, and such is the minimum risk response cost which is expected to continuously increase.

Comment

Identifier
Risk 3

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

Risk type & Primary climate-related risk driver

Emerging regulation	Other, please specify (Directive on Corporate Sustainability Due Diligence)

Primary potential financial impact
Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
On February 23, 2022, the European Commission issued a Proposal for a "Directive on Corporate Sustainability Due Diligence" to tackle human rights and environmental impacts across global value chains and the Hungary plant of HKT may be subject to the proposed Directive. The estimated effective date is between 2024 and 2026, and if negative impacts are identified in practice, the company may be liable for civil damages. Sectors subject to the due diligence on the supply chain are human rights, environment and climate change, and it is expected that demands for assessments of climate change risks and supplementation of business strategies will be made. In order to respond to such demands, human resource allocation will be inevitable, and such regulations may lead to risks such as damage to corporate reputation or car maker contract terminations.

Time horizon
Medium-term

Likelihood
Virtually certain

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
142822000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure is defined as the fines imposed for violations of the supply chain due diligence directive. As the law is currently being developed, the figures presented are not accurate estimates, and the current fine calculations are based on the Supply Chain Due Diligence Act (draft) of Germany. According to related laws of Germany, fines are imposed upon discovery of violations or failure to comply with the law. The fine calculation is currently being formulated, and it can reach up to EUR 8,000,000, or up to 2% of annual global sales in the case of companies with annual sales of EUR 400,000,000 or more. If the current draft goes in effect, the estimated fine for violations made by HKT is approximately KRW 142,822,000,000.

Cost of response to risk
81070000

Description of response and explanation of cost calculation
Additional labor and operation costs invested for the climate change sector of the supply chain due diligence were calculated as risk response costs. Labor costs will be occur in the internal ESG Team and Hungary plant to respond to greenhouse gas emission data and climate change strategies, and approximately KRW 81,070,000 was calculated with annual allocation date and average wage. This figure is the minimum risk response cost, and there is possibility that it will increase depending on participation in additional related activities.

Comment

Identifier
Risk 4

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

Risk type & Primary climate-related risk driver

Technology	Transitioning to lower emissions technology

Primary potential financial impact
Increased capital expenditures

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
The situation requires companies to further reduce greenhouse gas emissions according to the trend in global climate change, and significant cost is expected to be required. With Scope 1 and 2 as the start, the management scope is expected to expand up to Scope 3, and such will require significant investment in exploring and developing innovative reduction technologies in the long-term such as transition to low-carbon raw materials, increase of product energy efficiency and establishment of low-carbon distribution system in addition to energy reductions in the manufacturing process. End-of-life tire pyrolysis, which is one of the promising low-carbon technologies, uses pyrolysis to decompose end-of-life tire and recover recovered carbon black (rCB) and pyrolysis oil. Currently, business feasibility, safety, environment-friendliness and practicality are being reviewed to minimize the risk associated with its application prior to initiating the project. Low-carbon technologies which are yet to be commercialized or are in infancy may have risks in and of itself, and costs will inevitably occur in the process of commercializing the technology.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium

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)
25600000000

Potential financial impact figure – maximum (currency)
26100000000

Explanation of financial impact figure
The financial impact figure is calculated based on the quantitative loss associated with the failure to invest in the pyrolysis facility, which is the low-carbon technology under review at present. Considering the present value of investment and annual operation costs including the installation costs, the estimated costs are approximately 25.6-26.1 billion KRW.

Cost of response to risk
60800000

Description of response and explanation of cost calculation
Labor and operation costs invested for the business feasibility review to reduce risks associated with the introduction of the pyrolysis facility were calculated as the risk response cost. Considering the number of personnel and necessary period related to the profitability review and business implementation plans for the pyrolysis facility, the estimated risk response cost is approximately 60,800,000 KRW. This figure is the minimum risk response cost, and there is possibility that it will increase depending on participation in additional related activities.

Comment

Identifier
Risk 5

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

Risk type & Primary climate-related risk driver

Market	Changing customer behavior

Primary potential financial impact
Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
The Korean government has established its National Implementation Strategy with the objective of achieving carbon neutrality in 2050. In the transportation sector, the government included strategies to connect major strongholds of Korea with high-speed railways to promote public transportation. Furthermore, the expansion of car sharing allowed people to use cars without owning one, and changes in work environment, such as telework, development of micro mobility (electric bicycles, electric scooters, etc.) service and the aging society may lead to the decrease in demand of cars in the long-term. According to the traffic demand projection made by the Korea Transport

Institute, demand for cars in the future has more decreasing factors than increasing factors, and such may lead to the decrease in tire product demand.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
13721400000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure was calculated based on the tire sales decrease considering the demand for cars in Korea. According to the Korea Transport Institute, the car traffic rate in Korea will decrease by approximately 1.8% by 2045 due to the acceleration of a super-aged society, introduction and expansion of high-speed railway and increase in oil price. Based on such, the financial impact figure was estimated to be 1.8% of the 2021 annual sales made by the Korea plant.

Cost of response to risk
134000000

Description of response and explanation of cost calculation
In order to strengthen its competitiveness in the future, HKT established INB Corporation in 2021 to undertake consulting and investment tasks for new businesses, and the investment made for the company is calculated as the risk response cost. INB Corporation engages in professional market survey, new business exploration and solution consulting. While its tasks are focusing around diversifying its capabilities in mold production and automotive repair aside from tire-centered business, it is still at its infancy where it will focus more on exploring new businesses.

Comment

Identifier
Risk 6

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

Risk type & Primary climate-related risk driver

Reputation	Shifts in consumer preferences

Primary potential financial impact
Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
HKT conducts B2B and B2C businesses. B2B mainly deals with car makers, and B2C mainly deals with consumers via sales vendors. As the awareness of ESG is increasing, car makers developed a trend of preferring products with low environmental impact in the overall manufacturing process, and consumers are now placing energy efficiency, environmentally friendly certifications or social image of the brand as the determining factor in choosing a product. In addition, the automotive paradigm is shifting from internal combustion engine vehicles to electrical vehicles, and some car makers are even announcing their discontinuation of internal combustion engine vehicles, so the demand for tires suitable for electric vehicles is also increasing. In order to stay ahead of the changing customer demands and consumer trends, HKT continues to invest in developing energy reduction products, especially product suited for electric vehicles, and the company is also assessing and monitoring the environmental impact of existing products and new products through assessing the overall manufacturing processes. Failing to change and keep up with such trend will lead to loss of market share and decrease in sales.

Time horizon
Medium-term

Likelihood
Virtually certain

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)
348285750000

Potential financial impact figure – maximum (currency)
696571500000

Explanation of financial impact figure
The financial impact figure is estimated with the cost of reducing tire product demand. It is assumed that there will be a 5-10% annual sales reduction if no product

improvement or development is made and only existing products are sold, where the financial cost is estimated to be approximately KRW 348,285,750,000-696,571,500,000.

Cost of response to risk
3123000000

Description of response and explanation of cost calculation
To satisfy the changing demand for products from consumers and car makers, HKT is making various efforts. First, it is making many investments in research and development to satisfy the diverse demands of low-carbon products, high-efficiency products and tires for electric vehicles. In the case of high-efficiency products, many efforts are made to develop a tire with low rolling resistance, which has a significant impact on fuel efficiency, and in the case of low-carbon products, many activities, such as transitioning from previous petroleum-based materials to bio materials, are being implemented. The company is also focusing its capabilities to develop low-noise products taking into account the fact that noise is more apparent in electric cars compared to internal combustion engine vehicles. The annual cost of developing such tire products is approximately 3,100,000,000 KRW. Second, it is conducting annual life cycle assessment with a professional consulting firm to monitor the environmental impact of the product lifecycle and use the data obtained for low-carbon product design and share it with car makers. The company continues to expand the implementation of the life cycle assessment, and conducts sensitivity analysis of various factors to identify critical factors and use them in designing low-carbon products. The annual cost invested in the life cycle assessment is KRW 23,000,000.

Comment

Identifier
Risk 7

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

Risk type & Primary climate-related risk driver

Reputation	Increased stakeholder concern or negative stakeholder feedback

Primary potential financial impact
Increased credit risk

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
In present day, ESG has become a standard in assessing a company. Negative ESG issues or lower ESG ratings due to poor improvement activities and strategies can have negative impact on company valuation, capitalization and brand reputation in the market. With more and more investors wanting to invest in companies with a clear ESG strategy, and with consumer trends expanding in the direction of making purchase decisions based on valuation, lower ESG ratings can act as a factor decreasing a company's credit ratings.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium

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)
42799000000

Potential financial impact figure – maximum (currency)
128397000000

Explanation of financial impact figure
With the assumption that market capitalization will decrease by 1-5% based on lower ESG assessments and negative feedback, a potential financial impact of KRW 42,799,000,000-128,397,000,000 is estimated.

Cost of response to risk
486400000

Description of response and explanation of cost calculation
HKT has organized a dedicated team for ESG management, and the ESG Team conducts tasks related to responding to global ESG assessment firms, managing ESG indices, operating ESG Strategy Committee and monitoring ESG related issues and laws. The team also endeavors to monitor and improve ESG issues throughout the company, and ensures that critical issues are shared with executives and improvement activities are implemented companywide. Considering the labor and operation costs of the ESG Team, the risk response cost is estimated to be approximately KRW 486,400,000. The response cost may increase depending on the role and significance of ESG in the future.

Comment

Identifier
Risk 8

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

Risk type & Primary climate-related risk driver

Acute physical	Cyclone, hurricane, typhoon

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

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
Natural disasters caused by climate change can inflict damage to the supply chain and logistics network of a company. Damage to properties and delay or shutdown of materials and product deliveries lead to sales decrease, and the cost to restore the damage is expected to be high. Among the various physical risks, natural disasters, such as cyclones, hurricanes and typhoons, are estimated to have the biggest financial impact, and damages inflicted directly on plants or logistics centers by such natural disasters may cause significant losses in terms of facility damage, production shutdown and damage recovery.

Time horizon
Medium-term

Likelihood
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)
9000000000

Potential financial impact figure – maximum (currency)
21000000000

Explanation of financial impact figure
The financial impact figure is estimated based on losses associated with plant shutdown due to natural disasters, such as hurricanes and typhoons. In general, the loss incurred by a day of plant shutdown is estimated to be approximately KRW 3,000,000,000. If a plant is shutdown to recover from the damages for a minimum of 3 days and maximum of 7 days, the estimated impact figure is KRW 9,000,000,000-21,000,000,000.

Cost of response to risk
17900000

Description of response and explanation of cost calculation
HKT conducts repairs on leakages to prepare for natural disasters, and such include waterproofing and vinyl repair works at product warehouses and plant roofs. To prevent heavy rain damage before the rain season, areas with leakage possibilities are thoroughly inspected, and work suited for each situation is applied. The cost invested in the Korea plant for these works is expected to be approximately 17,900,000 KRW. This risk response cost may increase if the frequency of heavy rain or local downpour increases.

Comment

Identifier
Risk 9

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

Risk type & Primary climate-related risk driver

Chronic physical	Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential financial impact
Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
The main raw material used to make a tire is natural rubber. The annual global natural rubber production is approximately 14,000,000 tons, and Thailand, Malaysia and Indonesia produce 80% of global natural rubber. However, Southeast Asia, where natural rubber is harvested from, is very vulnerable to climate change. According to a report by IPCC, extreme climate conditions, such as heat waves and local downpour, are expected to occur more frequently in Asian countries. This may contribute to change in cultivation environment, such as increase in rubber tree diseases due to pests and reduction in cultivation land, resulting in the disturbance of rubber harvesting. The decrease in natural rubber supply will lead to increase in raw material prices, and as there is no alternative to rubber trees, the risk also includes the necessity to secure alternatives in the long-term.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
High

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
744681130500

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure is calculated as the additional costs occurred due to increase in raw material cost. According to the World Bank, the price of natural rubber in 2035 is projected to increase by approximately 17% compared to 2021. With the assumption that the price of natural rubber in 2021 will increase annually by 1.13% starting from 2023, the additional costs incurred in 2035 due to raw material price increase is estimated to be approximately KRW 744,681,130,500.

Cost of response to risk
31849500

Description of response and explanation of cost calculation
To establish a sustainable natural rubber supply chain, HKT is taking part in the GPSNR (Global Platform for Sustainable Nature Rubber). GPSNR is a global platform stakeholders from various sectors, including natural rubber farmers, dealers, manufacturers and car makers, participate in, and it is program that makes a commitment in supporting activities for a sustainable supply chain. HKT is a founding member of the platform, and it endeavors in minimizing risks through various activities, including the announcement of "Sustainable Natural Rubber Policy." Approximately KRW 19,000,000 is allocated as annual fee for GPSNR, and in 2021, formic acid valued at approximately KRW 13,000,000 was supplied to 100 natural rubber supply farmers in Indonesia to prevent rubber tree damage and reduce soil and water contamination. In addition, R&D to utilize dandelion as an alternative and supplement to natural rubber is also being conducted.

Comment

Identifier
Risk 10

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

Risk type & Primary climate-related risk driver

Chronic physical	Changing precipitation patterns and types (rain, hail, snow/ice)

Primary potential financial impact
Increased indirect (operating) costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
According to IPCC, all RCP scenarios it reviewed come to the conclusion that the surface temperature of Earth is expected to rise until mid-21st century, and the frequency of extreme climate conditions, such as more frequent heat waves, heavy rain and flooding, is expected to increase in all areas on Earth. Among such conditions, changes in rainfall pattern including hevay rain and snow may have direct impact on the company's business operations. For example, it may negatively impact the procurement of raw materials and distribution of products, and in extreme cases, production may seize temporarily or product delivery may be delayed. As various transportation modes, such as trucks, ships and trains, are used, extreme climate conditions are considered as risks in long-term business operations.

Time horizon
Long-term

Likelihood
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)
1800000000

Potential financial impact figure – maximum (currency)
2700000000

Explanation of financial impact figure
The financial impact figure is estimated based on the assumption of plant operation ratio decreasing up to 30% due to material supply or product distribution delays caused by extreme climate conditions, such as heavy rain or snow.

Cost of response to risk
21480000

Description of response and explanation of cost calculation
Projections of Korea's climate based on RCP 4.5 scenario estimate that rainfall in Korea will increase by 17.3%, and projections based on the worst-case scenario, RCP 8.5, estimate that rainfall will increase by 20.4%. To be prepared for the frequent heavy rain and increased rainfall, the cost for leakage prevention and measures in the plant, office and rented buildings are expected to increase. Additional costs incurred by the rainfall pattern change based on the worst-case scenario are estimated to be approximately KRW 21,480,000.

Comment

Identifier

Risk 11

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

Risk type & Primary climate-related risk driver

Market	Increased cost of raw materials

Primary potential financial impact
Increased direct costs

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
HKT is making efforts to reduce the carbon footprint of its products by using sustainable materials, as there are increasing negative perception of petroleum-based materials and demand for environmentally friendly products. Currently, 29% of all material purchases (based on weight) are eco-friendly materials (i.e., recycled and reused materials, bio materials, etc.), and this corresponds to approximately 46% of the overall purchasing amount. This is mainly because the prices of environmentally friendly materials are higher than regular materials, and material costs may increase further depending on the expansion of application.

Time horizon
Medium-term

Likelihood
Likely

Magnitude of impact
High

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
696571500000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure is calculated with the assumption that tire sales decreased because the company failed to satisfy the car makers' requirement for using environmentally friendly materials. Therefore, 10% decrease in sales compared to 2021 was assumed, and this correlates to a financial impact of approximately KRW 696,571,500,000.

Cost of response to risk
135000000000

Description of response and explanation of cost calculation
The financial impact figure is calculated as the additional amount required to achieve the internal objective for environmentally friendly materials (40% by 2030). The introduction of rice husk silica and ISCC certified SBR will contribute to achieving 41% sustainable material use, and raw material costs are estimated to increase by approximately 107%. Accordingly, the potential impact figure is estimated to be approximately KRW 135,000,000,000.

Comment

Identifier
Risk 12

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

Risk type & Primary climate-related risk driver

Market	Changing customer behavior

Primary potential financial impact
Decreased revenues due to reduced demand for products and services

Climate risk type mapped to traditional financial services industry risk classification
<Not Applicable>

Company-specific description
HKT is expanding its production of seasonal tires according to seasonal characteristics. For example, winter tires during winter and summer tires during summer. However, with average temperatures rising during winter due to global warming, the overall demand for winter tires may decrease, resulting in lower winter tire sales. As of 2021, the winter tire sales make up approximately 15% of all tire sales.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
53535706112

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure is calculated assuming that the sales will decrease due to the decreased demand for winter tires. A 5% decrease in winter tire sales compared to 2021 was assumed, and the estimated financial impact based on this is approximately KRW 53,535,706,112.

Cost of response to risk
118564428290

Description of response and explanation of cost calculation
It is deemed necessary to expand the production of products that can replace winter tires in the event of a significant decrease in demand due to long-term climate change and other factors that make it difficult to maintain production. For example, summer tires may replace winter tires. In this case, investment in expanding the summer tire production line is expected to be made, but since it is difficult to make accurate projections at the moment, the risk response cost is calculated as the investment cost of 2% of the summer tire sales.

Comment

C2.4

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

C2.4a

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

Identifier
Opp1

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Resource efficiency

Primary climate-related opportunity driver
Use of recycling

Primary potential financial impact
Reduced direct costs

Company-specific description
If facilities for end-of-life tire pyrolysis, which one of the promising low-carbon technologies, are fully implemented and operated, resources such as recovered carbon, pyrolysis oil and steam, can be recycled. If recyclable resources can be fully extracted from end-of-life tires along with recovered carbon and if a closed loop recycling system is established in the long term, it is expected that the system will be able to reduce risks associated with unstable raw material supply and fluctuating prices due to climate change. In terms of financial impacts, raw material and fuel purchasing costs can lead to a reduction in direct expenses.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
11300000000

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
The financial impact figure is calculated with the assumption of making profit through the operation of the pyrolysis facility. Factors considered during profitability calculation include the transition to LNG steam, reuse of recovered carbon black, selling pyrolysis carbon black and reuse of pyrolysis oil, and it is estimated that approximately KRW 11,300,000,000 in profit will be made.

Cost to realize opportunity
26100000000

Strategy to realize opportunity and explanation of cost calculation
The pyrolysis facility investment cost is estimated to be KRW 26,100,000,000 at a maximum, and the investment cost includes the equipment price, material price, fuel price, labor costs, fixed costs, depreciation costs and variable costs. The investment amount is still being reviewed, so the actual amount invested in the future may be different from the estimate.

Comment

Identifier
Opp2

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Energy source

Primary climate-related opportunity driver
Participation in carbon market

Primary potential financial impact
Reduced indirect (operating) costs

Company-specific description
The Korea plant and Hungary plant are responding to the Emission Trading System, and if the greenhouse gas emission is less than the allowance by the government, the remaining emission credits can be sold in the market. In the case of Korea, the price of emission credits is formed at around KRW 25,000-30,000 per tCO2, and in the case of Europe, the price soared in 2021 at a range of 65-75 EUR on average. The Emission Trading System is designed to reduce the allowance with each planned phase, so it is very likely that the price of credits will increase in the future. If greenhouse gas emission can be reduced with various activities, it is possible to make a profit by selling the remaining emission credits.

Time horizon
Short-term

Likelihood
Likely

Magnitude of impact
Medium

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)
6258833928

Potential financial impact figure – maximum (currency)
8762367500

Explanation of financial impact figure
The financial impact figure is calculated with the projected emission credit sales when the company successfully reduces greenhouse gas emissions according to the Carbon Neutrality Roadmap. The Emission Trading System is currently used by the Korea plant and Hungary plant, but since few emission credits are allocated to the Hungary plant, it is difficult to expect profit by selling the credits during Phase 4. In the case of the Korea plant, if it successfully reduces 25% of emissions by 2025 compared to 2018 according to the roadmap, the projected emission sales profit during Phase 3 (2021-2025) is approximately KRW 6,258,833,928-8,762,367,500. This only considered the profit made with emission credits sales, so if energy cost reduction is added, the actual financial profit may increase further.

Cost to realize opportunity
10353193126

Strategy to realize opportunity and explanation of cost calculation
HKT continues to make investments in reducing greenhouse gas emissions and energy consumption every year, and in the case of the Korea plant, the cost reduction achieved per 1 ton of CO2 between 2020 and 2021 in terms of performance is estimated to be approximately 32,101 KRW/tCO2. Since the amount of Scope 1 and 2 emissions to reduce between 2022 and 2025 according to the Carbon Neutrality Roadmap is approximately 322,524 tons, the investment to be made in greenhouse gas emission reductions is estimated to be approximately KRW 10,353,196,126.

Comment

Identifier
Opp3

Where in the value chain does the opportunity occur?
Direct operations

Opportunity type
Energy source

Primary climate-related opportunity driver
Use of lower-emission sources of energy

Primary potential financial impact
Reduced direct costs

Company-specific description
HKT is establishing a foundation to follow the trend of carbon neutrality and RE100. The cost of producing renewable energy is decreasing with the advancement of technology, and the government is aggressively promoting the expansion and application of renewable energy with various measures, including support funds. Once the

generation cost reaches a fair level, the use of renewable energy will reduce the overall cost associated with energy, and if circumstances allow it, it will be possible to make additional profit by selling certificates in the renewable energy certificate market. In addition, since the Emission Trading System of Korea is subject to Scope 2, it is possible to make additional profit by selling emission credits secured with emission reductions.

Time horizon
Medium-term

Likelihood
Likely

Magnitude of impact
Medium-high

Are you able to provide a potential financial impact figure?
Yes, a single figure estimate

Potential financial impact figure (currency)
1763015985

Potential financial impact figure – minimum (currency)
<Not Applicable>

Potential financial impact figure – maximum (currency)
<Not Applicable>

Explanation of financial impact figure
HKT is planning to progressively introduce renewable energy to domestic and overseas plants, and the Hungary plant and Korea plant are the first plants being looked at. The planned capacities are 2 MW and 6.9 MW solar power generation, respectively, and the energy produced is expected to be completely consumed by the plants. The financial impact figure is defined as energy cost reduction and emission credits sales profit, and it is estimated to be approximately KRW 1,763,015,985. This financial profit is expected to increase with the expansion of renewable energy use in the company.

Cost to realize opportunity
13007000000

Strategy to realize opportunity and explanation of cost calculation
The photovoltaic facilities to be installed in the Hungary plant and Korea plant are expected to require approximately KRW 13,007,000,000 and with technological advancement potentially reducing the cost of renewable energy production in the future, the investment cost for renewable energy is expected to decrease.

Comment

Identifier
Opp4

Where in the value chain does the opportunity occur?
Downstream

Opportunity type
Products and services

Primary climate-related opportunity driver
Development and/or expansion of low emission goods and services

Primary potential financial impact
Increased revenues through access to new and emerging markets

Company-specific description
Changes in consumer preference according market trends, including energy-saving and low-carbon products and electric vehicles, are opportunities for HKT to release new products and services. The company is establishing a product portfolio in line with the changing demands of car makers and consumers, and is making its best efforts to develop and release products. With the Kinergy Eco 2 tire receiving an "A," the highest rating in the tire labeling system by the European Council, and iON, the first electric vehicle tire brand in the global market, successfully launching, HKT continues to expand its market share and sales. The company is also responding to the EV market by signing supply contracts with top EV manufacturers and making specialized products, and it will take part in the 2022/2023 ABB FIA Formula E Championship as an official sponsor. By prioritizing EV OE supply, the company is expected to expand it to more than 20% by 2028, and with the continuous expansion plan for specialized RE EV products, the company aims to increase its brand value and preoccupy the market and sales.

Time horizon
Medium-term

Likelihood
Very likely

Magnitude of impact
Medium-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)
696571500000

Potential financial impact figure – maximum (currency)
1393143000000

Explanation of financial impact figure
The financial impact figure is calculated by estimating the rise in sales according to market share increase. The financial profit when sales increase by 10-20% compared to 2021 due to continuous product development and lineup launches following customer preference is estimated to be KRW 696,571,500,000-1,393,143,000,000.

Cost to realize opportunity

3100000000

Strategy to realize opportunity and explanation of cost calculation
To further broaden its efforts in tire research and development, HKT established a large-scale R&D facility called the Technodome. The facility is collecting big data on tire material research, original technology development, environmentally friendly tires and future driving technology, and continues to conduct performance assessments of tires. Above all, the facility is conducting research to improve low rolling resistance, which is a critical factor in high-efficiency products and electric vehicle tires. And is focus on technologies to minimize tire weight and lower rolling resistance levels, and to reduce energy loss due to air resistance. Research is also being conducted on technologies to support the increased weight of electric vehicles and reduce the noise generated by them. The R&D budget allocated for low-carbon product development is approximately KRW 3,100,000,000, and the R&D cost is expected to continuously increase.

Comment

Identifier
Opp5

Where in the value chain does the opportunity occur?
Downstream

Opportunity type
Products and services

Primary climate-related opportunity driver
Ability to diversify business activities

Primary potential financial impact
Increased revenues through access to new and emerging markets

Company-specific description
HKT is aggressively engaging in new business discovery and business diversification in response to the expansion of high-speed railways, acceleration of car sharing, and an aging society as well as rise in costs and decrease in demand for new car tires. Various efforts are being made to establish future growth engines based on STREAM, the group's mid- to long-term growth strategy. STREAM refers to Smart Energy, Tire and Core Biz, Rising Tech, Electrification and Automation, and they are the guidelines for creating new opportunities.

Time horizon
Long-term

Likelihood
Likely

Magnitude of impact
Medium-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)
6059700000

Potential financial impact figure – maximum (currency)
12119400000

Explanation of financial impact figure
The financial impact figure is calculated as the increased sales expansion costs due to market share increase in the non-tire sector. Sales in the non-tire sector are assumed to rise by 5-10% compared to 2021, and the financial profit is estimated to be KRW 6,059,700,000-12,119,400,000.

Cost to realize opportunity
134000000

Strategy to realize opportunity and explanation of cost calculation
To secure future competitiveness, HKT established an affiliate called the INB Corporation. The affiliate specializes in consulting and investing in new businesses, and the new business discovery cost was calculated based on the investment made to establish the affiliate.

Comment

Identifier
Opp6

Where in the value chain does the opportunity occur?
Downstream

Opportunity type
Markets

Primary climate-related opportunity driver
Other, please specify (ESG assessments)

Primary potential financial impact
Other, please specify (Receiving higher ESG assessments or positive feedback may lead to better chances of attracting investors)

Company-specific description
With the growing interest in ESG by investors, it has become a standard that determines whether to invest in an organization. As a result, receiving higher ESG assessments or positive feedback when a sustainable business strategy is announced may lead to better chances of attracting investors, and furthermore, stock prices may rise and lead to greater market capitalization. HKT used reputation risks as opportunities and implemented aggressive measures such as announcing the company's climate change strategy and performance through CDP, DJSI and sustainability reports. As a result, HKT solidified its position as a global top-tier company in sustainability in the "Dow Jones Sustainability Index (DJSI) World" for 4 consecutive years, and has received "Leadership A-" from the CDP Climate Change Ratings.

Time horizon
Long-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)
42799000000

Potential financial impact figure – maximum (currency)
128397000000

Explanation of financial impact figure
With the assumption that market capitalization will increase by 1-5% based on greater ESG assessments and positive feedback, a potential financial impact of KRW 42,799,000,000-128,397,000,000 is estimated to be achievable.

Cost to realize opportunity
140000000

Strategy to realize opportunity and explanation of cost calculation
HKT publishes a sustainability report every year, and to secure credibility of the report, it receives independent assurance of its contents from a third party. The company also uses professional translators to prevent the original intent from being lost in English translations, and also endeavors in communicating with global investment firms. Publication and verification costs of the sustainability report are calculated, and the cost is estimated to be approximately KRW 140,000,000.

Comment

C3. Business Strategy

C3.1

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

Row 1

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

Publicly available transition plan
Yes

Mechanism by which feedback is collected from shareholders on your transition plan
We have a different feedback mechanism in place

Description of feedback mechanism
HKT has a phased feedback process for ESG issues including climate change. First, yearly performance is reported to management staff by the ESG Strategy Committee and the future direction and major agendas are discussed. Then, the ESG Steering Committee meeting is held and various tasks are performed in connection with works under the responsibilities of the executive staff in charge. The performance status is monitored on a quarterly basis and the ESG Strategy Committee receives feedback from the CEO. Major agendas are submitted back to the ESG Committee under Board of Directors for review. In this way, promotion strategies and activities of HKT are performed through the process of getting feedback from the executive staff in charge, CEO and Board of Directors.

Frequency of feedback collection
Annually

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

Explain why your organization does not have a 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

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

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

C3.2a

(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
Transition scenarios: IEA SDS	Company-wide	<Not Applicable>	The Sustainable Development Scenario (SDS) presented by the IEA follows the path of "Well below 2ºC" that the Paris Agreement aims at. This scenario assumes that developed countries, China, and other countries reach carbon neutrality by 2050, 2060, and 2070, respectively. According to the SDS scenario, an increase in global temperatures can be limited to 1.65ºC with a 50 percent chance and can be reduced to 1.5ºC after 2070. The SDS set parameters such as economic growth rate by country, fluctuation of energy mix, fossil fuel price, and future carbon price, and provides policy assumptions and costs for core technologies to realize these according to scenario prospects. Among these, prospects and policy advice on energy mix, carbon price, and transportation, which are closely associated with the business of HKT, were intensively reviewed, and the analysis results were grafted and reflected in the promotion strategies and vision of HKT's carbon neutrality roadmap and reduction target. For example, as a result of analysis of the conversion scenario, policies that can directly affect HKT the most were evaluated as the Emission Trading System and carbon tax. With the reduction of GHG emissions in worksites (Korea, Hungary) that implement the Emission Trading System as a priority, implementation strategies such as the use of renewable energy, optimization of energy efficiency, and reduction plan are reflected in the carbon neutrality roadmap. These roadmap contents were approved by a periodic Board of Directors meeting and shared companywide, and future implementation status will be monitored by the ESG Strategy Committee every year, and associated contents are reported to the ESG Committee under the Board of Directors.
Physical climate scenarios: RCP 8.5	Company-wide	<Not Applicable>	RCP 8.5 presented in the fifth IPCC report is a scenario assuming that GHG will be continuously emitted at the current trend rate. RCP 8.5 predicts that the carbon dioxide concentration will reach 940 ppm by the end of the 21st century (2070 -2099) caused by human activities, raising the average global temperature by 4.8ºC and precipitation by 6.0%. In the case of Korea, if GHG is emitted as stated in the RCP 8.5 scenario, Korea's average temperature and precipitation are predicted to rise by 6.0ºC and 20.4%, respectively, by the end of the 21st century (2070-2099), from which it is analyzed that the overall Asian region is vulnerable to climate change compared to the global area. HKT currently has eight manufacturing plants, five of which are located in Asia. Thus, these climate prospects can disrupt property and plant operations of HKT. Also, it can affect future supply and demand for the raw materials of tires. Natural rubber has the highest purchase cost percentage for the raw materials of tires and is mainly imported from Southeast Asia. Extreme climatic phenomena such as the rapid rise of temperature, frequent heavy rain and droughts can disrupt the supply of natural rubber by changing growing conditions, and widen the range of fluctuation of prices of raw materials. Therefore, HKT sets the mid- to long-term goal for sustainable raw material use and reflected it in the carbon neutrality roadmap, and supplemented the roadmap by establishing implementation plans such as a review of alternative raw materials. HKT also supplemented the content to establish an efficient transportation system by adding plans for eco-friendly transportation system conversion and optimization of transportation distance to reduce GHG emissions in the distribution stage of the roadmap. Also, HKT performs inspection of leaking parts and repairs every year to prepare for the rainy season and natural disasters and will tighten the monitoring level according to changing climate phenomena to more systematically manage the fields.

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

What is the main impact of the transition scenario and physical climate scenario analysis on our organization and what is reflected in the strategy?

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

SDS analysis identified the ETS as the carbon regulations that can directly affect HKT and carbon prices in 2050 are expected to be 160USD/t in developed countries, leading to the conclusion that they will have a significant impact on business operation. For example, if the ETS transitions to 0% free allocation, Korea and Hungary plant have to purchase full credits, the financial impact is estimated to be KRW 97.356 billion annually. Since this is considered a significant cost, HKT has established plans to prioritize Scope 1,2 reductions, and developed strategies by reviewing technologies. Also, it has set a timeline to use renewable energy given the price projections of LCOE. According to the technological costs of SDS, LCOE for Solar PV is projected to be 15-30USD/Mwh in 2050, and compared to the future energy and CO2 credit costs, it is more beneficial to use renewable energy than national electircity. With RE100 achievement at the Hungary plant as the start, solar PV installation plans and other method(REC, PPA) are being developed. These details were approved by the ESG Strategy Committee and shared with all worksite, and also announced in the 2021 ESG Report. Monitoring of the status is planned to be checked by Climate Committee, and the implementation strategy will be updated according to the monitoring results. In addition, to secure credibility for the reduction goals, various tasks are being conducted in SBTi of 2022. The SBTi follow the "well below 2ºC" at a minimum, so the roadmap of HKT can be regarded as being faithfully developed according to the corresponding scenario. According to the RCP 8.5 analysis, factors projected to have the direct impact on HKT are extreme climate conditions and rainfall pattern changes. If climate conditions become severe due to flooding or heavy rain, damage to worksites, increases in the price of raw materials may occur. In particular, material price rise is thought to be the biggest financial burden. Natural rubber, which comprises the largest proportion of tire materials, is imported mostly from Southeast Asia, so if its supply decreases because of heat waves or floods in Asian countries vulnerable to climate change, the burden on business will be significant. The cost of natural rubber purchase was KRW 652.485billion and if the price increases by 1% we will bear an additional cost of KRW 7.373billion annually. As a result, HKT defined a long-term objective for the use of sustainable materials and reflected it in roadmap, and developed strategies including searching for alternative materials. We are also continuing to study the possibility of rubber extraction from dandelion as an alternative to preparing for a decrease in the supply of natural rubber. Furthermore, we are conducting leakage area inspections and repairs to be prepared for the annual rain seasons, and it plans to perform systematic site management by increasing the monitoring level according to the weather conditions.

C3.3

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

	Have climate-related risks and opportunities influenced your strategy in this area?	Description of influence
Products and services	Yes	The risks and opportunities associated with the rise in customer demand for low-carbon products (refer to C2.3a Risk 6 and C2.4a Opp4) have affected product R&D and portfolio development. HKT is striving to develop low-carbon products using environmentally friendly materials. Hankook Tire is making great efforts to develop low-carbon products using eco-friendly raw materials. Keumsan Plant achieved the global eco-friendly certification ISCC PLUS as the first in the tire industry to do so in 2021. The ISCC PLUS recognized the Plant's efforts to replace petroleum-based oil with one that is natural and synthetic rubber, which is also derived from petrochemicals, with biochemical alternatives (bio-based polymers). Using eco-friendly materials certified as such, we released the all-weather product Kinergy 4S2 and its SUV version Kinergy 4S 2 X which are unique for their optimal performance in virtually any kind of weather condition - from summer rainstorms to wintery snow-packed roads. Furthermore, we develop recyclable or renewable raw materials which can potentially replace their conventional petroleum/mineral-based counterparts to bolster our competitive edge in sustainable material technology. Our aim is to make the transition from conventional silica extracted from minerals to renewable silica made from plant-based waste. We also strive to use more recycled rubber extracted from end-of-life tires and renewable carbon to reduce the carbon emissions that stem from the acquisition of tire raw materials. Going forward, we will seek out sustainable materials and increase our consumption of these materials to truly live up to our eco design philosophy and reduce adverse environmental impacts.
Supply chain and/or value chain	Yes	The risks associated with securing a sustainable supply chain (refer to C2.3a Risk 3 and Risk 9) have affected HKT's supply chain greenhouse gases management and environmentally friendly renewable material supplier development activities. HKT regularized ESG self-diagnosis when purchase contracts are signed in order to investigate the ESG management status of suppliers and assess risks of supply chain management. Also, to reflect the assessment level of ESG risks in supply chains better for purchase decision making, the ESG assessment reflection rate for the comprehensive evaluation of suppliers was increased from 5% to 10% in 2021. According to the results of supply chain risk assessment, HKT provides ESG guidance to suppliers that need improvement and requires them to improve ESG performance. Also, HKT participates in Project TREE, a natural rubber project, to recover the sustainability of natural rubber, which is evaluated as a raw material influenced most by climate change. This is the first project led by an international trading company, ITOCHU, enabling tracking from supply to manufacturing and sales. This project allows only the supply of natural rubber collected from areas other than protected areas and makes it possible to regulate the cultivation of wildlife habitats and peat bogs. HKT partnered with ETEL, the largest tire distributer in the UK, and sells the tires manufactured through Project TREE. Part of the profits from the sales is used for sustainability support activities such as farm equipment, fertilizer, education and incentives for small-scale farms, collectors and local merchants who cooperate to secure the traceability of natural rubber.
Investment in R&D	Yes	Increased customer demand for energy-saving and eco-friendly products and resource efficiency (refer to C2.3a Risk 6 and C2.4a Opp1, Opp4,) have affected R&D investments for sustainable products. Hankook Tire engages in wide-ranging R&D activities to mitigate environmental impacts by developing technology to minimize the consumption of resources while improving fuel efficiency even from the discovery and application of eco-friendly raw materials and by increasing the ratio of products that employ eco-friendly technology. As part of our efforts towards eco-friendly tire technology development, we developed technology to increase the service life of tires while improving fuel efficiency through the comprehensive analyses of data on air pressure, sudden acceleration/braking, and idling performed through the use of tire-mounted sensors. We successfully demonstrated this technology following a year-long experiment we conducted on buses equipped with sensors. Also, We endeavor to minimize the consumption of resources and the discharge of waste while facilitating resource circulation to ensure that resources are used multiple times. We have developed hybrid films which increased the content of recycled polyethylene raw materials, which go to the tire manufacturing process, to up to 80% and are using such films at our Daejeon and Keumsan Plants. We plan to gradually extend the use of these hybrid films to our global plants. In addition, as part of our R&D efforts to manufacture sustainable products, we are working on technology to improve fuel efficiency by reducing the rolling resistance of tires on the road, all while optimizing the volume of tires to minimize resource consumption. In particular, we adopted lightweight cord and optimized rubber volume technologies that were successfully completed to release our new products – K135, RA45, and W462.
Operations	Yes	Regulatory risks and opportunities (C2.3a Risks 1,2,7, and C2.4a Opp2,3,4) have affected greenhouse gas reduction activities and implementation strategies in manufacturing plants. In an effort to join in the global effort to respond to the climate crisis, Hankook Tire raised the bar even higher on its long-term goal of reducing Scope 1 & 2 emissions from "50% reduction by 2050 compared to 2018" to "50% reduction by 2030" and created the "2050 carbon neutrality roadmap" including scope 3 emissions. We also shared related details at the company-wide level to pique the interest of all our employees to join in on our energy saving activities. Furthermore, respective worksites and the R&D Center proposed viable energy conservation and improvement solutions and raw material transition plans in line with the set reduction goal. Furthermore, we have increased the operational efficiency of our existing facilities to make our tire manufacturing process more energy efficient while continuously adopting high-efficiency facilities. Work is underway to shift from ordinary fluorescent lights to LEDs across all our operations. We are also replacing old equipment – freezers, feedwater pumps, and transformers – with ones that are highly efficient. As a result, the Chongqing plant recently received the "2021 National Green Factory recognition" from the Ministry of Industry and Information Technology of China in recognition of its high performance in areas such as energy savings and efficiency, reduction of GHG emissions, and eco-friendly operation system. Also, the Hungary plant plans to convert 20% of the electricity it uses to renewable energy in 2022 by purchasing renewable energy and a certificate, and intends to install solar panel facilities by 2024.

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 Assets	1. Revenue The expansion of the market and the rise in customer demand for low-carbon and energy-saving products have positive financial impacts because they lead to the growth in sales of related products. HKT is establishing a product portfolio that satisfies the changing demands of car makers and consumers, and is focusing its capabilities on developing innovative technologies for sustainable product development. If the market share grows through such activities, HKT will be able to expect increased sales for the products. Assuming that continuous product development and lineup launches to satisfy customer preferences lead to a 5-10% sales rise compared to 2021, the financial profit is estimated to be KRW 348,285,000,000-696,571,000,000. 2. Direct costs Market-based greenhouse gas regulations, such as carbon taxes and the Emission Trading System, are some of the many risks with a significant impact on HKT. At present, only the Korea plant and Hungary plant of HKT are subject to such regulations, but if the China plant becomes subject to them, the costs associated with management and responses will increase significantly. The Hungary plant purchased insufficient emission credits for 2021, and related expenses may occur for the Korea plant as soon as 2023. Emission credits purchasing costs are estimated to be approximately KRW 30,974,000,000-41,992,000,000 by 2030, and HKT developed its Carbon Neutrality Roadmap and is implementing energy reduction activities to reduce such costs. 3. Capital expenditures HKT is implementing various energy reduction activities to reduce greenhouse gas emissions at its worksites, such as improving the efficiencies of facilities, optimizing energy usage and using renewable energy. The company developed a 2022 energy reduction plan based on energy use assessments made by related experts, and is making various efforts, such as optimizing the compressed air system, which makes up 25% of the power consumption in plants, to optimize energy usage and minimize energy losses. Internal carbon prices are considered and reflected in investment-related decision-making processes for greenhouse gas and energy reduction activities, and in the roadmap, the cost required to be invested in the future is estimated to be approximately KRW 10,353,000,000. 4. Assets When new equipment, such as high-efficiency equipment, is purchased to reduce greenhouse gas emissions, it is treated as a tangible asset of HKT. Equipment and assets purchased every year are reported in business reports. Emission credits are treated and managed as an intangible asset. Greenhouse gas emissions and reduction performances are announced periodically in the Green Management Information Announcement, and buying or selling of emission credits are recorded and managed in internal accounting logs.

C3.5

(C3.5) In your organization's financial accounting, do you identify spending/revenue that is aligned with your organization's transition to a 1.5°C world?

No, but we plan to in the next two years

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

Year target was set
2019

Target coverage
Company-wide

Scope(s)
Scope 1
Scope 2

Scope 2 accounting method
Market-based

Scope 3 category(ies)
<Not Applicable>

Base year
2019

Base year Scope 1 emissions covered by target (metric tons CO2e)
264163

Base year Scope 2 emissions covered by target (metric tons CO2e)
955747

Base year 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)
1219910

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 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
100

Target year
2030

Targeted reduction from base year (%)
50

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]
609955

Scope 1 emissions in reporting year covered by target (metric tons CO2e)
240785

Scope 2 emissions in reporting year covered by target (metric tons CO2e)
869348

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)
1110133

% of target achieved relative to base year [auto-calculated]
17.9975571968424

Target status in reporting year
Underway

Is this a science-based target?
Yes, we consider this a science-based target, and we have committed to seek validation of this target by the Science Based Targets initiative in the next two years

Target ambition
1.5°C aligned

Please explain target coverage and identify any exclusions
HKT's GHG emission reduction subject includes both Korean business sites and overseas worksites. There are a total of eight HKT plants, and they are located in Korea, USA, China, Hungary and Indonesia. HKT is preparing for certification for the Science-based Target Initiative (SBTi) to set a reliable reduction target, and CO2 emission and removal caused by bioenergy combustion are not included. The base year has been changed from 2018 to 2019, but the approval of the sbti target has not been made yet, so the ESG report is open to the previous base year.

Plan for achieving target, and progress made to the end of the reporting year
HKT's GHG emission reduction activities are mainly classified into four sectors: High efficiency of facilities, energy optimization and leakage prevention, improvement of operation methods, and fuel conversion. In 2021, a total of 34 activities were performed, among which the improvement of operation methods and energy leakage prevention activities were most effective for GHG emission reduction. For example, energy unnecessarily consumed in operating plants could be saved with efficient equipment use through an electricity demand response system or reduction of air pressure loss with the optimization of the pneumatic system.

List the emissions reduction initiatives which contributed most to achieving this target
<Not Applicable>

Target reference number
Abs 2

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 2: Capital goods
Category 3: Fuel-and-energy-related activities (not included in Scopes 1 or 2)
Category 4: Upstream transportation and distribution
Category 5: Waste generated in operations
Category 9: Downstream transportation and distribution
Category 11: Use of sold products
Category 12: End-of-life treatment of sold products
Category 15: Investments

Base year
2019

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 emissions covered by target (metric tons CO2e)
32050346

Total base year emissions covered by target in all selected Scopes (metric tons CO2e)
32050346

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 emissions covered by target as % of total base year emissions in Scope 3 (in all Scope 3 categories)
99.86

Base year emissions covered by target in all selected Scopes as % of total base year emissions in all selected Scopes
99.86

Target year
2030

Targeted reduction from base year (%)
30

Total emissions in target year covered by target in all selected Scopes (metric tons CO2e) [auto-calculated]
22435242.2

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 emissions in reporting year covered by target (metric tons CO2e)
29624108

Total emissions in reporting year covered by target in all selected scopes (metric tons CO2e)
29624108

% of target achieved relative to base year [auto-calculated]
25.2336121425959

Target status in reporting year
Underway

Is this a science-based target?
Yes, we consider this a science-based target, and we have committed to seek validation of this target by the Science Based Targets initiative in the next two years

Target ambition
Well-below 2°C aligned

Please explain target coverage and identify any exclusions
According to the evaluation of scope3 emissions by category of HKT, emissions for the stage of use account for about 90% of the total emissions of SCOPE3. According to the SCOPE3 category importance assessment, 9 categories were selected out of a total of 15 categories to be considered for reduction targets, accounting for about 99% of SCOPE3's total emissions. HKT is currently preparing for SBTi certification to set reliable reduction targets and is in the process of preparing documents for verification. Therefore, scope3 emissions and reduction targets for the current proposed base year may be partially modified depending on the progress of the sbti verification.

Plan for achieving target, and progress made to the end of the reporting year
Hankook Tire has developed a promotion strategy for "Purchased Products or Services", "Use stage", and "Upstream and Downstream Transportation" which account for high emissions among Scope 3 categories and reflected them in its carbon neutral roadmap. The main strategies include using eco-friendly raw materials with low carbon footprint, improving the rotational resistance factor, which is closely related to tire energy consumption, and optimizing distribution paths.

List the emissions reduction initiatives which contributed most to achieving this target
<Not Applicable>

C4.2

(C4.2) Did you have any other climate-related targets that were active in the reporting year?
Target(s) to increase low-carbon energy consumption or production
Net-zero target(s)
Other climate-related target(s)

C4.2a

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

Target reference number
Low 1

Year target was set
2021

Target coverage
Company-wide

Target type: energy carrier
Electricity

Target type: activity
Consumption

Target type: energy source
Low-carbon energy source(s)

Base year
2019

Consumption or production of selected energy carrier in base year (MWh)
1608388

% share of low-carbon or renewable energy in base year
0.04

Target year
2050

% share of low-carbon or renewable energy in target year
100

% share of low-carbon or renewable energy in reporting year
1.2

% of target achieved relative to base year [auto-calculated]
1.16046418567427

Target status in reporting year
Underway

Is this target part of an emissions target?
As the emissions caused by the use of renewable energy fall under SCOPE 2, it is related to the GHG emission reduction target for SCOPE 1 and 2.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
HKT's plants are all included in the subject category. The time to achieve RE100 will be set differently by plant, taking into account the circumstances of each country.

Plan for achieving target, and progress made to the end of the reporting year
HKT will convert the electricity used in all global worksites to renewable energy by 2040. For phased conversion of renewable energy, HKT will create a portfolio for various and stable use of renewable energy, including green tariff, solar self-consumption, power purchase agreements (PPA), and equity investments. We will actively participate in an increase in renewable energy use. A method HKT is looking at as a priority is the installation of a PV system and purchase of a Renewable Energy Certificate (REC). The PV system is considered to be installed in worksites or warehouse roofs and used for part of office or plant electricity. However, since it is difficult to cover all power currently used in worksites with PV energy due to the characteristics of the process, purchase of REC is also being considered.

List the actions which contributed most to achieving this target
<Not Applicable>

C4.2b

(C4.2b) Provide details of any other climate-related targets, including methane reduction targets.

Target reference number
Oth 1

Year target was set
2019

Target coverage
Product level

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify	Other, please specify (Eco- friendly product porduction)

Target denominator (intensity targets only)
<Not Applicable>

Base year
2018

Figure or percentage in base year
35.79

Target year
2030

Figure or percentage in target year
80

Figure or percentage in reporting year
53

% of target achieved relative to base year [auto-calculated]
38.9278443790998

Target status in reporting year
Underway

Is this target part of an emissions target?
Yes. This target is related to scope3 emissions.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
HKT defines environmentally friendly products as tires that not only satisfy safety performances with considerations of their basic roles and characteristics, but also environmental impact reduction performances such as climate change, waste and noise. The ratio of products manufactured in 2021 that satisfy these requirements was approximately 53%, and this figure is officially announced in the ESG report.

Plan for achieving target, and progress made to the end of the reporting year
As part of the environmentally friendly tire technology development process, data such as air pressure, sudden acceleration/deceleration and idling were collected and analyzed using sensors attached on tires to contribute to developing technologies capable of reducing fuel consumption and increasing service life. Tires attached with sensors were installed on a bus, and various tests were conducted for a year for verification. Also, HKT is making various efforts to promote resource circulation, which minimizes resource consumption and waste generation, and reuses resources already used. The company developed a hybrid PE-film which expanded the ratio of recycled materials in polyethylene films used in tire production, and it is currently in use at Daejeon plant and Geumsan plant, and the company plans to expand its application globally.

List the actions which contributed most to achieving this target
<Not Applicable>

Target reference number
Oth 2

Year target was set
2021

Target coverage
Company-wide

Target type: absolute or intensity
Absolute

Target type: category & Metric (target numerator if reporting an intensity target)

Other, please specify	Other, please specify (Use of sustainable material)

Target denominator (intensity targets only)
<Not Applicable>

Base year
2019

Figure or percentage in base year
26

Target year
2030

Figure or percentage in target year
40

Figure or percentage in reporting year
29.3

% of target achieved relative to base year [auto-calculated]
23.5714285714286

Target status in reporting year
Underway

Is this target part of an emissions target?
Yes. This target is related to scope3 emissions.

Is this target part of an overarching initiative?
No, it's not part of an overarching initiative

Please explain target coverage and identify any exclusions
HKT defines sustainable materials as "renewable material," "recycled material," and "sustainable supply chain (suppliers with supplier ESG assessment grade A)." The ratio of materials that satisfy the sustainable material criteria among purchased materials in terms of weight is approximately 29%, and this figure is officially announced in the ESG report.

Plan for achieving target, and progress made to the end of the reporting year
HKT is making various efforts to prevent the depletion of natural resources and reduce carbon emissions during material acquisition processes. In particular, in 2021, the Geumsan plant became the first tire manufacturing facility to acquire the ISCC PLUS international environmentally friendly certification in recognition of its endeavors to replace petroleum-based materials with natural, bio materials. Furthermore, the company is continuing to conduct research to develop recyclable or renewable materials, but it is also making efforts to discover bio materials in collaboration with suppliers.

List the actions which contributed most to achieving this target
<Not Applicable>

C4.2c

(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
2050

Is this a science-based target?
Yes, we consider this a science-based target, and we have committed to seek validation of this target by the Science Based Targets initiative in the next 2 years

Please explain target coverage and identify any exclusions
Net-zero target include boundaries considered in scope 1, 2, 3 absolute reduction target. Scope 1 and 2 include 8 worksite of Hankook Tire, and Scope 3 selected 9 categories as the management scope.

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

Planned milestones and/or near-term investments for neutralization at target year
<Not Applicable>

Planned actions to mitigate emissions beyond your value chain (optional)
The activities focused on implementing in the short-term are activities to reduce scope 1 and 2 emissions by worksite. In 2022, about 80 ideas were proposed to save energy, of which more than 50% are being carried out according to the implementation plan. The total investment expected for 80 items is about 9.84 billion won, and the savings are estimated to be about 7.1 billion won. In the long run, we are considering investing in facilities to resource waste tires. Energy and raw materials recovered from waste tire resource facility are highly correlated with scope3 and scope1 emissions reduction and are currently in the planning review stage for decision making.

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	5	3543
To be implemented*	29	7911
Implementation commenced*	46	22243
Implemented*	34	54487
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	Machine/equipment replacement

Estimated annual CO2e savings (metric tonnes CO2e)
12165

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
3057820471

Investment required (unit currency – as specified in C0.4)
796545120

Payback period
<1 year

Estimated lifetime of the initiative
6-10 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Process optimization

Estimated annual CO2e savings (metric tonnes CO2e)
1001

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
305179674

Investment required (unit currency – as specified in C0.4)
190000000

Payback period
1-3 years

Estimated lifetime of the initiative
3-5 years

Comment

Initiative category & Initiative type

Low-carbon energy generation	Solar PV

Estimated annual CO2e savings (metric tonnes CO2e)
5218

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 2 (location-based)
Scope 2 (market-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
64226946

Investment required (unit currency – as specified in C0.4)
0

Payback period
No payback

Estimated lifetime of the initiative
6-10 years

Comment
The energy savings amount was calculated as the reduction of purchased power use as much as power used through solar energy generation. However, the energy savings amount with the purchase of a REC certificate instead of direct use of renewable energy was not included. Since the PV system was installed before the report year, the investment amount of the report year was input as 0.

Initiative category & Initiative type

Energy efficiency in production processes	Smart control system

Estimated annual CO2e savings (metric tonnes CO2e)
10051

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
1716109195

Investment required (unit currency – as specified in C0.4)
299367000

Payback period
<1 year

Estimated lifetime of the initiative
3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Waste heat recovery

Estimated annual CO2e savings (metric tonnes CO2e)
358

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
130000000

Investment required (unit currency – as specified in C0.4)
42000000

Payback period
1-3 years

Estimated lifetime of the initiative
3-5 years

Comment

Initiative category & Initiative type

Energy efficiency in production processes	Other, please specify (Maintenance)

Estimated annual CO2e savings (metric tonnes CO2e)
25694

Scope(s) or Scope 3 category(ies) where emissions savings occur
Scope 1
Scope 2 (location-based)

Voluntary/Mandatory
Voluntary

Annual monetary savings (unit currency – as specified in C0.4)
2776250170

Investment required (unit currency – as specified in C0.4)
125638412

Payback period
1-3 years

Estimated lifetime of the initiative
3-5 years

Comment

C4.3c

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

Method	Comment
Dedicated budget for energy efficiency	We are using part of the dedicated budget for energy reduction activities at our production sites, including process optimization, waste heat recovery, and introduction of high-efficiency facilities, etc.The budget classified as the corresponding item has a structure that is difficult to change after it is allocated, and is settled to be connected to related investment.
Dedicated budget for low-carbon product R&D	We are using part of the dedicated R&D budget for developing low-carbon products, including high-efficient tires with lower rolling resistance.
Compliance with regulatory requirements/standards	We established relevant targets to comply with climate change regulations, including emissions trading scheme to drive investments in emissions reduction activities.
Internal price on carbon	To reflect cost saving effects caused by GHG emission reductions during investment reviews, we calculate the internal carbon price every quarter and inform related departments of it.
Marginal abatement cost curve	We calculate a marginal abatement cost curve (MACC) and use it as a decision-making tool for the selection of a reasonable GHG reduction plan between “direct investment” and “purchase of allowance units.”

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

Group of products or services

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

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

Type of product(s) or service(s)

Road	Other, please specify (Tire)

Description of product(s) or service(s)

Considering the role and characteristics of tires,we defined products that have environmental impact reduction effects such as climate change, waste, and noise as eco-friendly products.For example, energy efficiency products (certification), wear performance improvement products, noise reduction products, products with eco-friendly new technologies, and recyclable products (renewable tires).

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 (LCA data for tire was used. Internal definition of eco-friendly product.)

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

Use stage

Functional unit used

One tire product with a mileage of 42,000 km fitted and used in a passenger car

Reference product/service or baseline scenario used

For passenger car tires, the average carbon footprints per tire in Europe were the baseline, while for truck tires, reduction was calculated based on the average carbon footprints of the products that are sold by HKT.

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

3421117

Explain your calculation of avoided emissions, including any assumptions

The reduction amount was calculated by multiplying the carbon footprint difference value of eco-friendly products compared to the baseline by the sales performance of eco-friendly products. GHG emission reduction = (Baseline carbon footprints - carbon footprints of eco-friendly products)* production quantity of eco-friendly products

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

45.03

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?

No

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

<Not Applicable>

Details of structural change(s), including completion dates

<Not Applicable>

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	No	<Not Applicable>

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)

264163

Comment

Scope 2 (location-based)

Base year start

January 1 2019

Base year end

December 31 2019

Base year emissions (metric tons CO2e)

955747

Comment

Scope 2 (market-based)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 1: Purchased goods and services

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
2617141

Comment

Scope 3 category 2: Capital goods

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
107186

Comment

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

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
453258

Comment

Scope 3 category 4: Upstream transportation and distribution

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
149956

Comment

Scope 3 category 5: Waste generated in operations

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
10916

Comment

Scope 3 category 6: Business travel

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 7: Employee commuting

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 8: Upstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 9: Downstream transportation and distribution

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
286996

Comment

Scope 3 category 10: Processing of sold products

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 11: Use of sold products

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
28328524

Comment

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

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
33551

Comment

Scope 3 category 13: Downstream leased assets

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 14: Franchises

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3 category 15: Investments

Base year start
January 1 2019

Base year end
December 31 2019

Base year emissions (metric tons CO2e)
62818

Comment

Scope 3: Other (upstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

Scope 3: Other (downstream)

Base year start

Base year end

Base year emissions (metric tons CO2e)

Comment

C5.3

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

American Petroleum Institute Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry, 2009
IPCC Guidelines for National Greenhouse Gas Inventories, 2006
ISO 14064-1
Korea GHG and Energy Target Management System Operating Guidelines
The Greenhouse Gas Protocol: A Corporate Accounting and Reporting Standard (Revised Edition)
Other, please specify (IEA (International Energy Agency) CO2 Emissions from Fuel Combustion Highlights)

C6. Emissions data

C6.1

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

Reporting year

Gross global Scope 1 emissions (metric tons CO2e)
240785

Start date
<Not Applicable>

End date
<Not Applicable>

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 are reporting a Scope 2, market-based figure

Comment
Hankook Tire & Technology 2021/22 ESG Report accounts the Scope 2 emissions following both the location-based methods and market based methods (two different figures).

C6.3

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

Reporting year

Scope 2, location-based
867891

Scope 2, market-based (if applicable)
863370

Start date
<Not Applicable>

End date
<Not Applicable>

Comment
Greenhouse gas emission calculation method is basically followed by IPCC Guidelines for National Greenhouse Greenhouse Greenhouse Inventories (2006). SCOPE2 Located based Calculation: (i) Country power discharge coefficient published in IEA Report (2018 Edit), (ii) EGRID (USA, 2020) SCOPE2 Market based Calculation: (i) Renewable Energy Purchase Information, (ii) Residual Mix Factor (EU), (iii) Emission Faction Used in the Context of Location-Based

C6.4

(C6.4) Are there any sources (e.g. facilities, specific GHGs, activities, geographies, etc.) of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure?
No

C6.5

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

Purchased goods and services

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
2617141

Emissions calculation methodology
Hybrid method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
10.6

Please explain
Greenhouse gas emissions from tire raw material purchases were included. Some emission factors were used by receiving data from the supplier, and the Ecoinvent's emission factor was applied if there was no data.

Capital goods

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
107186

Emissions calculation methodology
Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

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

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
317397

Emissions calculation methodology
Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

Upstream transportation and distribution

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
222136

Emissions calculation methodology
Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

Waste generated in operations

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
6680

Emissions calculation methodology
Other, please specify (Life cycle assessment data used(Waste intensity))

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

Business travel

Evaluation status
Not relevant, calculated

Emissions in reporting year (metric tons CO2e)
1370

Emissions calculation methodology
Average spend-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain
Emissions have been calculated, but as a result of the review during the screening stage, the effect on emissions is not significant, so it is excluded from scope 3 management.

Employee commuting

Evaluation status
Not relevant, calculated

Emissions in reporting year (metric tons CO2e)
20400

Emissions calculation methodology
Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain
Emissions have been calculated, but as a result of the review during the screening stage, the effect on emissions is not significant, so it is excluded from scope 3 management.

Upstream leased assets

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
Under the control approach, greenhouse gas emissions in this category are calculated including scope 1 and 2.

Downstream transportation and distribution

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
370540

Emissions calculation methodology
Distance-based method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

Processing of sold products

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
Not calculated because this category are not related to tire products

Use of sold products

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
27320917

Emissions calculation methodology
Average product method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain

End of life treatment of sold products

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
1389926

Emissions calculation methodology
Other, please specify (Life cycle assessment data used(Waste intensity))

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain
While GHG is emitted in the process of disposal and transportation of end-of-life tires(ELT), end of life tires contribute to the reduction of GHG emissions by offsetting the GHG emitted from existing industries by material or energy recovery. Metric tons CO2e value is a negative value as emissions reduction.

Downstream leased assets

Evaluation status
Not relevant, calculated

Emissions in reporting year (metric tons CO2e)
17484

Emissions calculation methodology
Asset-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain
Emissions have been calculated, but as a result of the review during the screening stage, the effect on emissions is not significant, so it is excluded from scope 3 management.

Franchises

Evaluation status
Not relevant, calculated

Emissions in reporting year (metric tons CO2e)
14980

Emissions calculation methodology
Average data method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
0

Please explain
Emissions have been calculated, but as a result of the review during the screening stage, the effect on emissions is not significant, so it is excluded from scope 3 management.

Investments

Evaluation status
Relevant, calculated

Emissions in reporting year (metric tons CO2e)
52038

Emissions calculation methodology
Investment-specific method

Percentage of emissions calculated using data obtained from suppliers or value chain partners
100

Please explain
It was calculated in consideration of the stake in Hankook Tire in scope 1, 2 emissions of the invested companies.

Other (upstream)

Evaluation status

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

Other (downstream)

Evaluation status

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

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
1.55e-7

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
1104155

Metric denominator
unit total revenue

Metric denominator: Unit total
7141136827775

Scope 2 figure used
Market-based

% change from previous year
12

Direction of change
Decreased

Reason for change
Overall sales in 2021 increased by approximately 11% compared to the previous year, but this was the contribution of investment profits rather than tire sales. In fact, tire production declined by approximately 0.9% compared to 2020, and greenhouse gas emissions decreased by approximately 2.8% due to a decrease in production and operating days, and energy reduction activities.

Intensity figure
0.995

Metric numerator (Gross global combined Scope 1 and 2 emissions, metric tons CO2e)
1104155

Metric denominator
metric ton of product

Metric denominator: Unit total
1109710

Scope 2 figure used
Market-based

% change from previous year
1.99

Direction of change
Decreased

Reason for change
Tire production fell by approximately 0.9% compared to the previous year, but greenhouse gas emissions decreased by approximately 2.8%. While tire production declined due to COVID-19 and the global chip shortage, the increased awareness and will to implement carbon reduction activities led to greenhouse gas emission reductions.

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	240518	IPCC Fifth Assessment Report (AR5 – 100 year)
CH4	92	IPCC Fifth Assessment Report (AR5 – 100 year)
N2O	175	IPCC Fifth Assessment Report (AR5 – 100 year)

C7.2

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Republic of Korea	113449
China	25392
Hungary	48269
Indonesia	33905
United States of America	19770

C7.3

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

By business division
By facility
By activity

C7.3a

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

Business division	Scope 1 emissions (metric ton CO2e)
Tire	240785

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
Daejeon Plant (DP)	42026	36.451659	127.413184
Geumsan Plant (KP)	71424	36.116229	127.528231
Jiaxing Plant (JP)	1445	30.793572	120.757012
Jiangsu Plant (HP)	857	33.572286	118.987914
Chongqing Plant (CP)	23090	29.638753	106.752593
Hungary Plant (MP)	48269	46.999763	18.928521
Indonesia Plant (IP)	33905	-6.361529	107.161464
Tennessee Plant (TP)	19770	36.563465	-87.247213

C7.3c

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

Activity	Scope 1 emissions (metric tons CO2e)
Stationary combustion	237754
Mobile combustion	2691
Production of rCB (Recovered Carbon Black)	0
Gaseous waste incineration (facility to prevent air pollution)	340

C7.5

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

Country/Region	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Republic of Korea	307892	307892
China	377573	377573
Hungary	53548	49027
Indonesia	99061	99061
United States of America	29817	29817

C7.6

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

By business division
By facility
By activity

C7.6a

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

Business division	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Tire	867891	863370

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)
Daejeon Plant (DP)	144508	144508
Geumsan Plant (KP)	163384	163384
Jiaxing Plant (JP)	156690	156690
Jiangsu Plant (HP)	152121	152121
Chongqing Plant (CP)	68762	68762
Hungary Plant (MP)	53548	49028
Indonesia Plant (IP)	99061	99061
Tennessee Plant (TP)	29817	29817

C7.6c

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

Activity	Scope 2, location-based (metric tons CO2e)	Scope 2, market-based (metric tons CO2e)
Purchased electricity	757604	753083
Purchased steam	110287	110287

C7.9

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

Decreased

C7.9a

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

	Change in emissions (metric tons CO2e)	Direction of change	Emissions value (percentage)	Please explain calculation
Change in renewable energy consumption	5567	Decreased	0.49	As a result of photovoltaic self-consumption and renewable energy purchasing activities, an emissions decrease of approximately 5,567 tCO2eq was achieved in 2021. (i) Emissions in 2020: 1,136,878 tCO2-eq/yr (ii) Emissions reduction in 2021 of this activity : 5567 tCO2-eq/yr (iii) The percentage of change: -5567/1,136,878 x 100 = -0.49%
Other emissions reduction activities	48920	Decreased	4.3	We reduced GHG emissions by 4.3% through emissions reduction activities such as use external low-carbon steam, the introducing high-efficiency facilities, recycling energy, preventing energy leakage and promoting operational efficiency, etc. (i) Emissions in 2020: 1,136,878 tCO2-eq/yr (ii) Emissions reduction in 2021 of this activity : 48920 tCO2-eq/yr (iii) The percentage of change: -48920/1,136,878 x 100 = -4.30%
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?

Market-based

C8. Energy

C8.1

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

More than 15% but less than or equal to 20%

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)	LHV (lower heating value)	0	1250420	1250420
Consumption of purchased or acquired electricity	<Not Applicable>	17639	1478341	1495980
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	0	593586	593586
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	655	<Not Applicable>	655
Total energy consumption	<Not Applicable>	18294	3322347	3340641

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	No
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
Please select

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

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
Please select

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

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
Please select

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

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

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

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
LHV

Total fuel MWh consumed by the organization
10738

MWh fuel consumed for self-generation of electricity
541.3

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

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
LHV

Total fuel MWh consumed by the organization
1239682

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam
1195378

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

Total fuel MWh consumed by the organization

MWh fuel consumed for self-generation of electricity

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam

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
LHV

Total fuel MWh consumed by the organization
1250420

MWh fuel consumed for self-generation of electricity
541.3

MWh fuel consumed for self-generation of heat

MWh fuel consumed for self-generation of steam
1195378

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	1196.3	1196.3	655	655
Heat				
Steam	1195378	1195378	0	0
Cooling				

C8.2e

(C8.2e) Provide details on the electricity, heat, steam, and/or cooling amounts that were accounted for at a zero or near-zero emission factor in the market-based Scope 2 figure reported in C6.3.

Sourcing method
Default delivered electricity from the grid (e.g. standard product offering by an energy supplier), supported by energy attribute certificates

Energy carrier
Electricity

Low-carbon technology type
Renewable energy mix, please specify

Country/area of low-carbon energy consumption
Hungary

Tracking instrument used
Contract

Low-carbon energy consumed via selected sourcing method in the reporting year (MWh)
17639

Country/area of origin (generation) of the low-carbon energy or energy attribute
Hungary

Commissioning year of the energy generation facility (e.g. date of first commercial operation or repowering)

Comment
Hungary plant purchased about 17,638 mwh of renewable energy according to the government's obligation to purchase renewable energy and the amount.

C8.2g

(C8.2g) Provide a breakdown of your non-fuel energy consumption by country.

Country/area
Republic of Korea

Consumption of electricity (MWh)
625694

Consumption of heat, steam, and cooling (MWh)
183912

Total non-fuel energy consumption (MWh) [Auto-calculated]
809606

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
China

Consumption of electricity (MWh)
459770

Consumption of heat, steam, and cooling (MWh)
409674

Total non-fuel energy consumption (MWh) [Auto-calculated]
869444

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Indonesia

Consumption of electricity (MWh)
135867

Consumption of heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]
135867

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
United States of America

Consumption of electricity (MWh)
78797

Consumption of heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]
78797

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

Country/area
Hungary

Consumption of electricity (MWh)
196507

Consumption of heat, steam, and cooling (MWh)
0

Total non-fuel energy consumption (MWh) [Auto-calculated]
196507

Is this consumption excluded from your RE100 commitment?
<Not Applicable>

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	No third-party verification or assurance

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
Hankook Tire & Technology ESG Report 2021-22_Eng_CDP ver.pdf
Hankook Tire Verification Opinion Ver.2.5_Kor.docx

Page/ section reference
English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html (i) Emissions data: p.53 (ii) About reporting boundaries: p.7(Can check it in the ESG report when it is uploaded through the link.) (iii) Independent assurance statement: p.64 (Currently, the Korean version of the verification opinion is available. English version can be found on the relevant page when uploading the esg report.)

Relevant standard
DNV VeriSustain Protocol/ Verification Protocol for Sustainability Reporting

Proportion of reported emissions verified (%)
53

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
Third Partys Verification Statement(HANKOOK TIRE).pdf

Page/ section reference
Daejeon Plant & Geumsan Plant (Korea plants)

Relevant standard
Korean GHG and energy target management system

Proportion of reported emissions verified (%)
47

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
Hankook Tire & Technology ESG Report 2021-22_Eng_CDP ver.pdf
Hankook Tire Verification Opinion Ver.2.5_Kor.docx

Page/ section reference
English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html (i) Emissions data: p.58 (Location based scope2, Can check it in the ESG report when it is uploaded through the link.) (ii) Independent assurance statement: p.64 (Currently, the Korean version of the verification opinion is available. English version can be found on the relevant page when uploading the esg report.)

Relevant standard
DNV VeriSustain Protocol/ Verification Protocol for Sustainability Reporting

Proportion of reported emissions verified (%)
64

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
Third Partys Verification Statement(HANKOOK TIRE).pdf

Page/ section reference
Daejeon Plant & Geumsan Plant (Korea plants)

Relevant standard
Korean GHG and energy target management system

Proportion of reported emissions verified (%)
36

Scope 2 approach
Scope 2 market-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
Hankook Tire & Technology ESG Report 2021-22_Eng_CDP ver.pdf
Hankook Tire Verification Opinion Ver.2.5_Kor.docx

Page/ section reference
English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html (i) Emissions data: p.53 (Market based scope2) (ii) Independent assurance statement: p.64 (Currently, the Korean version of the verification opinion is available. English version can be found on the relevant page when uploading the esg report.)

Relevant standard
Please select

Proportion of reported emissions verified (%)

C10.2

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

C10.2a

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

Disclosure module verification relates to	Data verified	Verification standard	Please explain
C4. Targets and performance	Emissions reduction activities	DNV VeriSustain Protocol/ Verification Protocol for Sustainability Reporting	English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html (i) Emission reduction activities & performance : p.30-31 , p.34, p.35, p.53
C5. Emissions performance	Year on year change in emissions (Scope 1 and 2)	DNV VeriSustain Protocol/ Verification Protocol for Sustainability Reporting	English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html (i) Emissions data: p.53 (Market based scope2) (ii) Emissions data: p.58 (Location based scope2)
C8. Energy	Energy consumption	DNV VeriSustain Protocol/ Verification Protocol for Sustainability Reporting	English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html (i) Energy data: p.52

Hankook Tire & Technology ESG Report 2021-22_Eng_CDP ver.pdf
Hankook Tire Verification Opinion Ver.2.5_Kor.docx

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.

EU ETS
Korea ETS

C11.1b

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

EU ETS

% of Scope 1 emissions covered by the ETS
100

% of Scope 2 emissions covered by the ETS
0

Period start date
January 1 2021

Period end date
December 31 2021

Allowances allocated
9199

Allowances purchased
31134

Verified Scope 1 emissions in metric tons CO2e
43713

Verified Scope 2 emissions in metric tons CO2e
0

Details of ownership
Facilities we own and operate

Comment

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 2021

Period end date
December 31 2021

Allowances allocated
467218

Allowances purchased
0

Verified Scope 1 emissions in metric tons CO2e
116734

Verified Scope 2 emissions in metric tons CO2e
320258

Details of ownership
Facilities we own and operate

Comment

C11.1d

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

HKT engages in various activities to comply with the Emission Trading System. It develops energy reduction plans for domestic/overseas plants and implements related activities every year. During profitability review sessions, the company reviews not only reduced energy costs but also reduced greenhouse gas emissions and carbon emission credits costs before making decisions.

Furthermore, it makes projections of the greenhouse gas emissions based on a consideration of the production plan for the upcoming year, and it monitors and reviews the projections twice a year to make adjustments to its purchasing and selling strategy.

When it purchases and sells emission credits, the company uses a carbon price range defined internally. The company also broadens its assessments of the overall tire product lifecycle, and it continues to make efforts to manage carbon internally by establishing science-based greenhouse gas reduction objectives.

C11.2

(C11.2) Has your organization originated or purchased any project-based carbon credits within the reporting period?
No

C11.3

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

Yes

C11.3a

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

Objective for implementing an internal carbon price

Navigate GHG regulations
Stakeholder expectations
Change internal behavior
Drive energy efficiency
Drive low-carbon investment
Stress test investments
Identify and seize low-carbon opportunities

GHG Scope

Scope 1
Scope 2

Application

The internal carbon price is being used in the process of investment decisions for facilities or businesses in Korea.

Actual price(s) used (Currency /metric ton)

26741

Variance of price(s) used

The internal carbon price is calculated from KAU (Korean Allowance Unit) trading price data for the latest 12 months, and the evolutionary pricing approach of updating price every quarter is used for it.

Type of internal carbon price

Shadow price
Implicit price

Impact & implication

As K-ETS(Korea Emissions Trading Scheme) has been enforced in Korea since 2015, it is needed to reflect cost reduction effects according to GHG emissions reduction for the exact investment decision making of regulated worksites including Daejeon Plant and Geumsan Plant. As such, Hankook Tire & Technology updates and notifies the internal carbon price every quarter, and has used it for review of investment for worksites in Korea since 2016. The internal carbon price in 2020 was KRW 29,026 per tCO2-eq.

C12. Engagement

C12.1

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

Yes, our suppliers
Yes, our customers/clients

C12.1a

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

Type of engagement
Engagement & incentivization (changing supplier behavior)

Details of engagement
Climate change performance is featured in supplier awards scheme

% of suppliers by number
100

% total procurement spend (direct and indirect)
100

% of supplier-related Scope 3 emissions as reported in C6.5
9

Rationale for the coverage of your engagement
We conduct ESG assessments of suppliers to improve the ESG management capabilities of suppliers. ESG assessments consists of various related indices including GHG and energy management, and the ESG assessment results are reflected in annual supplier comprehensive assessments and the supplier excellence award.

Impact of engagement, including measures of success
Supplier ESG assessment results are divided into three grades: G (Green), Y (Yellow), R (Red), and 0 (no response) according to scores for ESG management, and the purchasing department monitors variations in status every year. The audit consists of seven categories - operation of ESG management system, human rights & labor, ethics management, corporate philanthropy, safety & health, environment and climate change management, and ESG management of suppliers. Audit results are offered to suppliers for corrective action plans (CAPs), which will help suppliers' improve their own sustainability and mutual growth with Hankook Tire & Technology. Going forward, we will recommend suppliers that receive audits to establish and implement corrective action plans.

Comment

Type of engagement
Information collection (understanding supplier behavior)

Details of engagement
Collect climate change and carbon information at least annually from suppliers

% of suppliers by number
1.43

% total procurement spend (direct and indirect)
15

% of supplier-related Scope 3 emissions as reported in C6.5
9

Rationale for the coverage of your engagement
Companies with a high purchase ratio of major materials are prioritized and mandated to submit greenhouse gas emissions-related information regarding the material supplied to HKT. The percentage of participating companies based on the total material purchase cost is estimated to be approximately 15%.

Impact of engagement, including measures of success
To manage its carbon footprint and greenhouse gas emissions during the material acquisition stage, HKT mandates major suppliers to submit greenhouse gas emissions-related information on the material supplied. Receiving supplier information can improve the credibility of HKT's carbon footprint compared to using a commercial database, and by sharing such information with external stakeholders, the company is able to respond to external demands.

Comment

C12.1b

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

Type of engagement & Details of engagement

Education/information sharing	Run an engagement campaign to education customers about your climate change performance and strategy

% of customers by number
100

% of customer - related Scope 3 emissions as reported in C6.5
92

Please explain the rationale for selecting this group of customers and scope of engagement
To raise our customers' awareness of climate change and GHG emissions reduction, Hankook Tire & Technology has engaged with all potential customers who purchase our tire products.

Impact of engagement, including measures of success
We provide online purchasing guidelines to allow customers to evaluate energy consumption efficiency of Hankook Tire & Technology products before purchasing. Through its tire energy consumption grading system, customers can understand fuel saving and GHG emissions reduction effects by comparing tire labels (https://www.hankooktire.com/kr/ko/help-support/warranty/labeling.html) Hankook Tire & Technology has been constantly monitoring the sales of lowcarbon products such as LRR(Low Rolling Resistance) tires to measure the performance of this engagement activity. The sales of Hankook's low-carbon products in 2021 is 52.95 %(revenue based).

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

Direct or indirect engagement that could influence policy, law, or regulation that may impact the climate

Yes, we engage directly with policy makers

Yes, we engage indirectly through trade associations

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)

This is a commit letter submitted to SBTi. It contains a willingnesst to set a net zero goal, and it is revealed on the SBT website that Hankook Tire will set a reduction goal and be verified under the Paris Agreement.

SBT-Commitment-Letter_Hankook Tire_resend.pdf

Describe the process(es) your organization has in place to ensure that your engagement activities are consistent with your overall climate change strategy

1. Hankook Tire & Technology has continuously been participating in public hearings related to climate change, including on the GHG Emission Trading Scheme, and presenting its opinions directly to government management agencies whenever there is a prior announcement of the enactment or amendment of related laws or guidelines. 2. Hankook Tire & Technology is a member of KBCSD (Korea Business Council for Sustainable Development). If there are issues related to Korea's environmental policy, including K-ETS, we submit comments to the Ministry of Environment through KBCSD. Also, we are engaged in the establishment of national environmental policies by discussing the suggested opinions with higher level government officers including Vice Minister of Environment through the Environment Policy Council meeting held twice a year and the Operation Committee held every month.

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?

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

Emissions trading schemes

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

In Korea, The Emission Trading System has been adopted and operated as a greenhouse gas regulation since 2015. Hankook Tire is participating as a mandatory company and reports energy usage and greenhouse gas emissions to all corporations owned by Hankook Tire, including Daejeon plant and Geumsan plant. Currently, we are carrying out the 3rd phase ('21-25) and receive a free allocation of 90%.

Policy, law, or regulation geographic coverage

National

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

Republic of Korea

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

Neutral

Description of engagement with policy makers

The Emission Trading System of Korea establishes and allocates related standards and factors to grant free allocations to industries with a high risk of carbon leakage. Industries that are not eligible for free allocation 100% can attend auctions and buy allowance credit. HKT once submitted a statement on the calculation process for the purpose of fair assessment. The statement claimed that the data calculation ranges of denominator and numerator were not identical, and the statement was submitted to ensure that all industries rather than individual industries would receive fair assessments. In addition, HKT is reviewing heat and resource recovery through end-of-life tire pyrolysis activities to be registered as a GHG reduction project. There is currently no specific calculation method registered among related methodology in Korea, and only waste plastic is eligible. HKT is considering tire pyrolysis as a means of reducing greenhouse gas emissions in the future, so we are endeavoring to ensure that the process receives institutional recognition.

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 is aligned with the goals of the Paris Agreement?

Yes, we have evaluated, and it is aligned

C12.3b

(C12.3b) Provide details of the trade associations your organization 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 (The Korea Tire Manufacturers Association (KOTMA))

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

Has your organization influenced, or is your organization attempting to influence their position?
We publicly promote their current position

State the trade association's position on climate change, explain where your organization's position differs, and how you are attempting to influence their position (if applicable)
The Korea Tire Manufacturers Association (KOTMA) supports the Korean government's regulatory measures on climate change, but it is responsible for reviewing flaws in laws, enforcement ordinances and guidelines to prevent the tire industry from being at a disadvantage. Equations and standards for selecting industries eligible for free allocation in the Emission Trading System have also been discussed with tire manufacturers to propose a revision to the Ministry of Environment, and the association is endeavoring in resolving related matters by forming a consultative body to ensure fair assessments in the future.

Funding figure your organization provided to this trade association in the reporting year, if applicable (currency as selected in C0.4) (optional)
2509730448

Describe the aim of your organization's funding
Support association operating costs

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

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
Underway – previous year attached

Attach the document
Annual Financial report_2022.05.16.pdf

Page/Section reference
(i) Emissions figures (p.221) (ii) Energy consumption figures (p.221) (iii) Emissions reduced figures (p.222) However, this is a report published prior to the verification of the ESG report, and the greenhouse gas reduction performance has changed. (Annual report : 23,853 tCO2, ESG report : 54,487tCO2) The revised figures will be uploaded to the Korea Electronic Disclosure System (DART:https://dart.fss.or.kr/dsab007/main.do)) on August 16.

Content elements
Emissions figures
Other metrics

Comment

Publication
In voluntary sustainability report

Status
Underway – previous year attached

Attach the document
Hankook Tire & Technology ESG Report 2021-22_Eng_CDP ver.pdf
Hankook Tire & Technology ESG Report 2020-21_Eng_Full ver.pdf

Page/Section reference
ESG Report 20/21: p.12, 14~15, 32~34, 59~60 ESG Report 21/22: p.4, 12~16, 29~39, 50~53, 58, 61~63 English version of ESG Report 21/22 will be uploaded on below link by August. https://www.hankooktire.com/global/sustainability/esg-report/esg-download.html

Content elements
Governance
Strategy
Risks & opportunities
Emissions figures
Emission targets

Comment

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 made public commitments only	Commitment to Net Positive Gain Commitment to No Net Loss Adoption of the mitigation hierarchy approach Commitment to not explore or develop in legally designated protected areas Commitment to respect legally designated protected areas Commitment to avoidance of negative impacts on threatened and protected species Commitment to no conversion of High Conservation Value areas Commitment to no trade of CITES listed species	<Not Applicable>

C15.3

(C15.3) Does your organization assess the impact of its value chain on biodiversity?

	Does your organization assess the impact of its value chain on biodiversity?	Portfolio
Row 1	Yes, we assess impacts on biodiversity in both our upstream and downstream value chain	<Not Applicable>

C15.4

(C15.4) 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	Law & policy

C15.5

(C15.5) 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	Other, please specify (Internal indicator(Life Cycle assessment))

C15.6

(C15.6) 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
Other, please specify (Hankook Titre & Technology Hompage)	Content of biodiversity-related policies or commitments	We will post a biodiversity policy on our website in August (https://www.hankooktire.com/global/ko/home.html)

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	Vice President of HR Division & Sustainability	Other C-Suite Officer

SC. Supply chain module

SC0.0

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

-

SC0.1

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

	Annual Revenue
Row 1	6883268577435

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
BMW AG

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
2320

Uncertainty (±%)
5

Major sources of emissions
Fossil fuel(Boilers, air pollution prevention facilities(CRCO, CFRTO))

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
11071780

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
BMW AG

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail

<Not Applicable>

Emissions in metric tonnes of CO2e
8319

Uncertainty (±%)
5

Major sources of emissions
Purchased electricity, purchased steam

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
11071780

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Daimler Truck AG

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
54

Uncertainty (±%)
5

Major sources of emissions
Fossil fuel(Boilers, air pollution prevention facilities(CRCO, CFRTO))

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
257845

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Daimler Truck AG

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
194

Uncertainty (±%)
5

Major sources of emissions
Purchased electricity, purchased steam

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
257845

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Ford Motor Company

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
6040

Uncertainty (±%)
5

Major sources of emissions
Fossil fuel(Boilers, air pollution prevention facilities(CRCO, CFRTO))

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
28821068

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Ford Motor Company

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
21656

Uncertainty (±%)
5

Major sources of emissions
Purchased electricity, purchased steam

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
28821068

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
General Motors Company

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
2656

Uncertainty (±%)
5

Major sources of emissions
Fossil fuel(Boilers, air pollution prevention facilities(CRCO, CFRTO))

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
12675984

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
General Motors Company

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
9525

Uncertainty (±%)
5

Major sources of emissions
Purchased electricity, purchased steam

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
12675984

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Nissan Motor Co., Ltd.

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
2175

Uncertainty (±%)
5

Major sources of emissions
Fossil fuel(Boilers, air pollution prevention facilities(CRCO, CFRTO))

Verified

Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
10378232

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Nissan Motor Co., Ltd.

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
7798

Uncertainty (±%)
5

Major sources of emissions
Purchased electricity, purchased steam

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
10378232

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member
Renault Group

Scope of emissions
Scope 1

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
647

Uncertainty (±%)
5

Major sources of emissions
Fossil fuel(Boilers, air pollution prevention facilities(CRCO, CFRTO))

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
3087633

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

Requesting member

Renault Group

Scope of emissions
Scope 2

Allocation level
Company wide

Allocation level detail
<Not Applicable>

Emissions in metric tonnes of CO2e
2320

Uncertainty (±%)
5

Major sources of emissions
Purchased electricity, purchased steam

Verified
Yes

Allocation method
Allocation based on mass of products purchased

Market value or quantity of goods/services supplied to the requesting member
3087633

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

Please explain how you have identified the GHG source, including major limitations to this process and assumptions made
Based on the organizational and operational boundary defined in the Greenhouse Gas Protocol(WRI/WBCSD), we included all Scope 1 and Scope 2 GHG sources which directly and indirectly affect our tire manufacturing process.

SC1.2

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

Hankook Tire & Technology informed the information about our emissions to our customers according to the weight of sold products in the form of following documents.

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

- Korea GHG and Energy Target Management System Operating Guidelines

- ISO 14064-1

- IEA CO2 Emissions from Fuel Combustion Highlights

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
We face no challenges	

SC1.4

(SC1.4) Do you plan to develop your capabilities to allocate emissions to your customers in the future?
No

SC1.4b

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

We don’t have much difficulty in allocating our emissions as not only shipping destinations of our sold products are clearly predetermined but the weight of sold products to each client is tracked at the same time.

SC2.1

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

SC2.2

(SC2.2) Have requests or initiatives by CDP Supply Chain members prompted your organization to take organizational-level emissions reduction initiatives?
No

SC4.1

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

SC4.1a

(SC4.1a) Give the overall percentage of total emissions, for all Scopes, that are covered by these products.
15

SC4.2a

(SC4.2a) Complete the following table for the goods/services for which you want to provide data.

Name of good/ service
H426

Description of good/ service
PCR(Passenger Car Radial) Tire

Type of product
Final

SKU (Stock Keeping Unit)
EA (unit of tire product)

Total emissions in kg CO2e per unit
341

±% change from previous figure supplied

Date of previous figure supplied

Explanation of change

Methods used to estimate lifecycle emissions
ISO 14040 & 14044

Name of good/ service
K125

Description of good/ service
PCR(Passenger Car Radial) Tire

Type of product
Final

SKU (Stock Keeping Unit)
EA (unit of tire product)

Total emissions in kg CO2e per unit
677

±% change from previous figure supplied

Date of previous figure supplied

Explanation of change

Methods used to estimate lifecycle emissions
ISO 14040 & 14044

Name of good/ service
H436

Description of good/ service
PCR(Passenger Car Radial) Tire

Type of product
Final

SKU (Stock Keeping Unit)
EA (unit of tire product)

Total emissions in kg CO2e per unit
938

±% change from previous figure supplied

Date of previous figure supplied

Explanation of change

Methods used to estimate lifecycle emissions
ISO 14040 & 14044

Name of good/ service
RH12

Description of good/ service
PCR(Passenger Car Radial) Tire

Type of product
Final

SKU (Stock Keeping Unit)
EA (unit of tire product)

Total emissions in kg CO2e per unit
1624

±% change from previous figure supplied

Date of previous figure supplied

Explanation of change

Methods used to estimate lifecycle emissions
ISO 14040 & 14044

Name of good/ service
TH22

Description of good/ service
TBR(Truck Bus Radial) Tire

Type of product
Final

SKU (Stock Keeping Unit)
EA (unit of tire product)

Total emissions in kg CO2e per unit
3918

±% change from previous figure supplied

Date of previous figure supplied

Explanation of change

Methods used to estimate lifecycle emissions
ISO 14040 & 14044

Name of good/ service
K435

Description of good/ service
PCR(Passenger Car Radial) Tire

Type of product
Final

SKU (Stock Keeping Unit)
EA (unit of tire product)

Total emissions in kg CO2e per unit
475

±% change from previous figure supplied

Date of previous figure supplied

Explanation of change

Methods used to estimate lifecycle emissions
ISO 14040 & 14044

SC4.2b

(SC4.2b) Complete the following table with data for lifecycle stages of your goods and/or services.

Name of good/ service
H436

Please select the scope
Scope 3

Please select the lifecycle stage
Material acquisition

Emissions at the lifecycle stage in kg CO2e per unit
18.6

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H436

Please select the scope
Scope 3

Please select the lifecycle stage
Transportation

Emissions at the lifecycle stage in kg CO2e per unit
0.55

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H436

Please select the scope
Scope 1 & 2

Please select the lifecycle stage
Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
7.88

Is this stage under your ownership or control?
Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H436

Please select the scope
Scope 3

Please select the lifecycle stage
Distribution

Emissions at the lifecycle stage in kg CO2e per unit
1.72

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H436

Please select the scope
Scope 3

Please select the lifecycle stage
Consumer Use

Emissions at the lifecycle stage in kg CO2e per unit
925

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H436

Please select the scope
Scope 3

Please select the lifecycle stage
End of life/Final disposal

Emissions at the lifecycle stage in kg CO2e per unit
15.3

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality
The emissions data is negative value because GHG emissions are reduced in this stage.

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H426

Please select the scope
Scope 3

Please select the lifecycle stage
Material acquisition

Emissions at the lifecycle stage in kg CO2e per unit
14.1

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H426

Please select the scope
Scope 3

Please select the lifecycle stage
Transportation

Emissions at the lifecycle stage in kg CO2e per unit
0.64

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service

H426

Please select the scope
Scope 1 & 2

Please select the lifecycle stage
Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
9.12

Is this stage under your ownership or control?
Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H426

Please select the scope
Scope 3

Please select the lifecycle stage
Distribution

Emissions at the lifecycle stage in kg CO2e per unit
0.43

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H426

Please select the scope
Scope 3

Please select the lifecycle stage
Consumer Use

Emissions at the lifecycle stage in kg CO2e per unit
321.5

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
H426

Please select the scope
Scope 3

Please select the lifecycle stage
End of life/Final disposal

Emissions at the lifecycle stage in kg CO2e per unit
4.34

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality
The emissions data is negative value because GHG emissions are reduced in this stage.

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K125

Please select the scope
Scope 3

Please select the lifecycle stage
Material acquisition

Emissions at the lifecycle stage in kg CO2e per unit
33.1

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K125

Please select the scope
Scope 3

Please select the lifecycle stage
Transportation

Emissions at the lifecycle stage in kg CO2e per unit
0.72

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K125

Please select the scope
Scope 1 & 2

Please select the lifecycle stage
Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
13.09

Is this stage under your ownership or control?
Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K125

Please select the scope
Please select

Please select the lifecycle stage
Distribution

Emissions at the lifecycle stage in kg CO2e per unit
0.84

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K125

Please select the scope
Scope 3

Please select the lifecycle stage
Consumer Use

Emissions at the lifecycle stage in kg CO2e per unit
652

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K125

Please select the scope
Scope 3

Please select the lifecycle stage
End of life/Final disposal

Emissions at the lifecycle stage in kg CO2e per unit
23.41

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality
The emissions data is negative value because GHG emissions are reduced in this stage.

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
RH12

Please select the scope
Scope 3

Please select the lifecycle stage
Material acquisition

Emissions at the lifecycle stage in kg CO2e per unit
37.8

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
RH12

Please select the scope
Scope 3

Please select the lifecycle stage
Transportation

Emissions at the lifecycle stage in kg CO2e per unit
0.92

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
RH12

Please select the scope
Scope 1 & 2

Please select the lifecycle stage

Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
15.7

Is this stage under your ownership or control?
Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

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Name of good/ service
RH12

Please select the scope
Scope 3

Please select the lifecycle stage
Distribution

Emissions at the lifecycle stage in kg CO2e per unit
3.47

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
RH12

Please select the scope
Scope 3

Please select the lifecycle stage
Consumer Use

Emissions at the lifecycle stage in kg CO2e per unit
1590

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
RH12

Please select the scope
Scope 3

Please select the lifecycle stage
End of life/Final disposal

Emissions at the lifecycle stage in kg CO2e per unit
24.3

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality
The emissions data is negative value because GHG emissions are reduced in this stage.

If you are verifying/assuring this product emission data, please tell us how

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Name of good/ service
TH22

Please select the scope
Scope 3

Please select the lifecycle stage
Material acquisition

Emissions at the lifecycle stage in kg CO2e per unit
113

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
TH22

Please select the scope
Scope 3

Please select the lifecycle stage
Transportation

Emissions at the lifecycle stage in kg CO2e per unit
17.16

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
TH22

Please select the scope
Scope 1 & 2

Please select the lifecycle stage
Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
113.16

Is this stage under your ownership or control?
Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
TH22

Please select the scope
Scope 3

Please select the lifecycle stage
Distribution

Emissions at the lifecycle stage in kg CO2e per unit
19.25

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
TH22

Please select the scope
Scope 3

Please select the lifecycle stage
Consumer Use

Emissions at the lifecycle stage in kg CO2e per unit
3778

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

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Name of good/ service
TH22

Please select the scope
Scope 3

Please select the lifecycle stage
End of life/Final disposal

Emissions at the lifecycle stage in kg CO2e per unit
122.24

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality
The emissions data is negative value because GHG emissions are reduced in this stage.

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K435

Please select the scope
Scope 3

Please select the lifecycle stage
Material acquisition

Emissions at the lifecycle stage in kg CO2e per unit
23

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K435

Please select the scope
Scope 3

Please select the lifecycle stage
Transportation

Emissions at the lifecycle stage in kg CO2e per unit
0.58

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K435

Please select the scope
Scope 1 & 2

Please select the lifecycle stage
Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
9.67

Is this stage under your ownership or control?

Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

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Name of good/ service
K435

Please select the scope
Scope 1 & 2

Please select the lifecycle stage
Manufacturing

Emissions at the lifecycle stage in kg CO2e per unit
9.73

Is this stage under your ownership or control?
Yes

Type of data used
Primary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K435

Please select the scope
Scope 3

Please select the lifecycle stage
Distribution

Emissions at the lifecycle stage in kg CO2e per unit
0.68

Is this stage under your ownership or control?
No

Type of data used
Primary and secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

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Name of good/ service
K435

Please select the scope
Scope 3

Please select the lifecycle stage
Consumer Use

Emissions at the lifecycle stage in kg CO2e per unit
460

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality

If you are verifying/assuring this product emission data, please tell us how

---

Name of good/ service
K435

Please select the scope
Scope 3

Please select the lifecycle stage
End of life/Final disposal

Emissions at the lifecycle stage in kg CO2e per unit
19

Is this stage under your ownership or control?
No

Type of data used
Secondary

Data quality
The emissions data is negative value because GHG emissions are reduced in this stage.

If you are verifying/assuring this product emission data, please tell us how

SC4.2c

(SC4.2c) Please detail emissions reduction initiatives completed or planned for this product.

Name of good/ service	Initiative ID	Description of initiative	Completed or planned	Emission reductions in kg CO2e per unit

SC4.2d

(SC4.2d) Have any of the initiatives described in SC4.2c been driven by requesting CDP Supply Chain members?
No

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