

C0. Introduction

C0.1

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

Since it started to manufacture tires in 1960, Kumho Tire continued to explore new markets and is now producing world best tires in 8 factories in Korea and abroad. Kumho Tire has developed technologies and advanced its capabilities that can produce not only automobile tires but also specialized tires for racing and aircraft. As of 2021, Kumho Tire has 5,406 employees. Headquartered at Gwangju, Korea, Kumho Tire operates 8 plants, 9 overseas sales corporations, and 13 branch offices in more than 180 countries around the world. With the opening of a branch office in Warsaw, Poland in November 2021, Kumho Tire successfully established a bridgehead to expand local sales networks in the Eastern and Central Europe, and improved logistics systems by modernizing tire storage facilities. As of 2021, Kumho Tire recorded sales of KRW2.6012 trillion at home and abroad, 20% up from the previous year. Kumho Tire has established strategies to respond to climate change such as the 2045 net zero roadmap and expand environment-friendly tire products, considering the accelerated transition to the net zero society as an opportunity to create new values. Kumho Tire has assessed and researched tires' environmental impact through the life cycle assessment (LCA), and established targets to achieve 100% use of recycled materials (recycled carbon black and recycled PET) and bio-sourced materials (natural rubber and environment-friendly butadiene) in all tire products by 2045. In 2021, Kumho Tire sold 2.29 million low carbon tires and earned KRW79.884 billion therefrom. Through continuous R&D to develop new environmental-friendly raw materials, Kumho Tire will strengthen its ability to produce environment-friendly tires and take a leap forward to become a global leading tire company with environment-friendly products.

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	Yes	3 years

C0.3

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

- Australia
- Austria
- Brazil
- Canada
- China
- Egypt
- France
- Germany
- Italy
- Japan
- Mexico
- Panama
- Poland
- Republic of Korea
- Russian Federation
- Saudi Arabia
- Spain
- Thailand
- Turkey
- United Arab Emirates
- United Kingdom of Great Britain and Northern Ireland
- United States of America
- Viet Nam

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	KR7073240004

C1. Governance

C1.1

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

Yes

C1.1a

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

Position of individual(s)	Please explain
Chief Executive Officer (CEO)	The CEO is a member of the Board, who bears the final responsibility for sustainable management strategies and policies, also reports key management issues to the Board and controls company-wide managerial activities. In addition, the CEO is the chairman of the Strategic Steering Committee that oversees business plans, strategies, and corporate managerial matters including climate-related issues. Throughout 2021 and 2022, the CEO approved reinforcement of the personnel in charge of climate-related issues, participation in the CDP assessment, and commitment to Net Zero with the carbon neutrality roadmap, to enhance the Kumho Tire's capability to respond to climate-related issues. In 2021, an extraordinary Board meeting approved the agreement for a site preparation to relocate the Gwangju plant in order to improve sustainability and achieve common interests of stakeholders. Plant relocation, which is expected to help strengthen premium and EV OE (original equipment) tire supply, will improve manufacturing cost competitiveness through enhancing production efficiency. In 2021, the Strategic Steering Committee reviewed the current status and plans to respond to climate change, including development of environment-friendly technologies, EV-focused supply plannings, and energy efficiency improvement strategies, and so forth.

C1.1b

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

Frequency with which climate-related issues are a scheduled agenda item	Governance mechanisms into which climate-related issues are integrated	Scope of board-level oversight	Please explain
Scheduled – some meetings	<p>Reviewing and guiding strategy</p> <p>Reviewing and guiding major plans of action</p> <p>Reviewing and guiding risk management policies</p> <p>Reviewing and guiding annual budgets</p> <p>Reviewing and guiding business plans</p> <p>Monitoring implementation and performance of objectives</p> <p>Overseeing major capital expenditures, acquisitions and divestitures</p> <p>Monitoring and overseeing progress against goals and targets for addressing climate-related issues</p>	<Not Applicable>	<p>The Strategic Steering Committee is authorized by the Board to oversee business plans, strategies, and corporate managerial matters including climate-related issues, and reports them to the Board. The Committee holds ordinary meetings every month and extraordinary meetings when necessary. Its members review and deliberate on investment/cost execution plans considering climate-related opportunities and risks, key strategic decision making, and short-/ long-term managerial plans, and monitor performances and daily managerial matters. In line with increasing demand for environment-friendly products from the automobile industry and reinforcement of environmental regulations, it is necessary for Kumho Tire to develop sustainable products with green technologies, keeping up with the EV-focused paradigm change of the mobility industry and rising consumption of eco-friendly products.</p> <p>As the climate-related issues affect Kumho Tire’s managerial strategies and investment plans, the Committee regularly reports and executes key managerial plans including climate actions. In 2021, the Strategic Steering Committee oversaw the current status and plans for technological advancement and supply expansion of EV tires, and improvement of energy efficiency through regular monthly meetings, reported by the head of each division, including the R&amp;D Division, Strategic Planning &amp; Administration Division, Production Technology Division, etc.</p> <p>Plus, the Board discussed key ESG performances and current actions related to climate change at the monthly regular meetings, including the establishment of the ESG management department, improvement in ESG ratings, the CDP participation and the LCA project.</p> <p>Meanwhile, the establishment of the ESG Committee under the Board was decided at the ordinary Board meeting in May 2022, and the ESG Committee will be established in August 2022. The ESG Committee will provide directions on sustainability and ESG management, to manage ESG risks/opportunities and monitor the ESG performances, so that the climate-related issues can be managed at the board level, the highest decision-making body. In terms of environmental management, the ESG Committee will scrutinize plans for environment-friendly businesses, review participation in the emissions trading scheme from all global business sites and the environmental factors in ESG ratings, and review and report the current status of carbon neutrality strategies implementation.</p>

**C1.1d**

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

	Board member(s) have competence on climate-related issues	Criteria used to assess competence of board member(s) on climate-related issues	Primary reason for no board-level competence on climate-related issues	Explain why your organization does not have at least one board member with competence on climate-related issues and any plans to address board-level competence in the future
Row 1	Yes	Kumho Tire uses work experiences as criteria for assessing competence of board members on climate-related issues. The board member is a joint chairperson of the Korea Federation for Environmental Movements (KFEM) Gwangju, a foundation established to respond to environmental pollution and a chairperson of Gwangju Solar Co-op, a cooperative to reduce carbon emissions and respond to the climate change.	<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>	Quarterly

**C1.2a**

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

Kumho Tire has established an environmental governance in which the CEO takes the final responsibility for climate-related risk management and decision making. Through the ESG Management Committee under the CEO consisting of heads of major divisions, the committee members review and approve ESG/climate-/environment-related issues, make decisions to integrate sustainability into company-wide management system, including climate actions. The ESG Management Committee establishes ESG strategies including climate-related issues, monitors key business performances from the ESG perspectives, identifies significant financial/non-financial risks and proactive measures, and reports key matters to the Board.

The ESG Part of the Strategy planning & Innovation Team, as the control tower for strategy establishment and internalization, builds a KPI system for executives linked to ESG performances and strengthens the relevant departments' capability to implement corporate ESG strategies. The SHE Planning Team oversees company-wide environmental management, establishes safety & environment strategies of plants, and participates in climate-related activities such as CERs. The R&D SHE Team is in charge of environmental management of the R&D Division, and environmental management of production facilities are handled by each of Gwangju, Gokseong and Pyeongtaek plants.

In addition, Kumho Tire formed 5 working groups and defined 60 tasks on 5 major ESG issues (climate change, people & culture, responsible supply chain, ethical management and governance) to embed and link ESG issues with relevant departments and their functions. Kumho Tire identifies climate change as one of the 5 main issues and establishes plans by clarifying the roles and responsibilities of each department by task. The CEO gets reported about key climate-related issues and the progress from each department. Kumho Tire has established a risk management system categorizing risks including global environmental regulations, natural disasters and environmental pollution, as the key risks to be reported to the CEO, the chairperson of the Emergency Management Committee, so as to enable instant decision-making and response to accidents to stabilize the situation.

**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	Kumho Tire conducts ESG campaigns for all executives and employees and provides monetary incentives to encourage their participation. In addition, Kumho Tire takes into account climate-related performances such as energy usage reduction and environmental compliance, in the employees' evaluation for the Health & Safety, Environment Team and the Machinery Engineering & Maintenance Team. For employees of the R&D Division, they are awarded for excellent development results related to climate change such as improvement of energy efficiency. Kumho Tire is planning to expand KPI evaluation linked with ESG indicators to more executives in 2023.

**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
All employees	Monetary reward	Behavior change related indicator	Kumho Tire carried out an ESG campaign titled "Creating a Green Office" for internalizing ESG management for all employees and executives, and encouraging their participation. Firstly, Kumho Tire promoted using tumblers in order to reduce the use of disposable plastic cups, providing discount benefits to the participants in collaboration with in-house cafes of Seoul office and Yongin R&D center. Secondly, Kumho Tire intended to reduce environmental pollution and improve resource circulation, collaborating with a paper cup recycling company by processing collected paper cups into photographic paper. Kumho Tire conducted company-wide ESG campaigns and provided gift certificates to participants based on the participation rates.
Other, please specify (R&D employees and managers)	Monetary reward	Efficiency project	The R&D Division holds an annual meeting to share R&D results and awards excellent projects that developed EV-related and environment-friendly technologies, motivating all researchers to actively produce good research output. In 2021, Kumho Tire granted pecuniary rewards to the employees who participated in the projects chosen as excellent research projects, such as developing high safety, airless tires for self-driving EVs, developing tire wear performance prediction tools for EV tires, and developing light weight/high strength hybrid capply.

**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	3	(-2025)
Medium-term	3	8	(- 2030) Kumho Tire committed to SBTi near-term and net-zero targets in 2022 and intends to be approved targets in 2 years. The objectives until 2030 are consistent with the period for the national NDC plan (-2030).
Long-term	8	23	(- 2045) Kumho Tire plans to achieve net-zero emissions by 2045.

**C2.1b**

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

Kumho Tire defines substantive financial or strategic impact as follows in the risk management process (subject to change): (1) incurrence of company-wide costs due to environmental regulations (i.e., cost increase due to the price increase of emission permits in the ETS and increase of the ratio of the amount allocated onerously); (2) impact on sales resulting from change of demand for goods and services due to climate issues (decrease in sales of not less than 5%); (3) change of stakeholders action and change in corporate value depending on corporate climate actions (change in the stock prices not less than 10%); (4) change of production costs due to natural disasters (increase of materials procurement costs not less than 5%); and (5) change in the capital access due to market changes (reduction in the interest rate by not lower than 5bp).

**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**

In order to integrate climate-related issues into corporate management strategies, Kumho Tire established the ESG Management Committee under the CEO, whose members report ESG performances and progress including carbon neutrality strategies to its chair (CEO). The ESG Management Committee holds a meeting on a quarterly basis to proactively identify and respond to financial/non-financial risks related to climate change. Kumho Tire will establish the ESG Committee under the Board in the second half of 2022 to manage ESG issues including climate change at the board level, in addition to operating an ESG dedicated department in the Strategic Planning & Administration Division, ESG implementing organizations in each division, and the 5 ESG Working Groups.

**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	Kumho Tire not only operates business sites in Korea but also has manufacturing plants and sales networks worldwide, and ensures compliance with applicable laws and regulations of countries in which it operates business. Kumho Tire is a company eligible for allocation under the Emissions Trading System in Korea and has established GHG emission allocation plans for each business site based on the allocated amount. Kumho Tire participated in the 1st and 2nd commitment period from 2015 to 2020, and is currently participating in the 3rd period (2021-2025). At the moment, a company that does not buy emission permits for the excessive portion of the allocated amount may be imposed a penalty surcharge of three times of the average market price of emission permits to the extent of KRW100,000 per 1 ton of carbon dioxide, and the purchasing cost of emission permits may increase in the future in case that the ratio of onerous allocation may decrease or the price of emission permits rises. Kumho Tire has a manufacturing plant in Tianjin, China which has been included in the Tianjin Pilot ETS since 2021. If a company fails to comply with the regulations relevant to the ETS, it will be disqualified for a financial support and national support policies concerning the circular economy, energy reduction measures and emissions reduction. In addition, as the Tianjin Regulations on Carbon Peak and Carbon Neutrality took effect in November 2021, an additional financial disadvantage of CNY20,000 to CNY200,000 (approx. KRW3,840,000 to KRW38,400,000) can be imposed on a company that fails to report GHG emissions, which is 5 to 10 times the average market price of the permits. The Tianjin Pilot ETS gradually introduced an auction system and the trade has increased, as auctions were held twice in each year of 2020 and 2021 after the first trading in 2019.
Emerging regulation	Relevant, always included	Climate-related regulations are rapidly spreading and getting enhanced at home and abroad. In March 2022, the Korean Government enacted the Framework Act on Carbon Neutrality and Green Growth for coping with climate crisis, revising up the 2030 NDC (National Determined Contributions) to reduce by 40% compared to 2018 and establishing a national vision to achieve carbon neutrality by 2050. The Act urges enterprises to not only disclose the information on environmental management including GHG emissions, reduction performances and plans, but also climate-related financial risks such as asset loss. In addition, the Financial Services Commission of Korea has strengthened duties of listed companies on the KOSPI market with total asset of not less than KRW 2 trillion, to disclose their sustainability reports from 2025. The European Commission announced the Directive on Corporate Sustainability Due Diligence in February 2022 in order to enhance protection of human rights and environment in corporate supply chains. The Directive proposes establishing administrative sanctions on violations and allowing civil liabilities for damage. Meanwhile, CBAM (Carbon Border Adjustment Mechanism) has been brought forward to 2025 with a broader scope of industry covered. If the automobile and tire industries are subject to the regulations, it will incur enormous costs to enterprises. Furthermore, the regulations on fuel efficiency are getting stricter globally, followed by the enforcement of WLTP (Worldwide harmonized Light-duty vehicle Test Procedure) and the EU labeling. In the U.S. where one of the plants and sales corporations of Kumho Tire are located, companies are likely to be required to disclose GHG emissions as the Biden Administration rejoined the Paris Agreement in 2021. The U.S. SEC (Securities and Exchange Commission) released a draft of the regulations on climate-related disclosures for listed companies. According to the regulation drafts, listed companies shall disclose their Scope 1 and 2 emissions by 2023, and Scope 3 by 2024.
Technology	Relevant, always included	Climate-related technical risks can include the risk of increasing costs incurred to convert existing tires into lower emissions products and the risk of losing sales (market) in case the conversion to low carbon products are delayed or failure to develop new technologies. The mobility industry worldwide is faced with strong demands for contributing to transition into carbon neutral society, and the tire industries are also under pressure to cooperate for achieving the global 1.5°C target. If Kumho Tire fails to effectively respond to these demands, it can lead to financial loss and weakened competitiveness. Therefore, Kumho Tire is closely monitoring technical risks and establishing R&D investment plans. The mobility market is now demanding sustainable products with low rolling resistance (LRR), sustainable materials and lower GHG emissions through the entire life cycle. In addition, as the EV market is rapidly growing, demand for EV tires is escalating as well. In order to be installed to EVs that are 150-200g heavier than regular automobiles with internal combustion engines due to the battery weight, tires should have stronger grip force and wear resistance. Kumho Tire released the first EV tire products in 2013 in Korea. Based on the accumulated technologies, Kumho Tire is now supplying Crugen HP71 and Ecsta PS71 for Kia's EV6, which are fit for EVs with improved wear resistance, grip force, and LRR.
Legal	Relevant, always included	As a company eligible for allocation of emission permits, Kumho Tire is required to report greenhouse gas emissions. In case of failure to report accurate emissions data, an administrative fine will be imposed. In Korea, the Energy Efficiency Labeling system has operated since 2012 to label the energy efficiency of the product, and it was extended to tire products for trucks and buses in 2022. The tire labeling is mandatory not only in Korea but also in many countries including the Europe, Brazil and the Middle East and to be enforced in China and India soon. If tire products are promoted for sale without strict verification of energy efficiency, customers may file a lawsuit on the grounds of false advertising, etc.
Market	Relevant, always included	Preference to low carbon products and environment-friendly policy directions are worldwide trends, and regulations on manufacturing of vehicles and vehicle parts are getting stricter. In fact, the EU passed a regulation on prohibiting sales of internal combustion vehicles from 2035. A lot of car makers including Volvo, Benz and Renault declared a fully transition to EV product portfolios and are implementing carbon neutrality strategies throughout their supply chains. As such, the EV market is growing rapidly and the demand for low carbon auto parts is increasing, therefore, it is important to develop environment-friendly and EV tire products with lower environmental impacts in lifecycle, and supply them in a timely manner.
Reputation	Relevant, always included	Enterprises are faced with strong demands for climate actions with emphasizing of the climate crisis from the international communities, and increasing market demands for environment-friendly products in line with value conscious consumption. In particular, the mobility industry is encountering stronger demands for the contribution to transition into the carbon neutral society, since GHG emissions of the industry accounts for a considerable portion of total emissions of the transportation sector, due to the emissions from internal combustion engines. Kumho Tire is now required to disclose information on its environmental management and climate related strategies (GHG emissions, energy consumption, RE100, governance, etc.) in the B2B transactions with car makers. With the change of consumption trends into "meaning out", consumers are considering sustainability of the product as major criteria for their choices, including corporate actions on climate change and ESG activities. Corporate value may fall down due to negative impressions if it fails to meet market demands for environment-friendly products/activities and information disclosure.
Acute physical	Relevant, always included	All of Kumho Tire's manufacturing facilities are exposed, to some extent, to physical risks, such as floods, heat wave, water shortage and forest fires, etc. A storm, flood or forest fire may affect raw material yields, inventories, facilities and capacity of plants. Heat wave may cause cost increase for cooling, degraded quality and productivity. According to the Thinkhazard, a platform that provides regional analysis on climate-related risks, Kumho Tire's plants in Georgia, U.S., Binh Duong, Vietnam, and Tianjin, China are exposed to the risks of floods, typhoons, forest fires and heat wave. The plant in Nanjing, China is vulnerable to floods, heat wave and forest fires while the one in Changchun, China exposed to floods and forest fires. Kumho Tire conducts internal safety and health inspections to continuously monitor and control such physical risks, and operates the FEMS (Factory Energy Management System). In order to efficiently respond when any physical risk is materialized, Kumho Tire established a risk management system, the Emergency Management Committee to report from the business site up to the CEO, the chairperson of it.
Chronic physical	Relevant, always included	Kumho Tire has the geographical and supply chain environment that can be affected by the rise in temperature and rainfall changes caused by climate change, which is expected to increase costs. This is because the global temperature rise can affect production of natural rubber, one of the key tire raw materials, which accounts for approx. 23% of total raw material cost. As most of them are produced in the Southeast Asia including Thailand and Indonesia, the accelerated climate change may reduce the efficiency in rubber production and degrade its supply. It will, in turn, increase the purchase cost of natural rubber and lead to aggravated profitability. Kumho Tire has participated in the GPSNR (Global Platform for Sustainable Natural Rubber) as one of the founding members, to build and support a sustainable natural rubber supply chain. Plus, the shortage of industrial water resulting from climate change and the consequential price increase of industrial water may affect manufacturing efficiency. In order to mitigate those risks, Kumho Tire introduced reverse osmosis and advanced treatment facilities, to reduce waste water by reusing them for process water.

**C2.3**

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

Yes

**C2.3a**

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

**Identifier**

Risk 1

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

Direct operations

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

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

Increased indirect (operating) costs

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

<Not Applicable>

**Company-specific description**

As an enterprise eligible for allocation of emission permits, Kumho Tire participated in the 1st and 2nd emissions trading scheme from 2015 to 2020 and is now participating in the 3rd emissions trading scheme. In the 3rd period, the onerous allocation ratio rised to 10%, over 3 times increase from 3% of the 2nd period. The EU Council agreed on a phase-out of free emission allowances by 2032 and the Korean Government is also likely to incrementally decrease the ratio of free allocation with reducing total permitted emissions, to respond to CBAM (Carbon Border Adjustment Mechanism) and align with carbon neutral society.

**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)**

51490000000

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

60380000000

**Explanation of financial impact figure**

Kumho Tire calculated the potential financial impact from purchase of emission permits in the 3rd period (2021-2025) and the 4th period (2026-2030) of the emissions trading scheme (ETS) based on the following 2 scenarios.

(Assumptions)

- Scenario 1: maintaining GHG emissions level of 2021 until 2030
- Scenario 2: reducing emissions to the level of the NDC industrial targets (14.5% reduction compared to 2018 by 2030)
- Assumptions for both scenarios : (1) applying the amount of free allocated permits in the 3rd period (2021-2023: 251,921KAU; 2024-2025: 249,562 KAU); (2) the ratio of onerous allocation increasing to 40% in the 4th period (2026-2030); (3) applying the current allocation approach of GF (grandfathering); and (4) the carbon price increasing by USD120, from 2021 (KRW23,402, average price of KAU21 in 2021) to 2030 based on IEA – NDC-based Carbon Price Scenario

(Results)

- Scenario 1: In the 3rd period, the cost for emission permits increases from KRW280 million to KRW740 million. In the 4th period, exceeding emissions sharply grow as the free emission allowance ratio rapidly decreases. As a result, Kumho Tire’s annual cost for purchasing emissions permits for the exceeding emissions will be between KRW9.01 billion and KRW14.27 billion in a year, reaching a total of KRW60.38 billion by 2030. (maximum impact)
- Scenario 2: In the 3rd period, Kumho will earn a total of approx. KRW250 million by reducing emissions approx. 1.2% in each year. However, during the 4th period, the declined free allocation would exceed the emissions reductions and in turn, Kumho Tire’s annual cost for purchasing emission permits will increase from KRW8.32 billion in 2026 to KRW12.3 billion in 2030. The total cost for purchasing emission permits until 2030 will reach KRW51.49 billion. (minimum impact)

**Cost of response to risk**

10700000000

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

Kumho Tire has made constant efforts to reduce GHG emissions by investing in energy saving facilities for plants. In 2021, Kumho Tire invested approx. KRW630 million to introduce air dryers for utility and raise energy efficiency in the Gokseong plant in order to save electricity use. This is expected to save electricity of 1,619MWh per year. In addition, Kumho Tire invested approx. KRW380 million to introduce refining equipment in the plant and save electricity use of more than 1,607MWh per year. Furthermore, the Pyeongtaek plant saved electricity use of 281MWh per year by changing the design of air pollution prevention facilities in the curing process while the Gwangju plant conducted energy efficiency improvements on compressors and steam turbine with approx. KRW1.1 billion invested in 2021. In addition, Kumho Tire calculated the investment for solar energy facilities from 2022 to 2030, provided that it will achieve the yearly emissions reduction from 2018 to 2030 (3,978 tCO2e) with solar energy facilities, in accordance with Scenario 2 of potential financial impact analysis. According to The Korea Energy Economics Institute, the price of LCOE of solar energy (1MW) will drop from KRW144.8/kWh in 2020 to KRW108.3/kWh in 2030. In turn, the installation cost of approx. KRW1.2 billion in 2022 is expected to decline to KRW900 million in 2030, and Kumho Tire expects to invest a total of KRW9.6 billion by 2030.

**Comment**

**Identifier**

Risk 2

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

Downstream

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

Market	Changing customer behavior
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**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**

Car makers worldwide has declared that they will completely stop investment in production and development of conventional internal combustion engine cars. Hyundai Motor Group, the largest car maker in Korea, stopped development of diesel engines and plans to stop developing gasoline engines gradually. Foreign car makers such as Volvo, Benz (100% transition by 2030) and GM (100% by 2035) also declared that they would convert all automobile products into EVs. According to the European Automobile Manufacturers' Association (EAMA), the market share of vehicles with gasoline and diesel engines (internal combustion engines) have been on the continuous decline, to the 52.8% of the new cars sold in the first quarter of 2021. In addition, as the prices of gasoline and diesel hit the record high in 2022, it also leads to the decline in demand for vehicles with internal combustion engines. Kumho Tire could lose its market share and sales if it fails to quickly convert its product lines into low carbon in the era of low carbon transition of the automobile industry.

**Time horizon**

Medium-term

**Likelihood**

Very 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)**

62581000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Kumho Tire's average turnover from tires (excluding non-tire products) between 2017 and 2021 is approx. KRW2.5 trillion. In case that the revenue linearly declines by 5% by 2030, the reduced turnover will increase from KRW13.9 billion in 2022 to KRW125.1 billion in 2030, which means the accumulated financial impact would reach a total of KRW625.8 billion by 2030.

**Cost of response to risk**

1420000000

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

Based on the design technology developed by itself, Kumho Tire strives to develop and expand environment-friendly products to reduce environmental impact in the entire lifecycle of tire products. Kumho Tire has contributed to improvement of air environment by minimizing fine dusts from tire wear and reduced GHG (CO2) emissions by improving rolling resistance (RR). As a member of the World Business Council for Sustainable Development - Tire Industry Project (WBCSD-TIP), Kumho Tire has participated in the research of global end-of-life tire (ELT) recycling technologies with global tire makers since 2005, in order to contribute to the circular economy. Kumho Tire conducts researches and assessments in regard to application of recycled raw materials, and set a target to increase the use of sustainable raw materials for all tire products, with 40% of recycled materials (recycled carbon black and recycled PET) and 60% of bio-sourced materials (natural rubber and environment-friendly butadiene) by 2045. Among a total of 333 of R&D projects conducted in 2021, 51 projects were relevant to environment-friendly technologies and products, including 27 researches and 24 development projects on EV and LRR. As these account for 15.3% of the total number of R&D projects, we calculated the management cost assuming that 15.3% of the 2021 R&D investment (approx. KRW92.7 billion) is environment-friendly R&D cost.

**Comment**

**Identifier**

Risk 3

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

Downstream

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

Reputation	Increased stakeholder concern or negative stakeholder feedback
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**Primary potential financial impact**

Other, please specify (Decreased corporate value)

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

<Not Applicable>

**Company-specific description**

Our corporate customers are requesting Kumho Tire to disclose climate-related information such as CDP and EcoVadis including the performance of environment-friendly tire production. If Kumho Tire fails to meet the demand from the stakeholders including corporate customers, it would have adverse impact on the sustainability rating, and the increased concerns and negative opinions of the stakeholders regarding Kumho Tire's response to climate change may cause decline in corporate value.

**Time horizon**

Short-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)**

10000000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Corporate value may decline because of negative opinions of the stakeholders regarding Kumho Tire's failure to disclose climate-related information. In case that the stock price declines by 10% from that of Jun 2022 (KRW348), its impact on the corporate value would reach approx. KRW100 billion (the number of issued shares 287,260,287 \* KRW348 = KRW99,966,579,876).

**Cost of response to risk**

313500000

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

Kumho Tires has disclosed the climate-related information through participating initiatives such as CDP and EcoVadis, as well as established an environmental management system verified by third parties in order to measure GHG emissions and energy consumption. We calculated the cost for ESG information disclosure as approx. KRW310 million, including cost for establishing net zero strategies and responding to CDP, LCA (Life Cycle Assessment) project, GHG emissions calculation and verification, and publishing a Sustainability Report.

**Comment**

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**Identifier**

Risk 4

**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)
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**Primary potential financial impact**

Increased direct costs

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

<Not Applicable>

**Company-specific description**

Most of the natural rubber are produced in the Southeast Asian countries such as Thailand and Indonesia. Heat wave may reduce latex production because the lack of rain delays tree maturation. In addition, annual rainfalls are expected to be extremely fluctuated due to El Niño-Southern Oscillation (ENSO), which may lead to frequent rainfalls causing soil erosion and flooding. Damage to natural rubber trees caused by frequent typhoons sometimes cause irreversible harm to the farms. According to the research published in the Frontiers in Environmental Science (2021), climate change would reduce rainfalls by 10% to 30% in the Southern Thailand by 2029.

**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)**

12486800000

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

49947200000

**Explanation of financial impact figure**

Kumho Tire spent KRW249,736,000,000 on purchase of natural rubber in 2021. If the price increases due to the decline in natural rubber supply, the purchase cost would rise 5% to 20%, with potential financial impact of KRW12,486,800,000 to KRW49,947,200,000.

**Cost of response to risk**

20000000

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

Kumho Tire has participated in the Global Platform for Sustainable Natural Rubber (GPSNR) as one of the 39 founding members including tire manufacturers, for improving sustainability of rubber yields, preventing reclamation and lumbering, protecting bio-diversity and water resources, and increasing transparency and traceability of the supply chain. We have established the Natural Rubber Policy to support sustainable and fair natural rubber value chain, and resource conservation. Kumho Tire spent approx. KRW20,000,000 on GPSNR activities.

**Comment**

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**(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**

Energy source

**Primary climate-related opportunity driver**

Participation in carbon market

**Primary potential financial impact**

Increased diversification of financial assets

**Company-specific description**

As an enterprise eligible for allocation of emission permits, Kumho Tire participated in the 1st and 2nd emissions trading scheme from 2015 to 2020 and is now participating in the 3rd emissions trading scheme. In addition, Kumho Tire's plant in Tianjin, China was selected to participate in the Tianjin Pilot ETS in 2021. In 2021, Kumho Tire's emissions did not exceed the allocated emission permits and the remaining permits were carried over to 2022.

**Time horizon**

Short-term

**Likelihood**

Very likely

**Magnitude of impact**

Medium

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

Yes, a single figure estimate

**Potential financial impact figure (currency)**

4080000000

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

<Not Applicable>

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

<Not Applicable>

**Explanation of financial impact figure**

Kumho Tire sold emission permits of 74,742 tCO<sub>2</sub>e for KRW2,641,237,000 in 2019 during the 2nd ETS period (2018-2020), and sold permits of 20,004 tCO<sub>2</sub>e for KRW329,893,000 in 2020. In 2021, the first year of the 3rd period, Kumho Tire sold emission permits of 8,334 tCO<sub>2</sub>e for KRW121 million. In 2021, the Tianjin Plant of Kumho Tire was allocated with emission permits of 109,973 tCO<sub>2</sub>e, and carried over the remaining permits (4,932 tCO<sub>2</sub>e) to the following year after emitting 105,041 tCO<sub>2</sub>e emitted. Kumho Tire analyzes potential profits from trading of emission permits until 2025 based on the following assumptions:

(Assumptions)

- (1) applying the amount of free allocated permits in the 3rd period (2021-2023: 251,921KAU; 2024-2025: 249,562 KAU)
- (2) maintaining the remaining permits in the Korea and Tianjin ETS to the past level with investment in the emissions reduction
  - Korea: selling permits of 8,153 tCO<sub>2</sub>e (average quantity sold between 2015 and 2021) every year until 2025
  - Tianjin: selling permits of 4,932 tCO<sub>2</sub>e (carried over quantity in 2021) every year until 2025
- (3) Price of emission permits: according to the IEA NDC Price Scenario, in Korea, KAU21's average price increases from KRW23,402 to KRW137,400 (USD120) by 2030; in Tianjin, China, the from average secondary market price increases from approx. KRW5,000 (CNY30.53) to KRW34,350 (USD30) by 2030.

(Results)

Kumho Tire's earnings from the sale of emission permits in the Korea ETS is estimated to increase from KRW191 million in 2021 to KRW1.12 billion in 2025, and those in the Tianjin Pilot ETS are expected to grow from KRW41 million in 2021 to KRW280 million in 2025. Kumho Tire is estimated to earn approx. KRW4.08 billion from the sale of emission permits by 2025.

**Cost to realize opportunity**

5000000000

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

Kumho Tire has made constant efforts to reduce GHG emissions by investing in energy saving facilities for plants. In 2021, Kumho Tire invested approx. KRW630 million to introduce air dryers for utility and raise energy efficiency in the Gokseong plant in order to save electricity use. This is expected to save electricity of 1,619MWh per year. In addition, Kumho Tire invested approx. KRW380 million to introduce refining equipment in the plant and save electricity use of more than 1,607MWh per year. Furthermore, the Pyeongtaek plant saved electricity use of 281MWh per year by changing the design of air pollution prevention facilities in the curing process while the Gwangju plant conducted energy efficiency improvements on compressors and steam turbine with approx. KRW1.1 billion invested in 2021. Kumho Tire calculated the total investments until 2025 assuming that it increases 5% every year between 2022 and 2025.

**Comment**

**Identifier**

Opp2

**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 resulting from increased demand for products and services

**Company-specific description**

With the expansion of the environment-friendly vehicle market in the Europe and US, the market for tire products installed in those vehicles is also expected to rapidly grow. Since Kumho Tire started to develop EV tires in 2012, it launched EV tire model "WATTRUN" for the first time in Korea, and has been developing and supplying other EV tires such as Crugen HP71 and Ecsta PS71. Crugen HP71, which is applied to Kia's EV6, achieved a high fuel efficiency and obtained the first grade in the rolling resistance coefficient in the domestic energy consumption efficiency rating system. Kumho Tire is also establishing manufacturing facilities exclusively for EV tire with upgraded EV tire design technologies and trend analysis. In addition, Kumho Tire focuses on developing LRR (low rolling resistance) products in order to respond to strengthened mileage regulations. It allowed Kumho Tire to achieve increased mileage compared to existing products by improving LRR compounds and structures, thereby contribute to reducing GHG emissions from tires, one of the main components of vehicles. Kumho Tire quickly responded to the Europe's strengthening regulations such as the introduction of Fit for 55. "Fortran e" developed in alignment with the European climate and road conditions, obtained Triple A in the EU labelling for RR, wet grip and noise, and will be put in the market in 2025.

**Time horizon**

Short-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)**

&lt;Not Applicable&gt;

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

320000000000

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

400000000000

**Explanation of financial impact figure**

Kumho Tire launched products WATTRUN VS31 and ECOWING ES31, which can reduce both fine dusts and GHG emissions with high energy efficiency and enhanced low wear performance. Sales revenues from these products have been on the steady rise, from KRW34.1 billion in 2019 to KRW46 billion in 2020 to KRW79.8 billion in 2021. In 2021, earnings from low carbon products accounted for 3.1% of total revenue, and given that the ratio increases to 8% to 10% of the expected turnover in 2025 (KRW4 trillion), the potential financial impact would be KRW320 billion to KRW400 billion.

**Cost to realize opportunity**

14200000000

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

Out of a total of 333 R&D projects in 2021, R&D projects pertaining to EVs and LRR were 51 projects, 15.3% of the total number of projects. We calculated the management cost assuming that 15.3% of the R&D investment in 2021 (approx. KRW92.7 billion) would be invested in environment-friendly R&D.

**Comment****Identifier**

Opp3

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

Downstream

**Opportunity type**

Markets

**Primary climate-related opportunity driver**

Other, please specify (Increased access to capital)

**Primary potential financial impact**

Increased access to capital

**Company-specific description**

Government-run banks and commercial banks in Korea are expanding environment-friendly investments by providing special interest rates on credit products for enterprises which implement environment-friendly management. Kumho Tire is eligible for those products since it has endeavored to integrate sustainability issues to its management. For instance, it has been focused to develop low mileage and low carbon products, getting certified of the EPD (Environmental Product Declaration) and CFP (Carbon Footprint of products) Label from the Korea Environmental Industry & Technology Institute under the Ministry of Environment for the first time in the tire industry. In addition, Kumho Tire has continuously developed and supplied EV tires such as WATTRUN VS31 and Crugen HP71. Kumho Tire can obtain funds by issuing green bonds in order to expand sustainable and environment-friendly business. In Korea, the difference of matrix pricing (spread) between green bonds (issued during 2019 and the 1st quarter of 2021) and conventional bonds with the same maturity was a negative figure, which means green bonds have effect of reducing financing cost with lower interest rate.

**Time horizon**

Short-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)**

335000000

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

1500000000

**Explanation of financial impact figure**

The difference of matrix pricing (spread) between green bonds (issued during 2019 and the 1st quarter of 2021) and conventional bonds with the same maturity is -6.75 bps in average, which means green bonds were issued at higher prices than others. Hence, it can be assumed that the interest rate for green bonds is 0.067% lower than that of conventional bonds. In addition, government-run banks and commercial banks in Korea have launched financial products linked to ESG performance with approx. 0.3% more favorable interest rates. Hence, the potential financial impact is calculated assuming Kumho Tire raises funds of KRW500 billion for investment in low carbon products to develop EV tires, etc. with a more favorable interest rate of between 0.067% and 0.3%.  $(500,000,000,000 \times 0.00067 = 335,000,000 / 500,000,000,000 \times 0.003 = 1,500,000,000)$

**Cost to realize opportunity**

14203886000

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

Government-run banks and commercial banks in Korea provide more favorable interest rates to enterprises that actively participate in environment-friendly management and ESG performances such as the environment-friendly product certification (EPD and CFP Label). Kumho Tire got certificated for those labeling from the Korea Environmental Industry & Technology Institute under the Ministry of Environment for the first time in the tire industry, for applying various design technologies and environment-friendly raw materials. As of 2021, Kumho Tire has maintained the EPD Label for 4 products and invested KRW3,886,000 in the EPD certification. Out of a total of 333 R&D projects in 2021, 51 projects were environment-friendly projects, which consists of 27 research projects and 24 development projects on EVs and LRR. Since such projects accounted for 15.3% of the total number of R&D projects, Kumho Tire calculated management costs assuming that 15.3% of the R&D investment in 2021 (approx. KRW92.7 billion) were environment-friendly R&D costs and the result is approx. KRW14.2 billion.

**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**

No, but our strategy has been influenced by climate-related risks and opportunities, and we are developing a transition plan within two years

**Publicly available transition plan**

<Not Applicable>

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

<Not Applicable>

**Description of feedback mechanism**

<Not Applicable>

**Frequency of feedback collection**

<Not Applicable>

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

<Not Applicable>

**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**

Until 2021, Kumho Tire had strived for complying with the National Roadmap for Greenhouse Gas Reductions by 2030 that the government announced to commit aligned with 1.5°C target of Paris Agreement. However, since the Korean Government determined the net zero targets by 2050 and raised the NDC targets (reducing by 40% from 2018) in October 2021, Kumho Tire came to thoroughly review its goals for GHG emissions and strategies, in order to respond to climate crisis raised by IPCC and WMO. Kumho Tire has established a 2045 carbon neutrality strategy to contribute to the transition to low carbon economy and to manage climate-related risks and opportunities. Kumho Tire also joined SBTi on July 1 2022 and set a goal aligned to 1.5°C net zero targets, in accordance with the SBTi Corporate Net-Zero Standard released by the SBTi in October 2021. Kumho Tire disclosed the net zero targets in the 2022 Sustainability Report published in July 2022, and soon the strategies will be established.

**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	No, but we anticipate using qualitative and/or quantitative analysis in the next two years	Important but not an immediate priority	Since the Korean Government determined the net zero targets by 2050 and raised the NDC targets (reducing by 40% from 2018) in October 2021, Kumho Tire came to thoroughly review its goals for GHG emissions and strategies, in order to respond to climate crisis. Kumho Tire has established ESG management system to manage ESG risks and opportunities including climate issues, and will use climate-related scenario analysis to integrate climate issues with its strategies, by operating a company-wide decision-making system which involves the Board, the CEO, executives and working-level staffs.

**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	Car makers worldwide have declared that they would completely stop investment in production and development of conventional internal combustion engine cars, and a full transition to EV product portfolios. In order to adapt to the low carbon conversion in the mobility industry, Kumho Tire is making efforts to reduce GHG emissions in lifecycle by developing design technologies, and by launching EV tire products to meet the demands from EV market. WATTRUN VS31 is an ultra-light weight tire launched in 2013, developed with the support of Environment-Friendly Motor Vehicle Technology Development Project Group under the Ministry of Environment. According to the tests conducted by domestic and foreign qualification test institutes, it improved the mileage efficiency by 4.8% and reduced CO2 emission by 5.9% compared to existing products. This technology also applied to ECOWING ES31 which is sold not only in the domestic market but also in the North America and Europe markets. Kumho Tire conducted precise analysis of EV benchmark tires to secure advanced EV tire technologies in 2021, considering heavy weight, high torque and low noise characteristics of EVs. We are developing EV platforms through VPD (Virtual Product Development) and planning to test on actual cars in 2022 and to develop high-performance EV tires for PCR and SUV in 2023. In 2022, we are expanding the sales of low-wear and low-carbon tires by launching two types of tires for EVs, 'TA91 ev' and 'HP71 ev'.
Supply chain and/or value chain	Yes	Kumho Tire has participated in the GPSNR (Global Platform for Sustainable Natural Rubber) as one of the founding members, to build and support a sustainable natural rubber supply chain. The GPSNR has established standards for improving sustainability of rubber yields, preventing reclamation and lumbering, protecting bio-diversity and water resources, and increasing transparency and traceability of the supply chain, in order to create sustainable and fair natural rubber value chain. Kumho Tire will continuously strive for build and manage a sustainable natural rubber supply chain by expanding the application of natural rubber policy and green purchase policy to its supply chain. Plus, the shortage of industrial water resulting from climate change and the consequential price increase of industrial water may affect manufacturing efficiency. In order to mitigate those risks, Kumho Tire introduced reverse osmosis and advanced treatment facilities, to reduce waste water by reusing them for process water.
Investment in R&D	Yes	With the establishment of the Gwangju Performance Center in 1981, Kumho Tire has established global R&D network, with overseas R&D centers in China, US and Europe to develop advanced technologies. In particular, Kumho Tire has focused on responding to climate change by developing and expanding environment-friendly tires with sustainable raw materials, low-wear, low carbon emissions, and by developing compound technologies to utilizing renewable, recycled, and plant-based raw materials. In 2021, Kumho Tire conducted basic R&D to develop new environment-friendly materials that can be used for tires, researches on properties of end-of-life tire (ELT) pyrolysis carbon black, MRP, etc. and development of compounds that increase the use of reclaimed rubber. Furthermore, Kumho Tire focuses on the development of low mileage tires with low rolling resistance (LRR) in order to respond to mileage regulations and expands R&D to be prepared for rapidly growing demands for EVs. Kumho Tire conducted precise analysis of EV benchmark tires to secure advanced EV tire technologies in 2021, considering heavy weight, high torque and low noise characteristics of EVs. We are developing EV platforms through VPD (Virtual Product Development) and planning to test on actual cars in 2022 and to develop high-performance EV tires for PCR and SUV in 2023. Furthermore, we have been conducting a variety of researches to develop low-wear, low carbon tires that contribute to reduction of fine dusts and greenhouse gases. Kumho Tire is participating in a road technology research project hosted by the Ministry of Land, Infrastructure and Transport in order to develop technologies for quantitative analysis of fine dusts in road, and to develop road materials and low-wear tires that can decrease fine dusts.
Operations	Yes	Kumho Tire built the FEMS (Factory Energy Management System) in the domestic plants in 2013 and has monitored the energy consumption in manufacturing facilities and the history of measures taken for problematic equipment to manage energy efficiency. Kumho Tire plans to introduce more solar energy facilities for conversion to environment-friendly energy, and contributes to GHG emissions reduction through improvement of obsolete equipment and introduction of high efficiency equipment. Kumho Tire has participated in the green growth pursued by the Korean Government, and got certified for reduction of GHG emissions for the first time in the domestic tire industry. In addition, Kumho Tire manages air and water pollution rates below 50% of the regulated level installing dust collecting equipment and waste water treatment equipment in the plants. In particular, with high-efficiency and low NOx burners, Kumho Tire has reduced NOx that causes fine dusts. Kumho Tire has established a target rate of the resource circulation every year, and monitored its performance in order to improve inefficient use of resources in the manufacturing process. In 2021, the resource circulation rate was 28.6% improved compared to that of 2018.

**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	<p>1) Revenues – In line with the automobile market's environment-friendly and low carbon conversion, customers show preference to environment-friendly products. If Kumho Tire is able to quickly convert to low carbon products with low rolling resistance that emits less carbon and EV tires with higher energy efficiency, it can have impact on the increase in revenues. In addition, if Kumho Tire participates in the emissions trading scheme and emits greenhouse gases less than the allocated quantity through reduction technologies, etc., the earnings from surplus emission permits will contribute to increase in revenues.</p> <p>2) Direct cost – Natural rubber is a major raw material used to make tires. However, most natural rubber is produced in the Southeast Asia, a region vulnerable to climate change. The decrease of yields due to climate change and the leaf fall disease would provoke price hikes of natural rubber and increase the unit cost for tire production.</p> <p>3) Capital expenditure – If Kumho Tire fails to reduce greenhouse gas emissions quickly, there would be indirect costs for purchasing emission permits during the 3rd period (2021-2025) and 4th period (2026-2030) of the emissions trading scheme. In addition, Kumho Tire must spend additional costs to get verification of greenhouse gas emissions from a third party.</p>

**C4. Targets and performance**

## C4.1

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

Absolute target

## C4.1a

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### (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**

2021

**Target coverage**

Company-wide

**Scope(s)**

Scope 1

Scope 2

**Scope 2 accounting method**

Location-based

**Scope 3 category(ies)**

<Not Applicable>

**Base year**

2018

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

92623.4

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

169156.6

**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)**

261780

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

67.1

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

44.6

**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**

50.6

**Target year**

2025

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

4.67

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

249554.874

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

87881.8

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

170464.5

**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)**

258346.3

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

28.087236074295

**Target status in reporting year**

Underway

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

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

**Target ambition**

<Not Applicable>

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

Kumho Tire's target is to include 100% of Scope 1 and 2 emissions of the reporting year in the target scope and to reduce emissions below the allocated emission permits by 2025 when the 3rd period ends. Kumho Tire was allocated with 90% of its average emissions from 2017 to 2019 for the 3rd period pursuant to the reduction goal by sector of "Basic Roadmap for the Attainment of 2030 National Greenhouse Gas Reduction Targets" released in July 2018.

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

After installing the FEMS (Factory Energy Management System) in 2013, Kumho Tire has monitored the energy consumption in domestic production facilities and the history of measures taken for problematic equipment to manage energy efficiency. In addition, Kumho Tire saved energy by replacing necessary components in the process of domestic plants and prevent steam leakage. Also, Kumho Tire holds an energy conservation meeting attended by persons in charge of energy in domestic and overseas plants once a month, and develops and shares ideas for energy conservation. Kumho Tire pursues solar photovoltaics for conversion to environment-friendly energy. Among overseas business sites, the Nanjing plant in China commences installation works for solar energy generation. In Korea, the Gwangyang Logistics Center will install removable photovoltaics panels with the total generation of 3,072 kWh on the roof, and the Pyeongtaek plant also examines proposals for installing similar facilities. Kumho Tire plans to install photovoltaics facilities in two more plants in China and Vietnam to contribute to conversion to new and renewable energy in the future.

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

<Not Applicable>

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**C4.2**

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

Other climate-related target(s)

**C4.2b**

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

**Target reference number**

Oth 1

**Year target was set**

2021

**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 (The percentage of transition to environment-friendly raw materials)
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**Target denominator (intensity targets only)**

<Not Applicable>

**Base year**

2021

**Figure or percentage in base year**

24

**Target year**

2045

**Figure or percentage in target year**

100

**Figure or percentage in reporting year**

24

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

0

**Target status in reporting year**

New

**Is this target part of an emissions target?**

No

**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**

Kumho Tire has a target to achieve 100% transition to environment-friendly raw materials for all tire products by 2045. Kumho Tire plans to increase the use of recycled materials, such as recycled carbon black, MRP (micronized rubber powder) and recycled PET to 40% and bio-sourced materials, such as natural rubber and environment-friendly butadiene, to 60% by 2045.

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

Kumho Tire is endeavoring to develop environment-friendly compound technologies that apply renewable and recycled materials and bio-sourced environment-friendly new materials to tire production. In 2021, Kumho Tire succeeded in the research and application of properties of end-of-life tire (ELT) pyrolysis carbon black, MRP, etc. and development of compounds that increase the use of reclaimed rubber. In 2022, Kumho Tire plans to take a step forward in the development of environment-friendly materials through researches on environment-friendly certified synthetic rubber and chemicals, and manufacture of prototypes of the products that had been in the experimental stage. Kumho Tire also applied bio-sourced materials such as oils and fiber cords to test tires, which may replace petrochemical materials and silica, and conducted assessment thereof. Based on basic researches, Kumho Tire is committed to achieving 40% use of environment-friendly raw materials by 2030 and 100% by 2045 and will make efforts to meet such targets.

**List the actions which contributed most to achieving this target**

<Not Applicable>

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**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

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**C4.3a**

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

	Number of initiatives	Total estimated annual CO2e savings in metric tonnes CO2e (only for rows marked *)
Under investigation	2	
To be implemented*	3	14856.77
Implementation commenced*	0	0
Implemented*	4	8603.3
Not to be implemented	0	

### C4.3b

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

#### Initiative category & Initiative type

Transportation	Other, please specify (Reduction of logistics costs through efficient loading)
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#### Estimated annual CO2e savings (metric tonnes CO2e)

6992

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

Scope 3 category 4: Upstream transportation & distribution

#### Voluntary/Mandatory

Voluntary

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

4141000000

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

0

#### Payback period

No payback

#### Estimated lifetime of the initiative

Ongoing

#### Comment

To save loading fees, Kumho Tire extended the use of efficient loading for export and saved the use of 453 containers in 2021. The total investment was KRW0 and the saved cost was KRW4,141,000,000. Emission reductions were calculated based on costs in accordance with the upstream logistics calculation method in category 4 under the GHG Protocol's Scope 3 Guide.

#### Initiative category & Initiative type

Energy efficiency in production processes	Other, please specify (Introduction of air dryers for plant utility)
---	--

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

744

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

Scope 2 (location-based)

#### Voluntary/Mandatory

Voluntary

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

170772120

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

628000000

#### Payback period

4-10 years

#### Estimated lifetime of the initiative

Ongoing

#### Comment

In 2021, Kumho Tire introduced air dryers for plant utility (new installment of refrigerant type air dryers + renovation of desiccant air dryers) to save energy use in the plants. Kumho Tire invested KRW628,000,000 and expected electricity savings of 1,619MWh per year. Since the average rate of industrial electricity was KRW105.48/kWh in 2021 according to the KEPCO, annual savings are estimated to be KRW170,772,120 (= 1,619\*1,000\*105.48). Expected annual emission reductions from power savings are calculated by multiplying electricity savings by the national emission factor of electricity (0.4594 tCO2e/MWh) and approx. 744 tCO2e is estimated to have been reduced.

#### Initiative category & Initiative type

Energy efficiency in production processes	Other, please specify (Introduction of air compressors for plant utility)
---	---

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

738

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

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

169506360

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

381490000

**Payback period**

1-3 years

**Estimated lifetime of the initiative**

Ongoing

**Comment**

In 2021, Kumho Tire introduced air compressors for plant utility (for refining process) to save energy use in the plants. Kumho Tire invested KRW381,490,000 and expected electricity savings of 1,607 MWh per year. Since the average rate of industrial electricity was KRW105.48/kWh in 2021 according to the KEPCO, annual savings are estimated to be KRW169,506,360 (= 1,607\*1000\*105.48). Expected annual emission reductions from power savings are calculated by multiplying electricity savings by the national emission factor of electricity (0.4594 tCO2e/MWh) and approx. 738 tCO2e is estimated to have been reduced.

**Initiative category & Initiative type**

Energy efficiency in production processes	Other, please specify (Change of the design of the air pollution prevention equipment in the curing process)
---	--

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

129

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

Scope 2 (location-based)

**Voluntary/Mandatory**

Voluntary

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

29639880

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

19000000

**Payback period**

&lt;1 year

**Estimated lifetime of the initiative**

Ongoing

**Comment**

In 2021, Kumho Tire changed the design of air pollution prevention equipment (AC towers and impellers) in the curing process to save energy use in the plants. Kumho Tire invested KRW19,000,000 and expected electricity savings of 281 MWh per year. Since the average rate of industrial electricity was KRW105.48/kWh in 2021 according to the KEPCO, annual savings are estimated to be KRW29,639,880 (= 281\*1000\*105.48). Expected annual emission reductions from power savings are calculated by multiplying electricity savings by the national emission factor of electricity (0.4594 tCO2e/MWh) and approx. 129 tCO2e is estimated to have been reduced.

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

Method	Comment
Compliance with regulatory requirements/standards	Kumho Tire induces investment in emissions reduction activities in preparation for the reduction of emission permits allocated gratuitously and carbon price increase as the ETS is enhanced in the future.
Dedicated budget for low-carbon product R&D	Kumho Tire invested its R&D budgets in the development of low-carbon, low-wear tires through global R&D networks. In addition, Kumho Tire intends to improve energy efficiency and reduce carbon emissions by investing in the development of new technologies to apply sustainable new materials.
Dedicated budget for other emissions reduction activities	Kumho Tire executes a part of the dedicated budget to energy saving through improvement of energy efficiency of the manufacturing process, such as replacement and improvement of compressors and recovery of steam turbine efficiency.

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

Yes

**C4.5a**

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

**Level of aggregation**

Product or service

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

Other, please specify (Regulation (EU) 2020/740, internal standard)

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

Road	Other, please specify (Tire)
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**Description of product(s) or service(s)**

ECOWING ES31 is a LRR (Low Rolling Resistance) tire product developed to reduce CO2 emissions in accordance with EU environmental regulations while maintaining the same performance. In particular, it achieved minimizing energy loss by lowering RR compared to existing products, and realized balanced driving performance in terms of wet grip, mileage and noise by applying optimal tread pattern designs and new materials. WATTRUN VS31 is an ultra-light weight tire which is 25% lighter than ordinary tires and obtained A/A grade in EU labeling based on the excellent fuel efficiency. Kumho Tire applied new technologies to reduce its weight by 25% while maintaining the equal performance to ordinary tires. Both products correspond to the 1st grade of Korea Tire Efficiency Standard Rating.

**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 (Internal calculation)

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

Use stage

**Functional unit used**

Annual mileage (12,519km)

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

KH27 (former version of ECOWING)

**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**

28705.27

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

Kumho Tire tested energy efficiency of its low carbon tire (ES31) and KH27 (reference group) applied to the same vehicle model (Avante AD) through the Korea Automotive Technology Institute (KATECH) in October 2018. We calculated avoided emissions based on the annual mileage (12,519km) and the annual mileage by multiplying the daily average mileage of automobiles in 2018 (34.3km) in the statistics of the Ministry of Land, Infrastructure and Transport by 365 days. According to the test results, vehicles with KH27 have the mileage of 14km/liter and consume approx. 892.4 liters per year while vehicles with VS31 & ES31 has the mileage of 14.53km/liter and consume approx. 861.6 liters per year. Hence, VS31 & ES31 can save 32.6 liters per year compared to KH27. If multiplying the fuel quantity saved by the improved mileage (32.6 liters) by the number of vehicles available (sales quantity/4=571,772), the total saved fuel quantity is 18,639,783.5 liters. Since Avante's mileage is 14km/liter, tires have the effect of reducing driving of 260,956,969km. As Avante's CO2 emissions are 110g/km, the estimated avoided emissions are 28,705.27 tCO2e.

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

3.06

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## C5. Emissions methodology

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### C5.1

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

Yes

### C5.2

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

## Scope 1

### Base year start

January 1 2018

### Base year end

December 31 2018

### Base year emissions (metric tons CO2e)

138056.8

### Comment

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

## Scope 2 (location-based)

### Base year start

January 1 2018

### Base year end

December 31 2018

### Base year emissions (metric tons CO2e)

379170.2

### Comment

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

## 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 2021

### Base year end

December 31 2021

### Base year emissions (metric tons CO2e)

815423.515

### Comment

## Scope 3 category 2: Capital goods

### Base year start

January 1 2021

### Base year end

December 31 2021

### Base year emissions (metric tons CO2e)

42163.553

### Comment

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

### Base year start

January 1 2021

### Base year end

December 31 2021

### Base year emissions (metric tons CO2e)

28178.491

### Comment

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

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

219567.567

**Comment**

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

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

1987.064

**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 2021

**Base year end**

December 31 2021

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

219567.567

**Comment**

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

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

222234.438

**Comment**

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

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

4570584.3

**Comment**

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

**Base year start**

January 1 2021

**Base year end**

December 31 2021

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

299478.12

**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**

January 1 2021

**Base year end**

December 31 2021

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

24091

**Comment**

**Scope 3 category 15: Investments**

**Base year start**

**Base year end**

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

**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**

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

China Corporate Energy Conservation and GHG Management Programme

IPCC Guidelines for National Greenhouse Gas Inventories, 2006

ISO 14064-1

Korea GHG and Energy Target Management System Operating Guidelines

Other, please specify (The Greenhouse Gas Protocol - Technical Guidance for Calculating Scope 3 Emissions)

**C6. Emissions data**

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**C6.1**

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**(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)**

120213.2

**Start date**

January 1 2021

**End date**

December 31 2021

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

**Past year 1**

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

118652.8

**Start date**

January 1 2020

**End date**

December 31 2020

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

**Past year 2**

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

131047.3

**Start date**

January 1 2019

**End date**

December 31 2019

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

**Past year 3**

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

138056.8

**Start date**

January 1 2018

**End date**

December 31 2018

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

**C6.2**

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**(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**

Kumho Tire's Vietnam plant purchased wood pellet steam from local companies and reported it as market-based emissions.

**C6.3**

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

**Reporting year**

**Scope 2, location-based**

362341

**Scope 2, market-based (if applicable)**

32.415

**Start date**

January 1 2021

**End date**

December 31 2021

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

**Past year 1**

**Scope 2, location-based**

329097

**Scope 2, market-based (if applicable)**

13.717

**Start date**

January 1 2020

**End date**

December 31 2020

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

**Past year 2**

**Scope 2, location-based**

351043

**Scope 2, market-based (if applicable)**

**Start date**

January 1 2019

**End date**

December 31 2019

**Comment**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

### Past year 3

#### Scope 2, location-based

379170.2

#### Scope 2, market-based (if applicable)

#### Start date

January 1 2018

#### End date

December 31 2018

#### Comment

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006).

## 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?**

Yes

## C6.4a

**(C6.4a) Provide details of the sources of Scope 1 and Scope 2 emissions that are within your selected reporting boundary which are not included in your disclosure.**

#### Source

Emissions from non-manufacturing facilities of the business sites in China, Vietnam and the US

#### Relevance of Scope 1 emissions from this source

Emissions are not relevant

#### Relevance of location-based Scope 2 emissions from this source

Emissions are not relevant

#### Relevance of market-based Scope 2 emissions from this source (if applicable)

Emissions are not relevant

#### Explain why this source is excluded

We excluded these sources because CO2 emissions from non-production office facilities of overseas business sites are minimal.

#### Estimated percentage of total Scope 1+2 emissions this excluded source represents

1

#### Explain how you estimated the percentage of emissions this excluded source represents

As for domestic business sites, Kumho Tire collected emissions data from non-manufacturing facilities categorized as other business sites, and its percentage is 1.53% of the gross domestic emissions. If applying the same percentage to overseas business sites, the estimated emissions are approx. 3,490tCO2e. This accounts for approx. 0.72% of the gross global Scope 1, 2 emissions in 2021 (= 3,490t/482,572t\*100).

## 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)

815423.515

##### Emissions calculation methodology

Spend-based method

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

0

#### Please explain

The emissions were calculated based on the purchase costs of raw materials such as rubber, cord (fabric/steel), carbon black, and bead wire purchased as raw materials for tires in Korea in 2021 in accordance with the GHG Protocol's Corporate Value Chain (Scope 3) Standard. The percentages of purchase are as follows: synthetic rubber (23.6%), natural rubber (23.4%), cord (fabric/steel) (19.8%), carbon black (13.2%) and bead wire (2.8%).

## Capital goods

### Evaluation status

Relevant, calculated

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

42163.553

### Emissions calculation methodology

Spend-based method

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

0

### Please explain

The emissions were calculated based on the amount of investment in plant and equipment necessary for manufacturing tires in Korea in 2021 in accordance with the GHG Protocol's Corporate Value Chain (Scope 3) Standard.

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

### Evaluation status

Relevant, calculated

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

28178.491

### Emissions calculation methodology

Fuel-based method

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

0

### Please explain

The emissions were calculated based on domestic fuel and energy consumed and evaluation coefficients of the Korean EPD. Formula:  $\sum$  (energy consumed by fuel type (kg) x emission coefficient by fuel (kgCO<sub>2</sub>e/kg)) or  $\sum$  (energy consumed (kWh or MJ) x energy emission coefficient (kgCO<sub>2</sub>e/kWh or MJ/kg)). Domestic business sites use gasoline, diesel, kerosene, LNG, LPG and electricity for fuel and energy, and emissions from the use of LNG and electricity account for 99% of emissions. As to electricity, the upstream emission coefficient at the power station (raw materials) were used for that of power consumption in this category, since the emission coefficient from power transmission and distribution loss was already applied to the calculation of Scope 2 emissions.

## Upstream transportation and distribution

### Evaluation status

Relevant, calculated

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

219567.567

### Emissions calculation methodology

Spend-based method

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

0

### Please explain

The emissions were calculated based on the air and maritime freight charges, land freight charges for domestic sale and export, warehousing fees, rents for logistics centers and warehouses, and electric bills, etc. incurred in the domestic upstream logistics phase in 2021 in accordance with the GHG Protocol's Corporate Value Chain(Scope 3) Standard.

## Waste generated in operations

### Evaluation status

Relevant, calculated

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

1987.064

### Emissions calculation methodology

Waste-type-specific method

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

100

### Please explain

We calculated emissions from actual waste treatment quantities (tons) of Kumho Tire's 3 domestic plants (Gwangju, Gokseong, Pyeongtaek) in 2021, using evaluation coefficients of the Korean EPD (Environmental Production Declaration) by treatment type such as landfill, incineration, recycling, waste water treatment, etc. Most of Kumho Tire's waste is rubber and tires. Emissions from incineration of general waste accounts for 73% followed by emissions from recycling of waste synthetic rubber which accounts for 33%.

## Business travel

### 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

Kumho Tire calculates only the GHG emissions related to the entire life cycle of tire products, and is considering Scope 3 emissions from business travel irrelevant in the aspect of emissions management. We will expand Scope 3 categories calculated and managed in 2022.

## Employee commuting

### 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

Kumho Tire calculates only the GHG emissions related to the entire life cycle of tire products, and is considering Scope 3 emissions from employee commuting irrelevant in the aspect of emissions management. We will expand Scope 3 categories calculated and managed in 2022.

## 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

There are no upstream leased assets excluded from the calculation of Scope 1, 2 emissions. We will expand Scope 3 categories calculated and managed in 2022.

## Downstream transportation and distribution

### Evaluation status

Relevant, calculated

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

219567.567

### Emissions calculation methodology

Spend-based method

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

100

### Please explain

The emissions were calculated based on the costs of items such as road transport, rents for warehouse and logistics centers incurred in the downstream logistics phase in Korea in 2021, in accordance with the GHG Protocol's Corporate Value Chain (Scope 3) Standard.

## Processing of sold products

### Evaluation status

Relevant, calculated

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

222234.438

### Emissions calculation methodology

Spend-based method

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

0

### Please explain

The emissions were calculated based on the domestic sales to car makers and distributors in 2021 in accordance with the GHG Protocol's Corporate Value Chain (Scope 3) Standard.

## Use of sold products

### Evaluation status

Relevant, calculated

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

4570584.3

### Emissions calculation methodology

Methodology for indirect use phase emissions, please specify (Calculated emissions from energy consumption due to rolling resistance and acceleration resistance generated from driving gasoline and diesel cars )

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

0

### Please explain

The emissions were calculated based on the energy consumption in the use phase of end users with tire products sold in Korea in 2021 with our own formula. We calculated the CO2 emissions in the use phase of each tire (tCO2e-tire) with the following formula: energy consumption due to rolling resistance and acceleration resistance (MJ/Fuel) \* 10<sup>-6</sup>(TJ/MJ) \* emission coefficient (kgGHG/TJ-Fuel) \* GWP, and gross emissions by multiplying the results from the formula by total domestic sales of tire in 2021. Gasoline and diesel are used as fuel and we used the emission coefficient of each fuel in accordance with the IPCC National Emission Factor Standard, and the GWP value in the second IPCC Report.

We used Kumho Tire's 245/45R18 TA51 model (for domestic sale) as the representative model to calculate emissions in this category for the following reasons: (1) we chose the main model among domestic replacement (RE) tire products because the proportion of RE sales is higher than that of original equipment (OE) in domestic market; (2) sales of TA51 accounts for 7.9% of gross domestic sales from its launch in April to December 2021, which is a large amount enough to represent other various patterns/models sold in the Korean market; and (3) 245/45R18 model accounts for approx. 12.3% of TA51 sales in the same period.

## End of life treatment of sold products

### Evaluation status

Relevant, calculated

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

299478.12

### Emissions calculation methodology

Average data method

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

0

### Please explain

Assuming that (1) end-of-life tire's (ELT) net calorific value (NCV) is 30GJ/ton and (2) 426,532 tons (gross weight of tires sold by Kumho Tire in Korea in 2021) of ELT were all incinerated for energy recovery; and (3) applying ELT carbon intensity 85kg-CO2/GJ and carbon contents ratio 73% (=100-27) from the WBCSD Cement Sustainability Initiative (CSI), 299,478 tons of CO2 is emitted at the ELT treatment phase.

## Downstream 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

There are no downstream leased assets excluded from the calculation of Scope 1, 2 emissions. We will expand Scope 3 categories calculated and managed in 2022.

## Franchises

### Evaluation status

Relevant, calculated

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

24091

### Emissions calculation methodology

Average data method

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

1.47

### Please explain

Annual emissions of a total 680 dealerships of TIREpro and KTS (Kumho Tire's domestic distributors) were calculated by multiplying the average size of 10 stores by the building GHG emission factor, in accordance with the GHG Protocol's Corporate Value Chain (Scope 3) Standard.

## Investments

### 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

Kumho Tire calculates only the GHG emissions related to the entire life cycle of tire products, and is considering Scope 3 emissions from investments irrelevant in the aspect of emissions management. We will expand Scope 3 categories calculated and managed in 2022.

## Other (upstream)

### Evaluation status

Not evaluated

### 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

Not evaluated

### 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

## C6.5a

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

Past year 1

Start date

End date

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

Scope 3: Capital goods (metric tons CO2e)

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

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

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

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

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

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

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

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

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

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

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

Comment

Past year 2

Start date

End date

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

Scope 3: Capital goods (metric tons CO2e)

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

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

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

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

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

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

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

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

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

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

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

Comment

Past year 3

Start date

End date

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

Scope 3: Capital goods (metric tons CO2e)

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

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

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

Scope 3: Business travel (metric tons CO2e)

Scope 3: Employee commuting (metric tons CO2e)

Scope 3: Upstream leased assets (metric tons CO2e)

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

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

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

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

Scope 3: Downstream leased assets (metric tons CO2e)

Scope 3: Franchises (metric tons CO2e)

Scope 3: Investments (metric tons CO2e)

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

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

Comment

C6.7

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

Yes

C6.7a

(C6.7a) Provide the emissions from biogenic carbon relevant to your organization in metric tons CO2.

	CO2 emissions from biogenic carbon (metric tons CO2)	Comment
Row 1	32.415	We calculated the emissions from wood pellet steam purchased by Kumho Tire's Vietnam plant in 2021.

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**

1.86e-7

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

482572

**Metric denominator**

unit total revenue

**Metric denominator: Unit total**

2601223000000

**Scope 2 figure used**

Location-based

**% change from previous year**

10.06

**Direction of change**

Decreased

**Reason for change**

Gross global revenue increased 19.8% from the previous year while gross global emissions increased 7.77%. However, the intensity figure declined by approx. 10% because the electricity use in the manufacturing process reduced due to energy saving activities in heating, cooling and the processes of refining and curing in 2021.

**Intensity figure**

0.01132562

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

482572

**Metric denominator**

unit of production

**Metric denominator: Unit total**

42608894

**Scope 2 figure used**

Location-based

**% change from previous year**

5.68

**Direction of change**

Decreased

**Reason for change**

Gross global tire production increased 14.2% while gross global emissions increased 7.77%. However, the intensity figure declined by approx. 5.7% because the electricity used in the manufacturing process reduced due to energy saving activities in heating, cooling and the processes of refining and curing in 2021.

**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	119873.2	IPCC Second Assessment Report (SAR - 100 year)
CH4	249.1	IPCC Second Assessment Report (SAR - 100 year)
N2O	90.9	IPCC Second Assessment Report (SAR - 100 year)

**C7.2**

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

Country/Region	Scope 1 emissions (metric tons CO2e)
Republic of Korea	87881.805
China	21977.28
Viet Nam	1154.169
United States of America	9199.985

**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	118664.479
Other	1548.8

**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
Gwangju plant	42307	35.142223	126.789302
Gokseong plant	39431	35.312708	127.204844
Pyeongtaek plant	4594.5	36.978134	126.853397
Tianjin plant, China	21654.769	39.067588	117.538627
Changchun plant, China	45.361	43.788822	125.250077
Nanjing plant, China	277.15	32.120941	118.814769
Vietnam plant	1154.169	10.780318	106.683983
Georgia plant, US	9199.985	32.744948	-83.648744
Other	1548.76	35.9078	127.7669

**C7.3c**

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

Activity	Scope 1 emissions (metric tons CO2e)
Fixed combustion	115802.502
Mobile combustion	3888.287
Others (waste)	522.45

**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	170464.546	
China	134439.052	
Viet Nam	31686.8	32.415
United States of America	25750.606	

**C7.6**

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

- By business division
- By facility
- By activity

**C7.6a**

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**(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	359917.363	32.415
Other	2423.655	

**C7.6b**

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**(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)
Gwangju plant	75174.275	
Gokseong plant	84869.763	
Pyeongtaek plant	7996.865	
Tianjin plant, China	83385.953	
Changchun plant, China	17383.128	
Nanjing plant, China	33669.971	
Vietnam plant	31686.8	32.415
Georgia plant, US	25750.606	
Other	2423.655	

**C7.6c**

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**(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	362341	
Purchased steam	32.415	

**C7.9**

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**(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?**

Increased

**C7.9a**

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**(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	0	No change	0	
Other emissions reduction activities	1611	Decreased	0.36	In 2021, Kumho Tire conducted energy saving and emissions reduction projects by investment in plant and equipment as follows: (1) improving energy efficiency by introducing air dryers for plant utility; (2) improving energy efficiency by introducing air compressors for plant utility; (3) improving energy efficiency by changing the design of air pollution prevention equipment in the curing process. The gross emissions in 2021 reduced by approx. 0.36% (1,611 tCO2e) by energy saving activities compared to emissions of 447,751 tCO2e in 2020.
Divestment	0	No change	0	
Acquisitions	0	No change	0	
Mergers	0	No change	0	
Change in output	36432.116	Increased	8.14	Gross global tire production increased 1.14% in 2021 and emissions increased by 8.1% due to increase of production were 36,432 tCO2e in Scope 1 and 2 emission compared to 447,751 tCO2e in 2020.
Change in methodology	0	No change	0	
Change in boundary	0	No change	0	
Change in physical operating conditions	0	No change	0	
Unidentified	0	No change	0	
Other	0	No change	0	

**C7.9b**

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

Location-based

**C8. Energy**

**C8.1**

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

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

**C8.2**

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

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

**C8.2a**

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

	Heating value	MWh from renewable sources	MWh from non-renewable sources	Total (renewable and non-renewable) MWh
Consumption of fuel (excluding feedstock)	HHV (higher heating value)	0	650633.6	650633.6
Consumption of purchased or acquired electricity	<Not Applicable>	0	677492.5	677492.5
Consumption of purchased or acquired heat	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of purchased or acquired steam	<Not Applicable>	63259.7	0	63259.7
Consumption of purchased or acquired cooling	<Not Applicable>	<Not Applicable>	<Not Applicable>	<Not Applicable>
Consumption of self-generated non-fuel renewable energy	<Not Applicable>	0	<Not Applicable>	0
Total energy consumption	<Not Applicable>	63259.7	1328126.1	1391385.8

**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	No
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**

HHV

**Total fuel MWh consumed by the organization**

0

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

<Not Applicable>

**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**

HHV

**Total fuel MWh consumed by the organization**

0

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

<Not Applicable>

**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**

HHV

**Total fuel MWh consumed by the organization**

0

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

<Not Applicable>

**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**

HHV

**Total fuel MWh consumed by the organization**

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

<Not Applicable>

**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**

HHV

**Total fuel MWh consumed by the organization**

10750.9

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

<Not Applicable>

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

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

668.52

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

<Not Applicable>

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

<Not Applicable>

**Comment**

In 2021, energy consumptions from diesel boilers of domestic plants were 1.5TJ and those of overseas plants were 0.91TJ. Gross energy consumptions were approx. 2.4TJ, calculated to approx. 668.52MWh.

**Gas**

**Heating value**  
HHV

**Total fuel MWh consumed by the organization**  
639882.7

**MWh fuel consumed for self-generation of electricity**  
<Not Applicable>

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

**MWh fuel consumed for self-generation of steam**  
626054.54

**MWh fuel consumed for self-generation of cooling**  
<Not Applicable>

**MWh fuel consumed for self- cogeneration or self-trigeneration**  
<Not Applicable>

**Comment**

In 2021, energy consumptions from LNG boilers of domestic plants were 1,658.8TJ and those of overseas plants were 595TJ. Gross energy consumptions were approx. 2,253.8TJ, calculated to approx. 626,054.54 MWh.

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

**Heating value**  
HHV

**Total fuel MWh consumed by the organization**  
0

**MWh fuel consumed for self-generation of electricity**  
<Not Applicable>

**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**  
HHV

**Total fuel MWh consumed by the organization**  
650633.6

**MWh fuel consumed for self-generation of electricity**  
<Not Applicable>

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

**MWh fuel consumed for self-generation of steam**  
626723.06

**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	0	0	0	0
Heat	0	0	0	0
Steam	564050.7	564050.7	0	0
Cooling	0	0	0	0

## C8.2e

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(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**

Heat/steam/cooling supply agreement

**Energy carrier**

Steam

**Low-carbon technology type**

Other biomass

**Country/area of low-carbon energy consumption**

Viet Nam

**Tracking instrument used**

Contract

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

63259.7

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

Viet Nam

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

**Comment**

Kumho Tire's Vietnam plant has purchased a steam from local companies generated from wood pellet. However, it was not confirmed whether it has been certified as sustainable biomass or low carbon energy.

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## C8.2g

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

## C9. Additional metrics

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### C9.1

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

**Description**

Waste

**Metric value**

12954.8

**Metric numerator**

Gross waste (tons)

**Metric denominator (intensity metric only)**

**% change from previous year**

2.11

**Direction of change**

Increased

**Please explain**

In 2021, gross domestic waste was 12,954.8 tons, increased by 2.11% from 12,687.7 tons in 2020. In the course of recovering from impacts of the COVID-19 pandemic, the manufacturing amount has increased in 2021 which led to the increase of waste, although the waste recycling rate also increased to 76.4%, up 0.7% year over year.

**Description**

Other, please specify (Water)

**Metric value**

1408343

**Metric numerator**

Water used (tons)

**Metric denominator (intensity metric only)**

**% change from previous year**

11.51

**Direction of change**

Increased

**Please explain**

In 2021, gross domestic water consumption was 1,408,343 tons, increased by 11.51% from 1,262,991 tons in 2020. In the course of recovering from impacts of the COVID-19 pandemic, the manufacturing amount has increased in 2021, which led to the increase of gross water consumption.

**Description**

Energy usage

**Metric value**

225.79

**Metric numerator**

Energy consumed

**Metric denominator (intensity metric only)**

Number of products

**% change from previous year**

3.72

**Direction of change**

Decreased

**Please explain**

In 2021, energy consumption per a tire decreased by 3.72%, from 234.52 (MJ/unit) in 2020 to 225.79 (MJ/unit). In 2021, the plant and equipment investment for energy saving in the refining and curing processes reduced electricity use in the manufacturing process which in turn reduced energy consumption compared to the previous year.

**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**

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**(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**

2021 Kumho Tire GHG Emissions Verification Report.pdf

**Page/ section reference**

p.21-24

**Relevant standard**

Korean GHG and energy target management system

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

73

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**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Underway but not complete for reporting year – previous statement of process attached

**Type of verification or assurance**

Third party verification/assurance underway

**Attach the statement**

Document 2. 2018-2020 Kumho Tire Tianjin Factory GHG Emissions Report.pdf

Document 1. 2018-2020 Kumho Tire Tianjin Factory GHG Emissions Verification Report.pdf

**Page/ section reference**

Document 1(p.16), Document 2(p.10)

**Relevant standard**

Other, please specify (China Corporate Energy Conservation and GHG Management Programme)

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

18

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C10.1b

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**(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**

2021 Kumho Tire GHG Emissions Verification Report.pdf

**Page/ section reference**

p.21-24

**Relevant standard**

Korean GHG and energy target management system

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

47

**Scope 2 approach**

Scope 2 location-based

**Verification or assurance cycle in place**

Annual process

**Status in the current reporting year**

Underway but not complete for reporting year – previous statement of process attached

**Type of verification or assurance**

Third party verification/assurance underway

**Attach the statement**

Document 2. 2018-2020 Kumho Tire Tianjin Factory GHG Emissions Report.pdf

Document 1. 2018-2020 Kumho Tire Tianjin Factory GHG Emissions Verification Report.pdf

**Page/ section reference**

Document 1(p.16), Document 2(p.10)

**Relevant standard**

Other, please specify (China Corporate Energy Conservation and GHG Management Programme)

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

23

**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
C6. Emissions data	Year on year change in emissions (Scope 1 and 2)	Korea GHG and Energy Target Management System Operating Guidelines	The GHG emissions data (2019-2021) of Kumho Tire's business sites in Korea and overseas were reported in the 2022 Sustainability Report at 97-98 (refer to the Assurance Statement Opinion at 106). The data was verified in accordance with the Verification Guidelines for GHG Emissions Trading System, the Guidelines for Reporting and Certification for the GHG Emissions Trading System according to the verification process of the verifying institution, pursuant to the Act on The Allocation and Trading of Greenhouse Gas Emission Permits. 2022_KUMHOTIRE_SUSTAINABILITY REPORT_ENG.pdf
C9. Additional metrics	Other, please specify (Waste, water used, energy consumption)	AA1000 AS	The data about the amount of waste, water consumption and energy consumption were verified in accordance with the AA1000 AS and reported in the 2022 Sustainability Report at 95-96 (refer to the 3rd Party Assurance Statement Opinion at 107). 2022_KUMHOTIRE_SUSTAINABILITY REPORT_ENG.pdf
C4. Targets and performance	Other, please specify (Environment-friendly products certification)	EPD (Environmental Product Declaration)	Kumho Tire obtained the EPD Label from the Korea Environmental Industry & Technology Institute under the Ministry of Environment for the first time in the tire industry, for applying various design technologies and environment-friendly materials to develop sustainable tire products. As of 2021, Kumho Tire maintains the EPD Label for 4 products, and will continue to expand environment-friendly products in order to meet demands for environment-friendly products (refer to p.45 of 2022 Sustainability Report). 2022_KUMHOTIRE_SUSTAINABILITY REPORT_ENG.pdf

## C11. Carbon pricing

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### C11.1

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(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

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

Korea ETS

Tianjin pilot ETS

### C11.1b

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

#### Korea ETS

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

73.11

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

47.04

**Period start date**

January 1 2021

**Period end date**

December 31 2021

**Allowances allocated**

251921

**Allowances purchased**

0

**Verified Scope 1 emissions in metric tons CO2e**

87882

**Verified Scope 2 emissions in metric tons CO2e**

170465

**Details of ownership**

Facilities we own and operate

**Comment**

## Tianjin pilot ETS

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

18.01

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

23.01

### Period start date

January 1 2021

### Period end date

December 31 2021

### Allowances allocated

109973

### Allowances purchased

0

### Verified Scope 1 emissions in metric tons CO2e

21654.77

### Verified Scope 2 emissions in metric tons CO2e

83385.95

### Details of ownership

Facilities we own and operate

### Comment

Kumho Tire's Tianjin plant (KTT) located in Tianjin, China was selected to participate in the Tianjin Pilot ETS by the Tianjin Ecology and Environment Bureau in 2021. In May 2021, GHG emissions data from 2018 to 2020 were verified by a third party verifying institution entrusted by the Tianjin Ecology and Environment Bureau, and the verification for 2021 data is ongoing. In 2021, the amount of emission permits allocated to KTT for the first time were 109,973 tCO<sub>2</sub>e, equivalent to 98% of 2019 emissions. Since the actual emissions in 2021 were 105,041 tCO<sub>2</sub>e, Kumho Tire will carry over the remaining 4,932 tCO<sub>2</sub>e to the 2022 emissions contract period.

## C11.1d

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

Starting from the participation in the 1st Korea ETS in 2015, Kumho Tire has developed strategies and built a system to manage emission permits in order to respond to carbon price systems. Kumho tire established organizations exclusively responsible for ESG including climate-related issues (SHE Planning Team and R&D SHE Team, etc.) were established under the Strategic planning & Innovation Team in December 2021 to build a company-wide system managing climate issues. Also we have plans to develop innovative CO<sub>2</sub> reduction technologies for energy saving up to 20% through process innovation (ES-20 project), to participate in CDM & KCDM projects, environment-friendly energy projects, and emission trading markets as well as investment in carbon funds.

## C11.2

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

No

## C11.3

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

Yes

## C11.3a

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

**Objective for implementing an internal carbon price**

Navigate GHG regulations

**GHG Scope**

Scope 1

Scope 2

**Application**

Kumho Tire uses an internal carbon price in the process of making decisions on domestic facility expansion and investment.

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

23402

**Variance of price(s) used**

Kumho Tire's internal carbon price is the average of KAU (Korea Allowance Unit) trading prices for recent 12 months and determined annually.

**Type of internal carbon price**

Shadow price

**Impact & implication**

Kumho Tire has participated in the 1st K-ETS (Korea Emissions Trading Scheme) since 2015 and used the internal carbon price for decision making on the investment in the facilities to be established, other than the business sites subject to regulation (Gwangju, Gokseong and Pyeongtaek plants). The internal carbon price in 2021 was KRW23,402 per tCO<sub>2</sub>e.

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**C12. Engagement**

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**C12.1**

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

Yes, our suppliers

Yes, our customers/clients

Yes, other partners in the value chain

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**C12.1a**

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

**Type of engagement**

Engagement & incentivization (changing supplier behavior)

**Details of engagement**

Run an engagement campaign to educate suppliers about climate change

**% of suppliers by number**

4.95

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

52

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

**Rationale for the coverage of your engagement**

Kumho Tire operates regular assessment for its suppliers to identify potential risk factors and recommend to improve. In 2021, 32 suppliers whose transaction value of previous year was higher than KRW 2 billion or which had achieved lower ratings in previous assessment, completed the assessment. The transactions with them accounts for 52% of the total procurement spend.

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

Kumho Tire strives for establishing sustainable relationship with its suppliers for shared growth and ESG management in supply chain. KUMHO TIRE Portal of Supplier Management (K-POS) allows suppliers to manage the purchase process themselves and directly communicate with Kumho Tire, so that we plan to support ESG settlement for our suppliers through the portal. Kumho Tire operates regular assessment for its suppliers and provides incentives based on the result of assessment grades. In addition, we have improved the assessment checklist enhancing ESG-related factors and established the Supplier Code of Conduct based on the international norms and guidelines, with respect to human rights and labor, safety and health, environment, ethics, responsible procurement of raw materials and management systems. All suppliers are asked to agree on Code of Conduct through K-POS, targeting to obtain signatures from all 51 major suppliers in 2022.

**Comment**

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**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
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**% of customers by number**

100

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

0

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

Kumho Tire communicates with all potential customers to raise their awareness on climate change and GHG reduction.

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

Kumho Tire discloses energy efficiency grades to its consumers through the website with the details of tire products including mileage, web grip and noise, etc., so that they can choose safe and high quality products. In addition, Kumho Tire has implemented annual quality system diagnosis in accordance with its own quality guidelines, contributed to risk factors elimination and quality improvement. With these efforts, Kumho Tire scored 4.88 out of 5 in the customer satisfaction survey executed by Kumho Tire in 2021, and has maintained the 1st place in the Korean Customer Satisfaction Index for 17 consecutive years. Furthermore, Kumho Tire constantly communicates with customers through product launching events and SNS including Youtube.

**C12.1d**

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

One of Kumho Tire's key partners in the value chain is educational institution. Kumho Tire has carried out various carbon reduction programs including forestation, resuming in 2021 after suspension due to the COVID19 pandemic. One of the carbon reduction programs is educations for elementary school students in Seoul (providing environment education kits, writing tree-raising diary and watching environment education videos). Kumho Tire launched the "Green Study Room with Hope" campaign in 2016 to improve the educational environment of youth, and established 27 study rooms for the past 6 years. In February 2022, Kumho Tire started the "Green Campaigner" program, providing education about climate change and environment in collaboration with the Child Fund Korea. Our goal is to expand the education program to reach 1,000 students in 14 schools in 2022. Kumho Tire has raised awareness of climate-related issues through various environment education for students and children, also contributed to climate actions through voluntary environment protection activities.

**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)**

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

As part of company-wide strategies to respond to climate change, Kumho Tire participates in the ETS as well as engages in activities that could influence policy, such as joining in the Korea TCFD Alliance and GPSNR, participation in the UN Global Compact and its climate program, Climate Ambition Accelerator. Kumho Tire has established the ESG Part in the Strategic planning & Innovation Team as an organization in charge of ESG management, and integrated its strategies with ESG including climate issues pursuing the goals of Paris Agreement and stakeholders' demands.

**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**

The ETS is a system that the government allocates annual emission permits to eligible companies and allows them to emit within the allocated amount, so that contributing to achieve national targets for reducing GHGs effectively through market mechanisms.

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

National

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

China  
Republic of Korea

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

Support with no exceptions

**Description of engagement with policy makers**

Kumho Tire responds to climate change by complying with applicable laws pertaining to emissions trading scheme (ETS) and cooperating with the government's low carbon green growth policy. Kumho Tire has participated in the ETS from the first period to third period currently and complied with the guidelines for GHG reporting and allocation. It is required to submit GHG emissions data verified by a third party to the government every year and Kumho Tire manages GHG emissions by establishing allocation plans for each business sites according to the allocated amount. As a result, Kumho Tire has succeeded to reducing GHG emissions below the allocated emission permits every year until now.

**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

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**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 (UN Global Compact, Climate Ambition Accelerator)

**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 UN Global Compact (UNGC) is the world-largest corporate sustainability initiative that recommends corporations to internalize 10 principles such as human rights, labor, environment, anti-corruption into the corporate operations and management strategies. The UNGC encourages global corporations to adopt sustainable and socially responsible corporate strategies. In addition, the UNGC launched the Climate Ambition Accelerator in 2022 and provides companies with information necessary for setting GHG reduction targets and Net-Zero plans aligned to the SBT (science-based target) and the 1.5°C target. The UNGC aims at promoting sustainable development by raising awareness of climate-related issues and inducing behavioral change by 2030.

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

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

<Not Applicable>

**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

---

**Trade association**

Other, please specify (WBCSD\_TIP(World Business Council for Sustainable Development\_Tire Industry Project))

**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)**

Kumho Tire is a member of the Tire Industry Project (TIP) under the World Business Council for Sustainable Development (WBCSD) which was established in 2005. It cooperates with more than 200 global organizations for systemic innovation necessary to attain Net-Zero, minimize the loss of nature and respond to recovery power, and provides guidelines for setting science-based targets including standards and protocols in order to respond to climate change. 11 members of the WBCSD-TIP (2 Korean companies and 9 global companies) account for 60% of the global tire production capacity, and hold biennial global forums to discuss studies on environmental impact of the tire production and end-of-life treatment process. Kumho Tire continues to cooperate with members of TIP for sustainable development to conduct joint research projects on tire products and road wear particles, nano materials and technologies to utilize end-of-life tire (ELT).

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

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

<Not Applicable>

**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

---

**Trade association**

Other, please specify (GPSNR(Global Platform for Sustainable Natural Rubber))

**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)**

Kumho Tire has participated in the Global Platform for Sustainable Natural Rubber (GPSNR) as one of the 39 founding members including tire manufacturers, rubber producers, distributors and NGOs for sustainable procurement of natural rubber. The GPSNR establishes standards for improving sustainability of rubber yields, preventing reclamation and lumbering, protecting bio-diversity and water resources, and increasing transparency and traceability of the supply chain, in order to create sustainable and fair natural rubber value chain. Kumho Tire supports the GPSNR to contribute to improvement of sustainable value chain by mitigating risk factors of rubber supply that is seriously impacted by climate change by guaranteeing livelihood of small-scale rubber farmers. Kumho Tire will continuously support improvement of small farmers' livelihoods and protection of labor and human rights, as well as contribute to the attainment of net-zero emissions aligned to the 1.5°C target by gradually expanding the use of natural rubber.

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

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

<Not Applicable>

**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

---

**Trade association**

Other, please specify (KOTMA(Korea Tire Manufacturers Association))

**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) introduced the Extended Producer Responsibility (EPR) to extend the producers' responsibility to the treatment or disposal in the post-consumer phase. Kumho Tire is also participating in the KOTMA's program to recover and recycle end-of-life tire (ELT), and has performed the recycling obligation as a member of the Waste Recycling Association to contribute to environmental conservation.

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

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

<Not Applicable>

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

Yes, we have evaluated, and it is aligned

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**Trade association**

Other, please specify (KAIDA(Korea Automobile Importers & Distributors Association))

**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 Automobile Importers & Distributors Association (KAIDA) contributes to the improvement of the domestic automobile industry by improving business environment of the market, and supports the interests of imported car consumers in Korea. It actively responds to establishment and amendment of environmental regulations (GHG and mileage, exhaust gas, recycling, etc.) for climate actions and provides information on the automobile importers' CSR activities. Kumho Tire receives information on climate-related regulations and requirements for automobile importers from the KAIDA and thereby responds to climate-related regulatory and market risks. We believe that participation in KAIDA will ultimately contribute to the tire industry's performance aligned to the Paris Agreement.

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

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

<Not Applicable>

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

Yes, we have evaluated, and it is aligned

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C12.4

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

**Publication**

In mainstream reports

**Status**

Complete

**Attach the document**

2021 Kumho Tire Annual Financial Report.pdf

**Page/Section reference**

p.93-94

**Content elements**

Emissions figures

**Comment**

Disclosure of information on free allocation, quantity used and quantity disposed under the ETS

**Publication**

In voluntary sustainability report

**Status**

Complete

**Attach the document**

2022\_KUMHOTIRE\_SUSTAINABILITY REPORT\_ENG.pdf

**Page/Section reference**

p.14-16 (ESG Decision-making system and Implementation Tasks on Climate Change)

p.18-19 (Risks, Opportunities and Strategic Tasks in Climate Change Response)

p.34-45 (Net Zero Roadmap, Analysis of Climate Change Risks/Opportunities, Activities for Reducing GHG Emissions, Environment-Friendly Tire Products and Certification)

p.66-69 (Supplier Engagement Activities to Manage Sustainable Supply Chain)

p.95-98 (Emissions, Waste, Water & Energy Consumption of Each Business Site in Korea and Overseas)

**Content elements**

Governance

Strategy

Risks & opportunities

Emissions figures

Emission targets

**Comment**

Net zero roadmap, Low-carbon products, Supplier engagement

**Publication**

In voluntary communications

**Status**

Complete

**Attach the document**

Kumho Tire's Website (ESG Management\_Environmental Management).pdf

**Page/Section reference**

<https://www.kumhotire.com/ko/company/working/environment/index.do>

**Content elements**

Other, please specify (Climate change response system)

**Comment**

[ESG environmental management]

Obtained ISO 14001 Certification for the first time in the domestic tire industry

Built the LCA system

Environment Labeling Certification : Environment Mark (Type 1) Certification (Korea/Overseas), Carbon EPD Certification (Korea) and GHG Reduction Certification (Korea)

Built the environment protection system (in all process of raw materials, production, use and end of life treatment)

**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 and publicly endorsed initiatives related to biodiversity	Adoption of the mitigation hierarchy approach	Other, please specify (GPSNR)

## 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	No, but we plan to assess biodiversity-related impacts within the next two years	<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	Education & awareness Other, please specify (Forestration)

## 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	No	Please select

## 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
In voluntary sustainability report or other voluntary communications	Content of biodiversity-related policies or commitments Other, please specify (Forestration activities)	p.69 (Participation in GPSNR), 73 (Forestration)

## C16. Signoff

### C-FI

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

### C16.1

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

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

## SC. Supply chain module

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### SC0.0

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

Kumho Tire will do its best to fully answers to this module and provide information on how much its products affect customers' value chain and cooperate with customers for continuous improvement.

### SC0.1

---

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

	Annual Revenue
Row 1	2601223000000

### 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**

Renault Group

**Scope of emissions**

Scope 1

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO<sub>2</sub>e**

185721.5277

**Uncertainty (±%)**

2

**Major sources of emissions**

Energy consumption by onsite boilers

**Verified**

Yes

**Allocation method**

Allocation based on the volume of products purchased

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

616606

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

Other, please specify (Number of tires sold)

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

The sources of emissions identified are the sources over which the company has operational control. Exclusions are noted in C6.4a.

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**Requesting member**

Renault Group

**Scope of emissions**

Scope 2

**Allocation level**

Company wide

**Allocation level detail**

<Not Applicable>

**Emissions in metric tonnes of CO<sub>2</sub>e**

369315.2602

**Uncertainty (±%)**

2

**Major sources of emissions**

Purchased electricity

---

**Verified**

Yes

**Allocation method**

Allocation based on the volume of products purchased

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

616606

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

Other, please specify (Number of tires sold)

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

The sources of emissions identified are the sources over which the company has operational control. Exclusions are noted in C6.4a. Region-based approach was used except for emissions of steam generated with wood pellet from the Vietnam plant with local companies (market-base, 0.009%).

**Requesting member**

Renault Group

**Scope of emissions**

Scope 3

**Allocation level**

Company wide

**Allocation level detail**

&lt;Not Applicable&gt;

**Emissions in metric tonnes of CO2e**

169647.1745

**Uncertainty (±%)**

30

**Major sources of emissions**

Predominant Scope 3 category is the use phase, which accounts for 71% of all Scope 3 emissions.

**Verified**

No

**Allocation method**

Allocation based on the volume of products purchased

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

616606

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

Other, please specify (Number of tires sold)

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

Kumho Tire identified domestic Scope 3 sources and calculated emissions in accordance with the Greenhouse Gas Protocol: Technical Guidance for Calculating Scope 3 Emissions and internal calculation method. Since Scope 3 emissions of overseas business sites were not calculated, we applied the Scope 3 emission per unit of domestic tires to the tires manufactured in overseas plants.

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

Kumho Tire disclosed Scope 1, 2 and 3 emissions of each plant in the 2022 Sustainability Report at 97-98. The report can be downloaded at Kumho Tire's website (<https://www.kumhotire.com/ko/company/sustainableList.do>).

**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
Diversity of product lines makes accurately accounting for each product/product line cost ineffective	The challenge to allocate emissions to different customers is that two or more tire products with different emissions are manufactured in one plant. In addition, half-finished products produced in one plant are sometimes transferred to another plant. Therefore, it is difficult to calculate and allocate emissions by product line under the current data system.

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

Yes

## SC1.4a

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

Kumho Tire will improve the efficiency of the internal data collection process and thereby collect accurate primary data on all activities that occur in the supply chain. In addition, Kumho Tire will improve the accuracy of emission allocation by expanding data collection from suppliers so as to allocate emissions based on the sales volume of each customer.

## SC2.1

---

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

**Requesting member**

Renault Group

**Group type of project**

New product or service

**Type of project**

Other, please specify (New product or service that has a lower downstream emissions footprint: Scope 3, Category 11 'Use of sold products')

**Emissions targeted**

Actions that would reduce both our own and our customers' emissions

**Estimated timeframe for carbon reductions to be realized**

3-5 years

**Estimated lifetime CO2e savings**

30956.08

**Estimated payback**

Other, please specify (Not applicable)

**Details of proposal**

The percentage of emissions from Category 11 "Use of Products Sold" of Scope 3 of car makers is significant and the emissions in the use phase of their products greatly depends on tire performance. Kumho Tire proposes Renault Group to jointly develop low carbon tire technologies such as lower rolling resistance (LRR), which can be applied to EVs and satisfy end-consumers. Kumho Tire launched an ultra-light weight tire, WATTRUN VS31, which is 25% lighter than ordinary tires and can be applied to EVs. This tire obtained the A/A grade in the EU labeling, with excellent fuel efficiency and reduced weight while maintaining the equal performance to that of ordinary tires. ECOWING ES31, another lightweight tire that can be applied to EVs, minimized energy loss with improved LRR while realizing balanced driving performance in terms of wet grip, mileage and noise with optimal tread pattern designs and new materials. These two environment-friendly tire products obtained the highest labeling grade A/A in the Europe. According to the results on energy efficiency tests of two tire products by KATECH, it was found that VS31 & ES31 could save 32.6 liters per year compared to previous ordinary tire products. If the same amount of tires purchased by Renault Group in 2021 (616,606 units) are replaced with tires with equivalent energy saving effect, a total of approx. 30,956.08 tCO2e emissions will be reduced for 4 years in the use phase.

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## SC2.2

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

No

## SC4.1

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

Yes, I will provide data

## SC4.1a

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

99.18

## SC4.2a

---

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

**Name of good/ service**

Tires

**Description of good/ service**

Kumho Tire supplies tires to car makers such as Renault, Hyundai Motor Group, Volkswagen, Benz and BMW, etc. Tires in this category refer to all tire products for regular and motor sports vehicles manufactured by Kumho Tire.

**Type of product**

Final

**SKU (Stock Keeping Unit)**

**Total emissions in kg CO2e per unit**

11.23

**±% change from previous figure supplied**

**Date of previous figure supplied**

**Explanation of change**

**Methods used to estimate lifecycle emissions**

Other, please specify (Korea GHG and Energy Target Management System Operating Guidelines, IPCC Guidelines for National Greenhouse Gas Inventories(2006), China Corporate Energy Conservation and GHG Management Programme, ISO14064-1)

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SC4.2b

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

**Name of good/ service**

Tires

**Please select the scope**

Scope 1 & 2

**Please select the lifecycle stage**

Manufacturing

**Emissions at the lifecycle stage in kg CO2e per unit**

11.23

**Is this stage under your ownership or control?**

Yes

**Type of data used**

Primary

**Data quality**

Kumho Tire includes three production plants (Gwangju, Gokseong and Pyeongtaek) and other branches and service centers as domestic business sites, and three manufacturing plants in China (Tianjin, Changchun and Nanjing) and other manufacturing plants in Vietnam and Georgia, US as overseas business sites in the reporting boundary. For domestic business sites, the reported emissions were verified in accordance with the Korea GHG and Energy Target Management System Operating Guidelines. For the Tianjin plant, the reported emissions were verified in accordance with Tianjin Pilot ETS' regulations. For other overseas business sites, emissions were calculated in accordance with IPCC Guidelines for National Greenhouse Gas Inventories (2006). Hence, we believe the data quality is reasonable.

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

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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
Tires	Initiative 1	Until 2021, Kumho Tire had strived for complying with the National Roadmap for Greenhouse Gas Reductions by 2030 that the government announced to commit to alignment with 1.5°C target of the Paris Agreement. However, since the Korean Government determined the net zero targets by 2050 and raised the NDC targets (reducing by 40% from 2018) in October 2021, Kumho Tire came to thoroughly review its goals for GHG emissions and strategies, in order to respond to climate crisis raised by IPCC and WMO. Kumho Tire has established a 2045 carbon neutrality strategy to contribute to the transition to low carbon economy and to manage climate-related risks and opportunities. Kumho Tire also joined SBTi on July 1 2022 and set a goal aligned to 1.5°C net zero targets, in accordance with the SBTi Corporate Net-Zero Standard released by the SBTi in October 2021. Kumho Tire disclosed the net zero targets in the 2022 Sustainability Report published in July 2022, and soon the strategies will be reported.	Ongoing	
Tires	Initiative 2	In 2022, to save the energy use in plants, Kumho Tire plans to improve productivity of the curing process in Gwangju and Gokseong plants, and thereby 1,448Nm3 LNG per day will be saved. The expected emissions reduction from energy saving is 1,169.3tCO2e(= 1,448(m3)*365(day)*39.4(TJ/m3)/10^6*56,152(kgCO2e/TJ)/10^3). If dividing this figure by the total number of tires manufactured in Korea in 2021, the emissions reduced per tire is approx. 0.05kg.	Planned	0.05
Tires	Initiative 3	Based on the design technology developed by itself, Kumho Tire strives to develop and expand environment-friendly products to reduce environmental impact in the entire lifecycle of tire products all processes. Kumho Tire has contributed to improvement of air environment by minimizing fine dusts from tire wear and reduced GHG (CO2) emissions by improving rolling resistance (RR). As a member of the World Business Council for Sustainable Development - Tire Industry Project (WBCSD-TIP), Kumho Tire has participated in the researched of global end-of-life tire (ELT) recycling technologies with global tire makers since 2005, in order to contribute to the circular economy. Kumho Tire conducts researches and assessments in regard to application of recycled raw materials, and set a target to increase the use of sustainable raw materials for all tire products, with 40% of recycled materials (recycled carbon black and recycled PET) and 60% of bio-sourced materials (natural rubber and environment-friendly butadiene) by 2045. Among a total of 333 of R&D projects conducted in 2021, 51 projects were relevant to environment-friendly technologies and products, including 27 researches and 24 development projects on EV and LRR.	Ongoing	
Tires	Initiative 4	In 2021, Kumho Tire introduced air dryers for plant utility (new installment of refrigerant type air dryers + renovation of desiccant air dryers) to save energy use in the plants. Kumho Tire invested KRW628,000,000 and expected electricity savings of 1,619MWh per year. Since the average rate of industrial electricity was KRW105.48/kWh in 2021 according to the KEPCO, annual savings are estimated to be KRW170,772,120 (= 1,619*1,000*105.48). Expected annual emission reductions from power savings are calculated by multiplying electricity savings by the national emission factor of electricity (0.4594 tCO2e/MWh) and approx. 744 tCO2e is estimated to have been reduced in total. Approx. 0.03kg is reduced per tire if dividing the total figure by the total number of tires manufactured in Korea in 2021.	Completed	0.03
Tires	Initiative 5	In 2021, Kumho Tire introduced air compressors for plant utility (for refining process) to save energy use in the plants. Kumho Tire invested KRW381,490,000 and expected electricity savings of 1,607 MWh per year. Since the average rate of industrial electricity was KRW105.48/kWh in 2021 according to the KEPCO, annual savings are estimated to be KRW169,506,360 (= 1,607*1000*105.48). Expected annual emission reductions from power savings are calculated by multiplying electricity savings by the national emission factor of electricity (0.4594 tCO2e/MWh) and approx. 738 tCO2e is estimated to have been reduced in total. Approx. 0.03kg is reduced per tire if dividing the total figure by the total number of tires manufactured in Korea in 2021.	Completed	0.03
Tires	Initiative 6	In 2021, Kumho Tire changed the design of air pollution prevention equipment (AC towers and impellers) in the curing process to save energy use in the plants. Kumho Tire invested KRW19,000,000 and expected electricity savings of 281 MWh per year. Since the average rate of industrial electricity was KRW105.48/kWh in 2021 according to the KEPCO, annual savings are estimated to be KRW29,639,880 (= 281*1000*105.48). Expected annual emission reductions from power savings are calculated by multiplying electricity savings by the national emission factor of electricity (0.4594 tCO2e/MWh) and approx. 129 tCO2e is estimated to have been reduced in total. Approx. 0.03kg is reduced per tire if dividing the total figure by the total number of tires manufactured in Korea in 2021.	Completed	0.01

**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

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I have read and accept the applicable Terms