

TCFD Report

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|--|----|--|----|
| INTRODUCTION | 4 | Risk Management | 22 |
| To our stakeholders | 4 | Management Process of Major Risks | 22 |
| | | Identification of Major Risks | 23 |
| | | How to Segment Customers by Climate Risk | 25 |
| Governance | 5 | Metrics and Targets | 26 |
| Governance to Respond to Climate Change | 5 | Measuring Carbon Emissions and Setting Reduction Goals | 26 |
| Roles of the BOD | 6 | | |
| Roles of the Management | 6 | | |
| Strengthening Our Ability in Response to Climate Change | 6 | | |
| Strategy | 8 | | |
| Climate-related Opportunities and Risks | 8 | | |
| Impact that Climate Change Has on Shinhan | 9 | | |
| Climate Change Scenario Analysis | 11 | | |
| Shinhan Financial Group's Carbon Pricing | 17 | | |
| Response Strategy that Reflect Climate Risks and Opportunities | 19 | | |

INTRODUCTION

To our stakeholders

From Climate Change to Climate Crisis

With extreme weather events such as heat waves, droughts, wildfires, and floods sweeping the globe, 2022 was a year in which the "climate crisis by the numbers" became more apparent than ever. According to the World Meteorological Organization (WMO), an agency of the United Nations, the global average temperature in 2022 was about 1.15°C above pre-industrial (1850-1900) levels, and the Copernicus climate change service (C3S), a climate change watchdog under the European Commission, reported that the global annual average temperature in 2022 was the fifth highest since observations began.

With temperatures rising by more than 1 degree Celsius above pre-industrial levels for the eighth consecutive year since 2015, the world is experiencing the effects of an unprecedented climate crisis, and these effects are predicted to worsen. In March 2023, the United Nations Intergovernmental Panel on Climate Change (IPCC) approved its Sixth Assessment Report at its 58th General Assembly, warning that it is difficult to prevent global temperatures from rising by 1.5 degrees before 2040. The World Meteorological Organization (WMO) announced a 66% probability of global average temperatures crossing the 1.5°C threshold in 2027, reiterating the seriousness of the climate crisis and the need for a global commitment to net zero.

The Role of Finance in the Face of the Climate Crisis

What role can finance play in the climate crisis? Financial firms can play a role in financing the transition to a low-carbon economy and supporting companies that are struggling to make the transition. These firms can also anticipate domestic and international risks to climate change and communicate financial institutions' perspectives on preparing for them. Financial firms have more stakeholders than any other industry, and this year, many of our clients are responding to policies that are being enacted around the world to address the climate crisis, including national cap-and-trade programs, the EU's Carbon Border Tax, the SEC's climate disclosures, and the IFRS Foundation's sustainability and climate disclosures. Financial companies should be the first to analyze and respond to these policies, and act as a "helper" to help Korean companies grow.

According to a report by McKinsey (The Net Zero Transition), a total of \$275 trillion is needed to get the world to "Net Zero" in 2050. A lot of the financing for this transition is not an expense, but perhaps an investment. Finance needs to play a role as a 'Coordinator' to help the low-carbon transition so that everyone in the world can live in a 'good' environment.

Shinhan Financial Group's TCFD Report

Shinhan will disclose the "role of finance" in a transparent and detailed manner through Shinhan Financial Group's TCFD Report for 2022. In 2020, Shinhan Financial Group became the first financial group in East Asia to declare the 'Zero Carbon Drive', pledging its sincere efforts to achieve carbon neutrality, and is drawing a blueprint for green growth with 2022 as the year to achieve the Zero Carbon Drive. In particular, Shinhan Financial Group will provide useful information to many stakeholders on practical activities to implement carbon reduction, such as developing the first financial emission measurement system for domestic financial groups, obtaining approval of the Science Based Target Initiative (SBTi) for scope 1-3 carbon reduction targets, and joining RE100 to reduce internal carbon emissions.

The coexistence of the present and future generations can be placed on the shoulders of the current generation. Under that heavy responsibility, I will fulfill the role given to Shinhan.

[Introduction to 2022 Shinhan Green Blueprint](#)

“
Humanity is on thin ice — and that ice is melting fast. Our world needs climate action on all fronts — everything, everywhere, all at once.

”
UN Secretary-General António Guterres during a press conference on the IPCC's Sixth Assessment Report, March 2023



Governance

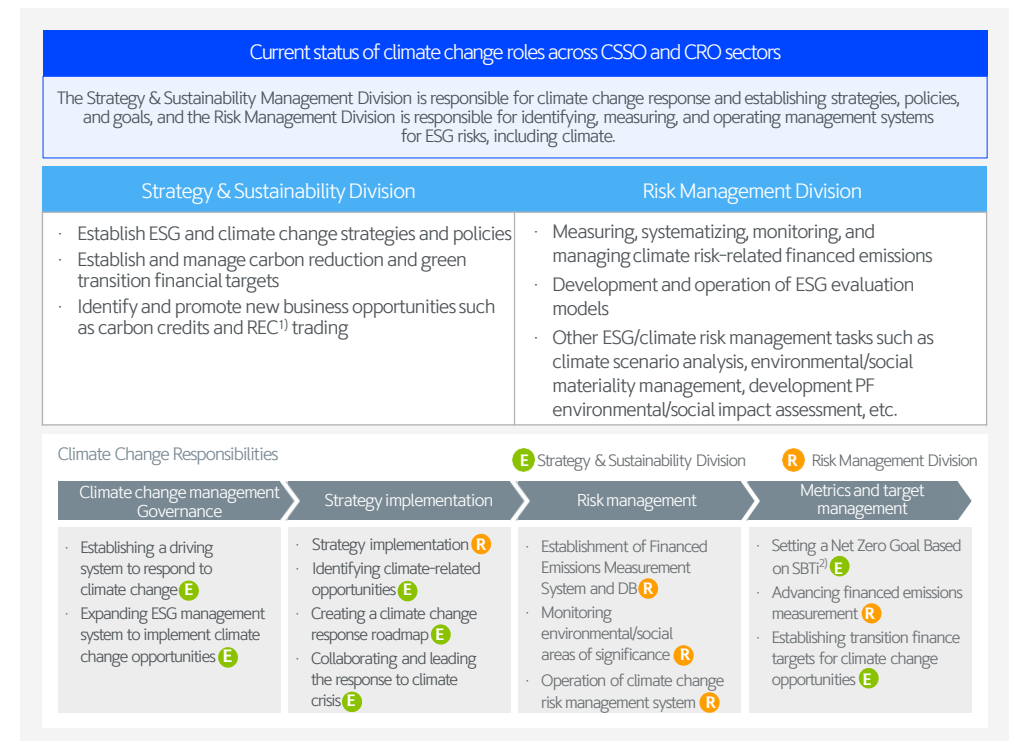
Governance to Respond to Climate Change

Shinhan Financial Group establishes a transparent and reasonable governance structure to respond to risks related to climate change and create business opportunities, thereby delivering sustainable value to stakeholders.

| | Opportunities of climate change | Risks of climate change | Key roles in detail |
|--------------------------|---|---|--|
| BOD sub-committees | ESG Strategy Committee Regularly report 4-6 times a year | Risk Management Committee Report 8-10 times a year Regularly report 4 times a year | <ul style="list-style-type: none"> Deliberate climate change strategy and risk-related agenda Decide on key policies/businesses/regulations related to climate change |
| CEO council | Group ESG Implementation Committee Regularly report every month | | <ul style="list-style-type: none"> Implement and monitor climate change-related strategies |
| Employees in charge | GCSO (Group Chief Strategy and Sustainability Officer) | GCRO (Group Chief Risk Officer) | |
| Group subsidiary council | Group ESG CSO Council | Group Risk Council | <ul style="list-style-type: none"> Discuss the direction of executing strategic tasks and countermeasures for relevant common issues of the Group Execute climate change risk management under the Risk Management Committee |
| Working group | Group ESG Working Group | Group Climate Risk Working Group | <ul style="list-style-type: none"> Identify climate change response tasks Analyze climate change-related trends and monitor risks |
| Subsidiaries | All 16 group companies, including Shinhan Financial Holding Company | | <p>Green IB Execution Lab Investing in green businesses and technologies</p> <p>ESG Global Desk Building a global network related to climate finance and discovering relevant new businesses</p> |

Shinhan Financial Group is the first Korean financial group to establish a climate change governance system that extends to the board of directors, management, executives in charge, and working teams, and is proactively identifying and managing climate change-related risks and opportunities. In particular, we are strengthening our capabilities to respond to climate change across the group through councils involving the CEOs, CSOs, CROs, and managers of each group company.

In particular, we have established a more specialized and advanced climate change response system by separating the corporate strategy/sustainability management area from the risk management area, and for organizationally detailed implementation, we are expanding the ESG organizational structure by establishing the 'Green IB Promotion Lab' and the 'ESG Global Desk' to address climate change-related opportunities in investment and global business expansion.



¹⁾REC(Renewable Energy Certificate) : A certificate that certifies that energy is supplied using renewable energy

²⁾SBTi: Science Based Targets initiative

Governance

Roles of the BOD

Shinhan Financial Group recognizes the importance of climate-related issues and strives to effectively supervise them and transparently manage the results. To this end, the ESG Strategy Committee and the Risk Management Committee of the Board of Directors are responsible for finalizing and approving climate change response strategies and important issues to implement them.

The ESG Strategy Committee, which was established in 2015 for the first time in a domestic financial company, oversees all major decisions related to ESG and climate change strategies, and held a total of four meetings in 2022. The ESG Strategy Committee, held in May, August, and November 2022, reviewed eco-friendly financial performance, financed emissions, and carbon intensity. In particular, the August ESG Strategy Committee discussed specific tasks to become the best practice for implementing Net Zero through the ESG mid-term strategy. The Risk Management Committee recognizes, measures, monitors, and controls all risks arising from various transactions in a timely manner and discusses issues related to major climate risk factors, and held a total of eight meetings in 2022.

Strengthening Our Ability in Response to Climate Change

Since the declaration of the Zero Carbon Drive in 2020, Shinhan Financial Group has continued to operate various education and training programs related to climate change by recruiting internal and external experts to strengthen the climate change response capabilities and execution capabilities of the BOD and management.

| Date | Contents | Participants | Hours | Attendance rate | Institutions |
|----------|--|---|-------|-----------------|----------------------|
| 2020.09. | · Climate change response trends (TCFD, etc.) · Global ESG trends | ESG Strategy Committee (5 persons) | 4H | 100% | External |
| 2020.11. | · Strategic use of sustainability and ESG | BOD | 1H | 100% | External |
| 2020.12. | · ESG and climate change risk management | Risk Management Committee (5 persons) | 1H | 100% | Internal |
| 2021.11. | · Measure and manage financed emissions to manage climate change risk | Risk Management Committee (5 persons) | 1H | 100% | Internal |
| 2022.03. | · Supply Chain Management and ESG Risk Issues for Financial Companies (Financed Emissions Management) | ESG 'Right, Nimble, Different' Research Society (CEO & Chairman, ESG department heads at group companies) (20 persons) | 1H | 100% | External |
| 2022.05. | · The state of ESG and climate risk and how the Group is responding · The state of ESG and climate risk and how the Group is responding | Samsun Session(Holding's executives and group company CEOs) (30 persons) | 1H | 100% | External Internal |
| 2022.08. | · Shinhan Zero Carbon Drive and K-Taxonomy | ESG Implementation Committee (group company CEOs) (16 persons) | 1H | 100% | External |
| 2022.09. | · Prepare your organization for ISSB disclosures | ESG 'Right, Nimble, Different' Research Society (CEO & Chairman, CSSO of each group company, head of ESG department) (48 persons) | 1H | 100% | External |

Roles of the Management

In 2021, Shinhan Financial Group established the ESG Implementation Committee, which is attended by all CEOs of group companies, to establish a driving system for promoting a unified ESG and climate change strategy at the group level along with the existing Group ESG CSSO Council¹⁾ and Group Risk Council. In addition, GCSO and GCRO, who are in charge of task execution, have been assigned to oversee the overall ESG driving system and climate risk management, respectively, to strengthen their leadership and expertise in responding to climate change, and report on major issues to the ESG Strategy Committee and Risk Management Committee. In particular, from 2022, Shinhan will reflect climate change issues in the CEO evaluation in three areas: green financial performance, internal emissions (Scope1,2), and financed emissions (Scope3). The three areas are part of the 'Creating Sustainable Performance' area, which accounts for a total of 15% of the CEO's evaluation weight, and are categorized as one of the seven tasks of the group's overall management plan. In particular, green finance is categorized as a long-term growth issue for the group, and the evaluation system is organized to help the entire group expand green finance in the long term. This matter is resolved by the Remuneration Committee, a committee within the BOD of Shinhan Financial Holding Company, and is directly linked to the CEO's incentives.

The evaluation of the Group CEO is also linked to the evaluation of the CEOs of the group companies, and a responsible performance management system has been established by reflecting the amount of green finance and carbon emission reduction within the KPIs of all group companies.

| Classification | Incorporating climate-related items into strategic tasks | Total |
|--|---|-------|
| Shinhan Financial Group (Creating Sustainable Performance) | Green Finance Track Record | 15% |
| | Reducing carbon emissions (financial carbon footprint, Scope 3) | |
| | Reduce carbon emissions (internal carbon emissions, Scope 1,2) | |

¹⁾ In 2019, we became the first financial company to appoint a Chief Strategy & Sustainability Officer (CSSO) for all group companies and designate a Head of ESG Practice to run the council.

Governance

Shinhan Financial Group's Climate Change Response Governance Operations in 2022

| Date | Conference Name | Participants | Discussion topic |
|--------------|--|--|---|
| 2022. 01. 27 | January ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Strategy Framework Branding (Proposal) ESG Promotion Status (Dashboard) |
| 2022. 02. 09 | ESG CSSO Council and Working Group Council | Group CSSO & Chairman, CSSOs of group companies, officers (65 persons) | <ul style="list-style-type: none"> Shared the Group's ESG promotion direction for 2022 |
| 15 | February ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Goals for '22 ESG Implementation Status |
| 22 | ESG Research Society | Group CEO & Chairman, Heads of ESG departments at major group companies (20 persons) | <ul style="list-style-type: none"> Carbon Emission Reduction TF Operation Plan Report on the development of financial emission measurement system |
| 2022. 03. 16 | March ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) |
| 21 | March ESG Working Group Council | ESG officers of group companies (49 persons) | <ul style="list-style-type: none"> Environmental Data Training for ESG Disclosures |
| 22 | ESG Research Society | Group CEO & Chairman, Heads of ESG departments at major group companies (20 persons) | <ul style="list-style-type: none"> Internal discussion: Strengthening ESG investments and becoming a climate innovator |
| 2022. 04. 18 | ESG Research Society | Group CEO & Chairman, Heads of ESG departments at major group companies (20 persons) | <ul style="list-style-type: none"> K-Taxonomy Enabling green finance through understanding |
| 29 | April ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) |
| 2022. 05. 18 | May CSSOs and Working Group Councils | Group CSSO & Chairman, CSSOs of group companies, officers (65 persons) | <ul style="list-style-type: none"> ESG Dashboard and Progress on ESG Strategy Tasks |
| 19 | May ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Strategic Tasks Dashboard ESG Progress Status (Dashboard) |
| 30 | ESG Research Society | Group CEO & Chairman, Heads of ESG departments at major group companies (20 persons) | <ul style="list-style-type: none"> Drive differentiated ESG management based on digital |
| 2022. 06. 15 | June ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) |
| 2022. 07. 07 | July ESG Working Group Council | ESG officers (49 persons) | <ul style="list-style-type: none"> Shared Proposal to Build a Group ESG Data Platform |
| 18 | July ESG Working Group Council | ESG division head, department heads and officers at major group companies (20 persons) | <ul style="list-style-type: none"> [Holding] Shinhan Financial Group's ESG Mid-term Strategy Report on the results of the '21 Social Value Measurement Project and directions for improvement |
| 29 | July ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) |

| Date | Conference Name | Participants | Discussion topic |
|--------------|--|--|---|
| 2022. 08. 17 | August ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG progress in the first half Key activities of group companies |
| 22 | August ESG Working Group Council | ESG officers at major group companies (10 persons) | <ul style="list-style-type: none"> Promote Group RE100 (Proposed) |
| 2022. 09. 12 | September ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) |
| 19 | September CSSO Council | CEO & Chairman, CSSO of group companies, department heads (32 persons) | <ul style="list-style-type: none"> ESG Dashboard and Progress on ESG Strategy Tasks |
| 30 | September ESG Working Group Council | Officers at major group companies (40 persons) | <ul style="list-style-type: none"> Analyze key global voluntary market carbon credit price trends Post-COP 26 carbon market policy changes and related efforts by global market participants, market trends, and outlook for the global carbon credit market Shinhan Financial Group's business opportunities based on market trends |
| 2022. 10. 13 | October ESG Working Group Council | ESG division head, Green IB Execution Lab, ESG department heads at major group companies (50 persons) | <ul style="list-style-type: none"> Final Reporting of REC Research Contracts |
| 30 | October ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) Analyzing ESG implementation performance |
| 2022. 11. 17 | November ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> Group carbon reduction progress Financed emissions status and actions |
| 21 | November ESG Working Group Council | ESG division head, ESG officers and secretariats of major group companies (50 persons) | <ul style="list-style-type: none"> Analyzing and applying the 'Corporate Renewable Energy Procurement Guidelines' (Korea Socially Responsible Investment Forum) |
| 2022. 12. 19 | ESG Research Society | Group CEO & Chairman, Bank ESG Ideas Competition Winners Shinhan 'Right, Nimble, Different' research group (ESG department heads of group companies) ESG department, Green IB Execution Lab (55 persons) | <ul style="list-style-type: none"> ESG Announcing the Idea Competition Winners: Case Studies for response to Biodiversity Group companies announce biodiversity collaboration |
| 30 | December ESG Implementation Committee | Group CEO & Chairman, CEOs of group companies (16 persons) | <ul style="list-style-type: none"> ESG Progress Status (Dashboard) |

Strategy

Climate-related Opportunities and Risks

Climate change has a wide range of impacts across economic activities, and for companies responding to it, it can be a strategic opportunity to create new markets and businesses. In particular, countries with a high carbon intensity based on manufacturing, such as South Korea, should use the transition to businesses based on renewable energy and eco-friendly technologies as a starting point for leapfrogging growth. This shift will increase the demand for financial services, including financing for eco-friendly businesses, and create new business opportunities for financial companies in green finance, transition finance, and more.

However, the transition to a low-carbon economy can also place a significant burden on economic activity as a whole. Financial firms, which are linked to the real economy as a whole, are exposed to a wider range of risks than other businesses, as existing business structures, facilities, etc. need to be adapted. In this context, financial firms need to redefine their role in the face of climate change more specifically, and develop strategies to proactively address climate change risks.

Climate-related Opportunities

| Classification | Climate-related opportunities | Potential financial impact |
|-----------------------|---|--|
| Resource efficiency | Increased energy and water resource efficiency, increased recycling and eco-friendly means of transportation, expansion of eco-friendly construction | <ul style="list-style-type: none"> Reduction in operation costs by improving energy efficiency and curtailing costs Increase in profits from a rise in production capacity Rise in the value of fixed assets (Example: Building with a high level of energy efficiency, etc.) Reduction in costs resulting from advantages in human resource management and plan (Example: Health and safety improvements, employee satisfaction level improvements) |
| Energy resources | Use of low carbon-emitting energy sources, use of government support policy incentives, carbon market participation, transition to distributed energy sources, application of new technologies | <ul style="list-style-type: none"> Decrease in operation costs from reduced GHG emissions Reduction in exposure to future fossil fuel price increases Reduction in influence from GHG emissions and carbon price changes Return on low-carbon technology investments Rise in capital availability Positive reputation benefits from a rise in demand for products/services |
| Products and services | Development and expansion of low carbon emissions-related products and services, climate change adaptation and insurance solutions new services through technological innovation, business activity diversification capabilities, changes in consumer preferences | <ul style="list-style-type: none"> Increase in profits based on demand for low-carbon emission products and services Rise in profits through new solutions (Example: Insurance risk transfer products and services) in relation to climate change adaptation needs Rise in profits by developing more competitiveness by reflecting changing consumer preferences |
| Market | Expansion of new market creation and accessibility, use of public sector incentives, access to new assets and regions that require insurance application | <ul style="list-style-type: none"> Increase in profits through new market access (Example: Partnerships with the government and development banks) Increased diversification of financial assets (green bond, infrastructure, etc.) |
| Resilience | Increased application of renewable energy and improved energy efficiency, resource diversification and discovery of alternative resources | <ul style="list-style-type: none"> Rise in market value through a restoration plan (Example: Infrastructure, land, building) Improvement in supply chain credibility and operation capabilities in diverse conditions Rise in sales through new products and services related to resilience |

As a financial institution, Shinhan Financial Group clearly recognizes its role in sustainable growth and the transition to a low-carbon economy, and has established and implemented strategies to mitigate climate change risks and create new businesses.

Climate-related Risks

| Classification | Climate-related risk | Potential financial impact |
|-----------------|-----------------------|---|
| Transition risk | Policy and legal risk | <ul style="list-style-type: none"> Increase in operation costs (Example: Rise in compliance costs, rise in insurance premiums) Depreciation due to policy changes Asset damage and early disposal of existing assets Increase in costs owing to fines and rulings or reduction in product and service demand |
| | Technology risk | <ul style="list-style-type: none"> Depreciation and early disposal of existing assets Reduction in product and service demand New technology and alternative technology R&D costs Capital investment for technology development Costs incurred from adopting/distributing new practices and processes |
| | Market risk | <ul style="list-style-type: none"> Reduction in demand for goods and services from changes in consumer preferences Increase in production costs owing to raised raw material prices and waste treatment cost changes Sudden, unexpected changes in energy costs Reduction in sales owing to sales performance changes Decrease in value owing to asset re-evaluation (Example: Amount of fossil fuel reserves, land value, stock value evaluation) |
| Physical risk | Reputation risks | <ul style="list-style-type: none"> Decrease in profits resulting from reduced product/service demand Decrease in profits owing to reduced production capacity (Example: Delay in plan approval, suspension of the supply chain) Decrease in profits owing to negative impact on human resource management and plan (Example: Attracting and retaining employees) Reduction in capital availability |
| | Chronic physical risk | <ul style="list-style-type: none"> Reduction in productivity and operating profit from suspension of business sites, collapse of the supply chain, deteriorated worker health, etc. Increase in operation costs and capital costs owing to facility damage, early disposal of existing assets, etc. Increase in insurance premiums for high-risk asset groups and possibility of reduced insurance availability |

Impact that Climate Change Has on Shinhan

Time Horizons

Climate risk is rapidly gaining prominence in all aspects of business, including policy and markets, as the world moves toward Net Zero. Issues such as carbon taxes and cap-and-trade programs that could affect the profits of regulated companies are emerging in the short term, and issues such as mandatory disclosure of environmental information by listed companies could pose operational and legal risks. Shinhan has analyzed that the relevant risks may affect Shinhan in the short term, which is defined as a period of at least one year and up to five years. In the medium term, reputational risks may arise from the implementation of Shinhan Financial Group's declared Zero Carbon Drive. Continued financial support for high-emitting industries that are unable to reduce their financed emissions or are unwilling to transition to low-carbon may be interpreted as "greenwashing," which may have a negative impact on public evaluation, and may also be associated with financial products such as passive investments and ESG-related ETFs, which may have a direct impact on stock price declines. This could extend to legal risks for shareholders and stakeholders.

In addition to direct risks, financial firms must also manage the risk of physical damage or deterioration in business operations of corporate clients that may occur during the transition to a low-carbon economy. In the case of conventional stress tests, short-term impacts were analyzed by predicting the future based on historical patterns, but in the case of climate scenarios, long-term analysis reflecting climate policy and regulatory impacts was found to be significant. From this perspective, Shinhan defines the medium-term as a five- to 10-year period in which it is possible to conduct practical risk monitoring and analysis and review plans to adjust exposure accordingly.

Finally, long-term risks can change dramatically depending on how physical and transition risks play out. According to the BIS report (2020), there is an inverse relationship between physical and transition risks. Therefore, if planning for low-carbon transition is not carried out smoothly, acute and chronic risks will increase due to the lack of physical risk management. Therefore, Shinhan defines the long term as the decade after 2100, which is the predicted point of reaching global temperature relative to industrialization in the IPCC report, and the decade in between.

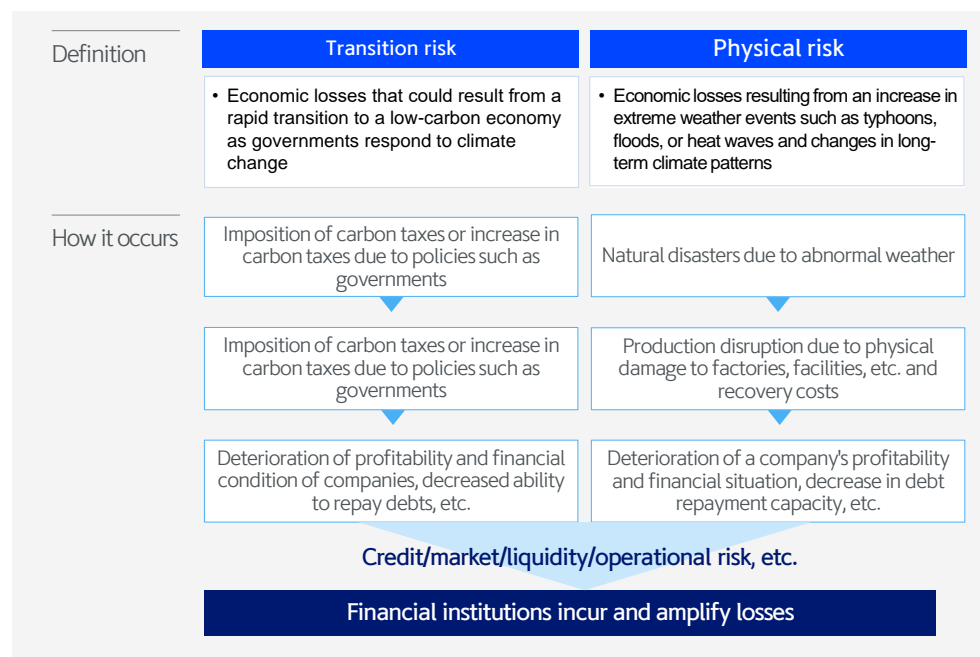
Time Horizons



Recognizing Climate Risk in Financial Firms

In recent years, global efforts to curb global temperature rise have been crystallized in the phrase "Net Zero 2050". This means that cumulative greenhouse gas emissions must be contained within a certain level, and a complete transition to a low-carbon economy by 2050 is the only way for humanity to do so. Climate risk is divided into transition risk and physical risk. Transition risks are economic losses that occur during the transition to a low-carbon economy by 2050, while physical risks are economic losses due to natural disasters caused by climate change.(TCFD 2018) If Net Zero is achieved at the target level, transition risks will occur during the transition to a low-carbon economy, but by limiting the increase in global temperature to a certain level, natural disasters will be limited and the level of physical risks will be reduced. Conversely, if the transition to a low-carbon economy is stalled and the goal of carbon neutrality is not achieved, transition risk may be minimal, but natural disasters are expected to escalate due to the failure to control global temperature rise, resulting in a significant increase in physical risk. As a result, an inverse relationship between transition risk and physical risk can be expected. As such, performance and physical risks can lead to complex problems such as credit, market shocks, reduced liquidity, and increased operational risk for companies, which can lead to losses for financial institutions.

Recognizing Climate Risk in Financial Firms



Strategy

| Risk type | Detailed risk definition | Impact on Shinhan | Time |
|-----------------|--------------------------|---|------------------|
| Transition risk | Policy and Legal | <ul style="list-style-type: none"> In the short term, export companies, including the US/Europe, may experience a rise in export costs due to the carbon tax that will further increase and regulations on high carbon-emitting businesses. In addition, operation costs can rise in the localization process, thus having a negative financial impact In accordance with the Glasgow Climate Pact, each country will establish and implement an NDC that does not exceed 1.5°C by 2030. Drastic emission reduction targets are expected to be imposed on companies within the next five years in accordance with each country's emission reduction policy. Measures that were eased in the short term can more sharply expand in the mid-term. Unprepared companies will be increasingly burdened by a rise in emission right prices and this may connect directly with borrowers' financial soundness. This may, in turn, increase Shinhan's risk In case the process of implementing Shinhan's net-zero finance influences borrower and customer contracts, etc. or leads to the raising of an issue, such as green washing, because support was not suspended for high carbon-emitting businesses, this may lead to a legal lawsuit or can become a legal risk | Short, mid, long |
| | Technology | <ul style="list-style-type: none"> All companies will increase low-carbon facility and infrastructure investments. In this case, there may be an impact on profits from the mid-term perspective as costs and expenses sharply rise but the volume of production and consumption does not rise accordingly In the long term, there may be technology development risks according to whether high carbon-emitting companies transition successfully to low-carbon transition technologies. Companies that do not successfully transition can suffer a considerable impact on profits | Mid, long |
| | Market | <ul style="list-style-type: none"> In the capital market, companies that do not actively respond to climate change have a high possibility of being excluded from investments. If Shinhan Financial Group experiences difficulties in managing financed emissions according to its declared net-zero finance or an issue related to responding to climate change resulting from a continued increase in exposure to high carbon-emitting businesses, Shinhan may be shunned by consumers and investors may withdraw their funds. This can also connect to a drop in stock prices to have a financial impact | Mid, long |
| | Reputation | <ul style="list-style-type: none"> Failure to manage financed emissions may lead to the raising of the green washing issue by the media and clients, a considerable impact on Shinhan's reputation as a company that leads green finance, and customer churn. A financial company's management of Scope 1, 2, and 3 and its climate change risk management system and response can be connected to indexes of major credit rating agencies or ESG evaluation organizations, leading to the risk of a drop in the Group's overall credit rating and ESG evaluation rating | Mid, long |
| Physical risk | Acute Risk | <ul style="list-style-type: none"> In case of an acute risk, it impacts Shinhan's corporate clients as well as retail clients. In addition, it can serve as a significant risk to owned real estate according to such acute risks as the rainy season, heavy rainfall, typhoon, and earthquake. Shinhan can be directly influenced by operation risks that are caused by a drop in such real estate's mortgage value, damage to facilities and equipment, and reduced production capacity as well as by financial risks that arise from compensation for customers' life insurance and non-life insurance. In addition, employees who suffered damages can be negatively impacted and risks may be triggered in the aspect of running the company. | Short, mid |
| | Chronic Risk | <ul style="list-style-type: none"> In case of a chronic risk, a rise in temperatures and sea levels can lead to reduced profits of relevant businesses. For example, temperatures directly influence agricultural crops and the ocean industry, and can have a considerable impact on biodiversity and survival. In this case, borrowers that engage in such businesses as the grain business, food and beverage business, and ocean and fishing industry are financially impacted as a result of a rise in sunk costs or operation costs In addition, chronic risks raise the amount of electric power use in overall industry. This can lead to reduced operating income owing to a hit to the supply chain and logistics chain | Mid, long |

Strategy

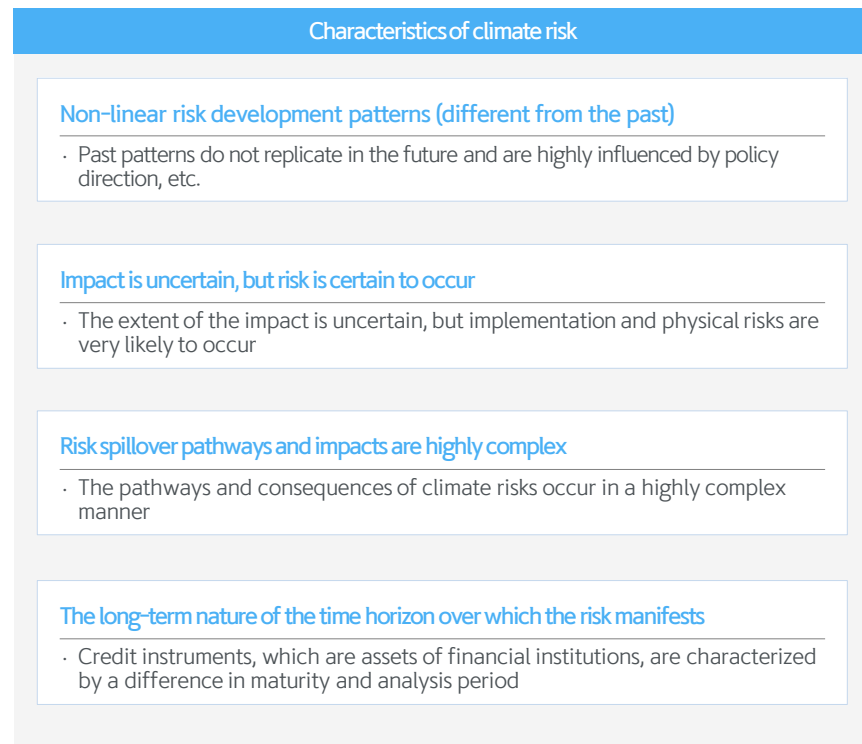
Climate Change Scenario Analysis

Shinhan Financial Group is preparing for the risks brought about by climate change through scenario analysis that considers the characteristics of climate risks. Climate risks are characterized by long-term impacts in terms of disasters caused by natural disasters that are expected to occur by 2100 due to rising global temperatures. In addition, the extent of the impact of climate risks is uncertain and difficult to accurately predict, while the probability of risk occurrence is very high for both physical and transition risks

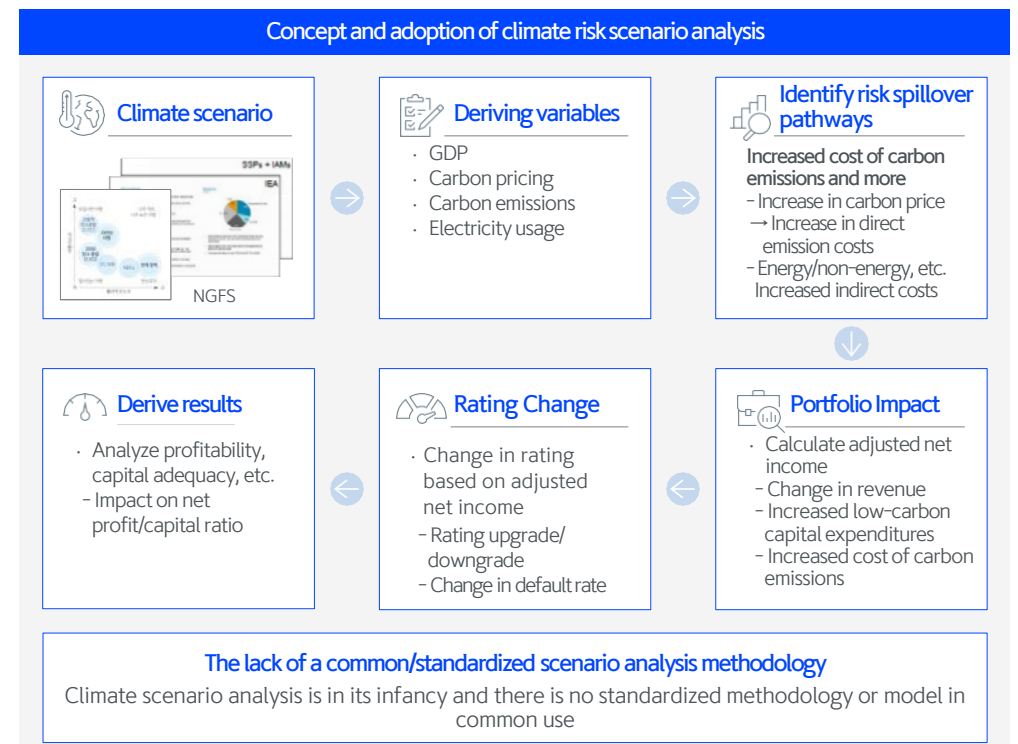
Existing stress tests conducted to analyze the impact of financial market crashes and recessions during a specific period, such as the financial crisis or coronavirus pandemic, are based on a short-term financial impact analysis of one to two years, but scenario analysis for climate risk is based on a long-term observation period. Due to this long-term nature, the period over which risks manifest themselves is long and is characterized by a gap between the maturity of credit instruments, a common asset of financial institutions, and the analysis period.

Furthermore, given the characteristics of climate risk, such as the fact that past patterns do not appear the same given the current state of domestic and international policies and companies responding to them, and the fact that the pathways and impacts of climate risk are highly complex in scope, including industries, economies, and markets, it is necessary to analyze based on scenarios that assume future conditions.

In response, Shinhan is analyzing the financial impact of climate risks by setting various variables for climate scenario analysis and deriving the risk spillover paths and impact levels according to the scenarios.



Need to analyze based on scenarios that assume future conditions



Strategy

Shinhan Financial Group Transition Risk Scenario Analysis

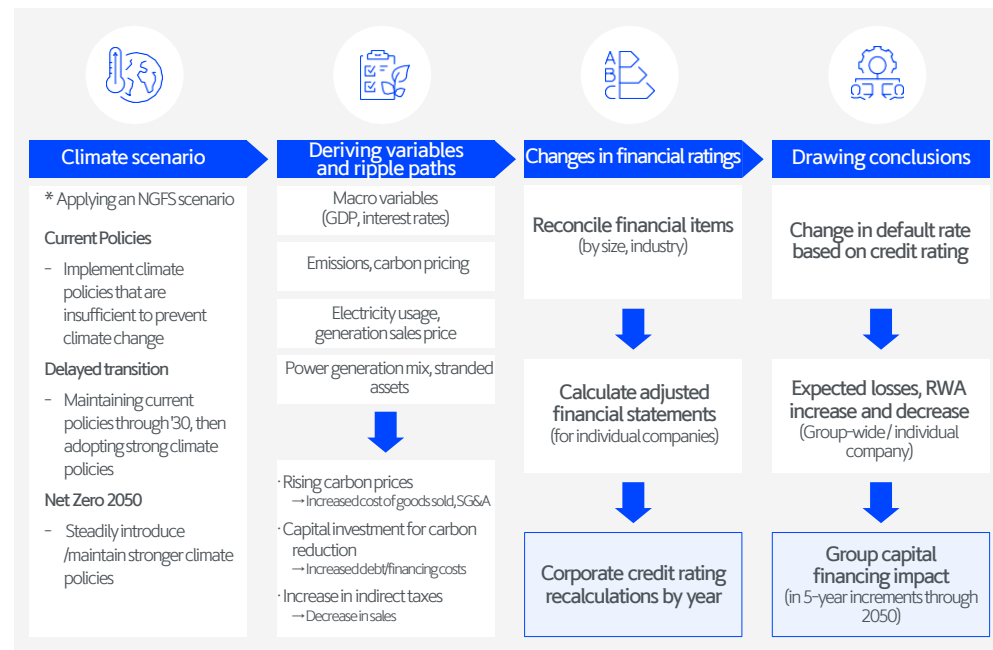
Considering the characteristics of climate risk and benchmarking various stress test methodologies such as the European Central Bank's (ECB) climate stress test¹⁾, we developed our own scenario analysis model that reflects the characteristics of Shinhan Financial Group's portfolio.

Using GDP growth rate, market interest rate, carbon price, and power generation mix as variables in the climate scenarios developed by NGFS, we estimated the future financial statements of individual companies by separating the impact of (1) the macroeconomic scenario and (2) the carbon policy scenario.

Based on the estimated financial statements, we calculated the credit ratings of the companies and analyzed the risk-weighted assets (RWA) and expected losses according to the credit ratings to estimate the capital ratios of Shinhan Financial Group by 2050.

¹⁾ 'Economy-wide climate stress test' (Economy-wide climate stress test, 2021.9.)

Transition Risk Scenario Process



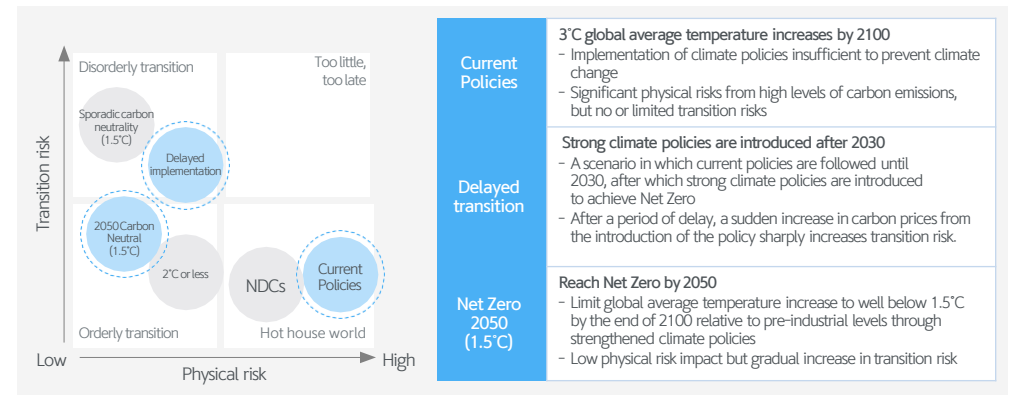
* Climate risk financial impact analysis estimation formulas based on ECB stress methodology

$$\begin{aligned}
 \text{(Assets)} \quad TA_t^i &= \exp\{a + b_1 \log(TA_{t-1}^i) + b_2 \log(GDP_t) + b_3 \text{CPI}\%_t\} \\
 \text{(Revenue)} \quad S_t^i &= \exp\{a + b_1 \log(S_{t-1}^i) + b_2 \log(TA_t) + b_3 \text{VAT}_t + b_4 \text{OIL}\%_t + b_5 t\} \\
 \text{(COGS)} \quad C_t^i &= \exp\{a + b_1 \log(C_t^i) + b_2 \log(TA_t) + b_3 t\} + \Delta \text{Cost}_t^i(\text{carbon cost}) + \Delta \text{Cost}_t^i(\text{energy cost}) \\
 \text{(Carbon Reduction)} \quad \Delta \text{Scope}1_t^i &= \text{Scope}1_{t-1}^i \times (1 + S_YOY_t^i) - \text{Scope}1_t^i
 \end{aligned}$$

For the scenario analysis of transition risk, we present results for three of the six scenarios provided by the NGFS that we consider to be the most characteristically distinct and meaningful: (1) Net Zero 2050, (2) Delayed transition, and (3) Current Policies.

The three selected scenarios, (1) Net Zero 2050, (2) Delayed transition, and (3) Current Policies, present levels of global warming, so that we can recognize the level each scenario is targeting. Net Zero 2050 and Delayed transition show global temperature rise declining to a peak in 2060, while Current Policies shows global temperature rise continuing.

NGFS Climate Change Scenarios



* NGFS (Network for Greening the Financial System): Green Finance Council, 95 organizations from around the world, including the Bank of Korea, the Financial Services Commission, and the Financial Supervisory Service, to promote green finance for the transition to a sustainable economy.

| Scenario | 2030 | 2050 | 2060 | 2080 | 2100 |
|--------------------|------|------|------|------|------|
| Net Zero 2050 | 1.13 | 1.26 | 1.26 | 1.13 | 1.02 |
| Delayed transition | 1.26 | 1.55 | 1.55 | 1.41 | 1.41 |
| Current Policies | 1.26 | 1.89 | 2.16 | 2.72 | 3.34 |

* Source: Median temperature increase provided by NGFS (2022)

Strategy

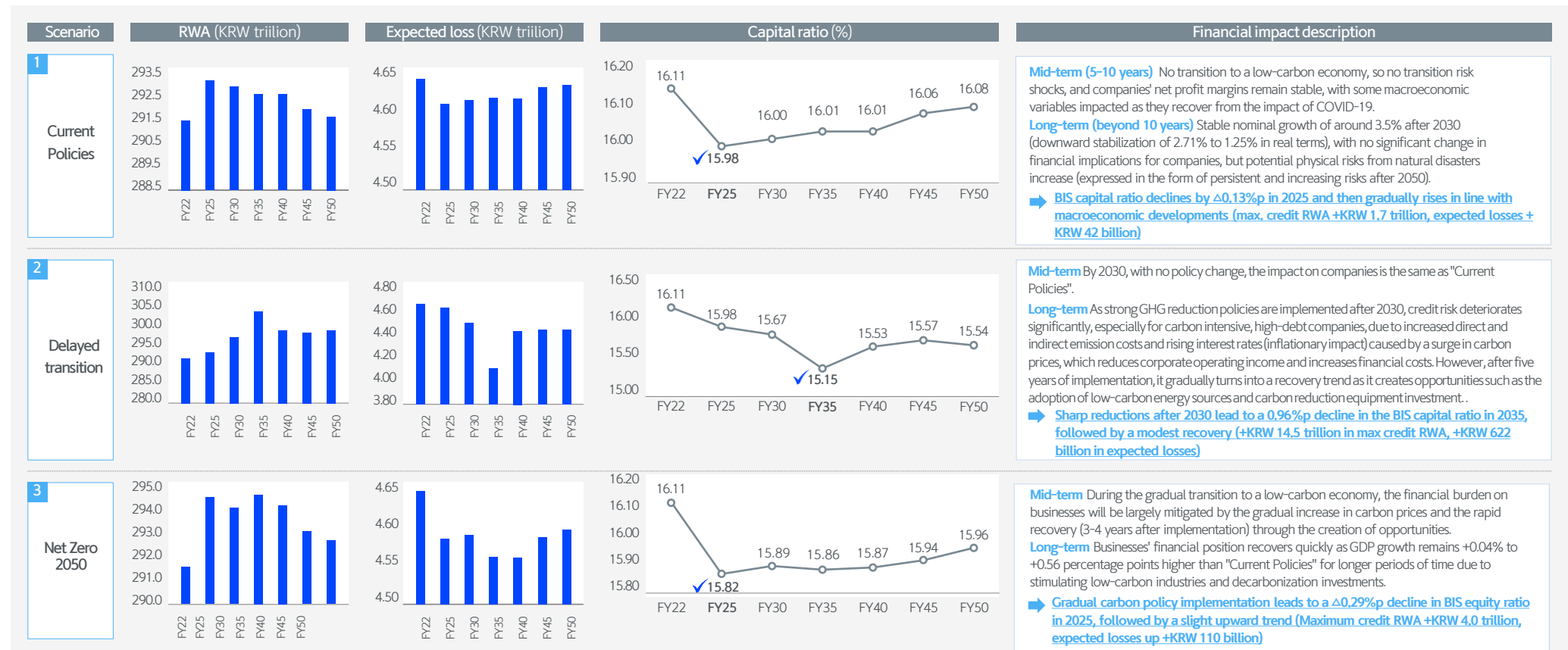
Transition Risk Scenario Analysis Results

The analysis of Shinhan Financial Group's transition risk scenarios shows that the Group's capital ratio is expected to fall by up to 0.96 percentage points from the baseline of 2022 in the Delayed transition scenario. Even at the maximum level of decline, the capital ratio is above the regulatory capital ratio level and the Group's targeted minimum maintenance capital ratio level, and is significant in that it specifically measures the impact of climate risk. While maintaining current policies may seem less risky in the short term based on capital ratio numbers alone, global temperatures are projected to rise by about 2 degrees Celsius in 2050 if current policies are maintained. In this case, physical risks, which are inversely related to transition risks, are very likely to occur and their impacts are likely to escalate, causing greater damage from a global perspective.

Therefore, if climate scenarios are considered comprehensively, early transition efforts to a low-carbon economy based on the Net Zero 2050 scenario are necessary.

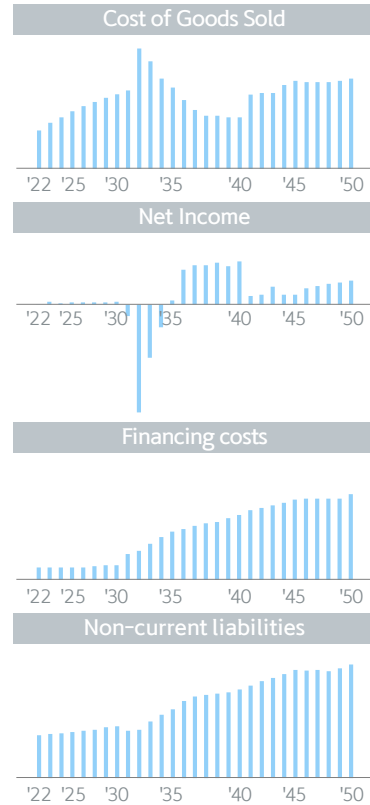
The scenario analysis was conducted for 14,000 companies that are categorized as high-carbon industries and have carbon emissions of 5,000 tons or more, which are significantly impacted by the carbon policy. The emissions of these companies account for 98% of the total financial emissions of Shinhan Financial Group, so the results are significant in terms of refining the target and scope for measuring the impact of climate risk.

Detailed Results of Shinhan Financial Group's Transition Risk Scenario Analysis

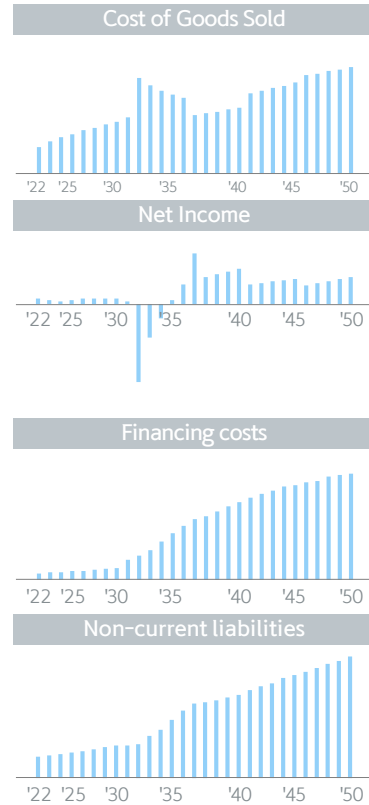


Shinhan Financial Group's carbon intensive industry transition risk analysis: Analyzed based on Delayed Transition Scenario

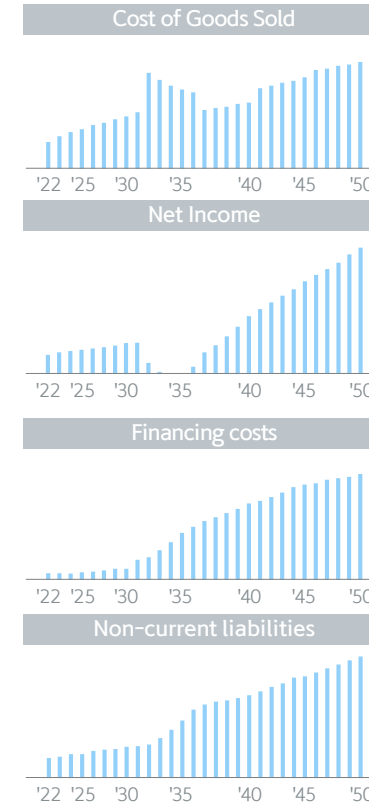
Change in financials for a carbon intensive industry (power generation company A)



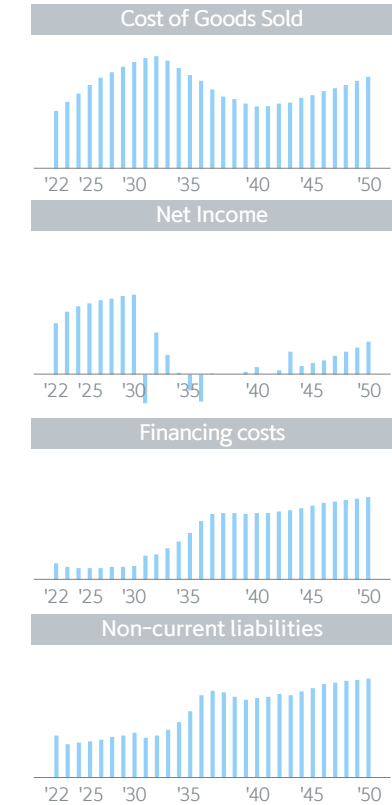
Change in financials for a carbon intensive industry (steel company B)



Change in financials for a carbon intensive industry (Cement company C)



Change in financials for a carbon intensive industry (Oil refinery company D)



Change in credit ratings

| Year | Rating |
|------|--------|
| 2022 | ✓ A- |
| 2025 | A+ |
| 2030 | BBB- |
| 2035 | ✓ B+ |
| 2040 | BBB |
| 2045 | BB+ |
| 2050 | ✓ BBB |

| Year | Rating |
|------|--------|
| 2022 | ✓ AA- |
| 2025 | A+ |
| 2030 | BBB+ |
| 2035 | ✓ BB- |
| 2040 | BBB |
| 2045 | BBB+ |
| 2050 | ✓ A- |

| Year | Rating |
|------|--------|
| 2022 | ✓ A+ |
| 2025 | A |
| 2030 | BBB+ |
| 2035 | ✓ BB- |
| 2040 | BBB |
| 2045 | BBB |
| 2050 | ✓ BBB |

| Year | Rating |
|------|--------|
| 2022 | ✓ AA- |
| 2025 | AA |
| 2030 | A+ |
| 2035 | ✓ BBB- |
| 2040 | BBB+ |
| 2045 | BBB+ |
| 2050 | ✓ BBB+ |

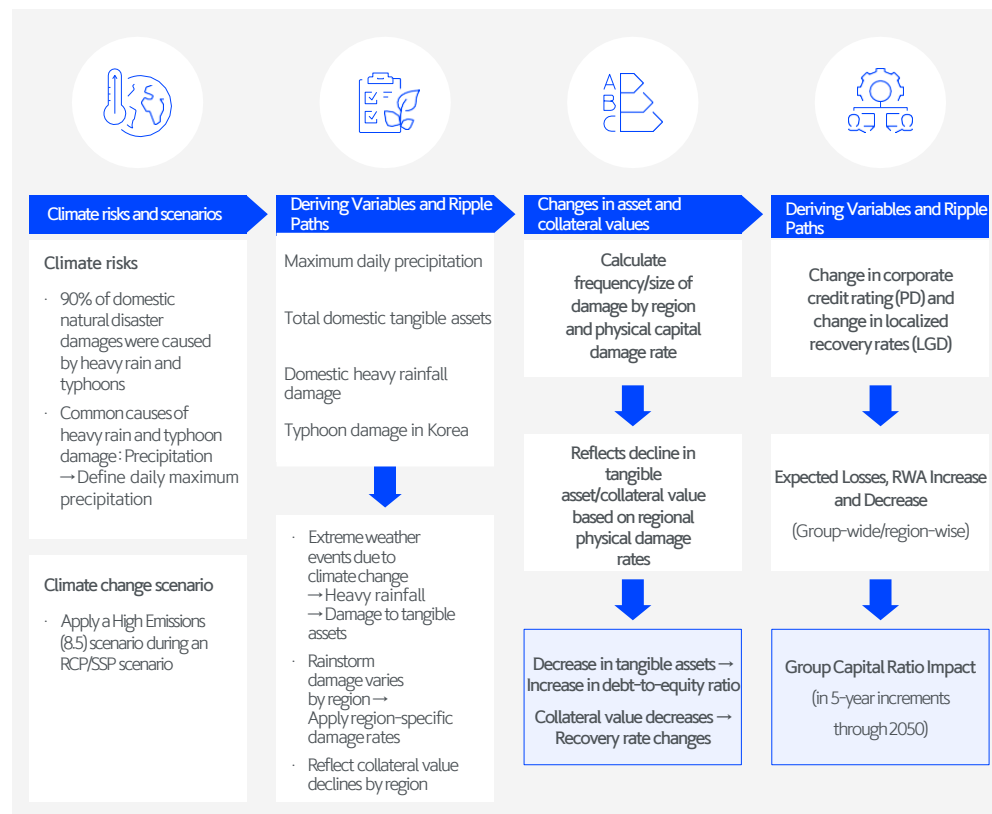
*Carbon intensive sectors: Carbon intensive sectors are selected based on a company's financed emissions, exposure, and intensity (power generation, steel manufacturing, chemicals, cement, etc.), see page 25.

Strategy

Shinhan Financial Group Physical Risk Scenario Analysis

Shinhan Financial Group has developed its own physical risk analysis methodology by benchmarking the ECB's physical risk analysis methodology¹⁾ and considering the Korean climate environment.

We derived the relationship between precipitation and heavy rain/typhoon damage events to estimate the frequency and scale of damage, and calculated the annual physical capital damage rate by region until 2050 using the RCP 8.5 / SSP5-8.5 daily maximum precipitation scenario and data on total tangible assets in Korea. Based on the results, we identified the impact on Shinhan Financial Group's capital ratio by reflecting the change in debt-to-equity ratio due to changes in a company's tangible assets, the resulting change in credit rating, and the decline in the value of collateral assets.



For the scenario analysis of risks, we used the Representative Concentration Pathway (RCP) scenario used in the IPCC Fifth Assessment Report and the Shared Socioeconomic Pathways (SSP) scenario used in the IPCC Sixth Assessment Report. Shinhan Financial Group utilized the results of the RCP8.5 and SSP5-8.5 scenarios to disclose its physical risk analysis. This is because physical risks tend to increase in high-emission and high-temperature scenarios, so high-emission scenarios are the most appropriate for the purpose of conducting physical risk scenario analysis. For the analysis period up to 2050, the uncertainties in the climate models are larger than the differences between the climate change scenarios, and it is not until close to 2100 that the differences between the climate change scenarios are more pronounced than the uncertainties in the climate models.

The physical risk scenario analysis was limited to heavy rain and typhoon damage. Heavy rain and typhoon damages account for the largest share of domestic natural disaster damages, accounting for 93.2% of total damages over the past 10 years. By type of damage, heavy rain (49.1%), typhoon (44.1%), snowfall (3.6%), and earthquake (2.2%).

| RCP (Representative Concentration Pathways) | | | SSP (Shared Socioeconomic Pathways) | |
|---|--|--------------------------------------|--|---|
| <ul style="list-style-type: none"> The IPCC Fifth Assessment Report defines GHG concentrations as the amount of radiation that human activity imposes on the atmosphere, and uses the term "representative" to mean that there can be many socio-economic scenarios for the same radiative forcing. The term "pathways" is used to emphasize the changes in GHG emission scenarios over time. The RCP number represents the amount of additional global absorbed energy (W/m²) due to greenhouse gases | | | <ul style="list-style-type: none"> For the IPCC's Sixth Assessment Report, five scenarios are divided into future mitigation and adaptation efforts based on future socioeconomic development in conjunction with radiative forcing in 2100 (the traditional RCP concept). Consider demographics, economic development, welfare, ecosystem factors, resources, institutions, technological development, social factors, and policies The first number of SSP represents the social/economic effort to adapt to climate change, and the second number represents the radiative forcing (W/m²) in 2100, as in the RCP scenario | |
| Classification | Definition | CO ₂ Concentration (2100) | Classification | Definition |
| RCP2.6 | Take action on greenhouse gas reductions now | 450ppm | SSP1-2.6 | Assuming that renewable energy technologies will minimize the use of fossil fuels and lead to environmentally sustainable economic growth. |
| RCP4.5 | Significant realization of greenhouse gas reduction policies | 540ppm | SSP2-4.5 | Assuming intermediate levels of climate change mitigation and socioeconomic development |
| RCP6.0 | Achieving some level of GHG reduction | 670ppm | SSP3-7.0 | Assuming a social structure that is vulnerable to climate change due to inactive climate change mitigation policies and late technology development |
| RCP8.5 | Greenhouse gas emissions on current trends | 940ppm | SSP5-8.5 | Assuming that rapid advances in industrial technology will lead to high fossil fuel use and urban sprawl |

1) See European Central Bank (ECB), "Economy-wide climate stress test," September 2021.

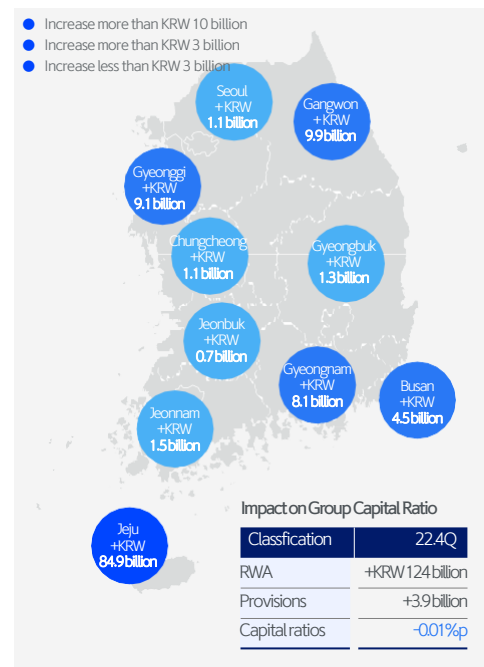
Strategy

Physical Risk Scenario Analysis Results

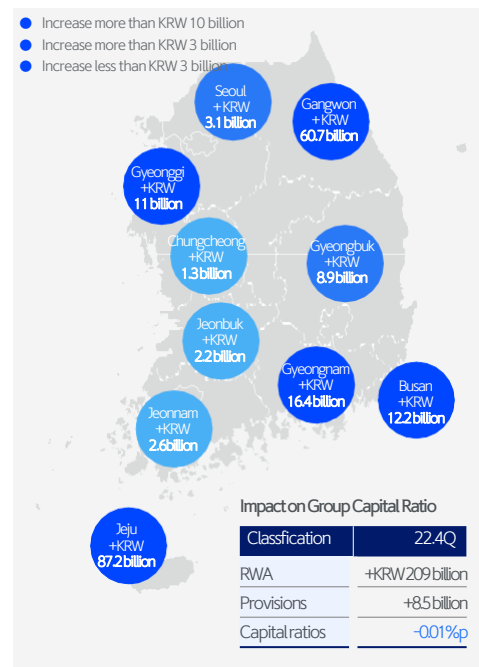
'The analysis of physical risk scenarios shows that the group's capital ratio is expected to decrease by up to 0.01%p under both the RCP 8.5 and SSP5-8.5 scenarios compared to the baseline of 2022. Under the RCP 8.5 scenario, group RWA is expected to increase by KRW 124.1 billion and provisions by KRW 3.9 billion by 2050, while under the SSP5-8.5 scenario, it is expected to increase by KRW 209.1 billion and KRW 8.6 billion by 2050, respectively.

The largest physical risk impact is in Jeju, which has a large amount of damage in the scenario and a relatively large exposure in Korea due to the characteristics of Jeju Bank, a subsidiary of Shinhan Financial Group. The results of the physical risk analysis show that the impact on Shinhan Financial Group's capital ratios is insignificant. However, if the analysis period for physical risks is extended to 2100 and the types of physical risks are expanded to other types such as heat waves, forest fires, water shortages, and coastal inundation, the impact may be greater.

Regional RWA Impact (RCP 8.5)



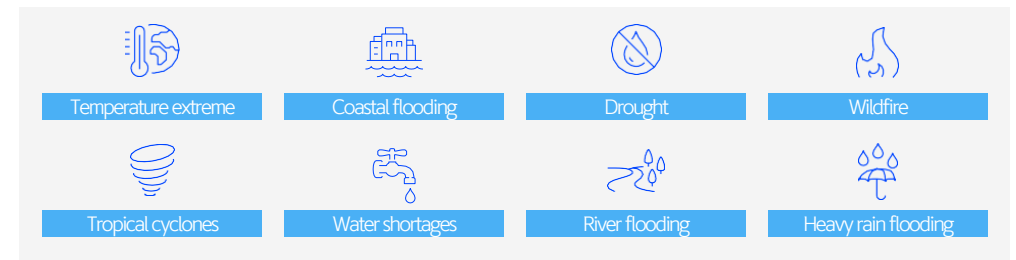
Regional RWA Impact (SSP 5-8.5)



As part of this expanded analysis, Shinhan utilized the physical risk analysis model of global credit rating agency Standard & Poor's (S&P) Global to further analyze the physical risks of the Group's portfolio. Acute disasters such as floods and typhoons, as well as the financial impact of chronic disasters and supply chain damage due to long-term climate change, were analyzed, including a total of eight core climate change risk types¹⁾.

In doing so, we identified financial impacts that could be caused by not only heavy rains and typhoons, but also other types of physical risks such as heat waves and cold waves. We also analyzed the types of physical risks to which Shinhan's portfolio is exposed, as well as industries and individual companies with high levels of financial impact. In the future, we plan to expand the scope of scenario analysis based on physical risks and refine the analysis of financial impacts as climate data is secured and the analysis methodology is refined.

8 Climate risks



Temperature increase over 1986-2006 global temperature average by scenario (°C)

| Scenario | 2030 | 2050 | 2060 | 2080 | 2100 |
|----------|------|------|------|------|------|
| RCP2.6 | 1.13 | 1.41 | 1.55 | 1.55 | 1.55 |
| RCP4.5 | 1.13 | 1.78 | 1.98 | 2.29 | 2.42 |
| RCP6.0 | 1.13 | 1.68 | 1.98 | 2.72 | 3.34 |
| RCP8.5 | 1.26 | 2.16 | 2.85 | 4.51 | 5.49 |

* Source: Median temperature increase provided by NGFS (2022)

1) Extreme temperatures, coastal inundation, drought, wildfires, tropical cyclones, water scarcity, riverine flooding, and flash flooding.

Shinhan Financial Group's Carbon Pricing

Purpose of Adoption

Carbon pricing is a market-economic approach to reducing greenhouse gas (GHG) emissions by utilizing market mechanisms to shift the costs of emissions to emitters, and can serve as a financial indicator for high-carbon emitters, which can be used as a basis for strategic planning and decision-making for a company's low-carbon transition, including driving an economic incentive-based low-carbon transition or paying for carbon emissions.

As the international community's demand for GHG reductions intensifies, and countries are increasingly regulated and targeted to meet their NDCs to implement the Paris Agreement, carbon pricing is being utilized as a flexible and efficient approach and tool to drive active carbon reduction and mitigate climate impacts. Therefore, Shinhan Financial Group measures carbon prices and utilizes them for stress testing and scenario analysis of financial assets in order to implement the global Paris Agreement and achieve the Group's Net Zero declaration, 'Zero Carbon Drive'. Furthermore, it is utilized as an important indicator for making business decisions such as eco-friendly investments and financial support for low-carbon transition, managing financed emissions through engagement with trading customers, and managing internal carbon emissions.

Measuring Carbon Price

Shinhan Financial Group manages all Scope 1, 2, and 3 GHG emissions according to the GHG Protocol, and applies differential carbon prices based on the characteristics of its own emissions and financed emissions. For Scope 1 and 2, which comprise the majority of our own emissions, we apply carbon prices based on renewable energy purchases, and for Scope 3, which comprises the majority of our financed emissions, we apply carbon prices based on the NGFS scenario.

Internal Carbon Pricing (Scope 1, 2)

In the case of internal carbon pricing for Scope 1 and 2, we calculate the price based on the cost of purchasing renewable energy that Shinhan Financial Group needs to promote in the short term to achieve its carbon neutrality declaration and RE100. In the case of domestic emission trading prices (KRW 10,000-20,000), which were the main application until last year, they are lower than those in Europe (about 100 euros per ton) and the United States (about 80 to 90 dollars), and we decided that there are limitations to limiting the carbon price to domestic emission trading prices. Therefore, Shinhan has set an internal carbon price of approximately KRW 100,000-130,000 per ton based on the cost of three means of offsetting emissions and purchasing renewable energy based on the RE100 standard: Green Premium, REC, and PPA, and makes decisions on business participation, purchases, and reductions to reduce internal emissions based on that price.

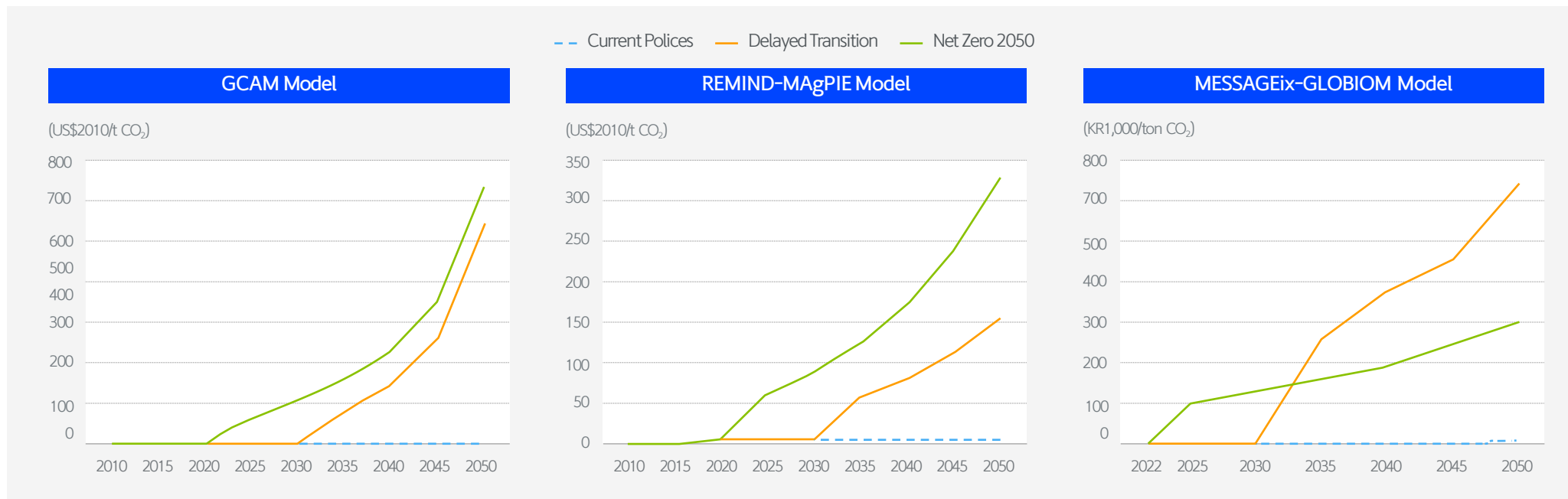
Financed Emissions Carbon Pricing (Scope 3)

Shinhan Financial Group is developing a carbon price for financed emissions based on national carbon prices analyzed according to scenarios provided by the NGFS, and is using it as an incentive or contractual condition for climate scenario analysis and business decisions such as credit and investment. NGFS utilizes three climate economic Integrated Assessment Models (IAMs), GCAM, REMIND-MAgPIE, and MESSAGEix-GLOBIOM, to generate carbon price scenarios. We found that the carbon price scenarios for Korea produced by the GCAM and REMIND-MAgPIE models show significantly higher carbon prices in the Net Zero 2050 scenario, where climate policies are introduced early and gradually strengthened, than in the Delayed transition scenario, where the carbon price rises sharply due to the delayed introduction of climate policies, which is at odds with the scenario narrative.

Therefore, we believe that it is reasonable to apply a carbon price based on the scenario calculated by the Shinhan Financial Group MESSAGEix-GLOBIOM model. However, it is important to note that the scenario calculated by the MESSAGEix-GLOBIOM model is not the result of analyzing Korea as a separate region, but as part of the Asia Pacific region consisting of 41 countries.

Strategy

Carbon Pricing Scenario for South Korea



Carbon Pricing Scenarios based on the MESSAGEix-GLOBIOM Model

| Scenario | Region | Unit | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 |
|--------------------|--------------------|---------------------------|-------|-------|-------|---------|---------|---------|
| Delayed Transition | Other Pacific Asia | US\$2010/tCO ₂ | - | 1.0 | 780.4 | 1,168.9 | 1,442.2 | 2,002.4 |
| Current Policies | Other Pacific Asia | US\$2010/tCO ₂ | - | 1.0 | 1.1 | 2.2 | 3.3 | 4.4 |
| Net Zero 2050 | Other Pacific Asia | US\$2010/tCO ₂ | 257.4 | 345.4 | 437.2 | 536.2 | 682.7 | 822.2 |

Strategy

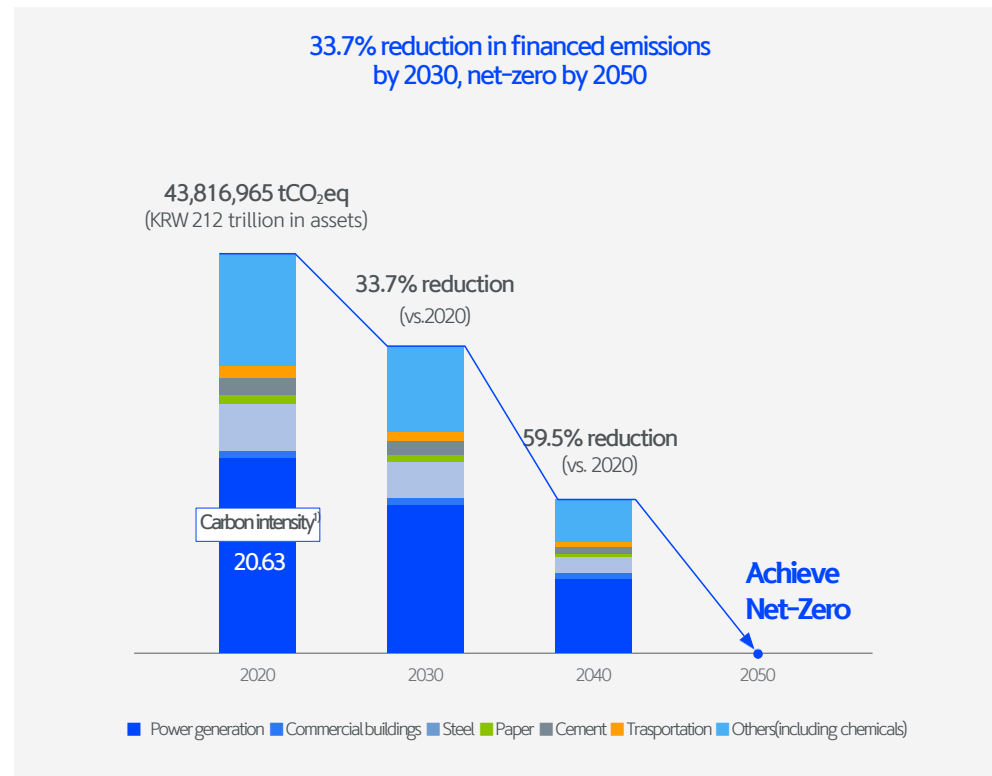
Response Strategy that Reflect Climate Risks and Opportunities

After comprehensively analyzing the impact of climate change risks and opportunities, Shinhan Financial Group declared 'Zero Carbon Drive' in 2020, the first financial group in East Asia to adopt a carbon-neutral strategy, and set detailed goals to achieve it.

Response to the Korean Green Classification System (K-Taxonomy)

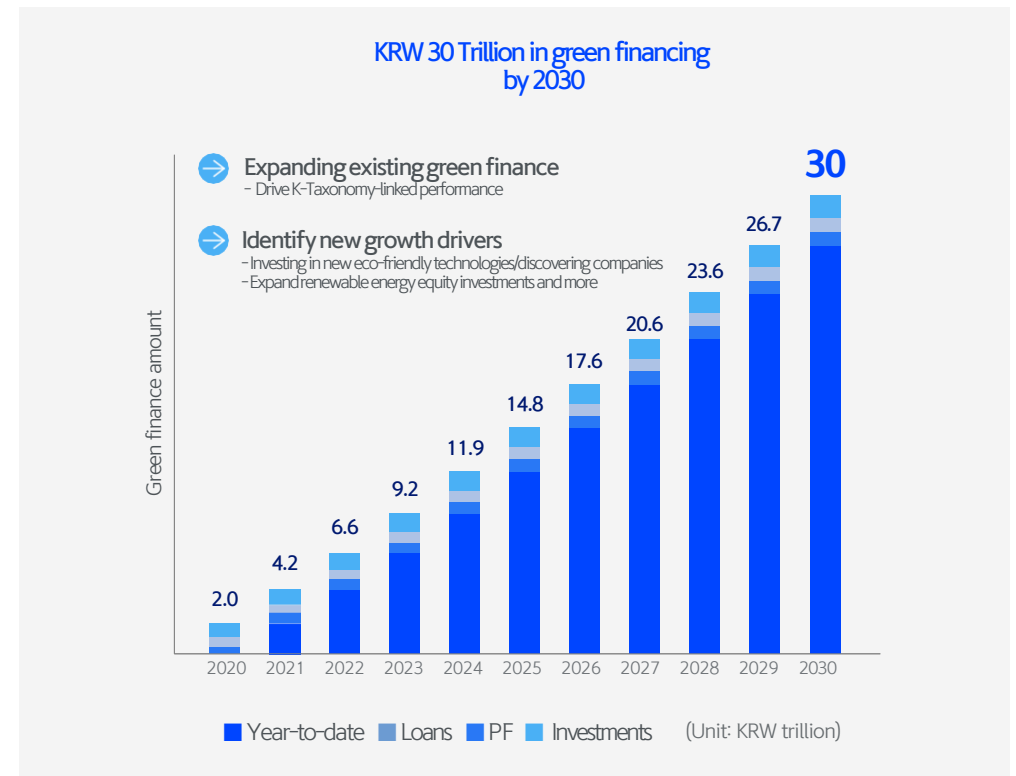
Climate change is recognized as a new type of risk, and the transition to a low-carbon economy in response is expected to have a significant impact on real payments. In addition, the low-carbon green transition, while costly and time-consuming, should be viewed as a challenge that must be addressed for the sustainable development of our society and an opportunity to secure future growth engines. As a result, climate change can be viewed as both a risk and an opportunity, and transition finance can be viewed by financial institutions as a response to the opportunity.

Financed emissions (carbon footprint of assets)



¹⁾ Financial emissions per KRW 100 million units of assets

Green financing



Strategy

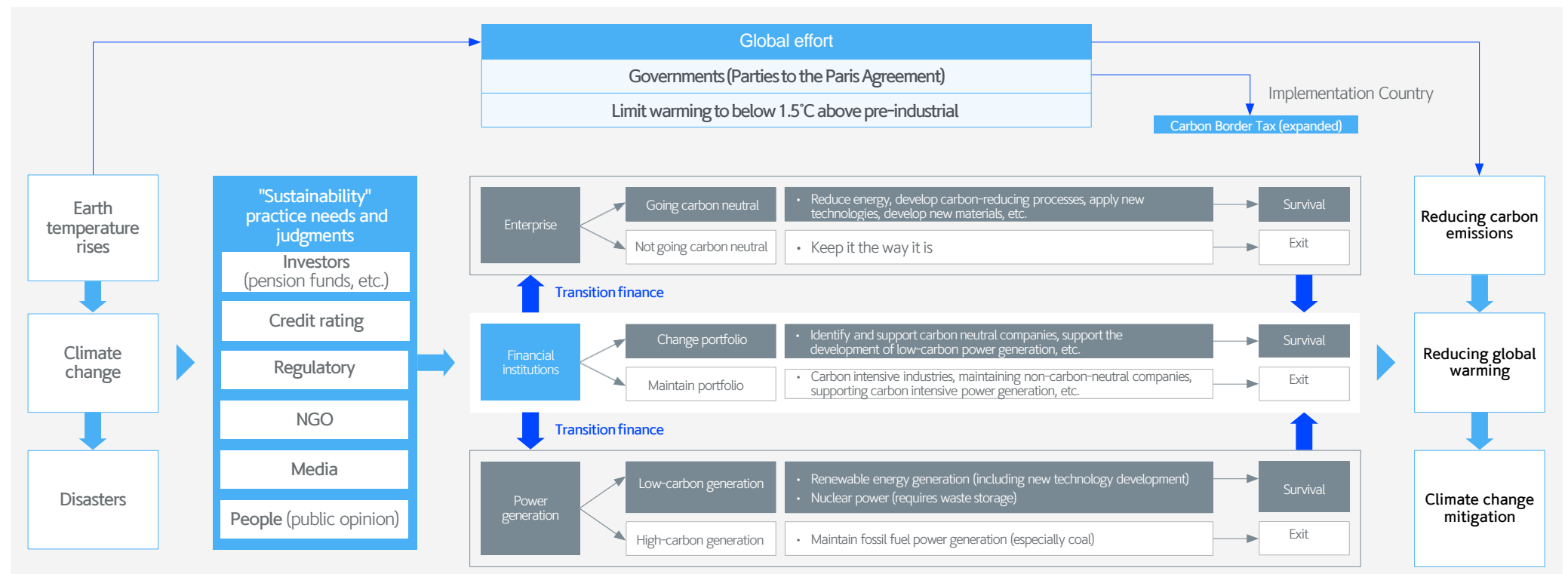
Background on the Transition Finance Policy

One of the key climate risk management objectives for financial firms is to reduce their financed emissions, and this can be done by removing exposure to carbon-intensive industrial sectors and avoiding providing loans, financing, and investments in those sectors. However, the Net Zero Banking Alliance's (NZBA) Transition Finance Guide highlights the need for transition finance, with three reasons why reducing exposure alone will not fully address the decarbonization challenge.

- Payback does not solve the problem of decarbonizing the real economy (i.e., it does not solve the problem of combating climate change)
- Carbon-intensive sectors may still receive funding from less regulated non-bank financial institutions, maintaining the status quo or even driving higher emissions as a result

- Banks no longer have a relationship with those customers and can no longer play a role in providing transition planning and solutions for Net Zero through financing or advisory services to customers in carbon-intensive sectors.

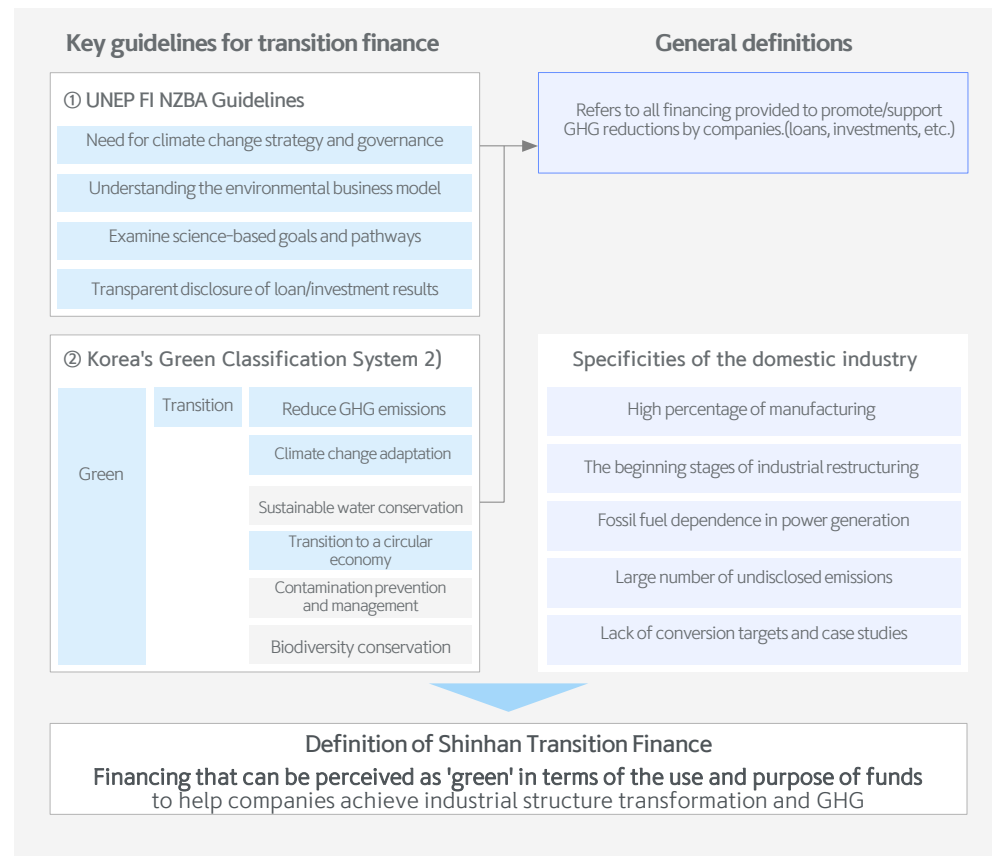
As a result, banks need to support the transition of their customers with the decarbonization of the real economy as a key factor, and develop customer engagement and financial techniques to promote decarbonization. The finance needed to do this can be referred to as transition finance, and it can be said that transition finance is a means to decarbonize the real economy and win-win finance that engages customers.



Strategy

Defining Transition Finance Target

Based on the Korean Green Classification System and the UNEP FI Net Zero Transition Finance Guidelines, Shinhan Financial Group has defined the scope of transition finance, taking into account the specificities of Korea, which has a high proportion of manufacturing industries. Through this, Shinhan's transition finance will aim to (1) achieve Net Zero by 2050, (2) provide Win-win financing for climate change, and (3) secure sustainability.

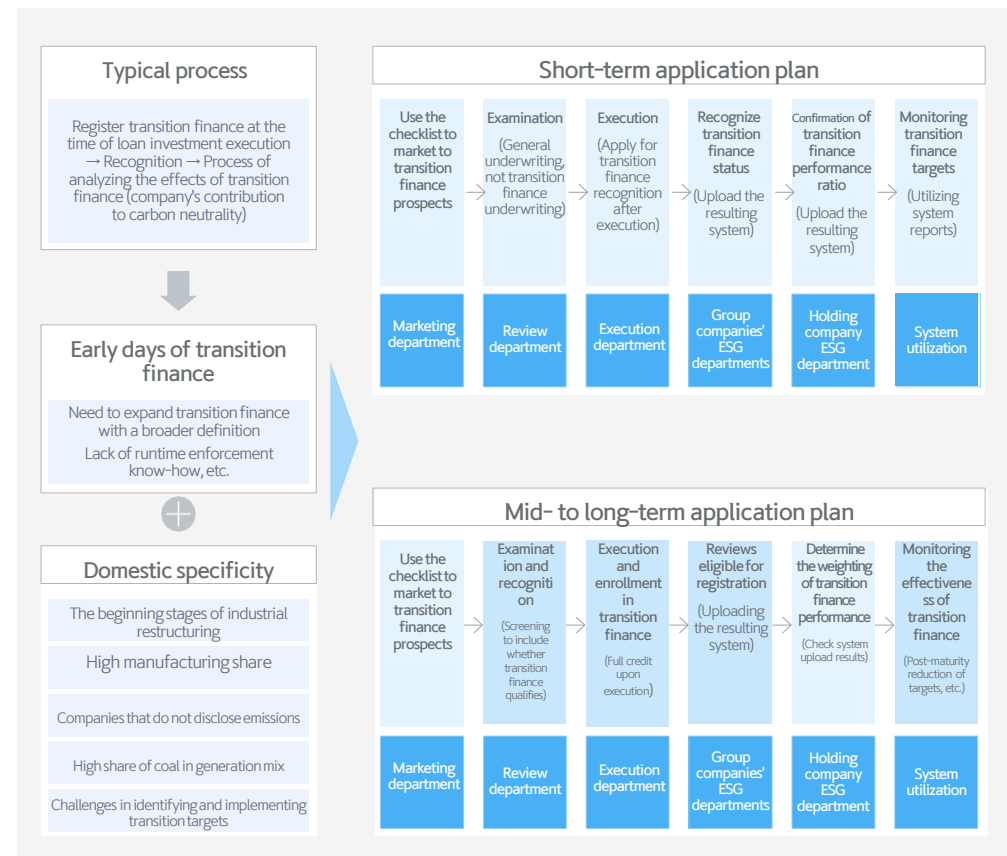


1) UNEP FI Net-Zero Banking Alliance (NZBA) Transition Finance Guidelines: Transition finance evaluation criteria applied by NZBA
 2) Korean Green Classification System: Include GHG reduction items in the green transition sector and climate change adaptation and transition to a circular economy in transition finance

Process for Determining Transition Finance

Performance on transition finance should be operated as a procedure to register and recognize transition finance at the time of loan-investment execution, but since registration at the time of execution is a prerequisite for a clear understanding of transition finance at the point of sale, it is necessary to separate short-, medium-, and long-term applications.

In the short term, we will determine whether transition finance is required after the loan and investment screening process, and in the medium to long term, we will supplement the factors that can determine transition finance during screening and execution.



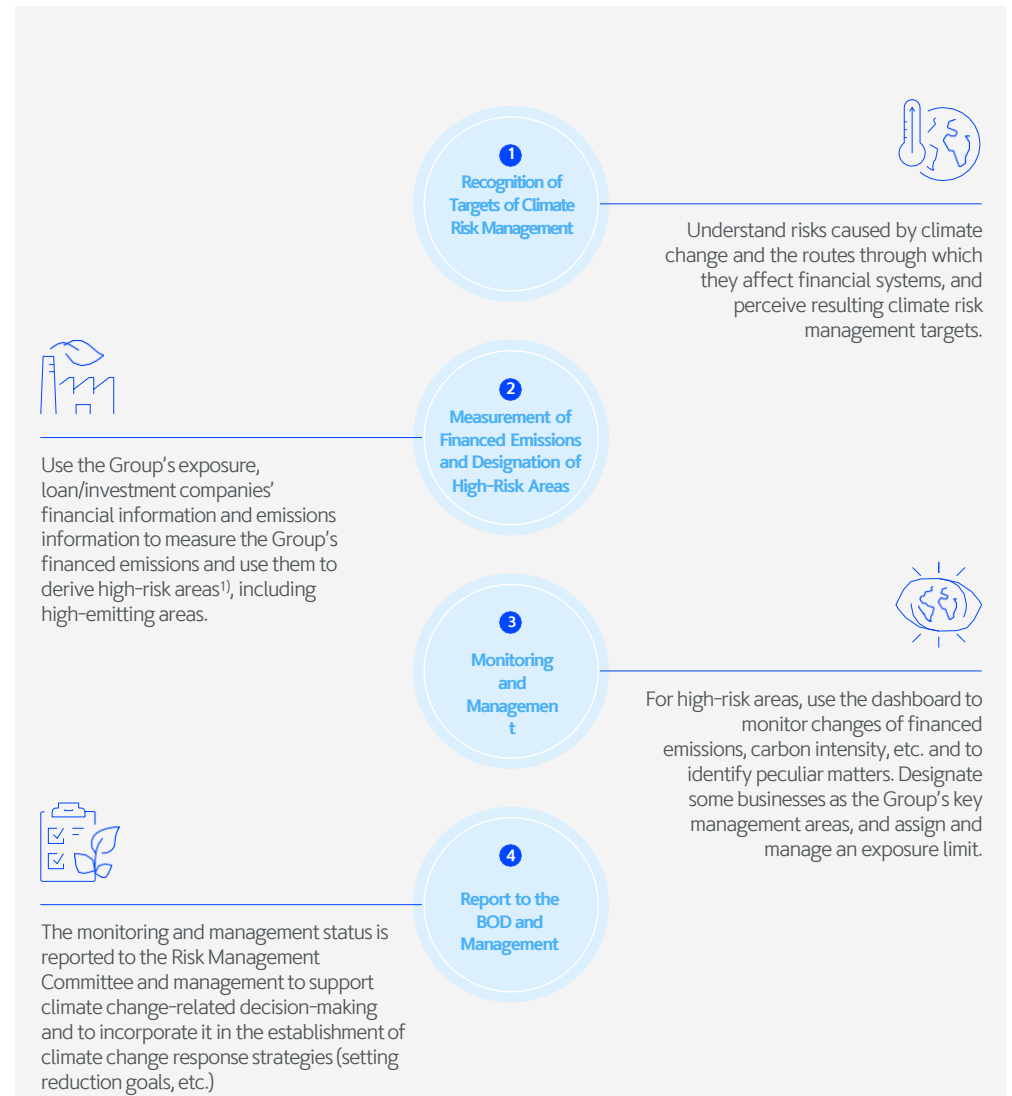
Risk Management

Management Process of Major Risks

By integrating climate risk areas within the existing risk management process, Shinhan Financial Group effectively identifies and monitors climate-related risks across the business, and to manage them, we systematically define environmental and social risks based on TCFD recommendations and develop appropriate methodologies to assess risks. In addition, we have advanced our risk management governance and regulatory framework by establishing a financed emissions measurement system and database, and establishing best practices for climate risk management.

➔ The ESG Strategy Committee oversees the establishment of sustainable management strategies and policy decisions, and the Risk Management Committee oversees the Group's risk management, including the management of ESG risks such as climate.

| Strategy & Sustainability Division | | Risk Management Division | |
|---|--|---|--|
| Classification | Highlights | Classification | Highlights |
| ESG Strategy Committee Policy | <ul style="list-style-type: none"> Establishing sustainability management strategies Policy decisions, including climate change response | Risk Management Committee Policy | <ul style="list-style-type: none"> Define ESG risk Specify sub-regulations related to ESG risk management |
| Group Climate Change Action Principles | <ul style="list-style-type: none"> Articulate the Group's Climate Action Principles and implementation framework | Group ESG risk management rules | <ul style="list-style-type: none"> Details on recognizing, measuring, and managing ESG risk management |
| Group Environmental Code of Conduct | <ul style="list-style-type: none"> Define what needs to be done for environmental management - Minimize greenhouse gas emissions - Financing green industry and green living - Stakeholder green communication | Group ESG Risk Management Best Practices | <ul style="list-style-type: none"> Best Practices in ESG Risk Management - Climate risk management, materiality management, environmental and social risk review, ESG risk-related systems, etc. |



¹⁾ Choose by comprehensively considering the Group's exposure/financed emission/carbon intensity level, definition of risk areas in TCFD (energy, transportation, raw materials and architecture, agricultural products/foods and forest products), and reports of the Bank of Korea and research institutes

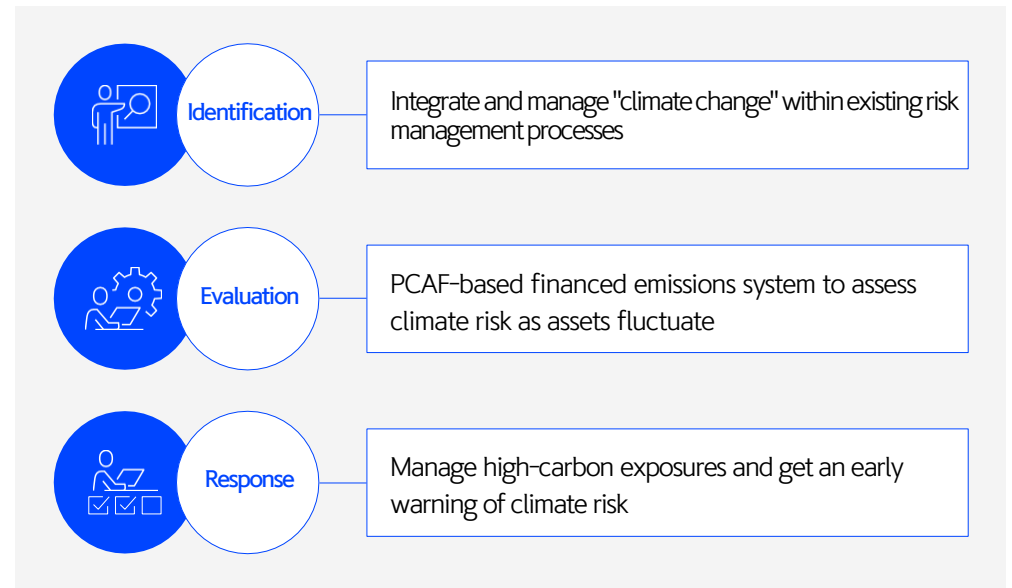
Risk Management

Identification of Major Risks

Based on the TCFD recommendations, Shinhan Financial Group is identifying the underlying, transition, and physical risks. The Group Risk Department regularly identifies areas of vulnerability to climate change based on climate change-related information from investment and lending companies. With 'financed emissions' as the main factor, we identify climate risks by checking the monthly volatility of assets and emissions. We also continuously monitor climate change risks by collaborating with internal and external specialized organizations and reflecting the latest research.

To systematically assess and manage climate change transition risks, Shinhan Financial Group has developed an independent financed emissions measurement system. It calculates financed emissions based on the PCAF standard and shares them across the company through a dashboard. In addition, physical damage caused by natural disasters can ripple through the financial sector. To manage physical risks, Shinhan analyzes the possible impacts on the Group's portfolio by region and industry through step-by-step climate scenario analysis.

Shinhan Financial Group reflects the results of financed emissions measurements in its credit/investment processes and decision-making. In particular, the Group sets exposure limits for carbon intensive industries that it focuses on and manages them. In addition, as with the existing risk management process, the Group monitors whether financed emissions exceed pre-set thresholds for each company/sector through the risk dashboard and establishes/implements management measures in case of excess.



Risk Management

| Scenario | Financial risk | | | Non-financial risk | | | |
|-----------------|------------------|--------|------------|--------------------|------------|-------|----------|
| | Credit | Market | Reputation | Regulatory | Technology | Legal | Physical |
| Transition risk | Policy and Legal | ● | ● | ● | | ● | |
| | Technology | ● | | | ● | ● | |
| | Market | ● | ● | | | ● | |
| | Reputation | ● | | ● | ● | | ● |
| Physical risk | Acute | ● | | | ● | | ● |
| | Chronic | ● | | | ● | | ● |

| FINANCIAL RISK | |
|------------------------|--|
| Credit Risk | Shinhan Financial Group measures financed emissions of its asset portfolio and conducts a scenario analysis on climate risks. We analyzed that the power generation, utility, energy, and materials sectors, which have substantial carbon emissions, will be exposed to climate change risks owing to future carbon price increases. If we change the Group's asset portfolio to low-carbon emission pathways through investments in renewable energy projects, we can look for opportunities that can generate offset credits. |
| Market Risk | Market risk arises from consumer behavior changes or changes in product and service supply and demand. Shinhan Financial Group conducts regular surveys and analyses to identify customer requirements as well as consumer and market trends that result from climate change. In addition, we expect increased demand for the renewable energy business in accordance with the Renewable Energy 3020 Policy, and are strengthening relevant responses. |
| Reputation Risk | Against the backdrop of increased consumer awareness of climate change and the environment, companies' sustainability activities in relation to climate change and the environment are influencing consumers' buying decisions. If Shinhan Financial Group fails to fulfill social responsibilities that are related to climate change and the environment, then its brand value will drop and a negative public opinion will form which can have a considerable impact on operating income. For this reason, we applied the Equator Principles and chose 12 significant environmental and social areas to minimize reputation risk. |

| NON-FINANCIAL RISK | |
|------------------------|---|
| Regulatory Risk | Under the emission trading scheme, a company needs to purchase excessive permits if allowances go down, and additional costs may arise to reduce emissions. The Group's clients may also experience a decrease in their debt repayment ability owing to purchasing of permits or investments in efficient facilities. If current regulations are strengthened as climate change gains speed, permit prices go up and the possibility of unexpected losses increases. As a measure, Shinhan Financial Group developed a financed emission measurement system and is systematically managing the Group's and companies' emissions. |
| Technology Risk | New low-carbon, eco-friendly technologies are being developed to achieve climate change-related and net zero goals. Sales may drop when financial products that include new technologies and innovation are not expanded/developed. Shinhan Financial Group identifies risks and opportunities by regularly surveying/analyzing climate-related technology development and market trends as well as customer demand. We also manage products that are related to building energy, such as Green Energy Factoring, Second Green Remodeling Loan, and New and Renewable Energy Fund. We plan to expand relevant financial products according to areas and speed of technology development. |
| Legal Risk | This refers to current or expected financial position and resilience-related risk that arises from a violation of laws, rules, or regulations or failure to observe stipulated customs, internal policies, processes, or ethical standards by a company or a project for which an investment was made. If a lawsuit is filed due to a climate issue and the business owner becomes subject to legal punishment, this may damage brand value and financial soundness. By using the environmental and social risk management system, Shinhan Financial Group determines whether to make an investment by evaluating financial impact on an investment company or project. If needed, the Group provides conditional financial support that obligates the reflection of measures to reduce environmental impact. |
| Physical Risk | Abnormal weather phenomena caused by climate change can directly damage assets owned by Shinhan Financial Group. In particular, bank branches that are located in mountainous areas have a relatively high possibility of suffering physical damages from localized heavy rain, and the resulting temporary business suspension may cause massive damages to business. Furthermore, average temperature rises in the summer raise the amount of electric power and tap water usage and also decrease labor productivity. Shinhan Financial Group pre-determines buildings and branches that are vulnerable to climate change and strives to prevent damages. |

Risk Management

How to Segment Customers by Climate Risk

Climate change will have a long-term impact on the portfolio assets held by Shinhan Financial Group, and the extent of the impact will vary depending on the type of customer and collateral provided by the customer. Therefore, in order to prioritize management targets, Shinhan has differentiated customers into transition risk and physical risk, and set management levels based on a combination of the two types.

Differentiate Customer Segments to Identify-Assess Transition Risk

Customer segmentation from a transition risk perspective is categorized into five levels of management intensity, TRR1 ~ 5, based on four factors: size-business type-disclosure of carbon emissions-increase or decrease in disclosed emissions. Size is a materiality criterion, and industry is a criterion for determining whether a company is a carbon intensive industry as defined by Shinhan Financial Group. Disclosure of carbon emissions is a criterion for determining whether a company is an emissions trading company or voluntarily discloses its emissions, and the increase or decrease in disclosed emissions is a criterion for determining reduction efforts among companies that have disclosed their emissions.

Differentiate Customer Segments for Physical Risk Identification-Assessment

The segmentation of the physical risk perspective is divided into four levels of management intensity, PHR1 ~ 4, based on four factors: size-collateral regional information (whether it is a high-risk area for natural disasters)-business type (whether it is a natural disaster-sensitive industry)-collateral size. Size is the same materiality criterion as transition risk, collateral geographic information is differentiated because the damage caused by natural disasters varies by region, business type is a criterion for classifying industries that are sensitive to natural disasters, and collateral size is a criterion for judging the size of the collateralized property

| Classification | Management intensity | Segmentation factors | | | |
|---------------------|----------------------|--------------------------|--|-----------------------------|--|
| | | Size ²⁾ | Industry | Carbon emissions disclosure | Increase or decrease in public emissions ³⁾ |
| TRR ¹⁾ 1 | High | | | Disclosed | Increase |
| TRR2 | Mid-High | | Carbon intensive industries | | Other than increase |
| TRR3 | Mid-Mid | Above a certain size | | Undisclosed | - |
| TRR4 | Mid-Low | | Other than carbon intensive industries | - | - |
| TRR5 | Low | Less than a certain size | - | - | - |

1) TRR : Transitional Risk Rating, where a lower number indicates greater control
 2) Size criteria: financed emissions of less than 50 tons or exposure of less than KRW 500 million
 3) Increase in disclosed emissions: Determined by whether disclosed emissions have increased for two consecutive years.

Through the selection of carbon intensive industries, Shinhan Financial Group aims to prioritize the Group's financed emissions management targets and use them as a basis for customer management and future portfolio adjustments.

The selection of carbon intensive industries was conducted in two stages, utilizing financed emissions as a basic indicator. The first step is to categorize industries with high financial intensity. In step 1, we categorized industries with high financial intensity by considering their exposure ratio and financial intensity ranking. In step 2, we checked the compatibility with Shinhan Bank's high-risk industries.

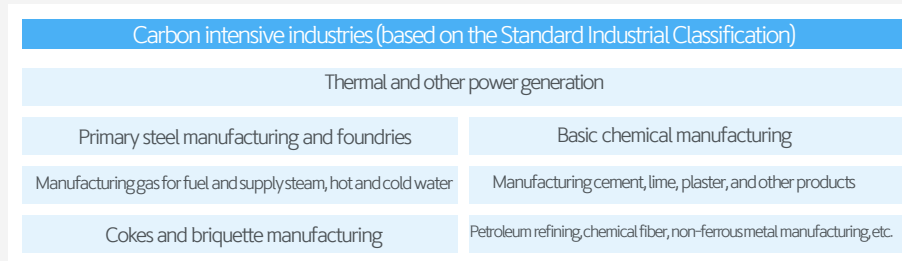
| Classification | Management intensity | Size | Collateral area information | Industry | Collateral size ²⁾ |
|---------------------|----------------------|--------------------------|-----------------------------|-------------------------------|-------------------------------|
| PHR ¹⁾ 1 | High | | High-risk regions | Risk industries ²⁾ | More than KRW 3 billion |
| PHR2 | Mid-High | Above a certain size | | Other industries | Less than KRW 3 billion |
| PHR3 | Mid-Low | | Other regions | - | - |
| PHR4 | Low | Less than a certain size | - | - | - |

1) PHR : Physical Risk Rating, where a lower number indicates a higher level of control.
 2) Collateral size is the appraised value of the collateralized property
 3) In the case of risky industries, it is 'agriculture, forestry, fishing and manufacturing, and construction'.

Shinhan Financial Group's Management of Carbon Intensive Industries

Shinhan selected carbon intensive industries by considering financed emissions, exposure, and financed emissions intensity, which will be used to prioritize the group's financed emissions management targets, manage risks, and adjust portfolios in the future.

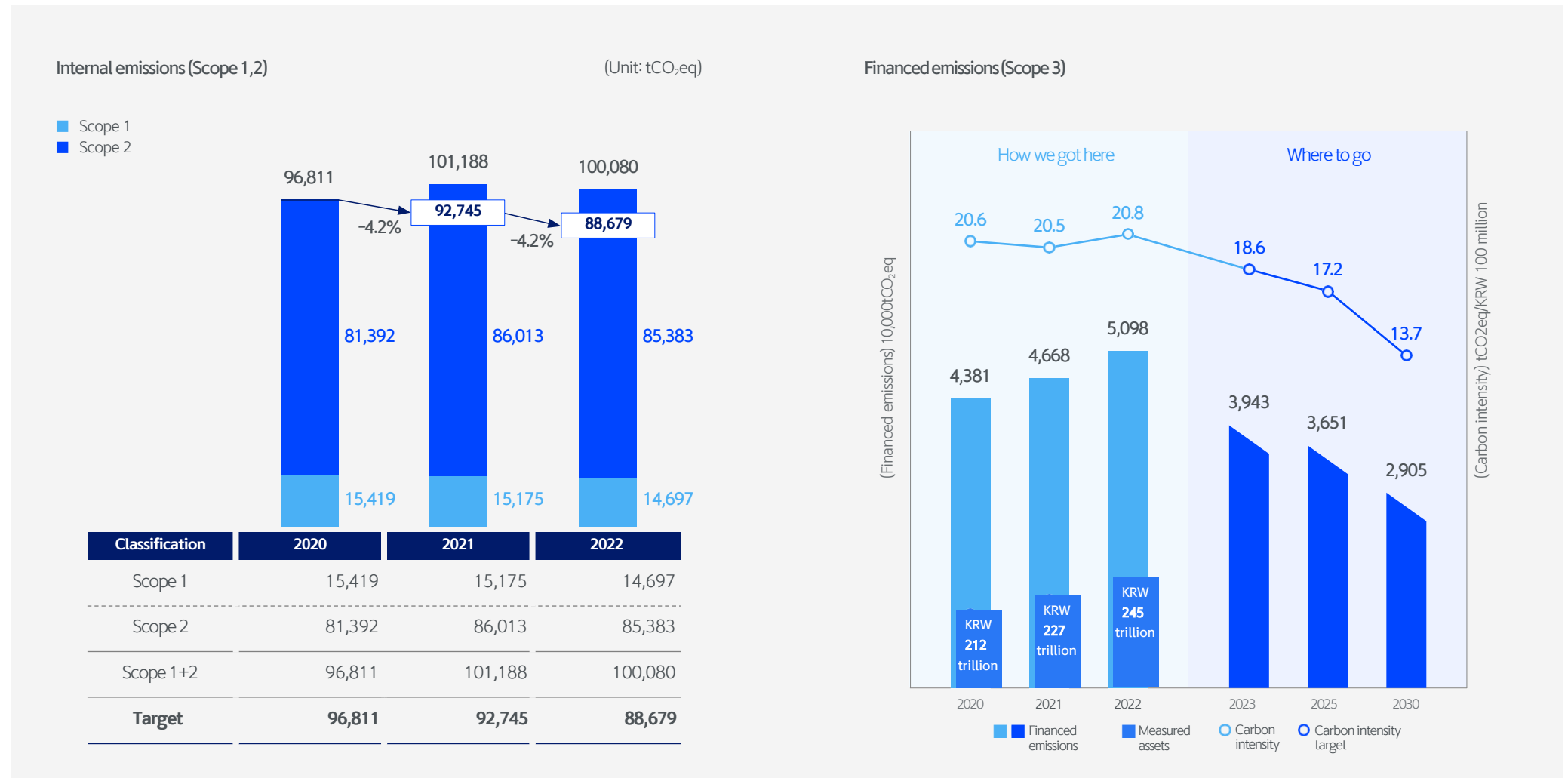
In the future, Shinhan plans to enhance carbon emission monitoring for carbon intensive industries and encourage emission disclosure and support, especially for customers with undisclosed emissions within carbon intensive industries. For customers whose emissions are increasing as a result of monitoring, we will consider a separate screening process, and for customers whose emissions are decreasing or being managed, we will consider active support for transition finance, etc.



Metrics and Targets

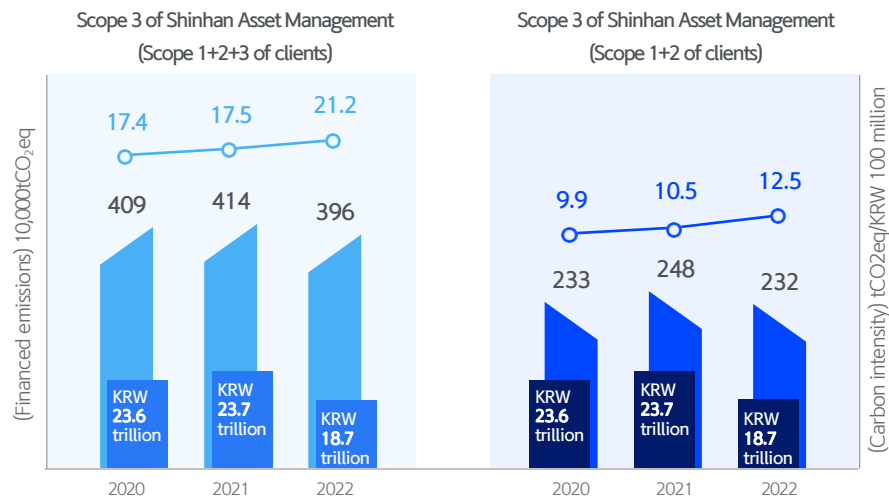
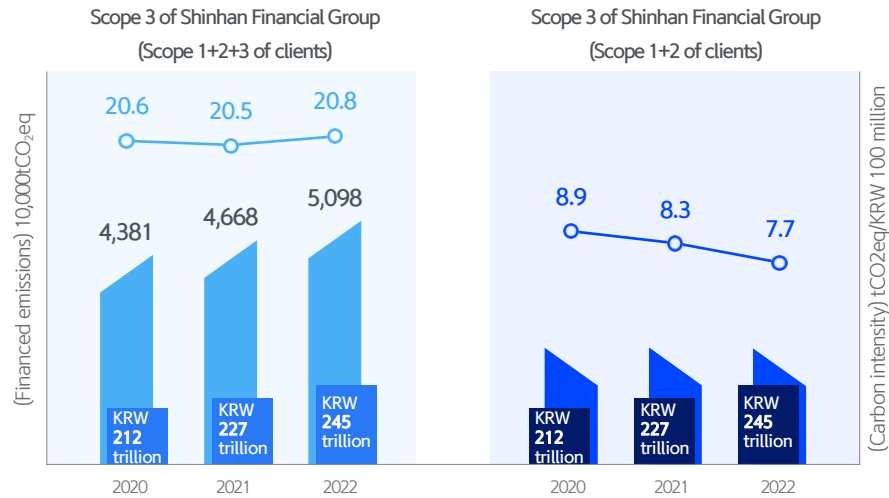
Measuring Carbon Emissions and Setting Reduction Goals

Emissions



Metrics and Targets

Analyzing Our Emissions



■ Financed emissions
 ■ Measured assets
 ○ Carbon intensity
 ○ Carbon intensity target

Shinhan's Thoughts on How to Measure Financed Emissions

Shinhan Financial Group measures its financed emissions based on the PCAF guidelines and includes all of its customers' scopes 1, 2, and 3 in its calculations and disclosures. Of these, we have observed a trend of decreasing carbon intensity when excluding Scope 3 from our customers.

The scope of environmental disclosures has expanded in recent years, and many companies are expanding their disclosures by analyzing and estimating not only Scope 1 and 2, but also Scope 3. Due to the nature of Scope 3, which occurs in facilities that a company does not own or control across its value chain, we do not believe that it can be reduced by engagement with financial institutions or green product efforts at this time.

In addition, many companies are expanding the collection of emissions for upstream activities among Scope 3, and in this trend, data from a company's emissions disclosure efforts can be directly linked to increased financed emissions, regardless of the nature of the industry and exposure. Given the characteristics of Scope 3 that are directly relevant to climate risk analysis, Shinhan is advancing the management of internal targets and operations for climate risk management.

Measuring the Financial Footprint of Client Assets

Shinhan Financial Group also measures and monitors the financed emissions of client assets other than its own assets through the financed emissions measurement of Shinhan Asset Management. In the case of asset management, the portfolio of stocks and bonds in the PCAF product line is utilized to measure financed emissions.

Metrics and Targets

Financed emissions of the Group's asset portfolio in 2022 (Scope 3)

Emissions Breakdown by PCAF Asset and Financed Emissions by Industry Sector

(Units: KRW trillion, 10,000tCO₂eq)

| Emission status | | | | | | |
|-----------------------------------|-----------------------|--------------------|-------------------------|---------------------|--------------------------|--|
| Asset classification | Calculated asset size | Financed emissions | Percentage of emissions | Emissions intensity | Data Score ¹⁾ | |
| Listed stocks and corporate bonds | 45.7 | 560 | 11.0% | 12.2 | 2.7 | |
| Listed stocks and corporate bonds | 142.0 | 4,173 | 81.9% | 29.4 | 3.6 | |
| Project finance | 3.7 | 255 | 5.0% | 69.7 | 3.7 | |
| Real estate for commercial use | 19.9 | 59 | 1.2% | 3.0 | 4.0 | |
| Mortgage | 28.1 | 13 | 0.3% | 0.5 | 4.0 | |
| Car loans | 5.7 | 38 | 0.7% | 6.7 | 4.2 | |
| Total | 245.08 | 5,098 | 100.0% | 20.8 | 3.5 | |

¹⁾ Score on a scale of 1 to 5 based on which data is used to calculate emissions based on the PCAF baseline: published emissions, emissions based on physical activity, and emissions based on economic activity

Carbon Intensity by Industry Sector and Asset

(Unit: tCO₂eq/KRW 100 million)

| | Power generation | Aluminum | Cement | Steel | Paper | Transportation | Chemicals | Others |
|------------------------|------------------|-------------|--------------|--------------|-------------|----------------|-------------|-----------|
| Corporate loans | 125.8 | 57.2 | 124.9 | 141.4 | 63.6 | 44 | 82.9 | 22 |
| Unlisted stocks | - | 52.8 | 59.4 | 60.3 | 204.6 | 34 | 79.5 | 7 |
| Publicly traded stocks | 111.6 | 37.7 | 266.7 | 160.3 | 55.81 | 26 | 16.1 | 7 |
| Corporate bonds | 141 | 54.1 | 470.3 | 102.6 | 100.7 | 10 | 74.8 | 4 |
| Total | 137.6 | 57.2 | 127.5 | 137.8 | 64.6 | 33 | 81.7 | 17 |

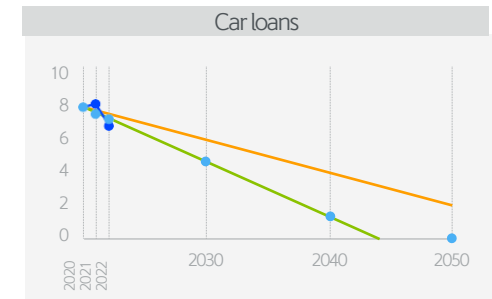
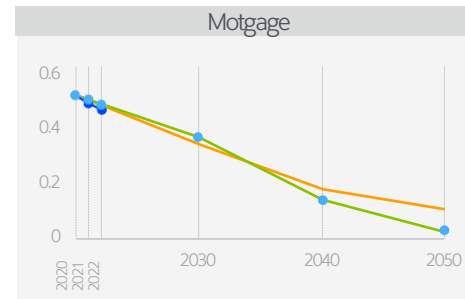
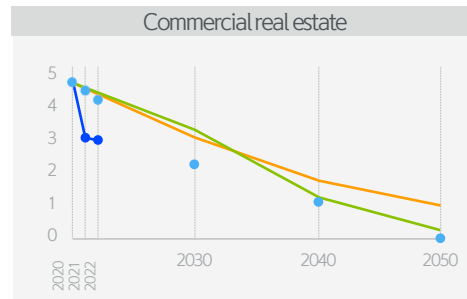
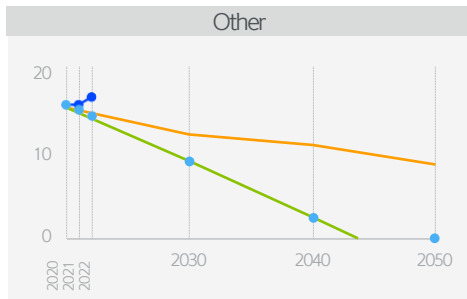
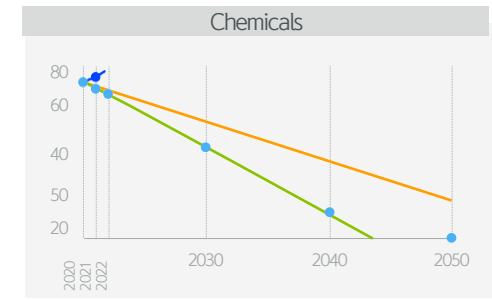
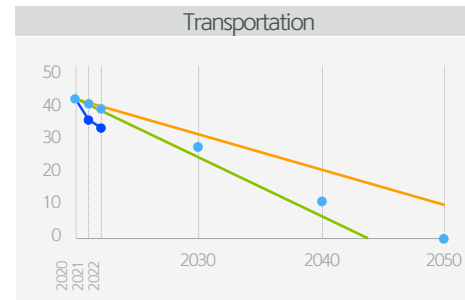
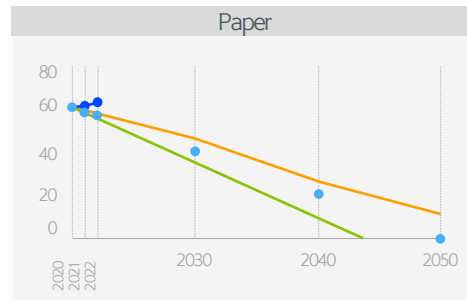
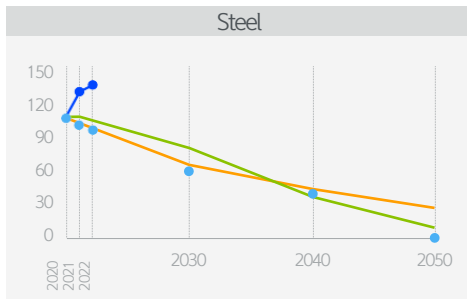
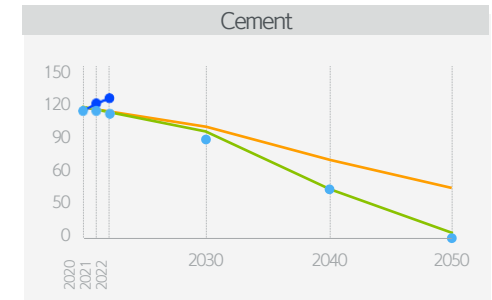
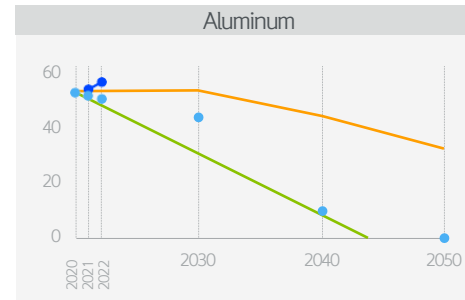
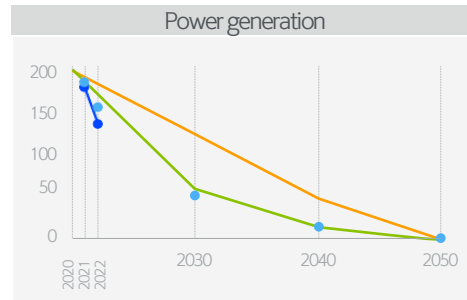
Metrics and Targets

PCAF-based Financed Emissions Measurement and Reduction Targets

Asset Portfolio Industry-specific Intensity Reduction Targets

(Unit: tCO₂eq/KRW 100 million)

- Shinhan's Target
- Shinhan's Current Portfolio
- B2DS
- SBTi 1.5C



¹⁾ B2DS Scenario: The Beyond 2°C Scenario (B2DS) analyzes the extent to which currently available technologies and those in the process of innovation can be leveraged to limit warming to a level significantly below 2°C, projecting a global average temperature of 1.75°C by 2100.

Metrics and Targets

Sovereign Debt Emissions

Shinhan Financial Group has expanded the scope of identifying climate change assets by separately measuring sovereign debt, which has been updated through the PCAF Financed Emissions Guidance. This will be updated within the existing risk measurement management system and managed regularly. Financial institutions are required to report both the inclusion and exclusion of Land Use, Land-Use Change, and Forestry (LULUCF) for Scope 1 emissions in their national emissions. Currently, there are data uncertainties in the emissions information for Land-Use, Land-Use Change, and Forestry (LULUCF). Therefore, when considering LULUCF emissions, there is a possibility of distorting the overall trend in important areas such as energy and industrial processes. Therefore, we report both the inclusion and exclusion of LULUCF emissions when reporting national emissions.

Sovereign Debt

(Unit: KRW 100 million, 10,000tCO₂eq)

| Country | LULUCF included | LULUCF excluded | Shinhan Financial Group | |
|--------------|------------------|------------------|-------------------------|--------------------|
| | Emissions | Emissions | Exposure | Financed emissions |
| Korea | 92,862 | 96,650 | 583,722 | 1,977 |
| U.S. | 658,430 | 734,324 | 25,008 | 66 |
| China | 1,309,561 | 1,374,529 | 4,637 | 22 |
| Japan | 156,062 | 161,263 | 3,203 | 8 |
| India | 373,798 | 376,926 | 6,358 | 21 |
| Vietnam | 59,010 | 60,214 | 2,429 | 12 |
| Others | 431,054 | 340,495 | 7,153 | 27 |
| Total | 3,080,777 | 3,144,401 | 632,509 | 2,134 |

1) Carbon emissions and financed emissions are the sum of SCOPE 1,2,3

2) Financed emissions are based on carbon emissions including LULUCF

Emissions from Carbon-intensive Industries (Unit: KRW 100 million, 10,000tCO₂eq)

| Carbon intensive industry | Exposure | | Financed emissions | | Intensity |
|---|------------------|---------------|--------------------|---------------|-------------|
| | Amount | Weight | SCOPE 123 | Weight | |
| Thermal and other power generation | 17,194 | 0.9% | 303 | 6.4% | 176.2 |
| Primary steel manufacturing and foundries | 32,475 | 1.7% | 448 | 9.5% | 137.8 |
| Basic Chemicals Manufacturing | 23,275 | 1.2% | 209 | 4.4% | 89.9 |
| Manufacture gas for fuel and supply steam, hot and cold water | 19,774 | 1.1% | 254 | 5.4% | 128.3 |
| Manufacturing cement, lime, plaster, and other products | 7,870 | 0.4% | 100 | 2.1% | 127.5 |
| Cokes and briquette manufacturing | 122 | 0.0% | 3 | 0.1% | 221.9 |
| Petroleum refining, chemical fiber, non-ferrous metal manufacturing, etc. | 116,275 | 6.2% | 777 | 16.4% | 66.8 |
| Non-carbon intensive sectors | 1,660,387 | 88.4% | 2,638 | 55.8% | 15.9 |
| Total | 1,877,372 | 100.0% | 4,731 | 100.0% | 25.2 |

Measurement logic: 1) Financed emissions = carbon emissions × allocation factor 2) Allocation factor = balance / PPP-adj GDP*.

*PPP-adj GDP: Purchasing power parity-adjusted GDP by country, using information provided by the International Monetary Fund (IMF).

Metrics and Targets

Internal Emissions, Energy Usage, and Targets

GHG Emissions (Scope 1, 2)

(Unit: tCO₂eq)

| | 2020 | 2021 | 2022 |
|--|---------------|----------------|----------------|
| Scope 1+2 | 96,811 | 101,188 | 100,080 |
| Scope 1 | 15,419 | 15,175 | 14,697 |
| Scope 2 | 81,392 | 86,013 | 85,383 |
| GHG emissions intensity (Employee: persons) | 4.4 | 4.6 | 4.3 |
| GHG emissions targets | 96,811 | 92,745 | 88,679 |

Financed Emission

(Unit: tCO₂eq)

| | 2020 | 2021 | 2022 |
|--|-------------------|-------------------|-------------------|
| Financed Emission Target | 43,816,695 | 41,100,060 | 40,890,324 |
| Financed Emission Performance | 43,816,695 | 46,688,085 | 50,982,536 |
| Financed Emission Intensity (KRW 100 million) | 20.6 | 20.5 | 20.8 |
| Financed Emission Intensity Target (KRW 100 million) | 20.6 | 19.9 | 19.3 |
| Total | 43,816,695 | 46,688,085 | 50,982,536 |
| Asset class | | | |
| Listed stocks and corporate bonds | 8,704,068 | 7,212,984 | 5,596,149 |
| Corporate loans and unlisted stocks | 32,371,976 | 36,016,983 | 41,734,737 |
| Project finance | 1,455,357 | 2,320,360 | 2,549,265 |
| Real estate for commercial use | 705,202 | 530,679 | 592,559 |
| Mortgage | 131,778 | 137,519 | 129,861 |
| Car loans | 448,314 | 469,560 | 379,965 |
| Total | 41,076,045 | 43,229,968 | 47,330,886 |
| Industry | | | |
| Power generation | 6,078,516 | 4,807,281 | 3,180,687 |
| Aluminum | 2,423,476 | 2,658,403 | 3,024,877 |
| Cement | 857,074 | 907,712 | 1,003,066 |
| Steel | 2,734,132 | 4,147,669 | 4,475,830 |
| Paper | 663,982 | 722,587 | 812,340 |
| Transportation | 1,327,705 | 1,030,344 | 1,080,495 |
| Chemicals | 4,090,636 | 4,572,927 | 5,756,406 |
| Others | 22,900,524 | 24,383,045 | 27,997,185 |

Energy Consumption

(Unit: TOE)

| | 2020 | 2021 | 2022 |
|--------------------------------------|---------------|---------------|---------------|
| Total Energy Consumption | 21,280 | 22,281 | 21,960 |
| Energy intensity (Employee: persons) | 1.0 | 1.0 | 0.9 |
| Total energy consumption | 21,280 | 20,386 | 19,492 |
| Electricity | 14,974.5 | 16,054.7 | 15,945.5 |
| Heat (Steam) | 137.1 | 160.6 | 128.0 |
| Town gas (LNG) | 2,975.9 | 2,896.4 | 2,695.5 |
| Town gas (LPG) | 1.6 | 1.4 | 0.8 |
| Indoor kerosene | 5.4 | 5.0 | 0.5 |
| Diesel | 10.0 | 14.2 | 14.4 |
| Car-gasoline | 3,085.8 | 3,091.4 | 3,113.2 |
| Car-diesel | 28.9 | 6.4 | 7.2 |
| Car-LPG | 60.6 | 50.9 | 55.1 |

*Scope of environmental performance sites

- 16 companies including Shinhan Financial Group (Holding Company)
- Reporting scope: All business sites within the operational control of the 16 group companies

*Reasons for changes (increases) in emissions and energy use

As part of the RE100 declaration in 2023, Shinhan Financial Group expanded the scope of the group's emissions measurement. As a result, a total of 16 companies of Shinhan Financial Group (including the Holding company) conducted GHG emissions inventory at the 'Emissions Trading System and GHG Target Management System' level (Shinhan Bank).

Therefore, in the case of existing Card, Securities, Life, and Jeju Bank, the scope of GHGs and energy usage, which was mainly measured at the headquarters, was expanded to include all small business sites such as branches and centers, and in cases where it was difficult to secure measurement data, emissions and energy usage per area by group companies were estimated.

For this reason, the scope of this report has been expanded from the previously reported scope, and we plan to further expand the scope to include our overseas subsidiaries (overseas operations) in the future (planned for 2024).

The data in this report has been separately assured by Lloyd's Register at the 'reasonable assurance' level for Scope 1 and 2 and at the 'limited assurance' level for Scope 3, and the GHG assurance opinion can be found in the '2022 ESG Report'.