

Financial Risks of Climate Change

Index	Contents
Value Chain	Downstream
Risk type	Current regulation Carbon pricing mechanisms
Financial impact	Reduced profitability of investment portfolios
Company-specific description	<p>As of 2015, Controlled Entities of the 'GHG & Energy Target Management System' with an average GHG emissions of the 3 most recent years greater than 125,000tCO₂eq are subject to participate in the Emission Trading System; they are allocated the emissions allowance based on the past GHG record and must carry out operation activities and emissions reduction activities within the given range. If the emissions allowance is not enough, a company must purchase permits from other liable companies to meet the balance between the GHG emissions and the allowance.</p> <p>As a result, some regulated companies would have negative profits considering the long-term effects of climate change which increases operating costs due to equipment investments, purchasing carbon credits etc. As of 2020, the amount of asset, bond, loan products are totally 58.6 trillion KRW for which is included in the area of interest. Therefore some companies with negative profit margins by climate change which are related to these products could give SFG a loss of financial asset or profit margin due to the difficulty in repayment.</p>
Time horizon	2030 (ten years, Long term)
Potential financial impact figure (currency)	5,860,000,000,000 KRW
Explanation of financial impact figure	Internal analysis suggests that by 2030, approximately 10% of the portfolio will be converted to a negative margin, given the cost of carbon. Therefore, by 2030, the financial assets are expected to lose 5.86 trillion KRW, equivalent to approximately 10% of the size of asset, bond, loan products(58.6 trillion KRW).
Cost of response to risk	1,700,000,000 KRW
Description of response and explanation of cost calculation	In 2019, Shinhan Financial Group began the analysis of the financial impact of climate change on loans, bonds and equity portfolios with more than 10 billion KRW assets and including in the area of interest. This analysis will calculate the carbon footprint and predict future carbon costs of the portfolio to analyze the impact on profits. Based on the result, we will establish a climate change impact analysis system for all portfolios in the group. The labor cost for performing portfolio analysis was about 1700 million KRW (17 employees for a year, average annual salary at 100,000,000 KRW/employee).

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Value Chain	Direct operations
Risk type	Chronic physical Changes in precipitation patterns and extreme variability in weather patterns
Financial impact	Decreased revenues due to reduced production capacity
Company-specific description	According to the Korea Meteorological Administration, between the years 2001 and 2010, Korea saw 2.6 days per year on average, during which daily precipitation exceeded 800mm; such heavy rain effects not only agricultural and mountainous regions but also urban areas, which would bring upon physical damages to the business branches of Shinhan Financial Group. Particularly, the 18 branches of Shinhan Bank located in Gangwon Province are considered more geographically vulnerable to physical damages from heavy rainfall, which may cause operational loss from temporary business shut-down.
Time horizon	2025 (3~4 years, Short term)
Potential financial impact figure (currency)	1,337,000,000 KRW
Explanation of financial impact figure	The 18 branches of Shinhan Bank may have to close the operation for approximately 3 days for recovering from physical damages due to heavy rainfall, in which case a financial loss of approximately 1,337 million KRW is expected to occur. * Considering the total operational profit of a branch in Gangwon Province (111,376 millions KRW) and the average operational days per year (250 days) in 2020.
Cost of response to risk	493,000,000 KRW
Description of response and explanation of cost calculation	<p>In preparation for natural disasters such as flood, heavy snowfall, and typhoon, major affiliates of Shinhan Financial Group such as Shinhan Bank, Shinhan Card, Shinhan investment Corp., and Shinhan Life operate individual Disaster Restoration Centers. Furthermore, Shinhan Future Strategy Research Institute and Shinhan investment Corp. regularly carry out climate change researches to determine risks and opportunities. In particular, Shinhan Bank has the 'Disaster/Calamity Crisis Management Guidelines' aimed at preventing damages from natural disasters such as typhoons, heavy rain, heavy snow, and earthquakes and responding to such events in a timely manner so as to protect both human and financial resources in advance and ensure continued operation. Following these Guidelines, occurrence of a natural disaster is reported to the branch manager, who then reports the incident to the Sales Division Head as well as the company's safety management division and/or business division. The safety management division, upon receiving the report, works with other teams in charge of such event and reports a summary to the management. In case of emergency, the Head of the Crisis Center directly reports to the CEO about the status of the event and the entire organization is transformed to be on call. In addition, to prepare for major losses related to climate change SFG takes out insurance on major buildings and branches every year.</p> <p>The operational cost of Disaster Restoration Centers for response to climate change is included in total operation costs of Shinhan Financial Group. Each of the major affiliates and their headquarters, major buildings, and branches are insured and the total insurance costs incurred in 2020 was 493 million KRW while the limit of liability for property damage is 1,383 billion KRW.</p>

● Total Exposure in portfolio

(단위 : 100 million KRW)

Segment	'17	'18	'19	'20.1Q	'20.2Q	'20.3Q	'20.4Q
Total Exposure	437,733	487,722	500,549	598,238	562,804	577,505	586,259
Loan	150,676	161,715	166,763	184,646	171,639	175,356	172,346
Bond	180,249	190,181	199,379	243,109	235,534	243,668	252,260
Stock	6,030	4,815	1,938	3,796	4,087	6,251	7,295
Etc	100,777	131,010	132,469	166,686	151,543	152,229	154,357
Carbon emission	10,373,058	11,937,365	10,937,534	12,126,434	12,032,543	11,981,788	12,889,127
Emission per 100 million KRX	23.7	24.5	21.9	20.3	21.4	20.7	22.0

● Branches in Gangwon-do (As of 2020)

Branch	Operating profit (million KRW)
강원영업부금융센터	14,739
원주금융센터	12,316
홍천	3,807
동해	5,093
삼척	2,899
태백	3,601
남원주	5,105
후평동	4,564
강릉경포	5,288
춘천남	6,647
원주중앙	6,453
속초	8,547
상지대학교	1896
강릉금융센터	11,701
영월	3,499
강원대학교	4,413
사북	4,434
강원도청	6,374
18	111,376

*Considering the average number of business days in a year is 250