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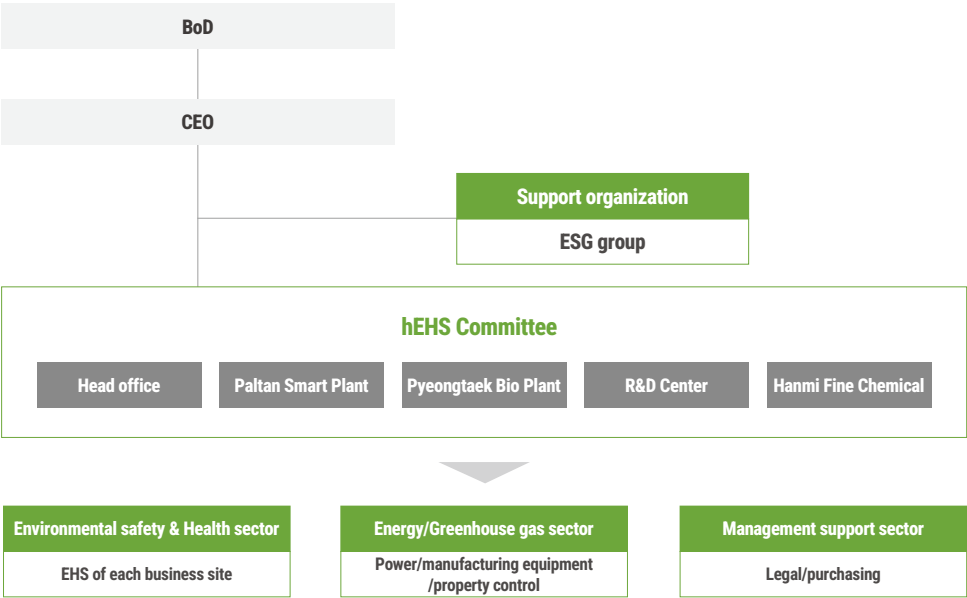
The response to carbon neutrality and climate change is having a significant impact on corporate sustainability management. Transitioning to a low-carbon economy under the Paris Accords has become the new global economic order, thus Korea’s industries must make all-encompassing efforts to mitigate climate change by pursuing a carbon neutral society by 2050. In accordance with such trends, Hanmi Pharm has incorporated environment, health, and safety as an important part of its sustainable innovative management. To this end, Hanmi Pharm is improving its governance of environment, health, and safety, and is constantly seeking improvements to strengthen the efficiency of its operations, including the development of policies and guidelines for each area. Furthermore, we are thoroughly examining the global initiative for responding to climate change. Hanmi Pharm will actively participate in climate change response activities and exert every effort to achieve carbon neutrality.

[EHS Management Policy](#) [Environmental Management Policy](#)

Decision-making Structure

Hanmi Pharm operates the hEHS Committee, which is led by the CEO, to practice clear environmental management encompassing carbon neutrality, climate change response, etc.

The hEHS Committee, Hanmi Pharm’s EHS (Environment, Health, Safety) organization, which it established for the first time in the Korean pharmaceutical industry in 2019, identifies the negative factors and opportunities occasioned by environmental risks, such as carbon neutrality and the minimization of environmental impacts, and establishes strategies and plans for each set period. Hanmi Pharm emphasizes the roles and responsibilities of top management in responding to carbon neutrality and climate change effectively. The CEO holds the responsibility and authority to make the final decisions on environmental management issues, and serves as the chairman of the hEHS Committee. Key environmental management issues are periodically reported to the board of directors at least once a year. In 2023, the Committee reported the details regarding the establishment of the carbon neutrality roadmap, including mid- and long-term schedules, etc.



Environmental Management System (EMS, ISO 14001)

Hanmi Pharm has acquired the ISO 14001 certification, an international standard for environmental management, and is applying it with a focus on production bases such as the Paltan Smart Plant and the Pyeongtaek Bio Plant. An environmental impact assessment of Hanmi Pharm's business sites is conducted periodically to identify any potential and actual environmental risks associated with our products, activities, and services at an early stage, thereby continuously improving the environment by analyzing risks and opportunities.

Classification	Roles & Responsibilities
BoD	• Supervises major environmental management strategies and plans.
CEO	• Is responsible for final decision-making on environmental management issues. • Approves environmental management goals and promotion plans.
hEHS Committee	• Discusses and reports key issues related to environmental management.
ESG group	• Establishes major environmental management strategies and plans. • Monitors environmental management. • Operates a communication channel for each business site.
Department dedicated to EHS	• Implements detailed environmental management activities.

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Environmental Management Promotion Strategy

To respond to climate change, Hanmi Pharm has established and disclosed a mid-long-term carbon reduction target and implementation plan, taking into account the domestic situation and nature of the pharmaceutical industry. We will continue to disclose the progress of our Climate Action Plan, starting from the h-Carbon Program leading to 2030 NDC, and then to 2040 Net Zero, and will actively communicate with our stakeholders and inform them of the diverse efforts we are making to reduce our environmental impacts. We joined the Korean TCFD alliance in 2023 and are supporting the TCFD, and we periodically participate in related seminars. In 2024, we plan to disclose the current status of Hanmi Pharm's response to climate change by participating in the CDP (carbon information disclosure project).

ESG Vision

Pursue sustainable management and growth based on Creation, Challenge & Innovation

Carbon Neutrality

Minimization of Environmental Impacts

Environmental management strategy

h-Carbon Program

2030 NDC

2040 Net Zero

Conduct efficient environmental management

Spread an eco-friendly corporate culture

Expand upcycling

Preserve biodiversity

Short-term: Expand environmental initiatives and strengthen management of the supply chain such as Scope 3, etc.
→ Enhance the climate change response system.

Mid-term: Introduce renewable energy and set greenhouse gas reduction targets for the supply chain
→ Reduce GHGs by 30% vs. 2018 (Surpassed the industry target).

Long-term: Transition energy and introduce eco-friendly equipment
→ Achieve carbon neutrality (for Scope 1 and 2).

Minimize discharge or emissions of pollutants and strengthen the safe management of chemical substances
→ Minimize environmental impacts.

Minimize nature capital such as waste, water, etc. and increase recycling
→ Realize upcycling.

Strengthen eco-friendly campaigns and the Nagoya Protocol system
→ Expand the eco-friendly corporate culture.

Environmental management key indicators and goals

Management indicator		2030 Goals
Carbon Neutrality	Greenhouse gas emissions	(Emissions) Reduce by 30% vs. 2018 / (Intensity) Reduce by 30% vs. 2018.
	Energy consumption	(Intensity) Reduce by 30% vs. 2018.
Conduct efficient environmental management	Air/water pollutants	(Emission/discharge concentration) Control below 50%/30% vs. maximum legally acceptable level every year. (Emission/discharge) Reduce by 40% vs. 2018.
	Harmful chemical substances	(Amount used) Reduce by 2% every year vs. previous year.
Expand upcycling	Volume of water intake and reuse rate	(Volume of water intake) Reduce by 20% vs. 2018 / (Intensity) Reduce by 25% vs. 2018. (Reuse rate) Achieve more than 12%.
	General/Hazardous wastes	(Intensity) Reduce by 15% vs. generated amount in 2018 / (Treated amount) Reduce by 20% vs. 2018. (Recycling rate) Achieve more than 75%.
Spread an eco-friendly culture	Increase of eco-friendly purchases	Maintain an eco-friendly literature rate of more than 90%. Maintain a 100% use of eco-friendly packaging boxes for produced medicines.
	AMR framework activities	Comply with the AMR framework (API PEC/PNEC<1).
Preserve biodiversity	Environmental protection activities	Carry out environmental protection activities more than 5 times per year, such as removing invasive species and planting trees. Plant a cumulative total of 7,000 trees to create the Hanmi Green Forest.

Participation in Initiatives

TCFD

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Hanmi Pharm supports the TCFD (Task Force on Climate-related Financial Disclosures), and joined the Korean TCFD alliance in November 2023, in order to establish laws and systems based on the domestic TCFD and strengthen the company's capacity to respond to the TCFD.

BNBP

기업과 생물다양성 플랫폼
Biz N Biodiversity Platform

Hanmi Pharm joined the BNBP (Biz N Biodiversity Platform) in 2023. It takes into account biodiversity issues throughout all its corporate activities, and recognizes its social responsibility to preserve biodiversity, and will continue making efforts to that end.

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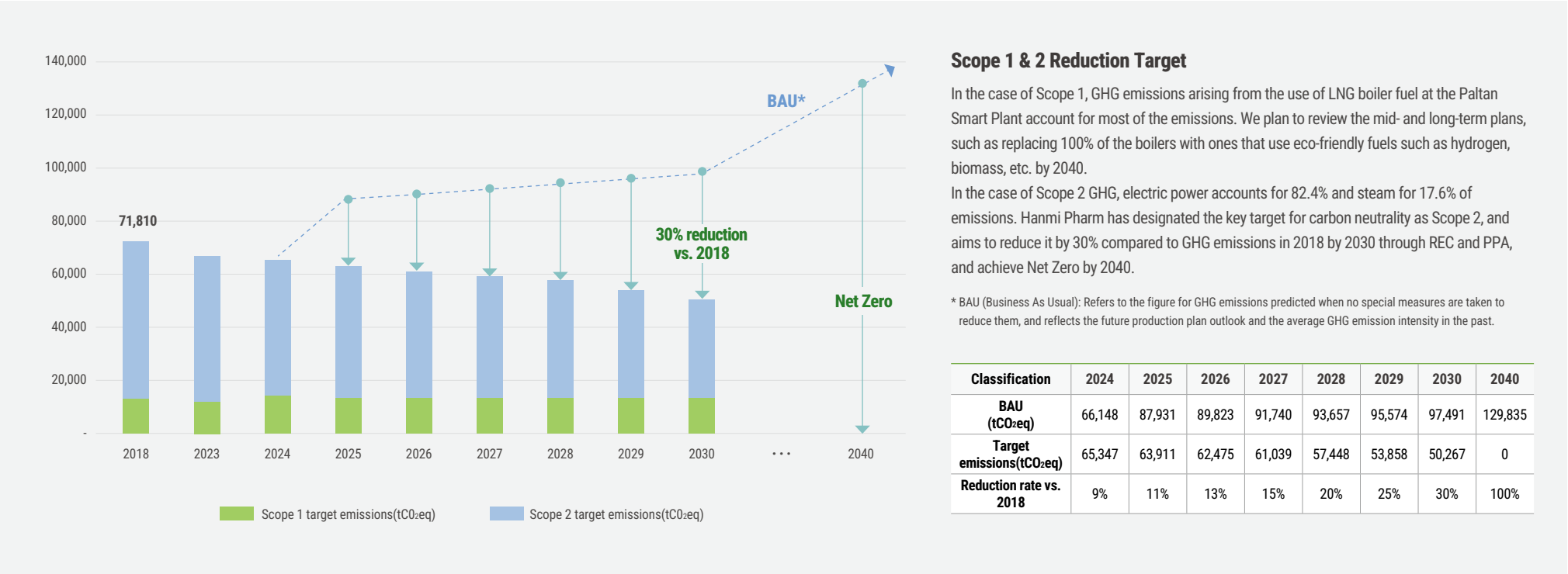
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Hanmi Pharm Scope 1 & 2 Carbon Neutrality Roadmap

Hanmi Pharm has been carrying out the h-Carbon Program, the first phase of Climate Action, to reflect the reality of the domestic pharmaceutical industry since 2023. The h-Carbon program is designed to establish a foundation for executing environmental management at the global level by restructuring the company’s decision-making structure as well as the system for responding to carbon neutrality and climate change, such as the assessment of climate change risks, the identification and analysis of opportunities, and the setting of targets. In addition, we plan to review renewable energy and eco-friendly equipment, and to work hard to realize 2030 NDC and 2040 Net Zero. Furthermore, Hanmi Pharm was designated as a company for allocation of greenhouse gas emission trading system in 2020, and continues to manage its greenhouse gas emissions by purchasing greenhouse gas emission rights.



Estimated Scenario of Hanmi Pharm's Scope 3 Carbon Neutrality

To achieve carbon neutrality of the supply chain, Hanmi Pharm has set out to establish the foundation for carbon neutrality throughout the value chain, such as estimating Scope 3 emissions in 2023. We plan to establish a system for estimating the product disposal category by 2026, and expect to enhance the Scope 3 emission estimation system by expanding the scope of calculation within such categories as products/services, etc. Hanmi Pharm’s Scope 3 emissions in 2023 amounted to 82,555 tCO₂eq, of which products/services accounted for approximately 56%. Accordingly, by expanding carbon neutrality training for suppliers and encouraging them to join initiatives related to carbon neutrality in the supply chain, we plan to strengthen the management of GHG emissions in the supply chain.

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Status of Hanmi Pharm's Greenhouse Gas Emissions

[Scope 1]

11,520tCO₂eq (8.0%)

- Boilers : 10,983tCO₂eq (7.6%)
- Vehicles & others : 539tCO₂eq (0.4%)

[Scope 2]

49,719tCO₂eq (34.6%)

- Electric power : 40,948tCO₂eq (28.5%)
- Steam : 8,772tCO₂eq (6.1%)

[Scope 3]

82,555tCO₂eq (57.4%)

- Upstream : 63,343tCO₂eq (44.0%)
- Downstream : 19,211tCO₂eq (13.4%)

Carbon Neutrality Performance & Plan in 2023

2023 Goal	2023 Achievements	Achievement rate	2024 Goals
Greenhouse Gas Emissions : 66,783 tCO₂eq (7% reduction compared to 2018) Energy Use : 1,289,830GJ (Reduce 7% Compared to 2018)	Greenhouse Gas Emissions : 61,238tCO₂eq (15% reduction compared to 2018) Energy Use : 1,224,181GJ(12% reduction compared to 2018) [Company-wide] Responded to the greenhouse gas emissions trading scheme [Paltan] Changed the steam pressure of boilers (140 days/year) / Saved energy by improving the operating time of the injection water system. [Pyeongtaek] Reused heat source of hot water heater condensate in administrative buildings. [R&D Center] Improved efficiency by replacing the refrigeration machines in the animal laboratory / Minimized environmental impact by replacing refrigerant (R-22 → R407).	100% 100% 100% 100% 100% 100%	Greenhouse Gas Emissions : 9% reduction compared to 2018(65,347tCO₂eq) Energy Use : 9% reduction compared to 2018(1,262,092GJ) [Company-wide] Respond to the GHG emission trading system and CDP evaluation / Estimate Scope 3 emissions and analyze the scenario. [Paltan] Enhance efficiency in the method of operating clean steam manufacturing equipment. [Pyeongtaek] Acquire Green Company certification. [R&D Center] Improve the high-efficiency lighting of fume-hoods / Replace the old fume-hood controllers in the laboratory (40 units).
[Hanmi Fine Chemical] Greenhouse Gas Emissions: 18,385tCO₂eq	[Fine Chemical] Greenhouse Gas Emissions: 15,842 tCO₂eq (Allowance: 18,385 tCO₂eq) • Replacement of capacitors at the SEP plant for power factor improvement (17 units), • Maintaining power factor at 95% (resulting in a 1% reduction in electricity bills), • Overhaul of inverters, replacement of high-efficiency motor facilities.	100% 100% 80%	[Fine Chemical] Greenhouse Gas Emissions: 17,050 tCO₂eq • Maintain the power factor at 95%. • Conduct a campaign to reduce electric charges.
Investment in Carbon Neutrality			Investment in Carbon Neutrality
2023 Plan: KRW 290 mil. / Use: KRW 450 mil. (Execution rate: 155%)			2024 Plan: KRW 380 mil.

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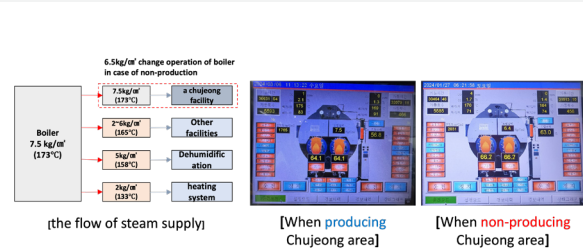
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Cost Innovation

Hanmi Pharm has reduced its use of energy, water, and steam through the efficient use of utilities, and has implemented the Cost-Innovation initiative since 2020 in order to foster a cost-saving culture among its employees. We are identifying and executing innovative practices centered on energy efficiency and greenhouse gas reduction, and rewarding employees’ performance in proportion to the extent (%) to which they achieve their targets. A grade is awarded based on quantitative effects, such as cost reduction, and the amount of energy saved from the evaluation of innovative practices, and then incentives are provided to managers and employees every quarter after a review by an executive.

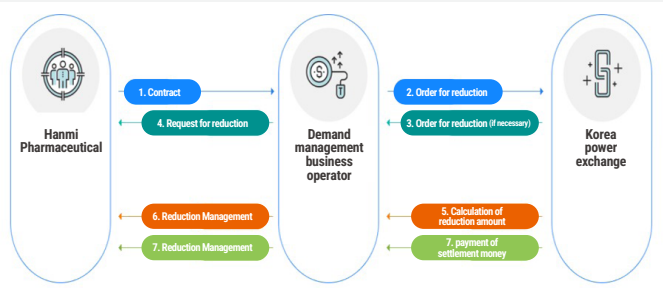
Site	Major details	Type	Cost savings	Amount of energy reduction (GJ/year)	Amount of GHG reduction (tCO ₂ -eq/year)
Paltan	Changed the steam pressure of boilers on holidays and national holidays.	LNG	KRW 38 mil.	1,365	69.2
	Adjusted the "plant steam supply time" of the injection water manufacturing equipment.	Steam	KRW 10 mil.	473	28.9
	Flexibly changed the On/Off time of air conditioning equipment.		KRW 12 mil.	743	35.5
Pyeongtaek	Partially turned off outdoor streetlights at night.	Electric power	KRW 2 mil.	116	5.5
	Performed scheduled operation of the exhaust fans on the rooftop of each building		KRW 4 mil.	205	9.8
	Reused heat source of hot water heater condensate in the administrative building.	LNG	KRW 28 mil.	1,007	51.0
R&D Center	Changed the operating hours of the lighting control system.	Electric power	KRW 4 mil.	258	12.4
	Improved the efficiency of the refrigeration machines in the animal laboratory.		KRW 15 mil.	866	41.5
Total			KRW 134 mil.	5,034	253.8

Estimated reduction of energy use and greenhouse gas emissions through Cost Innovation activities in 2023



Example of energy saved at the Paltan Smart Plant

The amount of boiler pressure used at the Paltan Smart Plant was changed from the previous 7.5kg/cm² to 6.5kg/cm² when not producing chewable tablets so as to reduce the amount of LNG gas consumed. Thus, on public holidays and days when chewable tablets are not produced, we reduced the amount of LNG used due to the drop in pressure caused by lowering the boiler supply pressure, and we reduced the amount of energy loss that occurs when reducing the pressure of equipment.



Participated in the Power Demand Management Project (DR, Demand Response)

The Pyeongtaek Bio Plant is participating in the power demand management project, a national project in which the electricity saved at business sites is compensated through the electricity trading market according to a temporary request by KPX (Korea Power Exchange) in the event of a national power supply emergency. The target is to reduce approximately 300kW by reducing the use of non-GMP facilities, wastewater treatment plants, and equipment such as air conditioning and heating equipment. We are taking part in the national policy project to contribute to the stabilization of the national power supply, and are being compensated according to the amount of the reduced costs.

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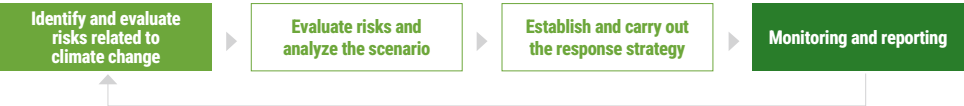
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Management of Climate Change Risks

Hanmi Pharm investigates climate change risk and opportunity factors once each year by comprehensively reviewing adverse effects on business operation, changes in the external environment, and financial impacts. Hanmi Pharm also reviews the likelihood of physical/transitional risks and opportunities occurring at its business sites and organizations from the short-, mid- and long-term perspective, and the severity of their potential impact on the company.

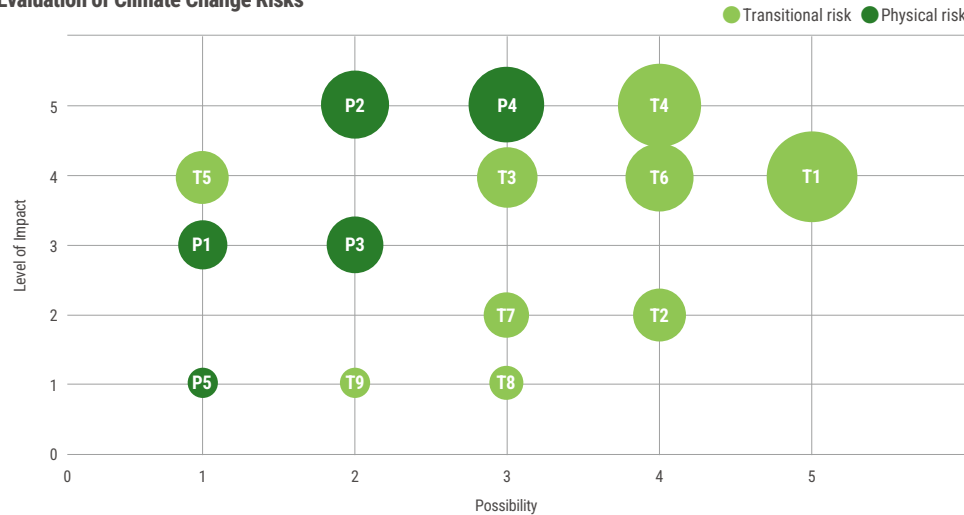
Framework for Managing Climate Change Risks



Assessment of Climate Change Risks & Opportunity Factors

Hanmi Pharm identified climate change risk/opportunity factors by identifying the 2024 regulatory policies and regulations, analyzing other companies in the same industry, and identifying stakeholders' requirements, and then assessed climate change risks based on 'probability' and 'level of impact'. As a result of analysis, such factors as the rising price of carbon emission rights and the increasing cost of transitioning to low carbon technology, all of which have a possibility of occurring, level impact, and financial impact, were identified as important climate change risk factors for Hanmi Pharm. We have also analyzed the specific financial impacts of the top two elements of each risk and opportunity factor.

Evaluation of Climate Change Risks



Circle size = Materiality (Probability x Level of Impact)

Classification		Risk details	Priority
Transitional Risks	Policy / Regulation	T1 Rising carbon emission rights prices.	1
		T2 Spreading of mandatory disclosure of climate	7
		T3 Tightening of the obligations and regulations related to existing products and services.	5
	Technology	T4 Increased cost of transitioning to low carbon technology.	2
	Reputation	T5 Changes in customer behavior.	10
		T6 Uncertainty of the electricity market.	4
		T7 Rising raw material prices.	9
	Market	T8 Consideration of consumers' environmental impact and rising preference for eco-friendly products.	12
		T9 Rising demand for response to climate change and biodiversity by investors and stakeholders.	13
Physical Risks	Acute	P1 Damage to facilities and equipment due to natural disasters such as typhoons, earthquakes, etc.	11
		P2 Damage to facilities due to urban flooding, and stream flooding.	6
	Chronic	P3 Rising abnormal temperature phenomenon.	8
		P4 Rising abnormal temperature phenomenon.	3
		P5 Rising risk of water shortages and drought.	14

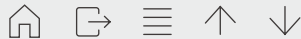
Classification			Risk details	Priority
Opportunity Factors	Policy / Regulation	01	Reduction of cost of responding to emission rights regulations on the reduction of GHG emissions.	1
		02	Reduction of electricity charges due to efficient management of demand for power, seeking out PPA contracts, etc.	4
	Technology	03	Reduction of GHG emissions and carbon cost through transition to carbon neutrality	2
	Reputation	04	Rising global business competitiveness due to the response to climate change.	3
	Market	05	Preservation of biodiversity and restoration of ecosystems in local communities.	5

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Assessment of Climate Change Transitional Risks

The global response to climate change, including strengthened regulations related to global carbon emissions and the increased burden of carbon prices, is having a significant impact on our company’s sustainable management and growth. Hanmi Pharm has established and discloses its mid-to-long-term carbon reduction target and implementation plan, taking into account the domestic infrastructure for climate change and the nature of the pharmaceutical industry based on the prevailing global standards. We aim to continuously disclose the status of Hanmi Pharm’s Climate Action, starting from the h-Carbon Program and leading to 2030 NDC and 2040 Net Zero, and intend to actively communicate with our stakeholders about the efforts we are making to reduce our impact on the environment.

Type	Period	Risks	Financial Impacts	Mitigation measures
Policy / Regulation	Short-term	T1. Rising prices of carbon emission rights - Increased cost of complying with tighter regulations, such as expansion of the paid-in allocation ratio for the 4th plan period.	1) Increasing cost of purchasing shortfalls in emission rights due to rising emission rights prices and change in the paid allocation ratio.	[Present] - Monitoring of the emissions markets and related policies and laws. - Establishment of a response strategy by the hEHS Committee. [Future] - Strengthen the company’s own greenhouse gas reduction activities.
	Mid-term	T2. Spreading of mandatory disclosure of climate - Spread of global climate disclosure systems, such as IFRS S2, SEC climate disclosure, ESRS. - Strengthened demand for response to CDP initiatives by stakeholders.	1) Increased cost of response, such as estimation, verification, and disclosure of GHG emissions.	[Present] - Estimate Scope 1, 2, and 3 emissions and conduct third-party verification. - Analyze climate change scenario and financial impacts. [Future] - Enhance the response to CDP climate change disclosure/scenario and financial impacts.
	Long-term	T3. Tightening of the obligations and regulations relating to existing products and services. - Expansion of the carbon regulations due to enactment of EU CBAM. - Introduction of a regulation for refrigerants used in refrigerating equipment that uses HFCs. - Introduction of Transition away from Fossil Fuel-Based Vehicles	1) Increased cost of complying with regulations; possibility of higher costs and fines when regulations are strengthened. 2) Increased cost of transitioning to alternative energy vehicles.	[Future] - Monitor the introduction of the carbon tax, such as CBAM, on a continuous basis. - Consider transitioning to alternative refrigerants and eco-friendly vehicles.
Technology	Long-term	T4. Increased cost of transitioning to low carbon technology. - Rising cost of energy transition and investment in GHG reduction facilities to achieve Carbon Neutrality 2040.	1) Increased capital expenditure due to self-generation of renewable energy, REC purchase, and PPA contracts. 2) Increased cost of investment in improving energy efficiency and optimizing processes.	[Future] 1) Consider reusing waste heat and transitioning to eco-friendly fuel for boilers. 2) Consider introducing low carbon technology for production facilities and equipment. 3) Consider introducing renewable energy (REC, PPA, etc.).
Market	Mid-term	T5. Changes in consumer behavior. - Increasing number of global pharmaceutical companies considering capacity to respond to climate change as an evaluation element when selecting global projects and extending contracts.	1) Potential loss of sales if contracts cannot be maintained due to failure to meet customers’ demand to respond to climate change.	[Present] - Join the Korean TCFD alliance, BNPB. - Disclose information based on third-party verification (ESG report, environmental information disclosure, etc.). [Future] - Increase participation in initiatives to respond to climate change.
	Mid-term	T6. Uncertainty of market signals - Rising electricity costs and intensified fluctuations.	1) Rising energy costs due to rising electricity prices.	[Present] - Participate in the power demand management system. [Future] - Seek out PPA contracts.
	Mid-term	T7. Rising raw material prices. 1) Rising cost of packing materials due to tightening of regulations on plastic and biodiversity. 2) Greater need to respond to climate change within the supply chain.	1) Higher operating costs due to the use of sustainable raw materials and compliance with environmental regulations. 2) Increased cost of raw material procurement due to increased cost of transitioning to low carbon in the supply chain. 3) Increased procurement costs when regulations are strengthened to enforce the manufacture of 80% of medicines from animal & plant raw ingredients.	[Present] - Estimate Scope 3 emissions, and conduct third-party verification. [Future] - Conduct engagement activities for major suppliers within the supply chain. - Establish an LCA-based emissions calculation system.
	Mid-term	T8. Consideration of consumers’ environmental impacts and rising preference for eco-friendly products.	1) Drop in brand value when there is a delay in responding to climate change. 2) Drop in sales due to failure to meet demands for response to climate change.	[Present] - Disclose information based on third-party verification (ESG report, environmental info disclosure, etc.). [Future] - Acquire the Green Company certification. - Consider carbon footprint and eco-labeled product certification.
	Short-term	T9. Rising demand for response to climate change and biodiversity among investors and stakeholders.	Reduction in availability of capital when investors’ standards are not met.	[Present] - Disclose information based on third-party verification (ESG report, environmental info disclosure, etc.). - Conduct the in-company Green Hanmi campaign and comply with the AMR framework. [Future] - Strengthen the conservation and recovery of ecosystems for biodiversity and local communities.

* The risk impact period is classified into short-term (2024), mid-term (2025-2029), and long-term (2030-2040).

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Assessment of Physical Risks of Climate Change

Hanmi Pharm is fully committed to identifying the physical risks at each business site and minimizing their adverse effects from a long-term perspective based on the results of a thorough assessment. We have identified impacts due to abnormal weather phenomena such as urban flooding, stream flooding, and rising temperatures as major risks, and are continuing to implement our emergency response plans and risk reduction activities through various global management systems including ISO 14001, 22301, and 45001. In the future, we will focus on managing adverse risks to biodiversity and local communities and strive to contribute to sustainable growth through the value of co-prosperity.

Type	Period	Risks	Financial Impact (KRW 100 mil./year)			Adaptation Measure
			Details	Short to mid-term (2024-29)	Long-term (2030-2040)	
Acute	Short-term	P1. Damage to facilities and equipment due to natural disasters such as typhoons, earthquakes, etc.	1) Costs incurred by restoring business sites damaged by natural disasters. 2) Fall in profits due to suspension of production.	1.0	1.1~1.3	[Present] - Establish BCP through ISO 22301 certification and conduct regular training. - Periodic inspection of facilities. [Future] - Step-by-step replacement of old equipment from inspection of all equipment; enhancement of BCP tailored to the pharmaceutical industry and infrastructure.
	Long-term	P2. Damage to facilities due to urban flooding, and river flooding.	1) Costs incurred due to the restoration of damaged business sites. 2) Reduction of profits due to suspensions of production.	20.8~21.3	26.5~28.8	
Chronic	Short-term	P3. Increase in wild fires around business sites.	1) Costs incurred due to the restoration of damages caused by wild fires.	3.5~3.6	5.2~5.8	[Present] - Manage the ISO 14001 certification & operation; provide annual emergency training for dealing with environmental accidents. - Monitor compliance with legal standards & GMP. [Future] - Strengthen the safe environment objective, performance management system and environmental impact assessment for each business site. [Present] - Establish the BCP through ISO 22301 certification and conduct regular training. - Introduce legal standard monitoring & enforce GMP compliance. [Future] - Improve equipment, such as centralized control of air conditioning & cooling and enhance regulations.
	Long-term	P4. Rising abnormal temperature phenomenon.	1) Rise in air conditioning & heating costs due to rising temperatures and increasing greenhouse gas emissions. (Air conditioners, HVAC units, etc.) 2) Rise in investments in air pollution prevention equipment.	232.2 ~ 240.0	286.7 ~ 319.7	
	Long-term	P5. Rising risk of water shortages and drought.	1) Increased cost of investment in equipment that reuses water. 2) Increased cost of investment in managing water quality.	-	0.05	

* The risk impact period is classified into short-term (2024), mid-term (2025-2029), and long-term (2030-2040). / The financial impact amount is calculated as the annual average amount.

Assessment of Climate Change Opportunity Factors

Hanmi Pharm has identified materiality by assessing impacts and the possibility of opportunity factors that could have an impact on climate change projects.

Type	Period	Opportunity Factors	Financial Impacts	Response measures
Policy/ Regulation	Short-term	01. Cost of responding to emission rights regulations on the reduction of GHG emissions.	Reduction of the cost of responding to emission rights regulations on the reduction of GHG emissions.	Conduct self-reduction activities through Cost Innovation.
	Long-term	02. Reduction of electricity charges through the power demand management system, seeking out PPA contracts, etc.	Reduced electricity charges through the power demand management system, seeking out PPA contracts, etc.	Participate in the power demand management system/PPA contracts to be monitored.
Technology	Long-term	03. Reduction of cost of GHG emissions and carbon by implementing carbon neutrality.	Reduced carbon cost by implementing carbon neutrality, such as the use of renewable energy.	Establish the 2040 Carbon Neutrality roadmap and strengthen monitoring. Consider introducing renewable energy (REC, PPA, etc.)
Reputation	Short-term	04.Rising global business competitiveness due to the response to climate change.	Increased sales due to meeting climate change response needs.	Disclose the TCFD-based ESG report/Respond to CDP climate change disclosure.
Market	Long-term	05. Preservation of biodiversity and restoration of the ecosystems of local communities.	Increase of corporate brand value.	Carry out environmental protection activities such as the Hanmi Green Forest, environment purification activities, BEE HAPPY project, etc.

* The period of risk impact is classified into the short-term (2024), mid-term (2025-2029), and long-term (2030-2040).

Detailed Financial Impacts of Climate Change Risks and Opportunity Factors

Classification	Transitional Risks		Physical Risks		Opportunity Factors	
Details	T1. Rising carbon emission rights prices		P2. Damage to facilities due to urban flooding, and stream flooding.		O1. Reduction of cost of responding to emission rights regulations on the eduction of GHG emissions.	
Financial Impact Analysis Standard	Hanmi Pharm became subject to the greenhouse gas emissions trading scheme in 2020, and when the price of carbon emission rights increases and the paid-in allocation ratio expands, the cost of purchasing the shortfall in emission rights increases in tandem. Accordingly, we have estimated the amount of financial impact through the predicted price of emission rights according to the consecutive expansion of the paid-in allocation ratio (30-50% assumed) and the transition scenario.		To analyze the impact of river flooding according to the IPCC AR6 (The Sixth Assessment Report) scenario, we have applied a statistical model of the volume and depth of river basin flooding by using 3 climate variables (annual number of day of frost, number of days of drought, rainfall over 5 days), and 4 geographical variables (watershed area, slope, etc.) Accordingly, as a result of analyzing the impact based on annual frequency exceeding the flooding standard over the past 100 years, property losses of KRW 2.08-2.13 billion may occur in the 2020s, and KRW 2.65-2.88 billion in the 2030s.		Hanmi Pharm operates the Cost Innovation system, and discovers innovative cases of energy saving in order to use its utilities more efficiently. We have reduced our GHG emissions by approximately 500 tCO2eq every year through our Cost Innovation activities, and have estimated the cost of responding to the regulatory emission rights saved by reflecting the carbon price predicted by the scenario.	
Results of the Financial Impact Analysis	Assumption of NDC reduction target achievement (based on the NDCs scenario)	Assumption of fulfillment of 2050 Net Zero (based on the Net Zero 2050 scenario)	Average temperature in 2100 +1.3-2.4 °C (based on SSP1-2.6)	Average temperature in 2100 +3.3-5.7 °C (based on SSP5-8.5)	Assumption of fulfillment of the NDC reduction target (based on the NDCs scenario)	Assumption of fulfillment of 2050 Net Zero (based on the Net Zero 2050 scenario)
	Short-term (2024): KRW 980 mil. Mid-term (2025-29): KRW 5.34 bil. Long-term (2030-40): KRW 6.48 bil.	Short-term (2024): KRW 730 mil. Mid-term (2025-29): KRW 5.1 bil. Long-term (2030-40): KRW 18.95 bil.	Short to mid-term (2024-29): KRW 2.13 bil. Long-term (2030-40): KRW 2.65 bil.	Short to mid-term (2024-29): KRW 2.08 bil. Long-term (2030-40): KRW 2.88 bil.	Short-term (2024): KRW 130 mil. Mid-term (2025-29): KRW 330 mil. Long-term (2030-40): KRW 530 mil.	Short-term (2024): KRW 100 mil. Mid-term (2025-29): KRW 320 mil. Long-term (2030-40): KRW 1.56 bil.
Details	T4. Increased cost of transitioning to low carbon technology.		P4. Rising abnormal temperature phenomenon.		O3. Pursuit of carbon neutrality to reduce the carbon cost.	
Financial Impact Analysis Standard	Hanmi Pharm established the Carbon Neutrality mid-long-term roadmap with the aim of achieving Carbon Neutrality by 2040. To achieve Carbon Neutrality, capital expenditure under renewable energy self-generation, REC purchases, and PPA contracts and investment costs for introducing reduction measures such as energy efficiency and process optimization will increase. We estimated the cost of implementing RE100 using solar power equipment, and REC purchases (average price assumed in 2024), and the cost of implementing the transition of our company cars (82 vehicles) to zero emission vehicles.		We calculated the annual frequency of the highest daily temperatures, extreme changes of temperature, for the period 1980-2000 based on the location of assets in order to analyze the impact of abnormal temperatures according to the IPCC AR6 (Sixth Assessment Report) scenario, the results of which show that asset losses of KRW 23.22-24 billion may occur in the 2020s, followed by losses of KRW 28.67-31.97 billion in the 2030s.		Hanmi Pharm has analyzed the difference in the cost of purchasing the emission allowance shortfall by reflecting the carbon price of each scenario of the NGFS in the greenhouse gas emissions projected for the point when BAU and carbon neutrality will have been implemented by 2040, and has derived the amount by which emissions can be reduced when implementing carbon neutrality as an opportunity factor. Hanmi Pharm will make efforts to achieve 2040 Carbon Neutrality by increasing its use of renewable energy with the adoption of REC, PPA, and solar power equipment.	
Results of the Financial Impact Analysis	Short-term (2024): - Mid-term (2024-29): KRW 4.39 bil. Long-term (2030-40): KRW 9.34 bil.		Average temperature in 2100 +1.3-2.4 °C (based on SSP1-2.6)	Average temperature in 2100 +3.3-5.7 °C (based on SSP5-8.5)	Assumption of fulfillment of the NDC reduction target (based on the NDCs scenario)	Assumption of fulfillment of 2050 Net Zero (based on the Net Zero 2050 scenario)
			Short to mid-term (2024-29): KRW 24 bil. Long-term (2030-40): KRW 28.67 bil.	Short to mid-term (2024-29): KRW 23.22 bil. Long-term (2030-40): KRW 31.97 bil.	Short-term (2024): KRW 70 mil. Mid-term (2025-29): KRW 3.12 bil. Long-term (2030-40): KRW 6.42 bil.	Short-term (2024): KRW 50 mil. Mid-term (2025-29): KRW 3.04 bil. Long-term (2030-40): KRW 19.56 bil.

* Amount of financial impact analysis result estimated with annual average amount.

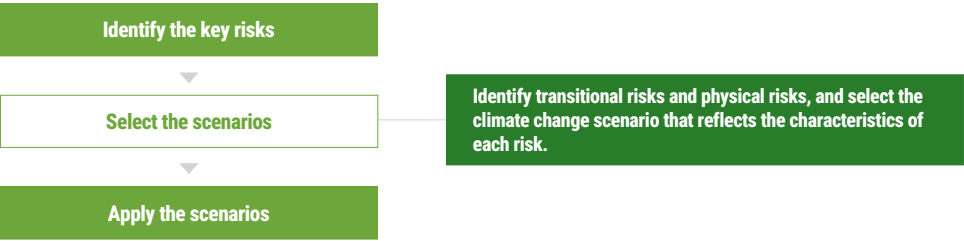
OUR COMPANY	+
SPECIAL TOPIC	+
ESG MANAGEMENT	+
ENVIRONMENT	-
▶ Environmental Management	
Minimizing Environmental Impacts	
Spreading an Eco-friendly Corporate Culture	
Preserving Biodiversity	
SOCIAL	+
GOVERNANCE	+
ESG FACT BOOK	+
APPENDIX	+
ESG POLICIES	+

OUR COMPANY	+
SPECIAL TOPIC	+
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ESG FACT BOOK	+
APPENDIX	+
ESG POLICIES	+

Climate Change Scenario Analysis

Hanmi Pharm has analyzed climate change scenarios in order to identify the financial impacts that risks and opportunities related to climate change will have on our company, and to devise measures for responding to the international community's request for carbon neutrality based on this.

Climate Change Scenario Analysis Process



Hanmi Pharm analyzed the potential financial impacts of the ‘strengthened GHG emission regulations and the rise in carbon emission rights prices’ in terms of transitional risks among the major risk factors, and eight types of acute and chronic risks in terms of physical risks.

The analysis of transitional risks was based on the NDCs of the NGFS (Network for Greening the Financial System), Below 2°C, and the Net Zero 2050 scenario, and assumptions were made by applying the content of the 2030 NDC (Nationally Determined Contributions) and 2050 Carbon Neutrality Scenarios A & B (Nov. 2021). In the case of physical risks, an analysis was conducted based on the SSP (Shared Socioeconomic Pathway) scenario, an emission scenario adopted in the AR6 (Sixth Assessment Report) of the IPCC (Intergovernmental Panel on Climate Change). It is a pathway in which changes in future socioeconomic systems, such as future population, economy, and energy consumption, were applied along with the intensity of radiative force as of 2100.

< Selection of Climate Change Scenario >

Transitional Risks		
Classification	Expected temperature rise	Source
NDCs Assumes the achievement of the current NDC GHG reduction target.	+ 2.6℃	NGFS
Below 2°C Assumes a reduction carried out in order to achieve the goal of keeping the rise in global temperature below 2°C.	+ 1.6℃	NGFS
Net Zero 2050 Achievement of 2050 Net Zero through continuous engagement in Carbon Neutrality activities.	+ 1.4℃	NGFS

Physical Risks		
Classification	Expected temperature rise	Source
SSP5–8.5(High) A scenario in which emissions are reduced by a relatively small amount, with total GHG emissions tripling by 2075.	+3.3-5.7℃	IPCC AR6
SSP2-4.5(Medium) A powerful reduction scenario in which emissions are maintained at the current level up to 2050 and then reduced up to 2100.	+2.1-3.5℃	IPCC AR6
SSP1-2.6(Low) An aggressive reduction scenario that matches the requirements of the Paris Accord, achieving Net Zero by 2050.	+1.3-2.4℃	IPCC AR6

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GOVERNANCE	+
ESG FACT BOOK	+
APPENDIX	+
ESG POLICIES	+

Results of the Financial Impact Analysis based on Climate Change Scenarios

Transitional Risk Analysis

Hanmi Pharm has estimated the corporate BAU¹⁾ scenario by reflecting the energy consumption and emission allowance allocations according to the production plan forecast, utilizing the NGFS (Network for Greening the Financial System)-based NDCs, Net Zero 2050, and Below 2°C transition scenarios, and analyzed the potential carbon cost²⁾ according to the scenario in which the country regulates the emission rights trading system and the climate change scenario according to this.

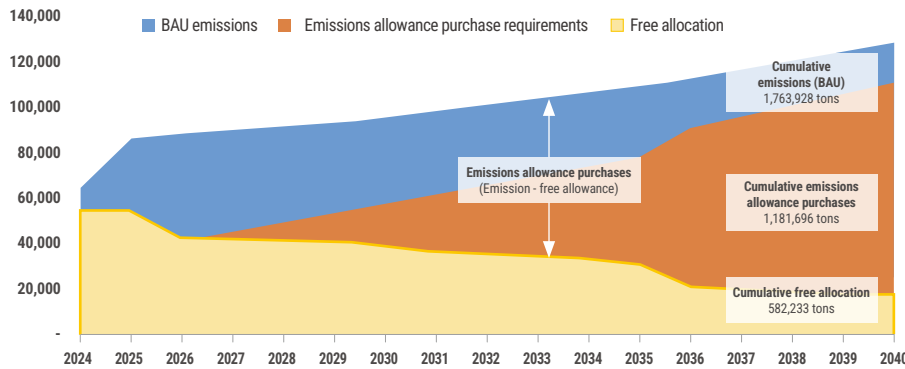
Hanmi Pharm’s outlook concerning the projected greenhouse gas emission allowance assumes that the 2050 Carbon Neutrality scenarios A & B, which include an 80.4% reduction target in the industrial sector, will be achieved linearly. Accordingly, it was estimated that the emission allowance will decrease by 54%, while the paid allocation rate will increase by 50%.

The potential carbon price of the NGFS scenario was derived by considering all the costs needed for socioeconomic damages and reduction according to greenhouse gas emissions, with the estimated price ensuring the IPCC SSP (Shared Socioeconomic Pathway) reduction pathway complied with the minimum cost through the integrated assessment model.

Hanmi Pharm’s outlook for the projected greenhouse gas emission allowance Hanmi Pharm’s outlook for the projected carbon-cost

- 1) BAU: An acronym for Business As Usual, it is the forecast volume of expected greenhouse gas emissions when no special measures are taken to reduce them.
- 2) Potential carbon cost: The shadow price, in which a company establishes a strategy and evaluates the investment by screening potential business risks due to future carbon regulations.

Hanmi Pharm’s Outlook for GHG Emission Allowance (Unit:tCO₂-eq)



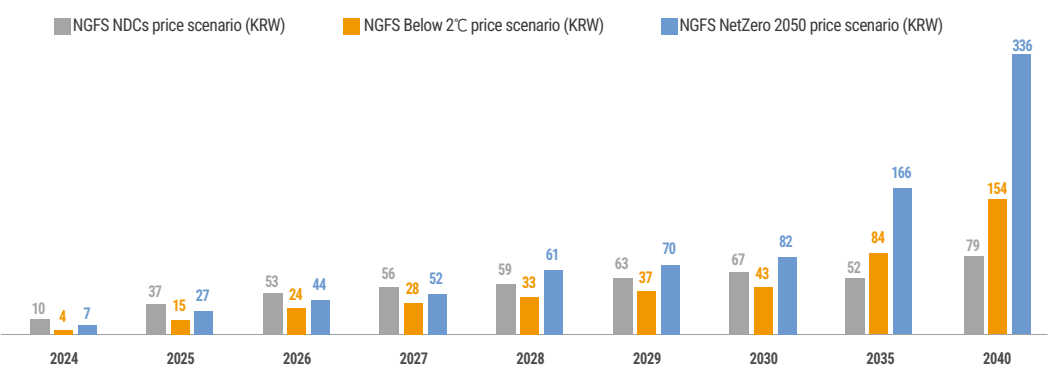
<Result of Transitional Risk Analysis>

“Hanmi Pharm’s outlook for greenhouse gas emission allowance” forecast that there will be a need to purchase the emission rights for 1.18 million tons, which is 67% of the projected cumulative emissions of 1.76 million tons in 2040. Assuming the NGFS Korean carbon price as the emission rights price for Hanmi Pharm’s projected carbon cost, the emission rights price will rise to approximately KRW 70,000-300,000 per ton of GHGs in 2040, while the carbon cost to be borne by Hanmi Pharm was analyzed to reach about KRW 7.9 billion per year in the NDCs scenario, and KRW 33.6 billion per year in the Net Zero scenario.

Scenario	Carbon price (Unit: KRW/tCO ₂ -eq)				Cumulative Carbon-cost (Unit: KRW 100 mil.)				2040 Cumulative Carboncost NPV ³⁾ (Unit: KRW 100 mil.)
	2025	2030	2035	2040	~2025	~2030	~2035	~2040	
NDCS	110,580	114,241	63,692	69,661	46	344	641	989	703
Below 2°C	45,949	73,072	103,801	135,991	19	185	516	1,156	756
Net Zero 2050	82,076	138,714	205,267	297,126	34	343	991	2,346	1,523

3) NPV (Net Present Value): A value obtained by discounting the cash flow at a specific point in time in the future with an interest rate to convert it to the amount at the present point in time, for which Hanmi Pharm’s weighted average discount rate of 3.65% over the past three years has been applied.

Hanmi Pharm’s Outlook for Carbon-cost Unit: KRW 100 mil.



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SPECIAL TOPIC	+
ESG MANAGEMENT	+
ENVIRONMENT	-

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SOCIAL	+
GOVERNANCE	+
ESG FACT BOOK	+
APPENDIX	+
ESG POLICIES	+

Physical Risk Analysis

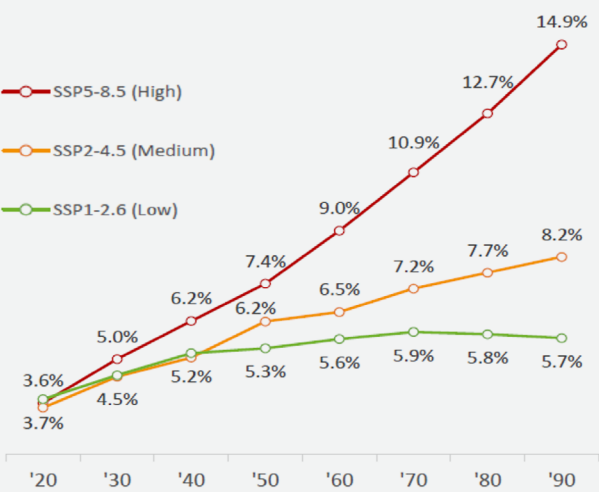
Hanmi Pharm has conducted a physical risk analysis of the Paltan Smart Plant¹⁾ and the Beijing Hanmi Pharm business site based on the SSP (Shared Socioeconomic Pathway) using the Climanomics²⁾ of S&P Global Sustainable 1. Physical risks were modeled by applying each variable, such as temperature and rainfall, to eight physical risks including abnormal temperatures, urban flooding, and forest fires according to acute and chronic risks. The mean annualized absolute loss (MAAL) includes the impact of business disruptions that lead to operating costs, capital costs, and losses on the direct financial impact of climate risks on specific types of assets.

1) The Paltan Smart Plant and Pyeongtaek Bio Plant business sites are located close by to each other (Scope is included within an analysis grid), and have similar locations in inland downtown areas and industrial conditions. Thus, the Paltan Smart Plant was analyzed as a representative business site.
2) A climate change scenario analysis platform for physical climate risk analysis published by S&P Global.

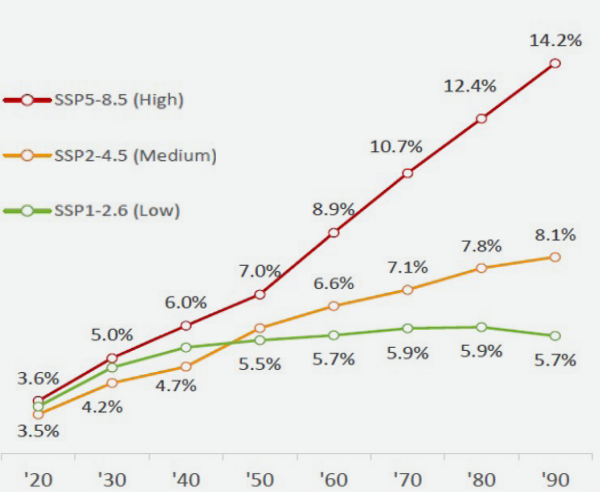
Results of Analysis of Physical Risks – by Asset

The rate of asset loss of the Paltan Smart Plant may increase from 5.3%-7.4% in the 2050s to 5.7%-14.9% in the 2090s, while that of Beijing Hanmi Pharm may increase from 5.5%-7.0% in the 2050s to 5.7%-14.2% in the 2090s.

Paltan Smart Plant



Beijing Hanmi Pharm



Results of Analysis of Physical Risks – by Risk

The results of the analysis of acute and chronic risks show that the impact of asset loss due to abnormal temperatures was the most significant, and that the asset loss rate due to abnormal temperatures would increase from 4.80% to 6.46% in the 2050s.

MAAL (Mean annualized absolute loss)

N.A	0~1%	~5%	~10%
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Classification		SSP1-2.6(Low)				SSP2-4.5(Medium)				SSP3-8.5(High)			
		'20	'30	'40	'50	'20	'30	'40	'50	'20	'30	'40	'50
Acute	Coastal flooding	-	-	-	-	-	-	-	-	-	-	-	-
	River flooding	-	-	-	-	-	-	-	-	-	-	-	-
	Urban flooding	0.29	0.36	0.41	0.44	0.27	0.35	0.43	0.52	0.28	0.39	0.53	0.70
	Typhoons	0.01	0.01	0.02	0.02	0.01	0.01	0.02	0.02	0.01	0.02	0.02	0.02
Chronic	Drought	-	0.00	0.00	0.00	-	0.00	0.00	0.00	-	0.00	0.00	0.00
	Abnormal temperatures	3.37	4.07	4.68	4.80	3.13	4.00	4.48	5.50	3.28	4.52	5.51	6.46
	Water stress	-	-	-	-	-	-	-	-	-	-	-	-
	Forest fires	0.05	0.07	0.08	0.09	0.04	0.07	0.09	0.12	0.04	0.08	0.12	0.16

OUR COMPANY	+
SPECIAL TOPIC	+
ESG MANAGEMENT	+
ENVIRONMENT	-

► Environmental Management

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- Preserving Biodiversity

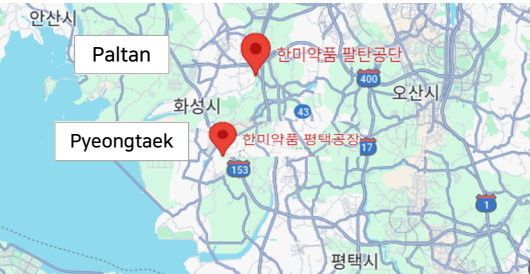
SOCIAL	+
GOVERNANCE	+
ESG FACT BOOK	+
APPENDIX	+
ESG POLICIES	+

Results of the Physical Risk Analysis

Since both the Paltan Smart Plant and Beijing Hanmi Pharm are located in inland downtown areas, physical risks arising from abnormal temperatures and urban flooding were identified as primary risks, but no potential asset loss due to coastal flooding, stream flooding, or water stress was identified.

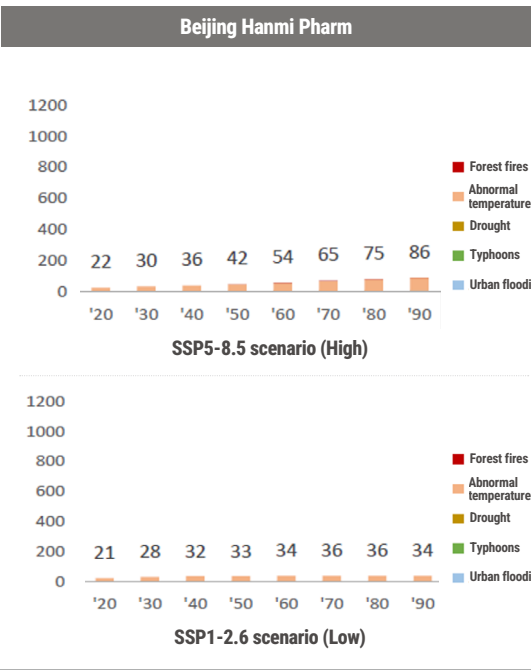
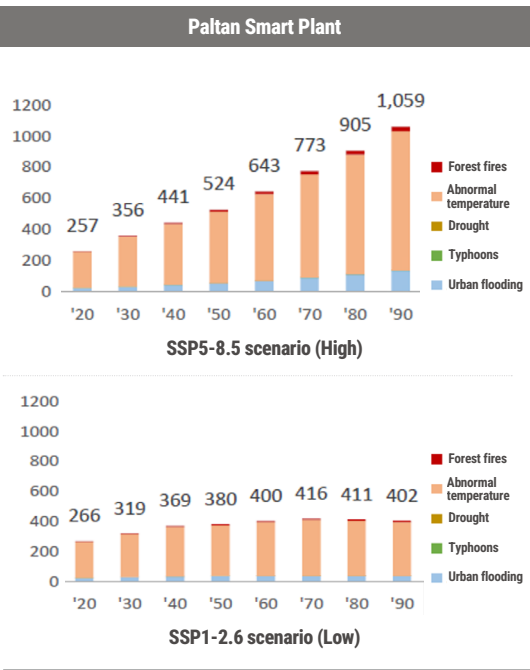
The results of the analysis, based on the SSP1-2.6 and SSP5-8.5 scenarios, show that the Paltan Smart Plant will incur losses ranging from KRW 38 billion to 52.4 billion in the 2050s, and that Beijing Hanmi Pharm will incur losses ranging from KRW 3.3 billion to 4.2 billion in the same period. Hanmi Pharm has established and is operating BCP (Business Continuity Planning) for natural disasters, and will strive to continuously enhance the direction of its response according to the level of exposure to physical climate change risks.

Business Site



Annual Average Predicted Asset Loss by Business Site

Unit: KRW 100 mil.



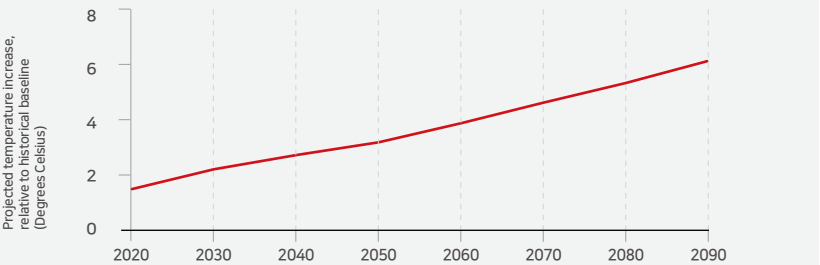
Abnormal Temperature Impact Analysis

As a result of the physical risk analysis, the change (Absolute change in the past 50th percentile value of daily maximum temperature) in abnormal temperatures with the greatest impact was measured from 1980-2000 (historical baseline period). According to the report, the daily maximum temperatures at the Paltan Smart Plant and Beijing Hanmi Pharm will rise by about 4°C compared to the period from 1980-2000 by the 2050s.

Paltan Smart Plant

Hazard ☒ Projected Value ☒ Historical Baseline(1980-2000)

This hazard measures the absolute change in the historical annual 50th percentile value of daily maximum temperature in degrees Celsius, relative to a historical baseline period (1980-2000).



Beijing Hanmi Pharm

Hazard ☒ Projected Value ☒ Historical Baseline(1980-2000)

This hazard measures the absolute change in the historical annual 50th percentile value of daily maximum temperature in degrees Celsius, relative to a historical baseline period (1980-2000).

