
TCFD
TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES
SK Gas
TCFD Report
2022
SK gas

About this Report

The Paris Agreement in 2015 and the Intergovernmental Panel on Climate Change (IPCC) in 2018, which pursue efforts to keep the global average temperature rise at less than 2°C and limit it to 1.5°C or less, compared to pre-industrial levels, stress the needs to bring the world's greenhouse gas emissions to zero by 2050.

The TCFD (Task Force on Climate-related Financial Disclosures), established by the G20 finance ministers and central bank governors, recommended the calculation and disclosure of the financial impact of climate change on businesses in 2017.

As a leading energy company in Korea, SK Gas is agile in responding to climate change trends. To this end, we have established a plan to go beyond reducing carbon emissions and carry out a portfolio transition to an eco-friendly, low-carbon business, and are striving for more fundamental responses and changes.

SK Gas published its first TCFD report to share this situation with our stakeholders. This has significant value in that we quantitatively identified the climate change response strategy and implementation status as well as the impact of climate change on our business and financial soundness and share the results.

This TCFD Report has been prepared in accordance with the guidelines provided in the TCFD recommendations. In order to calculate and explain the financial impact disclosed in the report, SK Gas used data that was forecasted by reputable institutions such as the International Energy Agency (IEA) and Bloomberg. However, the forecasts and plans included in this TCFD report are subject to change, depending on the variables found in various climate change factors, as well as changes and uncertainties in business and market conditions. It should also be noted that SK Gas does not assume any responsibility or obligation to provide any guarantees for the information and prospects presented in this report.

Based on our vision and future goal of becoming a net zero solution provider, SK Gas aims to become a leader in ESG management and the clean energy market. To this end, we declare our support for TCFD and fulfill our obligations as a company to contribute to addressing global climate change issues. The TCFD Report of SK Gas is the first step of our journey and will be a base for systematically managing and monitoring climate change risks.

Reporting Boundaries

This report defines the Pangyo headquarters, Ulsan Terminals, Pyeongtaek Terminals, G.Hub, and SK Advanced as organizational boundaries, according to the guidelines presented by the GHG protocol, SBTi, and International Financial Reporting Standards (IFRS) and describes climate change response activities and performance. The organizational boundaries will be updated when Ulsan GPS goes into operation in the future.

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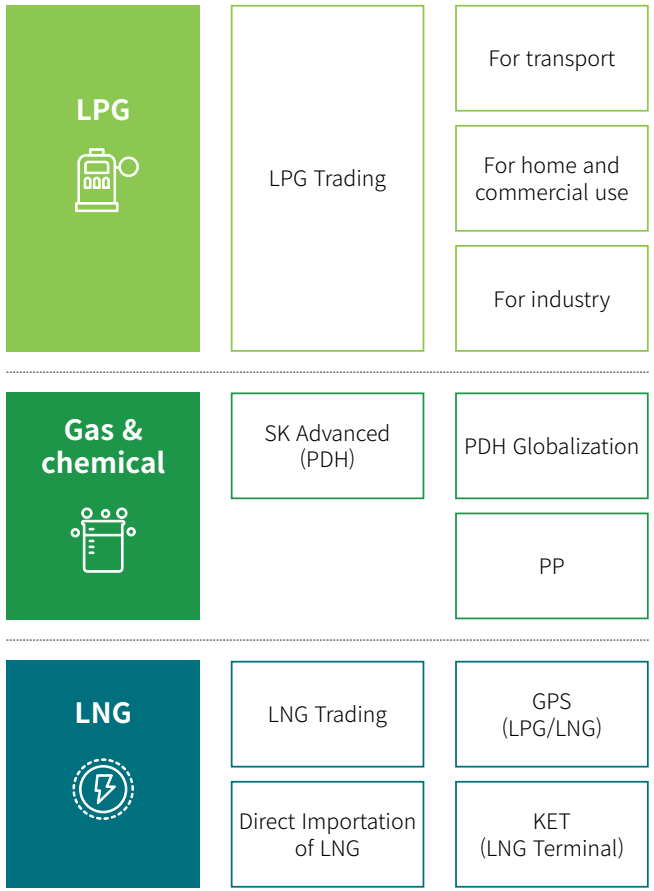
Business Profile



Business Units and Infrastructure

LPG

LPG Marketing in Korea · Based on the LPG import terminals located in Ulsan and Pyeongtaek and its nationwide sales and distribution network, SK Gas is supplying LPG to a variety of customers, for home and commercial use, transportation, industrial use, and petrochemical applications. The company possesses the risk management capabilities and operational know-how from over thirty years of business activities, specifically the operation of world-class storage terminals and domestic LPG market experiences.

Global LPG Trading · SK Gas is leading the global trading market by tapping into its LPG import and overseas sales experience and network. Going beyond profits from selling and purchasing, the company realizes profit diversification by reducing introduction costs through inventory optimization and swapping products and ships with other companies.

LPG Terminals · SK Gas has large-scale LPG terminals with a total capacity of 470,000 tons in Ulsan and Pyeongtaek. Ulsan Terminals are the world's largest rock cavern storage facilities and can store a total of 270,000 tons of LPG, including 140,000 tons of propane and 130,000 tons of butane. Pyeongtaek Terminals can store a total of 200,000 tons of LPG, including 140,000 tons of propane and 60,000 tons of butane. Ulsan and Pyeongtaek terminals have been operating accident-free since their launch in 2012, demonstrating the highest level of professionalism and efficiency in Korea.

Gas & Chemical · In the PDH (propane dehydrogenation) business, which produces propylene by removing hydrogen from propane, SK Advanced, a joint venture between Saudi AGIC (Advanced Global Investment Company) and Kuwait PIC (Petrochemical Industries Company), is operating a PDH plant with a capacity of 600,000 tons. In addition, SK Advanced established a joint venture with PolyMirae to complete a PP (polypropylene) plant with a capacity of 400,000 tons in 2021, which currently is in operation.

LNG

LNG/Power · Ulsan GPS, the world's first GW-class LNG/LPG combined gas power plant, is under construction. It is expected to start commercial operation in 2024 with a total power generation capacity of 1.2 GW. For the stable fuel supply and the profitability of GPS, SK Gas has signed a long-term fuel supply contract. In step with its commercial operation, the company plans to build and operate an LNG import terminal. By providing competitive fuel and terminal storage space to domestic LNG importers through the expansion of the value chain, the company will continue to generate stable profits.

Hydrogen Business

Hydrogen Energy · SK Gas is developing a hydrogen business model utilizing the Ulsan Industrial Complex's LNG/LPG infrastructure and nationwide distribution network. The company is promoting a hydrogen charging station business in Ulsan, along with the fuel cell power generation project based on byproduct hydrogen and the construction of a large-scale hydrogen complex. After introducing clean hydrogen/ammonia from overseas, SK Gas plans to supply it as a fuel for co-firing to LNG power plants and coal power plants.

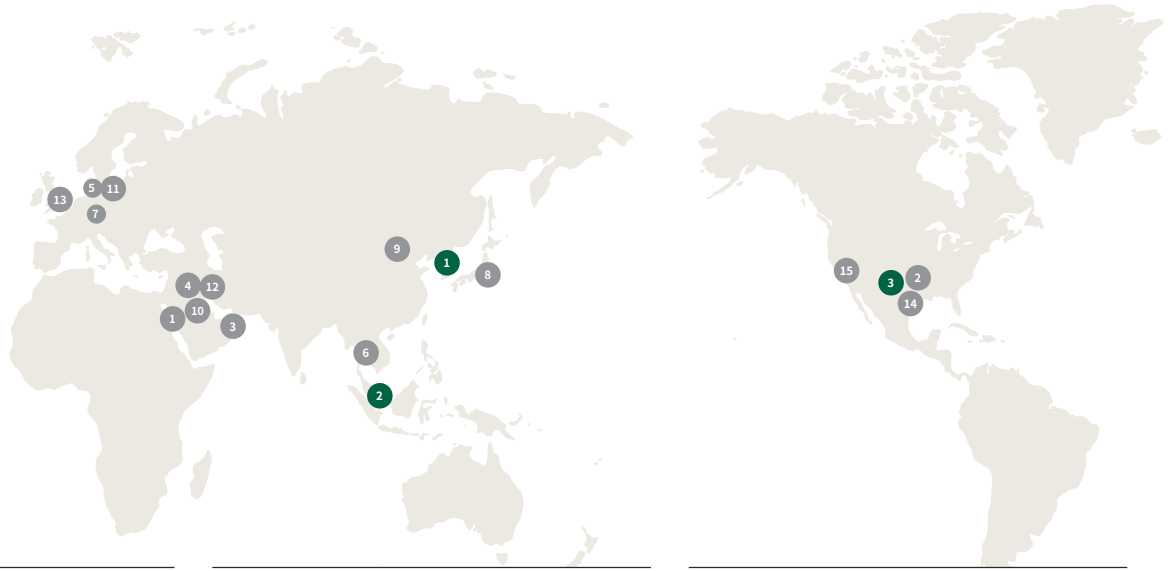
Company Overview

(as of December 2021)

Company	SK Gas Co., Ltd
Business Category	Wholesale supplier of gaseous fuel and related products
Headquarters	ECO Hub, 332, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do
Date of Establishment	Dec. 20, 1985
Workforce	531 persons
Current Net Profit	KRW 249.3 billion
Revenue	KRW 6.4945 trillion
Total Assets	KRW 5.1215 trillion

1.1 Our Business Profile

Business Profile



Domestic Network	
❶ Korea	Headquarters
	Ulsan Terminals
	Pyeongtaek Terminals
	G.Hub (tank terminal)
	Central Sales Office
	Eastern Sales Office
	Western Sales Office
	Jeju Sales Office
Overseas Network	
❷ Subsidiary in Singapore	
❸ Subsidiary in Houston, US	

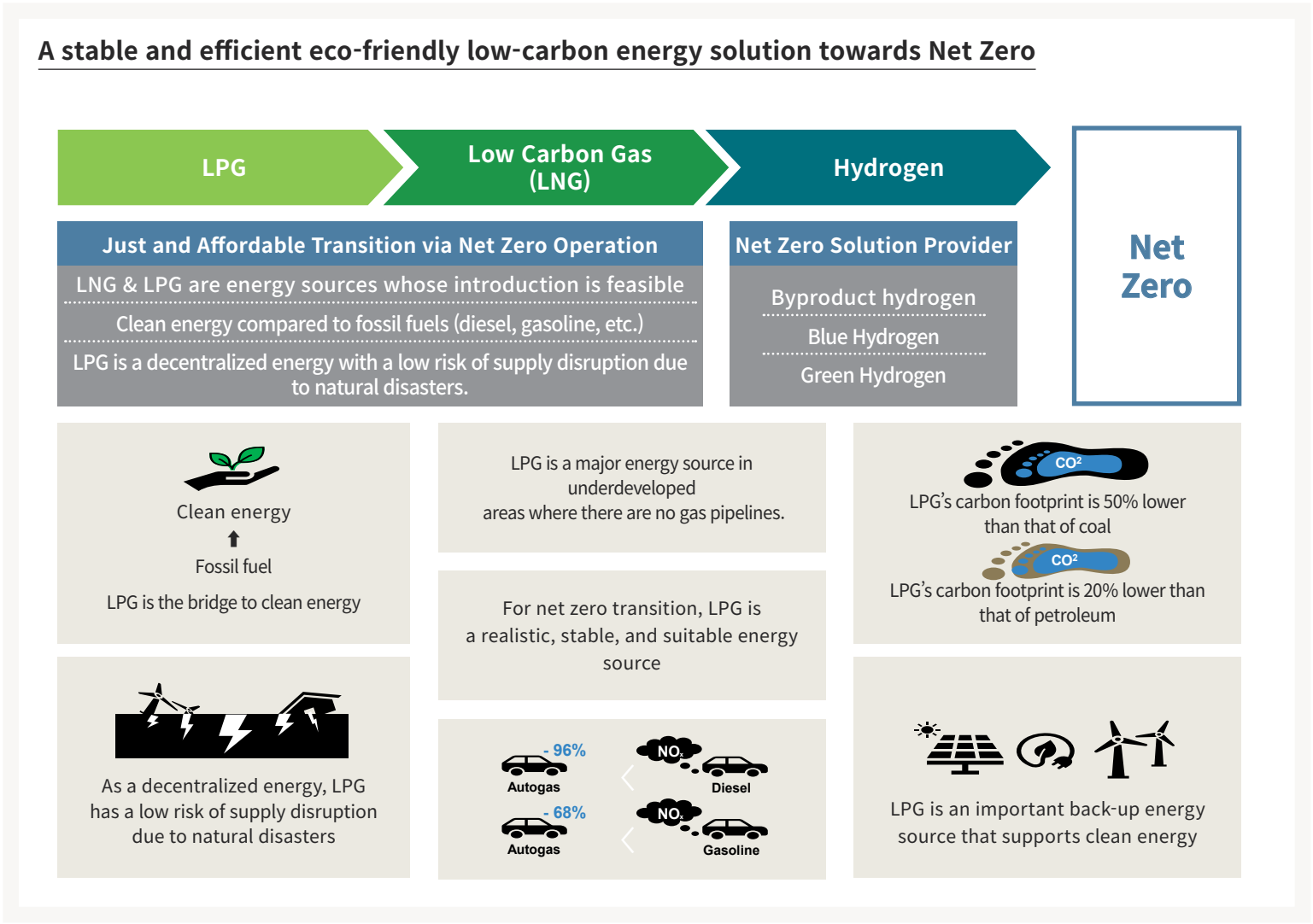
Overseas Partner	
LPG Trading	
Oil producing countries	❶ Aramco in Saudi Arabia
	❷ Phillips 66 and Chevron in US
	❸ UAE ADNOC
	❹ KPC in Kuwait
LPG trading companies	❺ Shell in the Netherlands
	❻ PTT in Thailand
	❼ Glencore and Vitol in Switzerland
	❽ Astomos in Japan
	❾ SINOPEC in China

Overseas Partner	
Petrochemical	
❿ AGIC in Saudi Arabia	
⓫ LyondellBaell in the Netherlands	
⓬ PIC in Kuwait	
⓭ INEOS in UK	
LNG	
⓮ Energy Transfer LNG Export, LLC in US	
Hydrogen	
⓯ C-Zero in US	

Global Network

SK Gas is leaping forward as a leader of the global energy market through continuous development of world-class technology and infrastructure, and network expansion. When it comes to the LPG trading business, the company is operating local subsidiaries in Singapore and Houston, USA. It has grown into a major LPG trader in Asia over the past 20 years, trading with companies in the Middle East and North America such as Saudi Arabia and Kuwait. The company has secured a stable and competitive LPG supply chain through partnerships with key exporters in the Middle East and North America, and is stabilizing profits by quickly responding to market price and demand volatility. Seizing the opportunity to create a new growth engine in the gas and chemical business, SK Gas established SK Advanced, a propylene production and sales company, in 2014 with AGIC, a state-owned petrochemical company in Saudi Arabia, and PIC in Kuwait. SK Advanced selected Lummus, a US company with next-generation technology, as a PDH process licenser. In 2019, producing 708,000 tons, which was 118% of its production capacity, the company was recognized as the best PDH operator among Lummus' licensees, and its O&M (operation & maintenance) capability was also recognized. In order to diversify the gas chemical business, SK Gas established a PP (Polypropylene) plant in Ulsan in a joint venture partnership with PolyMirae,
whose major shareholder is global chemical company LyondellBasell. The plant started its commercial operation in May, 2021 and is stably in operation. By jointly establishing Korea Energy Terminal (KET) with Korea National Oil Corporation, SK Gas also expanded the LNG supply chain, and in December 2021, signed a contract to invest in C-Zero, a US company, which possessed the source technology for eco-friendly turquoise hydrogen production, to secure leadership in the hydrogen economy market. Partnerships and strategies with global companies in line with changes in the energy market will continue.

1.2 LPG as a Stable and Efficient Eco-friendly Low-carbon Energy



Social, Economic, and Environmental Values of LPG

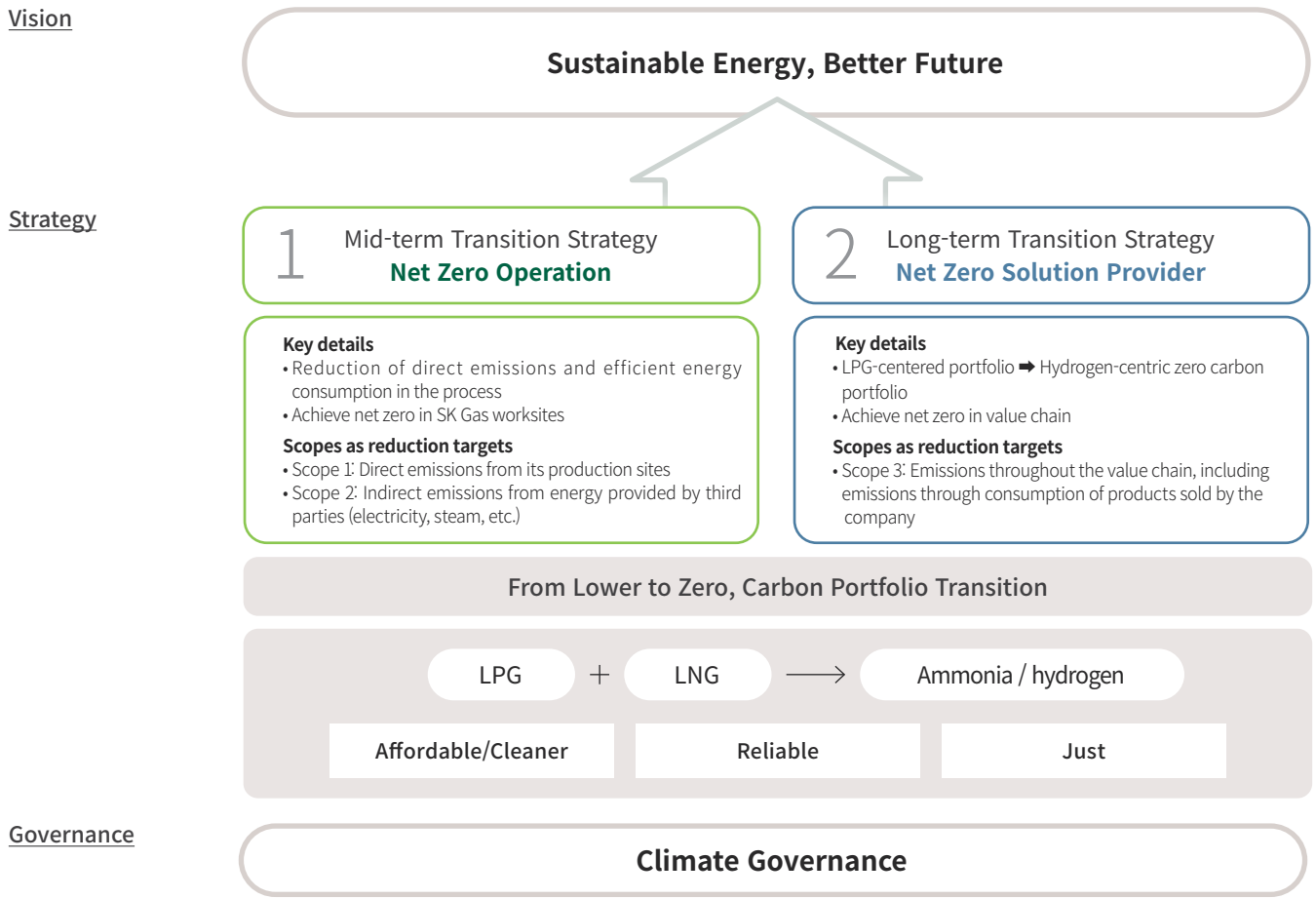
LPG, which forms the basis of the core business of SK Gas, serves as an eco bridge that carries the transition of the fossil fuel-oriented energy market to the zero-carbon clean energy. Although LPG is a fossil fuel, it is an eco-friendly energy with relatively low carbon emissions compared to coal, gasoline, and diesel. In fact, LPG does not produce carbon black, which is considered the main cause of global warming, and the emission of nitrogen oxides, the causative agent of ultra-fine dust, is lower than other fossil fuels.

Supplying LNG requires infrastructure such as supply pipes, but it is easy to supply, store, and use LPG without infrastructural change. Therefore, LPG is an important energy source even in developing countries or underdeveloped regions with insufficient infrastructure. Since LPG requires no infrastructure and has a low risk of supply disruption due to natural disasters, it is classified as the energy least affected by the external supply environment. Unlike green or blue hydrogen, LPG is less burdensome in terms of cost, so it can be used universally at home. For this reason, LPG is attracting attention as an important backup energy source that supports clean power generation.

As South Korea's number one LPG player, SK Gas has supplied low-carbon eco-friendly energy. Building on this track record, the company plans to switch to zero-carbon portfolio. SK Gas will actively respond to climate change and expand its business with hydrogen and ammonia, evolving into a net zero solution provider that takes the lead to achieve the global common goal of net zero.

1.3 Our Approach to Climate Change

Climate Change Response System



SK Gas's Approach in Responding to Climate Change

The new vision for SK Gas as the number one LPG player in Korea is "Sustainable Energy, Better Future."

SK Gas is trying to realize this through a long-term strategy as the company grows to become a net zero solution provider, along with its short-term strategy for net zero operation. The characteristics of the LPG business are economic feasibility, supply stability, and eco-friendliness. LPG is considered highly economical as it is a low-carbon and eco-friendly energy. It also has high accessibility and enables stable supply. Due to these characteristics and lower carbon emissions compared to other fossil fuels, LPG has come under the spotlight as an energy source for carbon neutrality and climate response.

Securing a stable energy source that serves as the core infrastructure for society is one of the major challenges facing every nation. SK Gas will do its best to contribute to solving social problems through the stable supply of economical, low-carbon, and eco-friendly energy. To this end, the company will establish climate change governance and strengthen its own carbon-neutral capabilities, while striving to fulfill the role in boosting resilience for climate change response.

Based on this, SK Gas plans to first establish its own net zero roadmap and then, achieve net zero operation. The company will devote itself to balancing business growth and environmental impact reduction by expanding its eco-friendly hydrogen and ammonia business and creating a better future through sustainable energy (Sustainable Energy, Better Future).

Governance and Risk Management

SK Gas operates an efficient governance system centered on the Board of Directors in which an outside director is appointed as its chairperson. The BOD is the highest decision-making body that oversees business issues across the company. It manages and supervises all aspects of ESG management, including climate change. Management discovers, identifies, and responds to risks and opportunities for climate change at SK Gas through the ESG Committee, and regularly reports major issues to the BOD through the ESG Committee.

SK Gas will build a solid governance foundation that it can transform from the Number One LPG company in Korea to a “Net Zero Solution Provider” climate change issues are reflected in its overall management and it can move from the as SK Gas pursue its mission of “realizing a sustainable and happy ecosystem.”

2.1 Climate Change Response Governance

Oversight of the Board

SK Gas has a BOD-centered responsible management system that separates ownership and management and appoints an independent outside director as the chairperson of the BOD. The foundation of successful corporate governance is a sound and effective board of directors. The BOD of SK Gas oversees and sets the direction for its comprehensive climate change and management strategies.

SK Gas established the Sustainability Management Committee in 2020 to strengthen ESG-based management, and in June 2021, expanded and reorganized it into the ESG Committee and appointed new members. As a result, the existing climate change risk management and response functions were extended to the committees under the BOD, and the responsible management system of the BOD was further strengthened.

SK Gas has a total of four committees under the Board of Directors: Audit Committee, Outside Director Recommendation Committee, ESG Committee, and Personnel Committee. Various responsibilities and authorities are delegated to them for their operation. The chairperson of each committee regularly reports to the BOD on the committee operations.

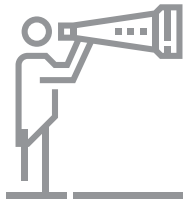
SK Gas's climate change governance and management system is centered on the ESG Committee under the supervision of the BOD. The ESG Committee is responsible for establishing the company's mid- to long-term climate change management strategy and consulting and reviewing ESG-based management for sustainable growth. It also oversees climate-related response activities within the organization. The committee monitors the climate change response and management plan on a regular basis and on special occasions, reviews its implementation, discusses future plans, and reports the results to the BOD. At the same time, the committee is making decisions to manage, evaluate, and mitigate climate change-related risks that SK Gas faces.

The ESG Committee reviews financial and non-financial risks in investments and business targets in advance and reports them to the Board of Directors. Especially, the committee reviews climate-related matters that cause ex-ante or ex-post issues with stakeholders such as the financial societies, civic groups, and local communities. Furthermore, it evaluates the level of environmental and social risks that may arise from the activities of investment and business targets, discovers potential risks, prepares countermeasures, and reports to the BOD.

Since 2020, the BOD has reconfirmed its roles and responsibilities through self-evaluation, and has been using it as an opportunity for effective BOD composition and operation. In addition, the company is striving to become a global ESG leader by reflecting ESG performance in the CEO's key performance indicators and including it in the compensation system.

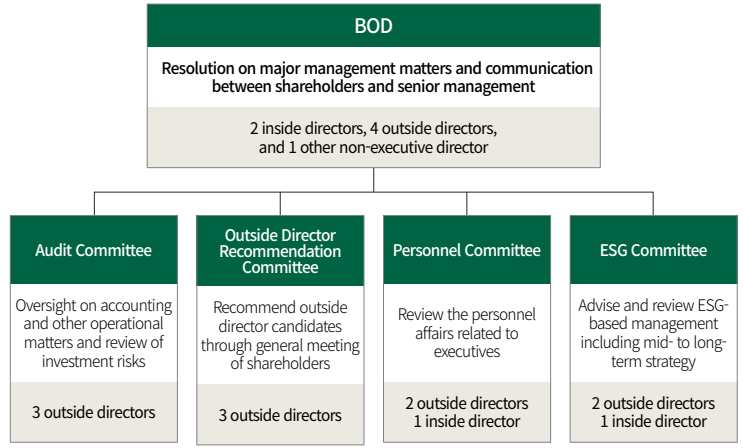
In 2021, the ESG Committee approved "Net Zero Solution Provider" as a new identity for SK Gas. As a result, SK Gas laid the groundwork for transitioning to a low-carbon, non-carbon business and responding to climate change company-wide. The BOD will play a central role in continuous monitoring to implement realistic carbon reduction goals and provide phased energy transition solutions.

The Personnel Committee, a committee within the BOD, establishes a climate change response system to reduce company-wide greenhouse gas emissions and establishes a net zero goal. The committee also reviews and evaluates the compensation plan by reflecting the operational performance of the annual ESG Management Infrastructure Plan in the CEO KPIs. To make real achievements according to the net zero plan established in 2022, the committee recognizes the need to link performance with rewards and plans to specify how to accomplish this.



Net Zero Solution Provider

Composition of BOD and Committees



Composition of ESG Committee

Name	ESG Committee	
Composition	Outside Director	Kim Yeon-geun (chair), Hyun-jeong Jeon
	Inside Director	Yoon Byung Suk
Purpose	• Advice and review on management strategies and ESG directions • ESG activity goal setting in consideration of environmental and social responsibility management policies • Implementation and improvement of risk management frameworks and review of strategies for financial and non-financial risks and opportunities	
Duties	• Review the results of the ESG initiatives and the implementation plan for the year • Review key non-financial risk factors, issues and countermeasures • Review related to stakeholder communication such as domestic and overseas ESG evaluation results • Review support measures for ESG capacity development and internalization • Review of environmental and social matters suggested by the chairperson • Review of other major issues related to ESG or strategy, which the committee considers need to be reviewed, as well as matters delegated by the BOD	

2.1 Climate Change Response Governance

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

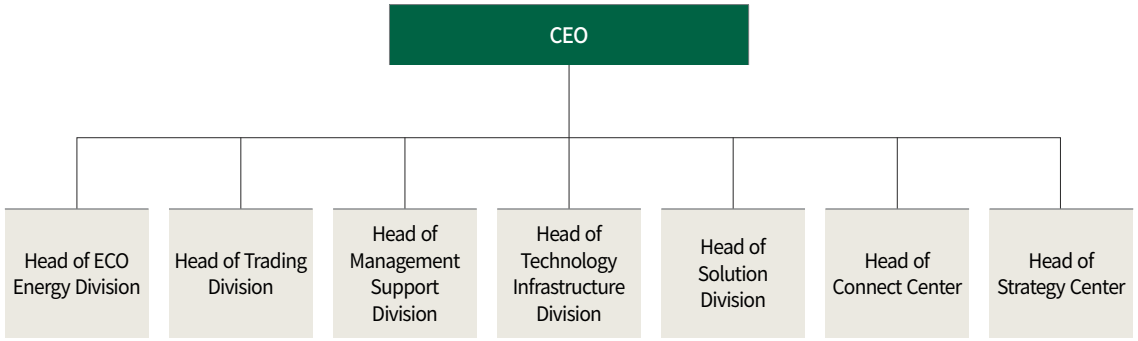
Top Management's Roles

C-Level Council

SK Gas is operating a company-wide C-level Council led by the CEO to respond to major company-wide risks including climate change.

The C-level Council is the company-wide risk management control tower. The head of each business unit, the head of the Business Support Division, the head of the Strategy Center, and the ESG Team are participating as its members, and the CEO is responsible for making important decisions throughout the company as the chief decision-maker. In the biweekly C-level Council meetings, the ESG Team reviews current risks and opportunities in climate change-related operations and strategies, reports the results, and prepares CEO-centered discussions and countermeasures. In this way, major climate change risks and opportunity issues that may occur in the entire value chain are identified, managed, and responded to by the C-level Council, a company-wide consultative body. Major agenda items are reported to the BOD and ESG Committee through the CEO. Agenda items discussed in the council are reported to the BOD and ESG Committee through the CEO.

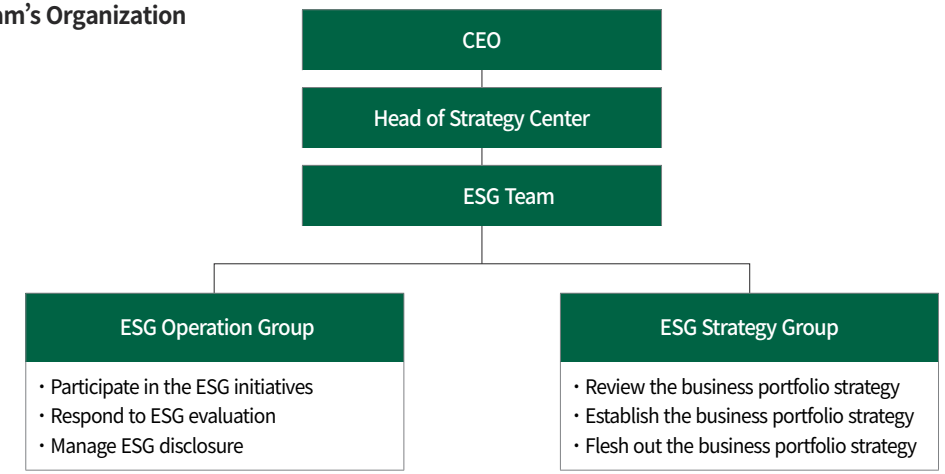
Composition of C-level Council



ESG Team

SK Gas's ESG Team is a company-wide coordinator of ESG management under the company-wide Strategy Center under the direct control of the CEO. In order to integrate ESG operating activities and strategies and operate systematically and strategically from a company-wide perspective, the team is formed by combining the ESG Operation Group and the ESG Strategy Group. The organization of the ESG Team is divided into the ESG Operation Group and the ESG Strategy Group. The Operation Group handles company-wide ESG initiatives, evaluations, and disclosures, while the Strategy Group sets up, reviews, and materializes strategies from a business portfolio perspective. In 2021, the ESG Team established the ESG Master Plan detailing the "Net Zero Solution Provider" strategy, which is the company's mid- to long-term strategy to decarbonize its business portfolio, and the mid-to-long-term ESG response strategy for strengthening ESG management, and submitted it to the C-level Council. After discussion, the final results were reported to and approved by the BOD.

ESG Team's Organization



2.2 Climate Change Response Risk Management

SK Gas's climate-related risks vary depending on the geographic locations and industrial characteristics (operations, supply chain, customers, and other factors) associated with its LPG business. The relevance and importance of climate-related risks to SK Gas may vary significantly depending on business strategies and management activities.

SK Gas prevents risks by identifying those that may occur in the full gamut of business activities in advance and managing them systematically. In the event of a risk, the company responds promptly according to the response process to minimize negative impact. As a risk management system operated on a regular basis, the company conducts an integrated identification of non-financial risks such as environmental and social issues, and collects stakeholder opinions to assess the materiality of issues.

SK Gas revised the ESG Committee Regulations in April 2022 to bolster its duties and powers related to risk management. The ESG Committee will support the BOD with company-wide oversight and management of future climate change-related risks and opportunities. Furthermore, the committee will establish ESG strategies and policies, operate ESG, discover issues, and manage financial and non-financial risks and opportunities of the overall business in an integrated manner.

When a significant climate change risk occurs, the ESG Committee conducts an in-depth review of and discusses potential impacts and countermeasures at the company-wide level, suggests a direction, and reports it to the BOD. SK Gas mainly specifies risks and opportunities related to climate change through the ESG Committee and is responding strategically to them.

Climate-related risks directly or indirectly affect SK Gas's financial and non-financial performance. SK Gas's business and operational activities are subject to financial impact when there are implementation risks and physical risks. SK Gas evaluates potential risks as part of its business and risk management strategy. At this time, the company considers the period (short-term / mid-term / long-term), financial impact (change in capital raising and profit / loss ratio due to specific business and investment), and the materiality of the issue.

The ESG department figures out the impact of climate-related issues on business and operational activities to identify and evaluate key risks, and reports them to the senior management in consultation with the company departments that fall into areas such as investment / business promotion, finance, and legal affairs.

The top management identifies climate-related risks and opportunities in business strategy and planning, and risk management, and considers the actual and potential impacts of these risks and opportunities on business activities and profits. They evaluate the short-term and long-term impacts of climate-related risks, and consider whether the company's net zero goals and actions are in line with the climate targets of domestic and foreign governments in accordance with the international agreement on climate change.

ESG executives consider the overall level of exposure to climate-related risks in the SK Gas business sectors and evaluate them so that they can be fully considered in the risk management system. Executives also oversee the company-wide response to climate-related risks, including policies, processes, management, and supervision for monitoring and reporting climate-related risks, and report important issues to the ESG Committee and the BOD.

Meanwhile, SK Gas operates programs such as training on new businesses (using MYSUNI, etc.) and rotational placement in order to develop the competencies of existing employees for new businesses during the current business portfolio transformation process, and strongly supports employees' adaptation to business transformation.

1 Identification of climate-related risks

- When investing in a new business or conducting a project with high climate-related risks, the working departments, such as strategy, business promotion, and operation, and the ESG department apply global sustainability standards to identify significant risks to SK Gas.

2 Climate-related risk assessment

- The ESG department evaluates investment and business risks by taking into account climate-related risk criteria (risk scale, operational activities and capabilities, commitment to risk mitigation, etc.)
- The evaluation range can be adjusted according to the characteristics of the sectors of SK Gas and the characteristics and size of operations and transactions, and metrics are set according to the evaluation results.

3 Management

- For investments and business projects with high climate-related risks, make improvements through the management shared with the project manager with the approval of the CEO, regular internal staff's review, and external expert's advice and explore their switch to sustainable business projects.
- Reduce the manageable risk exposure of climate-related metrics and determine targets that can be improved.

4 Reporting results

- The ESG department should report the level of exposure to climate-related risks, the level of implementation by established metric and target, and monitoring results.
- Implement policies for climate-related risk management by business sector, and collect and analyze data such as greenhouse gas emissions
- The accuracy, clarity, comparability, timeliness, etc. of public information such as the identification, assessment, and management of climate-related risks are subject to external audit

Climate Change Risk & Opportunities

Climate change risks and opportunities affect the business environment in various ways. SK Gas identified risks and opportunities in view of the vulnerability of mankind to climate change and their impact on its business. Furthermore, the company assessed transition and physical risks, focusing on the materiality of those factors. Through this, SK Gas was able to recognize the necessity and importance of responding to social issues as well as environmental issues caused by climate change.

The company plans to flesh out climate change scenario analysis and financial impact analysis to more systematically manage the impact and materiality of climate change risks and opportunities on its business. In doing so, SK Gas will establish a more realistic and effective response system.

3.1 Climate Change Risk & Opportunity

Climate Change Risk & Opportunity

SK Gas has set short-term, mid-term, and long-term timelines based on its business transformation and climate change goals. Fossil fuel-oriented businesses have a negative impact on the environment due to greenhouse gas emissions. In order to respond to these issues and establish itself as a "Net Zero Solution Provider," SK Gas wants to financially calculate the impact of climate change on its business, reflect it in the strategy, and continuously manage it.

Business Timelines

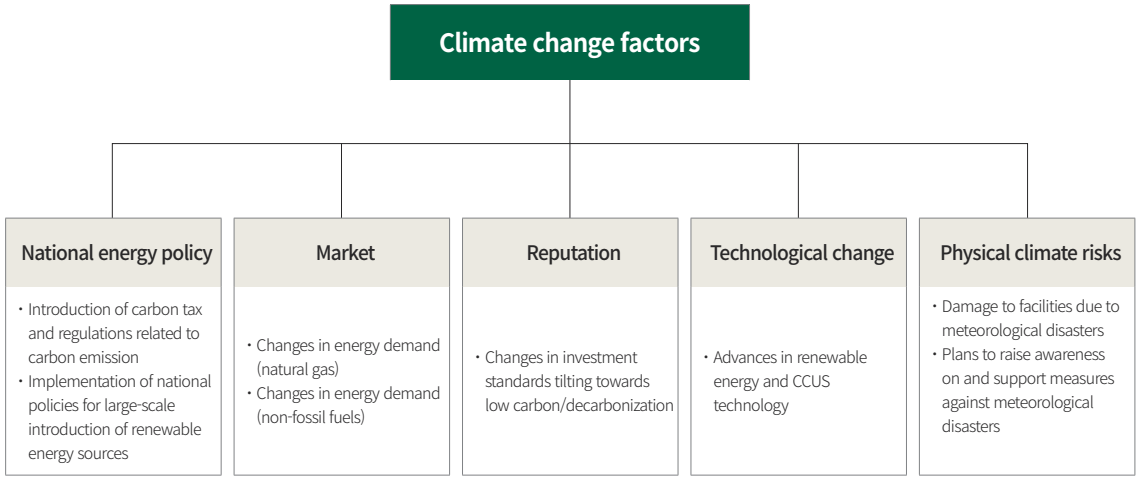
Short term	Medium term	Long term
Time period 2022 to 2026	Time period 2027 to 2030	Time period 2031 to 2040
Rationale	**Rationale**	**Rationale**
・LPG business expansion through BM innovation ・LNG infrastructure construction and business stabilization ・Development of hydrogen / ammonia business and establishment of strategy	・Complete the LPG and LNG lower carbon business solution offering ・Acquiring infrastructure and volume for hydrogen and ammonia business	・Complete the Zero Carbon Solution Provider strategy in hydrogen and ammonia

Defining Risks and Opportunities according to Climate Change Issues

As a bridge to the transformation to the zero carbon portfolio, climate change response trends and environmental changes in the LPG and LNG markets act as very important opportunities and crisis factors for SK Gas. SK Gas recognizes the importance of climate change factors, so it tries to preemptively respond to them. To this end, SK Gas defined climate change factors expected for the company in terms of policy, market, technology, reputation, and climate based on the environment surrounding its domestic and overseas energy business, and reviewed response methods from short-term, medium-term, and long-term perspectives.

Major climate change factors affecting SK Gas include increased customer demand for conversion to natural gas and non-fossil fuels, business impact from reputation, and national energy policies related to carbon tax and carbon emissions. The development and diffusion of renewable energy and decarbonization technology will provide new opportunities for SK Gas, but they may also act as risk factors if they fail to meet the needs of stakeholders. Furthermore, there is a possibility that natural disasters such as local abnormal climatic events caused by an increase in average temperature, sea level rise, typhoons, and torrential rains will damage facilities.

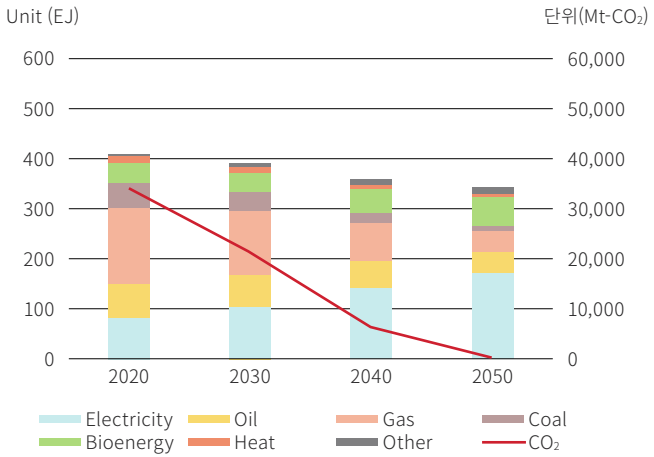
Climate Change Factors



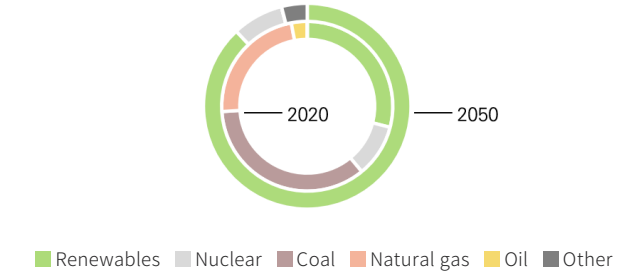
3.2 Climate Change Scenario: NZE2050 & STEPS

1.5°C scenario (NZE2050)
active response to climate change

World's final energy consumption and CO_2 emissions

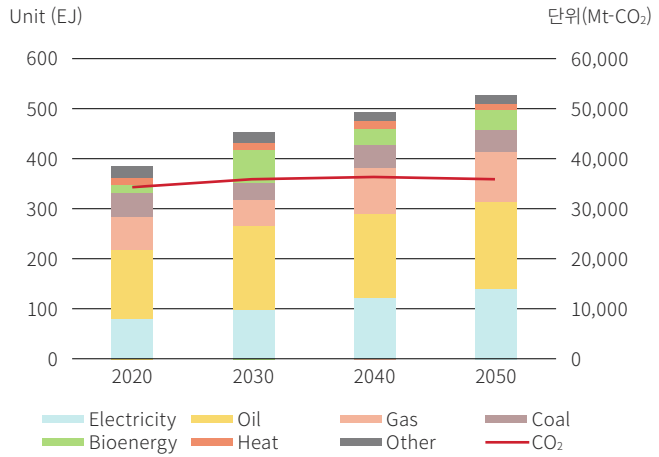


Global power consumption

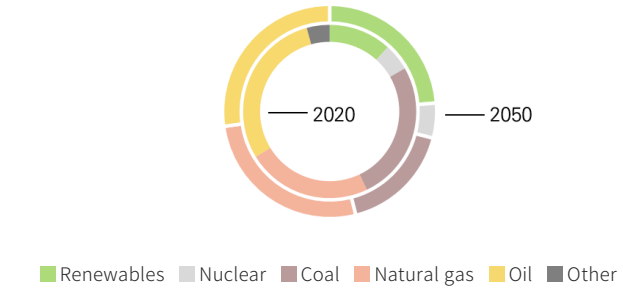


2.6°C scenario (STEPS)
remain as we are

World's final energy consumption and CO_2 emissions



Global power consumption



Climate Change Scenario Analysis

SK Gas conducted climate change scenario analysis to understand the mid- to long-term impact of risks and opportunity factors of climate change on business. Based on the scenarios set by the IEA, SK Gas evaluated its energy business that is expected to have a significant impact on climate change. The company compared and analyzed the 1.5°C scenario (NZE2050) and the 2.6°C scenario (STEPS) that achieve net zero by 2050. As the global response to climate change continues, the prerequisites for future scenarios may change. SK Gas will update its assumptions with the latest conditions as necessary in consideration of the scenarios set by the IEA and continue to deepen its scenario analysis.

NZE2050 & STEPS

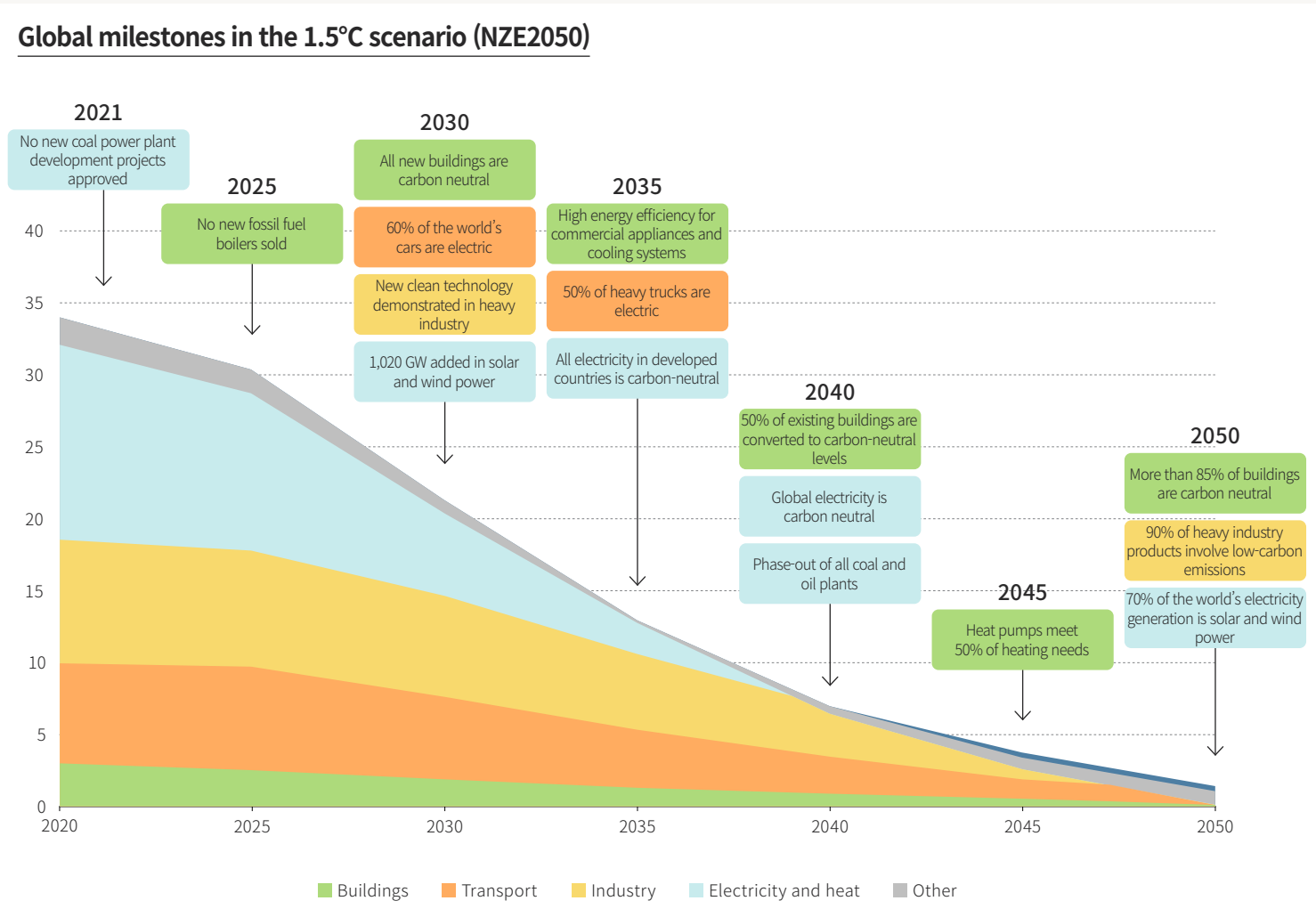
IEA NZE2050
Net-Zero Emissions by 2050 Scenario

Aggressive scenario
- A scenario assuming a 1.5°C temperature limit and air pollutant reduction as suggested by the Paris Agreement as paths to achieving the 2050 carbon neutrality goal
- It assumes the achievement of all carbon-neutral targets announced by individual countries and the rapid proliferation of renewable energy and related investments.

IEA STEPS
Stated Policies Scenario

Conservative scenario
- A scenario that reflects the existing policies that individual countries are applying to achieve energy-related goals and the policies that they are developing by segmenting them by industry and topic
  - The most conservative and most feasible scenario
  - It provides a reference point for evaluating the effectiveness and limitations of recently developed climate and energy policies

3.2 Climate Change Scenario: NZE2050 & STEPS



Climate Change Scenario Analysis

SK Gas is reviewing its mid- to long-term business strategy by analyzing the global milestone in IEA's 1.5°C scenario (NZE2050). IEA presents the global milestones for carbon neutrality in policy, infrastructure, and technology, which includes the possibility that achieving carbon neutrality may be difficult if the target is delayed in one area.

According to the global milestones in the 1.5°C scenario (NZE2050), LPG and LNG will grow in more importance and value as economical, stable, and clean energy sources to achieve carbon neutrality. However, as carbon emission regulations within production sites will be strengthened through the phase-out of all coal and oil power plants in 2040, risk factors still remain. It is also possible that the demand for low-carbon energy, including hydrogen, will increase in the mid-to-long term.

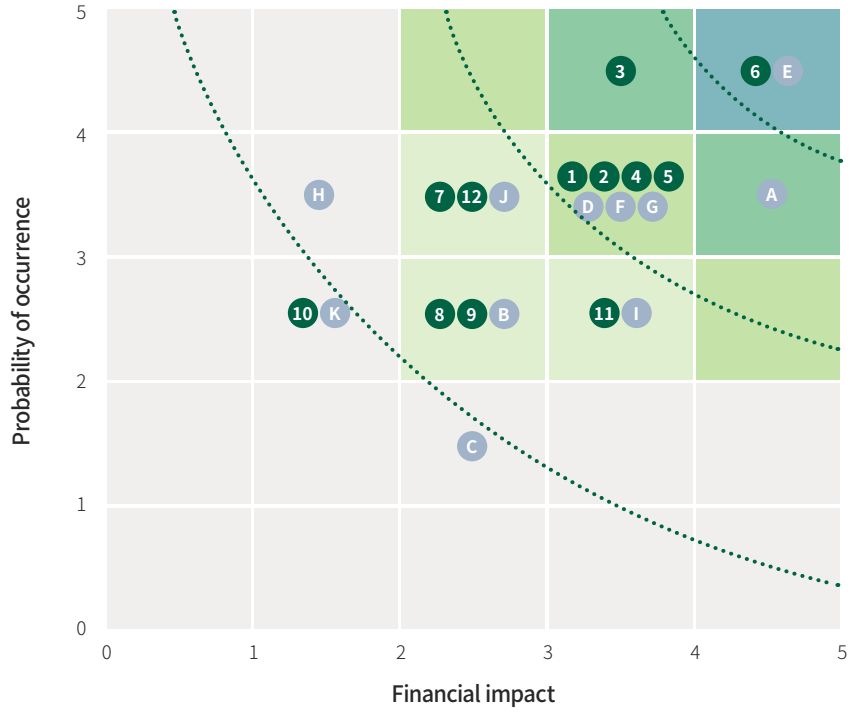
SK Gas is aware of the opportunities and risk factors of the 1.5°C scenario (NZE2050), and the company wants to manage its Net Zero operation and Net Zero Solution Provider business strategies by reflecting these factors.

3.3 Climate Change Scenario: Risk & Opportunity Mapping

Climate Change Scenario Analysis

SK Gas formed a pool of climate change risks and opportunities through industry analysis and literature research among others, and conducted a materiality assessment based on financial impact and probability of occurrence. The top four climate change factors with high financial impact and likelihood through analysis are related to national energy policies and markets. According to the national net-zero policy, there may be risks from strengthening the energy greenhouse gas target management system, decreasing LPG demand, and worsening profitability. However, there is also a possibility that short-term and mid- to long-term demand for LPG / LNG market will increase, causing sales to increase. SK Gas plans to manage climate change risks and opportunities based on the materiality test.

SK Gas's Climate Change Risk and Opportunity Materiality Assessment



Risks		
Policy	1	Increased carbon tax burden for LPG business
	2	Introduction of increasing eco-friendly electric vehicles and hydrogen vehicles
	3	**Reinforcement of energy greenhouse gas target management system**
	4	Increased carbon tax rate and tightened eligibility for emission trading system
	5	Introduction of renewable energy and expansion of RPS
Market	**6**	**Decreased LPG demand and lowered profitability due to the net zero policy**
	7	Price hike due to intensifying competition for LNG procurement
	8	Market growth slowing due to green hydrogen
Reputation	9	Reputational risk from unmet carbon-neutral goals
	10	Decrease in the value of investment in fossil fuel business
Physical risks	11	Increase in capital investment cost and insurance premiums
	12	Increased facility management and prevention costs

Opportunities		
Policy	**A**	**Growing demand for LPG and LNG products and short-term market expansion**
	B	Transition to renewable energy & green hydrogen-centered power supply system
	C	Increased government support for low-carbon energy and reduced technology development costs
Market	D	LNG business expansion at home and abroad
	E	**Increase in LPG and LNG market demand and increase in sales**
	F	Increased portion of eco-friendly fuel sources
	G	Increasing demand for low-carbon energy sources such as hydrogen and LNG
Technology	H	Renewable energy generation expansion
	I	CCUS technology expansion
Physical risks	J	Sales increase from increased sales of low-carbon energy sources
	K	Sustainable growth of eco-friendly and low-carbon energy market due to increase in natural disasters

3.4 Climate Change Risks

Business Risks

Classification of Risks			Climate Change Factors	Scenario	Business Impact	
					Short-term and Mid-term	Long-term
Risks	Conversion risks	National energy policy	Reinforcement of Net Zero policy and carbon tax / regulation on carbon emissions	1.5°C (NZE2050)	• Introduction of renewable energy and expansion of RPS • Introduction of more eco-friendly electric vehicles and hydrogen vehicles	• Increased carbon tax rate and tighter eligibility for emission trading system • Increasing number of countries adopting emission trading system • Increased carbon tax burden for LPG business • Global expansion of shipping and air emission trading systems
				2.6°C (STEPS)	• Reinforcement of energy greenhouse gas target management system	-
		Market	Changes in energy demand (natural gas)	2.6°C (STEPS)	• Price hike due to intensifying competition for LNG procurement	• Market growth slowing due to green hydrogen
			Changes in energy demand (non-fossil fuels)	1.5°C (NZE2050)	• Decrease in mid-term LPG demand due to the Net Zero policy	• LPG profitability decreases due to the Net Zero policy • Increased risk and uncertainty related to market transition
		Reputation	Changes in investment standards tilting towards low carbon / decarbonization	1.5°C (NZE2050)	• Decreased value of investment in fossil fuel business	• Reputational risk from unmet carbon-neutral goals
	Physical risks	Physical climate risks	Measures to raise awareness of meteorological disasters and provide support	2.6°C (STEPS)	• Increase in capital investment cost and insurance premiums • Increased facility management and prevention costs	• Weather disasters increase and accelerate delays in supply chain construction

Financial impact: Small Financial impact: Large

Linking Climate Change Factors to Business Risks

Climate change factors act as risks and opportunities for SK Gas. The company manages risks related to climate change factors by classifying them into short-term / mid-term, long-term, and financial impacts.

Climate change factors in terms of policy and regulation are applied to companies in the short term through national institutions such as carbon taxes and carbon trading schemes. They affect profits by acting as a primary cost increase, and can lead to an increase in secondary investment costs such as introduction or replacement of facilities for carbon reduction.

In the long term, if a factor is linked to a decrease in demand due to the introduction of carbon prices, it may lead to a decrease in direct sales in the LPG business, which is the company's main business.

When consumers' preference for internal combustion engines decreases and the demand for low-carbon technology increases, R&D investment costs increase and social perception of fossil fuels gradually turns negative. This incurs costs for responding to regulations and revising strategies.

In addition, a decline in short-term profitability may occur when the demand for non-fossil fuels increases due to the expansion of climate change response. They may then lead to a long-term decrease in profitability due to the continuous increase in demand for decarbonized non-fossil fuels.

The possibility of damage to facilities or safety accidents may increase due to abnormal weather. It's essential to be careful not only of operating losses, but also secondary damage to assets, real estate, etc.

3.5 Climate Change Opportunities

Business Opportunities

Classification of Risks			Climate Change Factors	Scenario	Business Impact	
					Short-term and Mid-term	Long-term
Opportunities	Conversion opportunities	National energy policy	Implementation of national policies for large-scale introduction of renewable energy sources	1.5°C (NZE2050) 2.6°C (STEPS)	• Growing demand for LPG and LNG products and short-term market expansion • Renewable energy & green hydrogen-centered power supply system conversion	• Expanding government support for low-carbon energy and reducing technology development costs
		Market	Changes in energy demand (natural gas)	2.6°C (STEPS)	• LNG business expansion at home and abroad • Increase in demand and increase in sales in the in LPG and LNG market • Increasing portion of eco-friendly fuel sources	-
				1.5°C (NZE2050)	• Growing demand for low-carbon energy sources such as LNG	• Growing demand for hydrogen net-zero energy solutions
		Technological change	Advances in renewable energy and CCUS technology	1.5°C (NZE2050)	• Renewable energy generation expansion	• CCUS technology expansion
	Physical opportunities	Physical climate opportunities	Measures to raise awareness of meteorological disasters and provide support	2.6°C (STEPS)	• Increased sales due to increased sales of low-carbon energy sources	• Sustainable growth of eco-friendly and low-carbon energy market due to increase in natural disasters

Financial impact: Small Financial impact: Large

Linking Climate Change Factors to Business Opportunities

As an opportunity factor for SK Gas in connection to climate change factors, changing market demand for energy may be one of the first factors that should be explained to stakeholders.

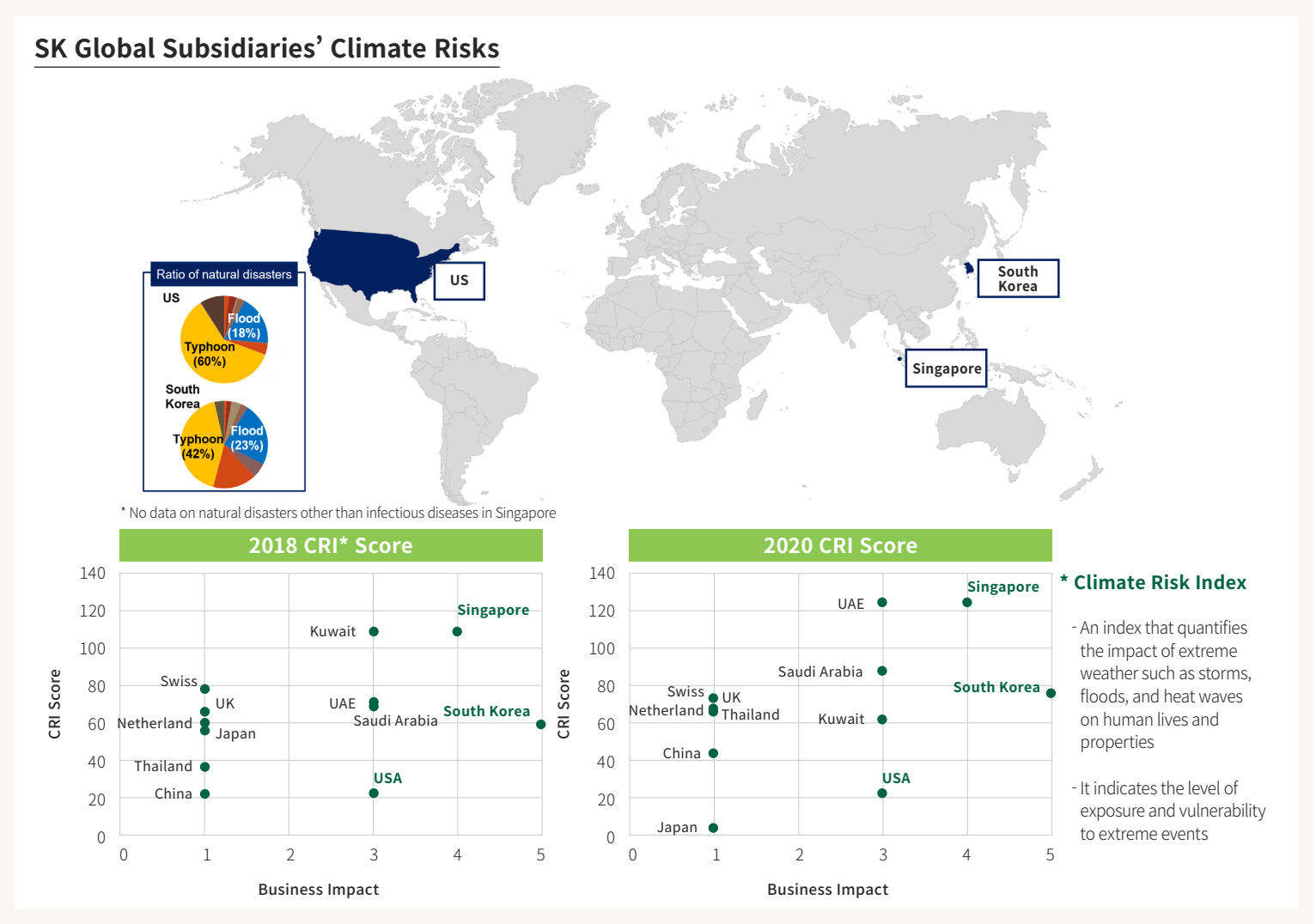
In terms of market changes, as energy demand and investment standards for hydrogen and low-carbon technologies change, related investments will expand and the development of low-carbon products and technologies will become easier. The growing demand for low-carbon energy could serve as an opportunity for SK Gas, which is planning its conversion to the hydrogen and ammonia portfolio.

By actively responding to global initiatives and regulations disclosed to the outside world, it is possible to maintain the image of an eco-friendly company and create positive effects in terms of reputation and consumer preference.

In the short term, the demand for LPG and LNG products as bridge fuels for conversion to the Zero Carbon energy may increase and the market may expand. In the long term, as the market demand for low-carbon / non-carbon energy sources increases, this may act as an opportunity to expand the hydrogen market, expand government support for the low-carbon energy market, and reduce costs associated with technology development.

Advances in renewable energy and CCUS technology can also present new opportunities. As the value of thermal power generation using new technologies such as synthetic methane and CCUS increases, SK Gas sees possibly increased new growth business opportunities.

3.6 Physical Risks



Climate Risks Affecting Major Relevant Countries

South Korea

South Korea's 2020 climate risk index rose by 26% as the proportion of human casualties increased compared to 2018, revealing that the country's ability to respond to extreme climate events was weak. Floods account for 82% of the damage caused by natural disasters in Korea in 2020. The proportion of water damage is high, and the damage caused by flooding in low-lying coastal areas due to sea level rise may be even greater. Due to the nature of SK Gas's production sites located on the coast, it is aware of the possibility of long-term risks to their facilities adjacent to the coast, such as the Ulsan Terminals and port. Therefore, SK Gas is seeking to establish preemptive management measures such as mid-to-long-term measures for each worksite.

US

The US Climate Risk Index for 2020 slightly increased compared to 2018, but remains at a similar level. Typhoons account for 69% of the damage caused by natural disasters in the United States. In addition, the projected sea level rise near the US under the RCP 8.5 scenario is 0.2m per year. SK Gas has identified the potential for business risks due to the impact on marine transportation from typhoons and sea level rise and declines in LPG fuel supply and demand, and is preparing countermeasures for such risks.

Singapore

Singapore's 2020 Climate Risk Index increased by about 14% compared to 2018 due to the increased damage to humans and properties, revealing the country's poor ability to respond to climate risks. Due to its geographical condition that has 30% of the island less than 5m above sea level, Singapore is vulnerable to the threat of rising sea levels. SK Gas is coming up with countermeasures to prepare for damage caused by climate change in advance.

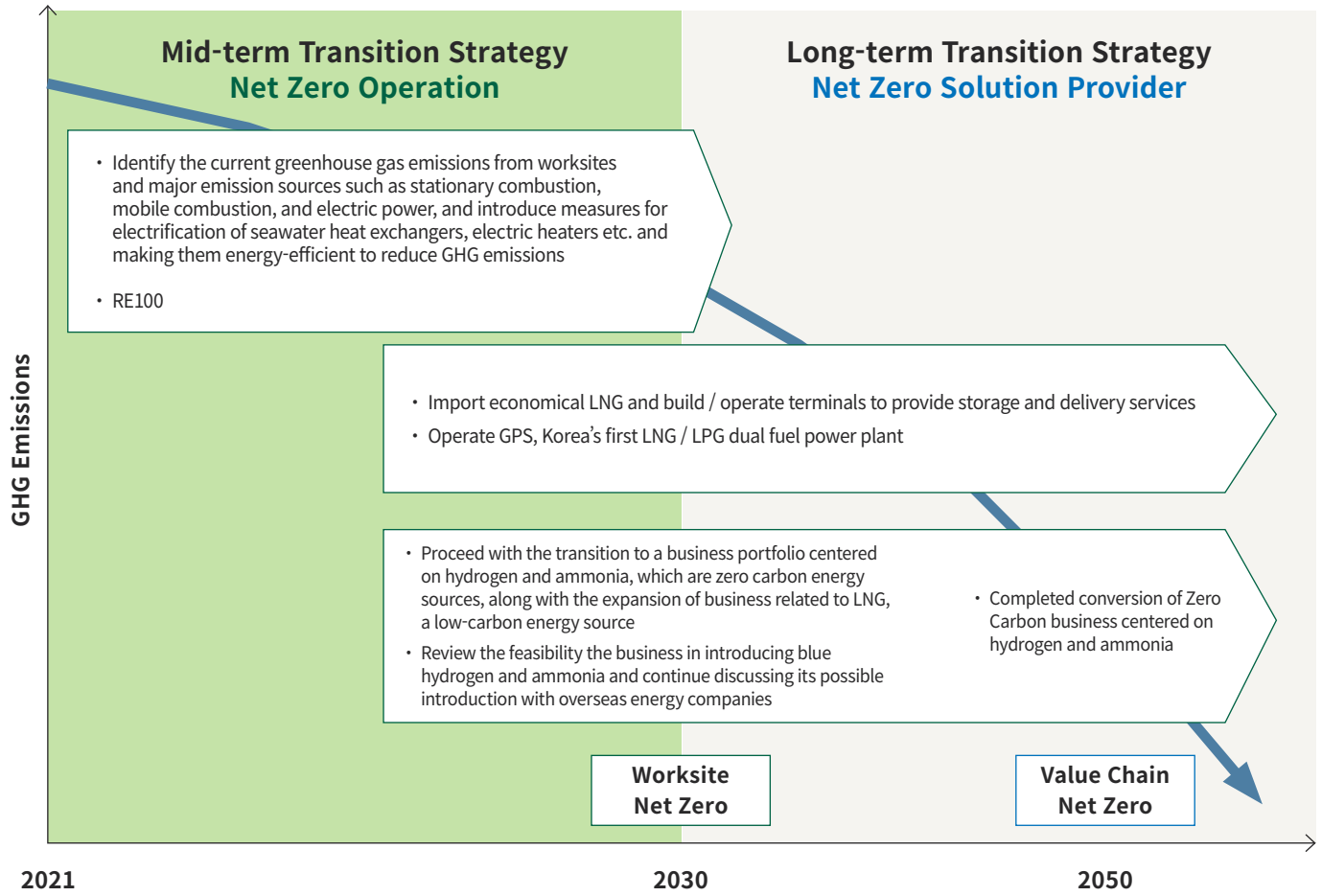
Strategy to the Future

The climate change risks and opportunities identified and evaluated by SK Gas will affect the company and its business in varying degrees depending on future climate change scenarios. In particular, the financial impact of these factors will act as a significant variable in SK Gas's management plan.

SK Gas analyzed the financial impact of responding to climate change based on the IEA's STEPS and SDS scenarios. Furthermore, the company calculated changes and forecasts related to SK Gas's energy and carbon costs due to changes in future carbon prices and policies. SK Gas wants to predict and prepare in advance for the Net Zero goal and wide range of variables that will be encountered in its work. As the company strives toward realizing net zero, it plans to materialize its climate change strategy and minimize uncertainties.

4.1 SK Gas Climate Change Response Strategy

SK Gas's Net Zero Roadmap



Mid-term Transition Strategy
Net Zero Operation

Short-term strategy for Net Zero at worksites

In 2022, SK Gas established a net zero goal and roadmap for greenhouse gases based on the Science Based Targets initiative (SBTi), and fleshed out a strategy to achieve this. By identifying greenhouse gas emissions and major sources of emissions at worksites and specifically supplementing strategies for portfolio conversion and RE100 introduction, the company raised the feasibility of achieving its Net Zero goal by one level. By analyzing the economic feasibility of the Net Zero related costs, The company also strengthened its ability to execute the strategy as it aims for the Net Zero goal.

SK Gas renewed its strategy to reduce greenhouse gas emissions from fire heaters, which account for the majority of Scope 1 emissions, and the RE100 strategy to expand the use of renewable energy. The company plans to continuously monitor its strategy to achieve Net Zero and its current implementation.

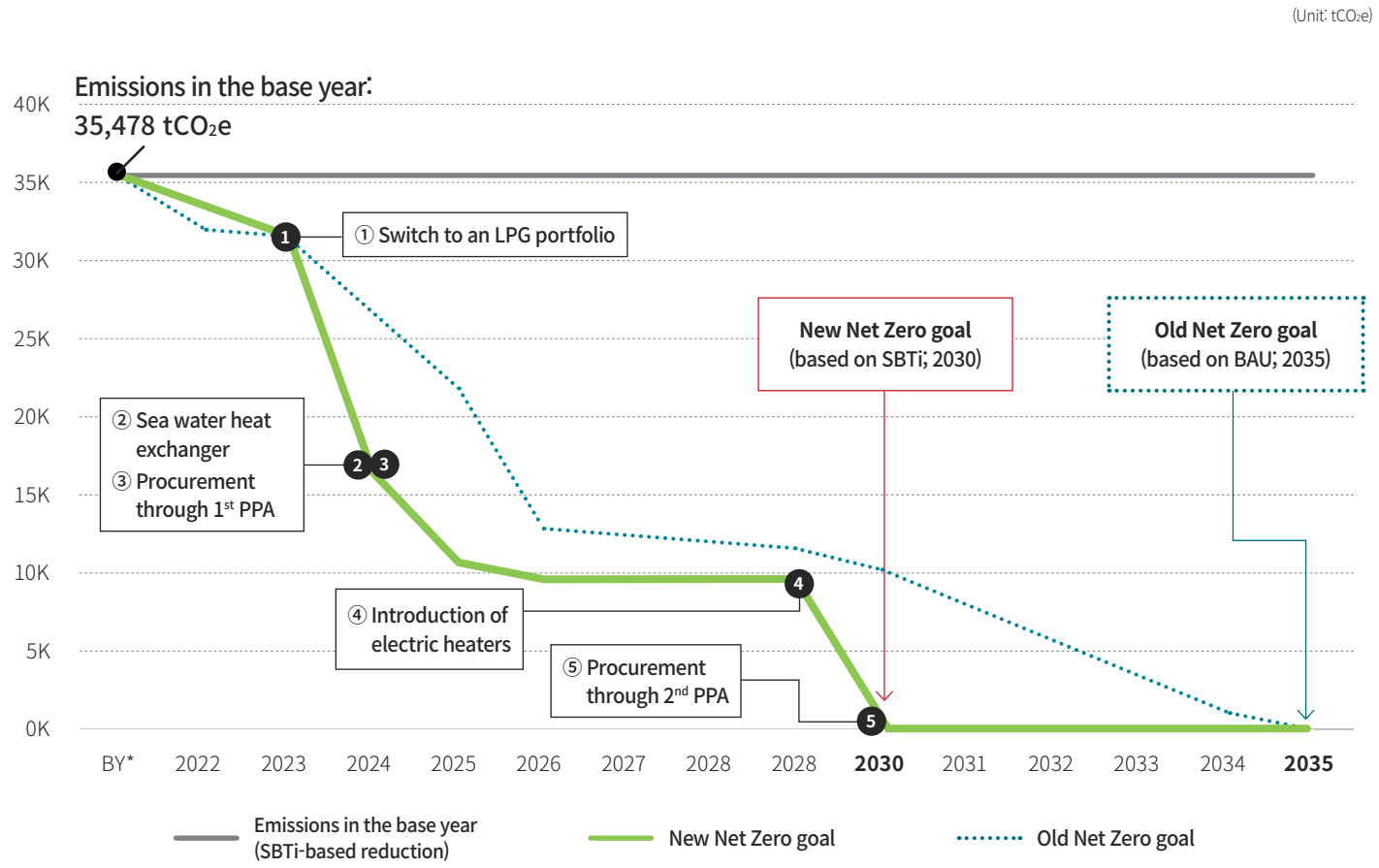
Long-term Transition Strategy
Net Zero Solution Provider

Long-term strategy for responding to climate change

SK Gas has declared its vision of a Net Zero Solution Provider, and is planning to transform to a hydrogen / ammonia-focused business portfolio along with the expansion of its LNG business. The company plans to provide customers with alternative energy solutions building on its LNG business. By introducing the world's top-tier LNG and building and operating terminals, it will provide storage and delivery services. By operating GPS as Korea's first LNG / LPG dual fuel power plant, SK Gas wants to support the bolstering of business competitiveness of customers such as collective energy operators. In order to convert to the Zero Carbon business, the company is promoting hydrogen fuel cell and mobility business using by-product hydrogen, and is also promoting hydrogen co-firing at power plants owned by SK Gas. The company will continue to review the feasibility of introducing blue hydrogen and ammonia and discuss the possibility of introducing them with foreign energy companies.

4.2 SK Gas's Net Zero Roadmap

SK Gas's Net Zero Roadmap



Mid-term Transition Strategy
Net Zero Operation

SK Gas's Net Zero Roadmap

In order to actively participate in the implementation of greenhouse gas reduction, which is a global climate change response task, SK Gas has revised the previously established Net Zero target for 2035 (declared in June 2021) based on BAU to 2030 according to the Science Based Targets initiative (SBTi) standard.

The newly established Net Zero plan is part of SK Gas's mid-to-long-term strategic goal of achieving Net Zero Solution Provider. It reflected the conversion to the LPG business portfolio and the resulting greenhouse gas reduction with the goal to achieve Scope 1 reduction, and also calculated the reduction due to seawater heat exchanger and PPA procurement. Afterward, it reflected reduction strategies such as electric heaters to be introduced in 2029 and secondary PPA in 2030. For Scope 2, SK Gas considered the increase in electricity consumption following the introduction of RE100 and electric heaters to reduce electricity consumption, which accounts for most of the greenhouse gas emissions.

The company has established a new Net Zero target in accordance with the Science Based Targets initiative (SBTi) standard and further solidified its commitment to Net Zero. SK Gas wants to step forward with this. SK Gas wants to cement its new identity as a Net Zero Solution Provider and establish SK Gas as a company that provides energy conversion solutions to various customers and stakeholders who are concerned about carbon emissions.

4.2 Energy Conversion: Scope 1 Stationary Combustion

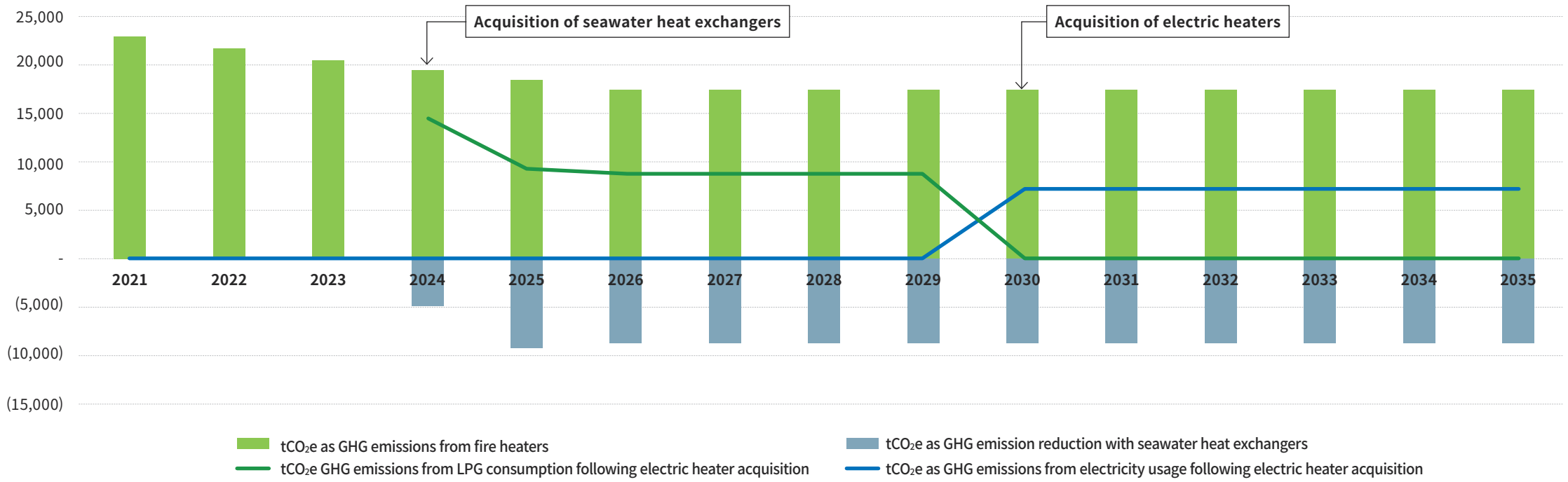
TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Scenario for Introducing the Stationary Combustion Fire Heater (LPG) Reduction Technology

Scope 1 emissions from stationary combustion accounted for 65% of total emissions, of which more than 99% were from LPG used as fuel for fire heaters. SK Gas plans to reduce about 50% of LPG usage by introducing seawater heat exchangers in 2024, and plans to introduce electric heaters in 2030 to reduce residual LPG emissions. After the introduction of seawater heat exchangers and electric heaters, the greenhouse gas emissions from LPG usage will be reduced to zero. SK Gas plans to realize this to finally achieve Net Zero through PPA, etc. in the renewable energy strategy through the implementation of RE100.

Mid-term Transition Strategy
Net Zero Operation

Analysis on the Scenario for Introducing the Fire Heater Reduction Technology



4.2 Renewable Energy: RE100 Implementation for Scope 2

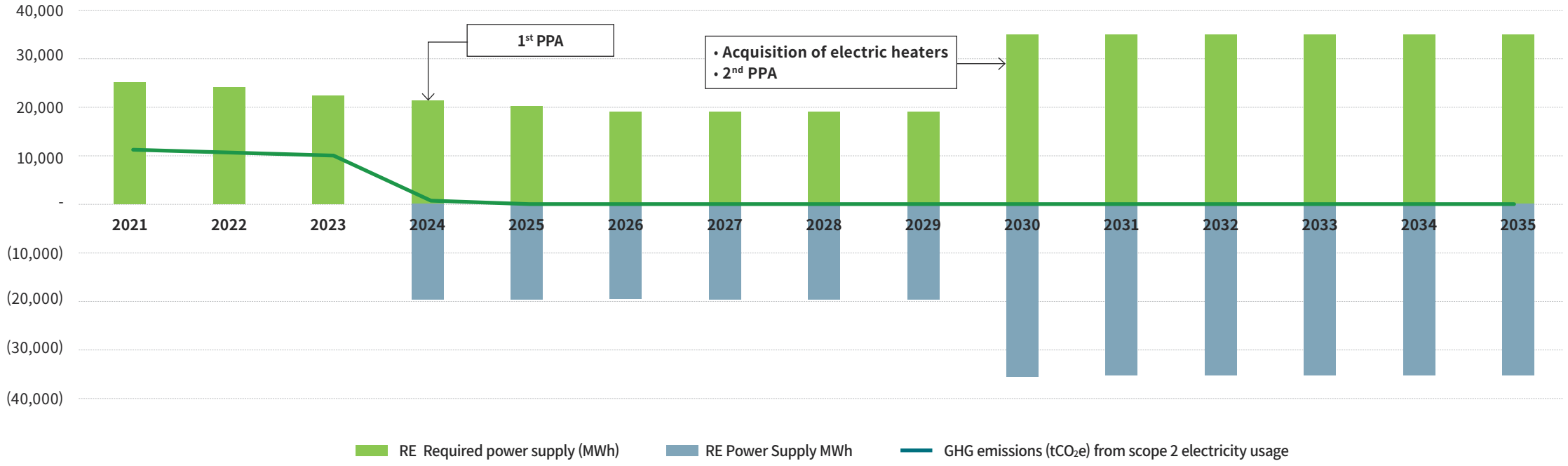
TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Mid-term Transition Strategy
Net Zero Operation

RE100 Adoption Scenario

In SK Gas's Scope 2 emission analysis, electricity consumption and steam consumption accounted for about 34% of the total BAU emissions for portfolio conversion. About 1% of these emissions were related to steam use, and most Scope 2 emissions were related to electricity usage. Considering the additional power demand due to the introduction of electric vehicles and the additional power demand due to electric heaters scheduled to be introduced in 2030 as part of the company's effort to reduce fire heater emissions, SK Gas calculated the total amount of electricity required for renewable energy. From 2024, Scope 2 emissions will be reduced from 12,000 tons to 1,300 tons due to PPAs, and after 2026, it will be Net Zero. Afterward, the company plans to maintain this level, with additional reduction options in 2030, when electric heaters will be introduced.

Scenario for renewable energy adoption

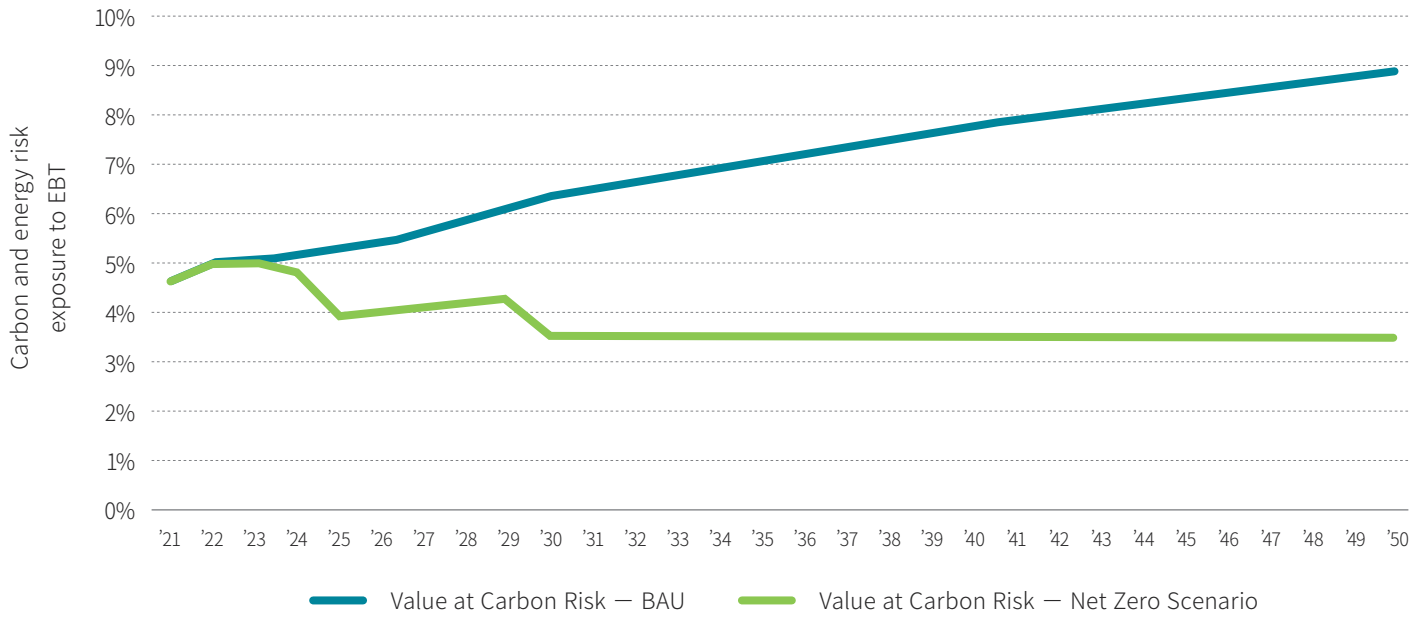


4.3 Analysis on Financial Impact of the Net Zero Scenario

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Mid-term Transition Strategy
Net Zero Operation

Value at Risk: EBT as a share of carbon and energy costs



- Carbon Price(KRW/tCO_2e)[1]: Assuming an increase from 49,109 KRW/tCO_2e in 2021 to 220,000 KRW/tCO_2e in 2050
- PPA Tariff (KRW): Calculated using data on electricity rate rises over the past ten years and forecasts for German industrial power tariff costs, assuming a minimum of KRW 150 and a maximum of KRW 242

1) IEA, 2021. WEO Scenario

Value at Risk of LPG

From the perspective of Net Zero operation, SK Gas calculated climate transition risk exposure as a value at risk (earnings before tax (EBT) as a share of carbon and energy costs) and their costs are expected to be reduced by 7% in 2050.

Various energy conversion costs are incurred in order to achieve Net Zero Operation at SK Gas's production sites. Based on the global climate change response trend, the cost of energy and carbon based on existing fossil fuels is expected to increase. If investment to cover appropriate conversion costs is not made, the ratio of energy and carbon costs to SK Gas's EBT is expected to continue to rise.

If SK Gas does not invest to cover energy conversion costs, the energy GHG cost compared to the projected EBT is expected to gradually increase from 5% in 2022 to about 9% in 2050. On the other hand, if risk costs are reduced due to energy conversion, the proportion of energy and GHG-related costs will gradually decrease to around 2%, and cost reduction can be expected as the worksites achieve their Net Zero goals.

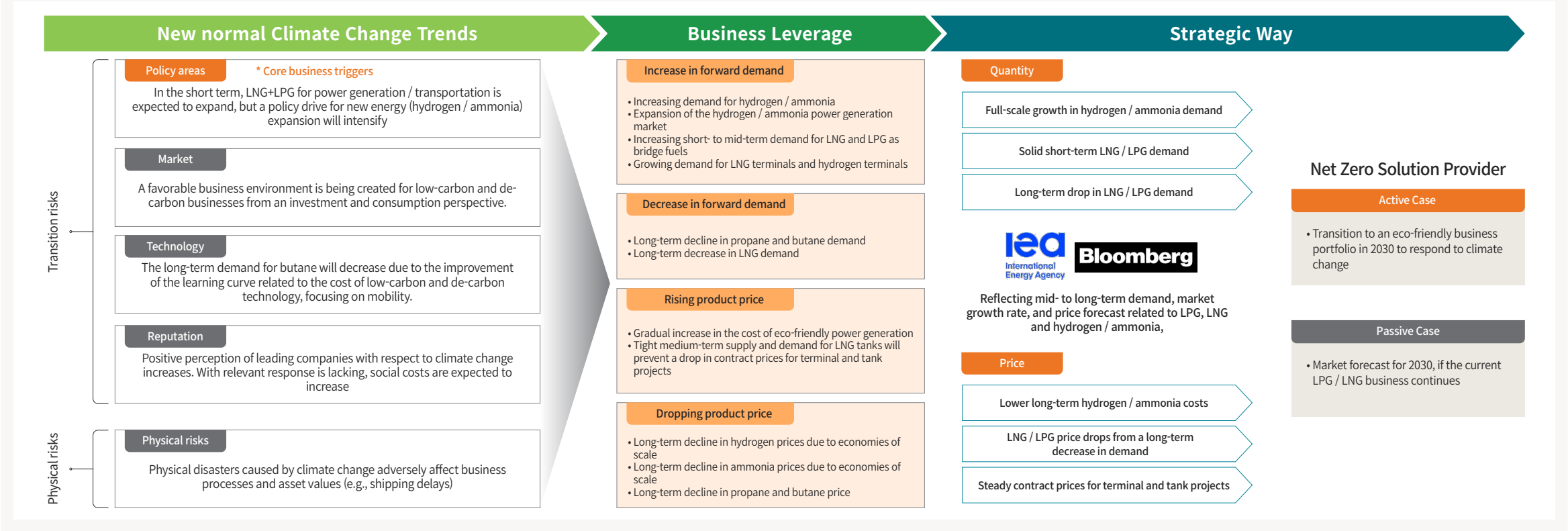
4.4 Analysis of Financial Impacts Based on Climate Change Scenarios

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Financial Impact Analysis Methodology

With the intent to link business opportunities and risks according to climate change factors, SK Gas derived those factors affecting demand (quantity) and price by synthesizing climate change factors in terms of policy, market, technology, and reputation. In terms of demand and price, SK Gas was able to anticipate short-term growth and long-term contraction of the LPG and LNG markets and long-term growth of the hydrogen and ammonia markets. SK Gas's financial analysis was conducted based on this, and the analysis is divided into an case, reflecting the impact on EBT of the transition to an eco-friendly business portfolio designed to achieve the vision of becoming a "Net Zero Solution Provider," and a passive case, which assumes that the current business is maintained.

Long-term Transition Strategy
Net Zero Solution Provider

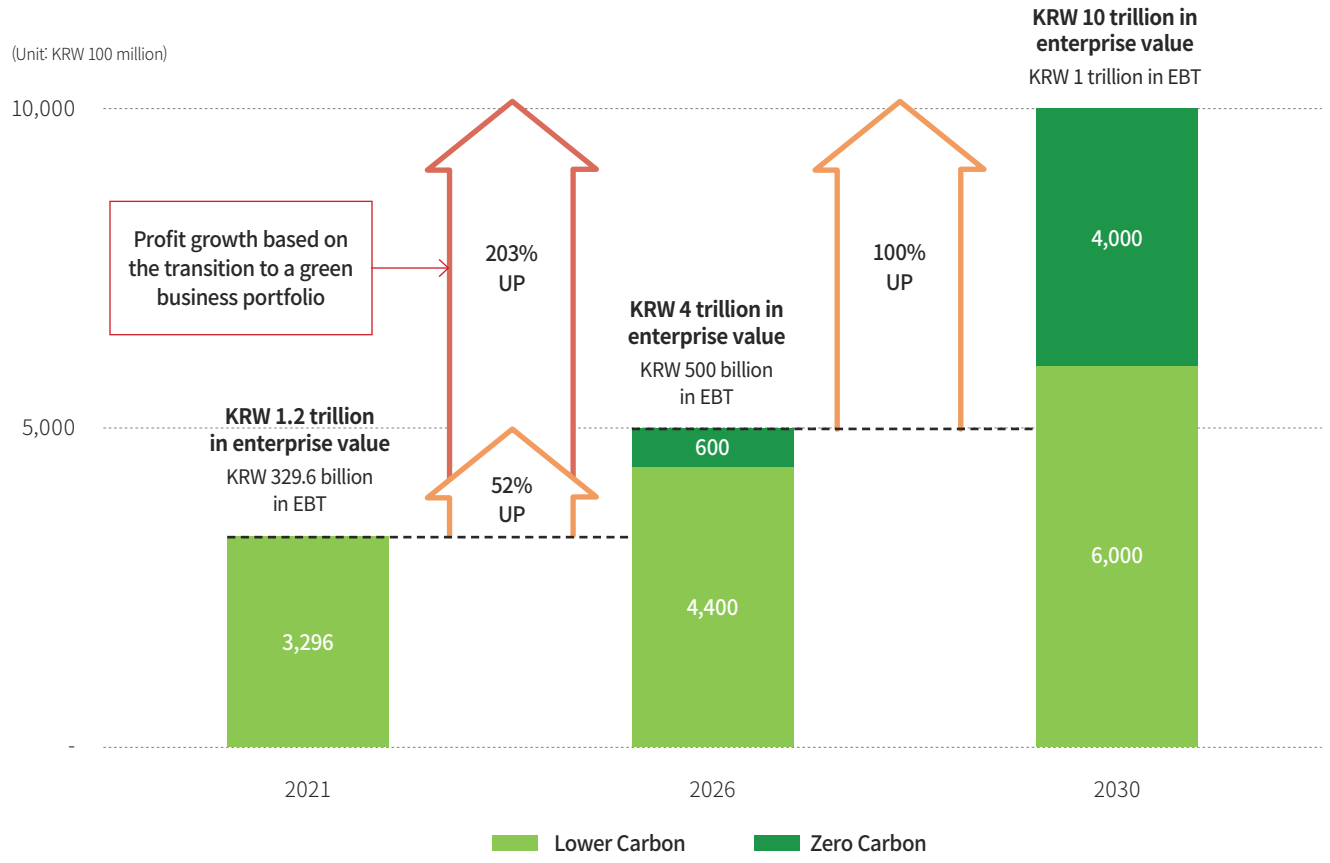


4.4 Analysis of Financial Impacts Based on Climate Change Scenarios

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Long-term Transition Strategy
Net Zero Solution Provider

Active Case: transition to a decarbonizing portfolio



Active Case

Earnings Before Tax (EBT) Forecast due to Eco-friendly Business Portfolio Transformation

SK Gas expects that EBT of KRW 329.6 billion recorded in 2021 will increase to approximately KRW 1 trillion in 2030 due to the transition to an eco-friendly portfolio. Of this, KRW 400 billion is from the zero carbon portfolio such as hydrogen and ammonia, and KRW 600 billion is from the low-carbon portfolio such as LPG and LNG. Accordingly, the current enterprise value of about KRW 1.2 trillion is expected to grow to about KRW 4 trillion in 2026 and KRW 10 trillion in 2030.

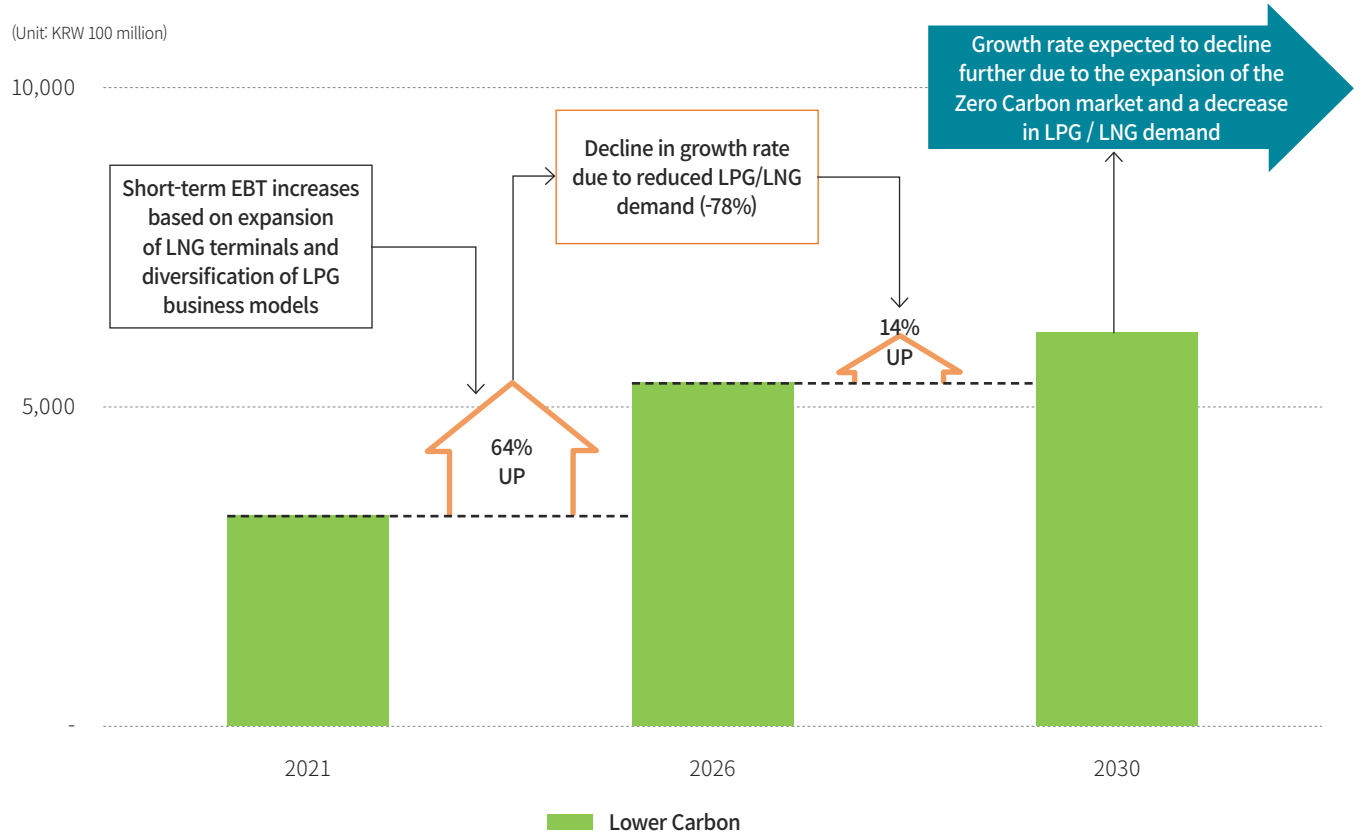
The growth in EBT is the result of the transition to an eco-friendly business portfolio. Under the goal of portfolio transformation, the future climate change trend will serve as an opportunity for downstream industries. And even after 2030, when SK Gas achieves KRW 1 trillion in EBT and KRW 10 trillion in enterprise value, it is expected to serve as a sustainable growth engine.

As the scenario analysis results show, SK Gas expects the hydrogen and ammonia supply and power generation market to expand in the future. In the short term, prices are expected to rise, but in the long term, the company expects to realize economies of scale and stabilize their prices as supply and demand stabilize. In this way, the full-fledged growth of the Zero Carbon market and long-term market stability will serve as positive factors for the sales and profits of SK Gas, which is aiming toward a business transformation. In addition, the proportion of hydrogen and ammonia in the estimated EBT is expected to increase further.

4.4 Analysis of Financial Impacts Based on Climate Change Scenarios

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Passive Case: no portfolio transformation



The growth rate forecast by reflecting the variables applied in the IEA's scenarios for level-specific climate change response to SK Gas's 2021 EBT
- A weighted average that incorporates growth forecast for the conservative (STEPS) scenario and the aggressive (SDS) scenario at 50:50.

Long-term Transition Strategy
Net Zero Solution Provider

Passive Case
Earnings Before Tax (EBT) Forecast When Maintaining the Current Business Portfolio

SK Gas predicted the long-term growth rate for the LPG market by reflecting the variables applied to IEA's level-specific climate change response scenarios in the EBT growth. Assuming that SK Gas will maintain its current business structure without undergoing the planned business portfolio conversion, profits are expected to grow from short-term expansion of its LPG and LNG business. In the long term, however, the company is expected to hit the limits of growth and reduce profits as the market shrinks.

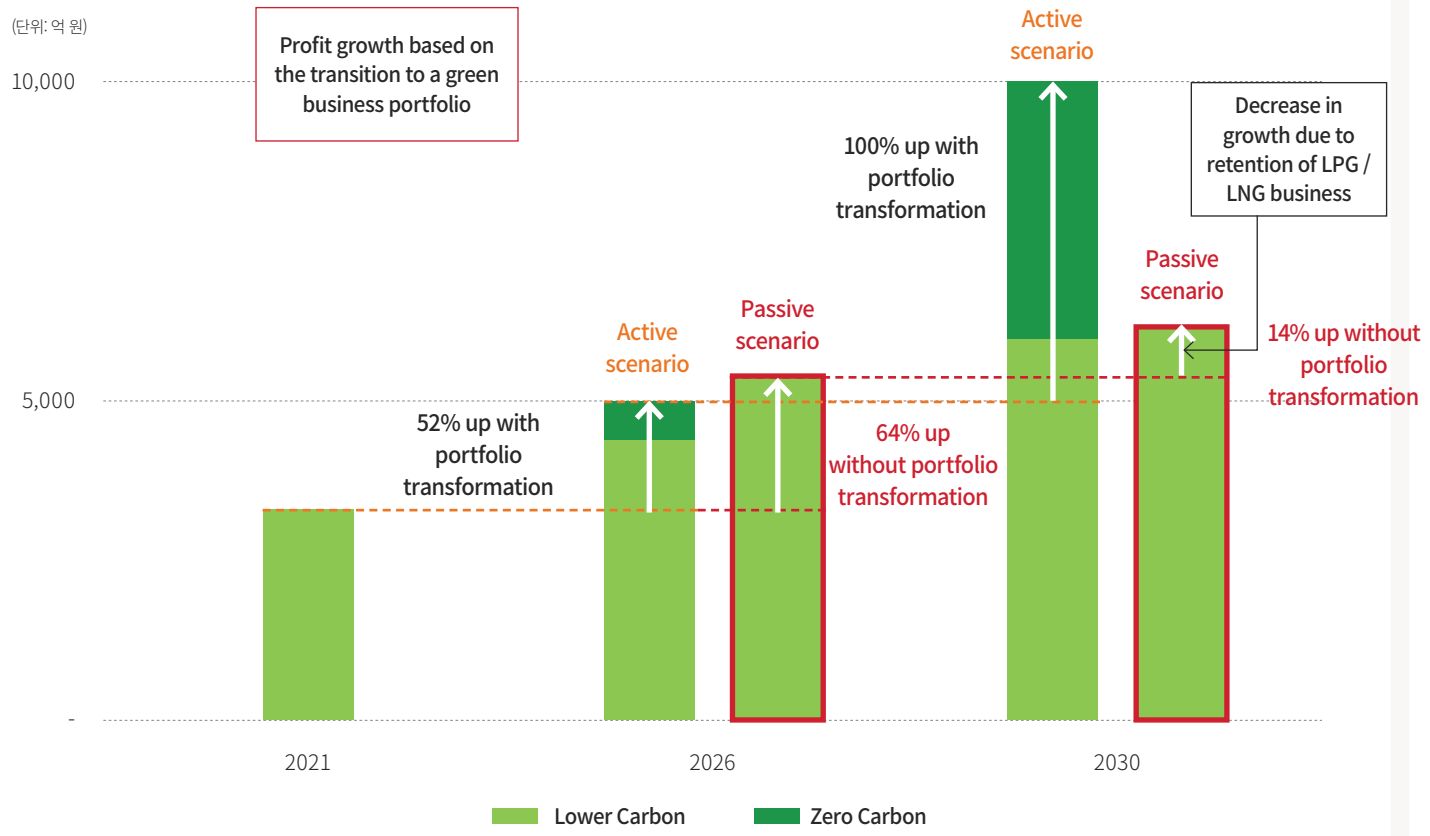
Reflecting the market growth rate in 2026, EBT will be up about 64% from 2021. However, as the market for zero carbon such as hydrogen and ammonia expands and the demand for LPG / LNG decreases, profits in 2030 are expected to grow by only about 14%, and the growth rate is expected to drop to about -78%.

It is expected that as this trend expands further after 2030, the LPG / LNG business will face a stagnation in growth and the profit margin of SK Gas will also decrease. In the end, short-term expansion strategies for the LPG and LNG business may be effective, but in the long term, it is highly likely to bring negative growth in enterprise value due to a decline in forward demand and price of major products due to climate change risks.

4.4 Analysis of Financial Impacts Based on Climate Change Scenarios

TCFD TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Cases in Comparison: Active vs. Passive Scenario



Long-term Transition Strategy
Net Zero Solution Provider

Implications of Analysis on Financial Impacts of Climate Change

The comparison of the active case and the passive case, respectively reflecting whether SK Gas's business portfolio is switched or not confirmed that in the short term, the passive case registered higher growth rates. This is because the LPG market will maintain its current demand and growth potential in the short term. The comparison confirmed, however, that the growth rate would drop sharply and the market would begin to stagnate.

In the active case of business portfolio transformation in response to climate change, the company recorded a 100% market growth rate after 2026 thanks to the rapid expansion of the zero carbon market. The analysis showed that the hydrogen / ammonia-related laws and regulations, infrastructure, and supply and demand will enter a stable period, leading to a sharp increase in market demand.

SK Gas is deploying an aggressive climate change response strategy, by actively responding to market changes, expanding profits, accelerating its own carbon reductions, and implementing strategies to accelerate carbon reductions within the entire value chain.

The company understands that transformation to an eco-friendly portfolio is the most effective strategy as a means of business growth. Therefore, SK Gas will strive to efficiently utilize the business opportunities arising from climate change. To this end, the company has established a climate change response target based on the Science Based Targets initiative (SBTi), and plans to continue to manage and improve performance in the implementation of climate change response. SK Gas plans to establish a Net Zero roadmap for Scope 3 and strengthen external communication based on global initiatives.

Metrics & Targets

Climate change risks and opportunities as well as strategies and countermeasures to respond to them as identified by SK Gas are measured and managed through specific indicators. SK Gas wants to index and specifically manage measurable factors to respond to climate change, such as portfolio transformation for greenhouse gas reduction, renewable energy use, total greenhouse gas emissions, and Net Zero goals. In particular, the company intends to continuously disclose and communicate the Net Zero Declaration and the implementation process for achieving the goals to its stakeholders.

These indicators and goals are intended to share its journey in responding to climate change with stakeholders. Going forward, SK Gas will continue to work hard to continue to lead the way in responding to climate change.

5.1 Climate Change Response Metrics & Targets

Indicators		Unit	2022	2023	2024	2025	2026	2027	2028	2029	2030	Target	Target Year
Engaging Net Zero targets	LPG portfolio reduction rate	%	6	12	18	25	32	32	32	32	32	32% achieved	2026
	Renewable energy conversion rate	%	5	11	54	70	73	73	73	73	100	100% achieved	2030
	Seawater heat exchanger adoption rate	%	-	-	50	100	-	-	-	-	-	100% achieved	2025
	Electric heater adoption rate	%	-	-	-	-	-	-	-	-	100	100% achieved	2030
	Scope 1 & 2 reduction rate	%	5	11	54	70	73	73	73	73	100	100% achieved	2030

Indicator	Item	Target	Target Year
GHG reduction at worksites	Renewable energy usage	35,700 MWh	2030
Investment in climate and environment related facilities	Climate change response facility investment cost	KRW 2.1 billion	2022

GHG Emissions		Unit	2019	2020	2021	2022 Target
Total GHG emissions	Scope 1	tCO_2e	26,331	23,992	23,481	22,495
	Scope 2		9,333	10,100	11,997	11,493
	Scope 3		-	-	11,601,210	11,311,180
	Total (Scope 1+2)		35,664	34,092	35,478	33,988
GHG intensity	Sales	tCO_2e/sales (KRW billion)	7.23	7.73	5.46	5.50

Energy Consumption		Unit	2019	2020	2021	2022 Target
Total energy consumption	Total consumption	TJ	616	617	654	641
Energy intensity	Sales	TJ/KRW billion	0.12	0.14	0.10	0.09

Response to Greenhouse Gas Emission and Net Zero Target

The LPG business is characteristically a low-carbon, eco-friendly business that has low carbon emissions compared to other fossil fuels. SK Gas strives to actively respond to climate change and provide eco-friendly energy solutions by shifting its business portfolio in the direction of ultimate carbon-free energy supply.

Accordingly, the company declared fuel conversion and RE100 goals to achieve Net Zero, and established indicators to manage goals, opportunities, and risks.

To manage the Net Zero goal, SK Gas plans to reduce the portion of LPG in the company's business portfolio by 32% by 2026, and achieve 100% in renewable energy conversion by 2030. The introduction of seawater heat exchangers and electric heaters to reduce Scope 1 emissions will be completed in 2025 and 2030, respectively. SK Gas is planning to reduce GHG emissions by 100% by 2030 by gradually reducing GHG emissions at its production sites.

Meanwhile, SK Gas has invested in facilities to reduce NOx, the cause of fine dust, in 2021. In 2022, the company will install solar power generation facilities at its production sites as in Ulsan, Pyeongtaek, and G.Hub to expand the use of renewable energy. Looking forward, SK Gas will increase the share of renewable energy use.

In 2021, the company's total greenhouse gas emission based on Scopes 1 & 2 is 35,478 tCO_2e. In accordance with the newly established SBTi target level, SK Gas plans to set a target for 2022 greenhouse gas emissions, intensity target, and energy use target, and continue its active reduction efforts.

5.1 Climate Change Response Metrics & Targets

GHG Emissions: Scope 3			
Category		Emission (tCO_2e)	Remarks
1	Purchased products and services	3,498,839	KS verified
2	Capital goods	36,170	
3	Energy	9,140	
4	Upstream transport	180,349	
5	Waste	57	
6	Business trip	96	
7	Commuting	1,043	
8	Lease	23	
9	Downstream transport	8,778	
10	Processing	2,270,872	KS verified
11	Product use	5,591,452	KS verified
12	Product disposal	-	
13	Lease	4,392	
14	Franchise	Not Relevant	
15	Investment	-	
Total		11,601,210	

Scope 3 Calculation Results and Management Plan

SK Gas plans to calculate and continuously manage Scope 3 GHG emissions to reduce GHG emissions in the entire value chain, as well as reduce GHGs at worksites.

SK Gas selected major categories and methodologies to calculate Scope 3 GHG emissions. Based on this, the company calculated emissions by identifying and collecting necessary data such as the value and quantity of raw materials purchased, fuel consumption, and emission factor. SK Gas improved the accuracy of the methodology and the reliability of the collected data and calculation results by having them verified by an external verification agency. Based on the verification results, it improved and supplemented data collection templates and methodologies to lay the groundwork for future management.

Most of SK Gas's Scope 3 greenhouse gases are emitted from categories 1, 10, and 11. Among them, the emissions in category 10 include those of SK Advanced, which produces propylene as an affiliate of the company. Ulsan GPS, a major subsidiary, is scheduled to go into operation in 2024 and has been excluded from calculation this year. Based on the calculated scope 3 emissions, SK Gas plans to continuously manage emissions throughout the value chain to achieve Net Zero goals including Scopes 1, 2, and 3 by 2050.

TCFD Index

TCFD Recommended Disclosures	SK Gas's Response
Governance	
a) Describe the board's oversight of climate-related risks and opportunities	8
b) Describe management's role in assessing and managing climate-related risks and opportunities	9
Strategy	
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	12, 15~17
b) Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning	6, 15~17
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	13~14, 20, 24~28
Risk management	
a) Describe the organization's processes for identifying and assessing climate-related risks	10
b) Describe the organization's processes for managing climate-related risks	10
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	6, 10
Metrics and Targets	
a) Disclosure the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	30
b) Disclosure Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	21~23, 30
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	30

References

References	Organization	Year
World Energy Outlook 2021 https://www.iea.org/reports/world-energy-outlook-2021/overview	IEA	2021
Utilities Sector & Industry Performance https://www.bloomberg.com/markets/sectors/utilities	Bloomberg	2022
Global Climate Risk Index 2021 https://www.germanwatch.org/en/19777	Germanwatch	2021
Annual Energy Outlook 2022 https://www.eia.gov/outlooks/aeo/	U.S. Energy Information Administration	2021
Annual_Review_2020 https://www.liquidgaseurope.eu/publications/annual-review-2020	LIQUID GAS EUROPE	2021
Domestic LPG policy, price, and statistics https://klpg.or.kr/_ENG/html/	Korea LPG Association	2022

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