2022 SK chemicals TCFD Report

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HEALTHCARE, EARTHCARE

SK chemicals

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The 2015 Paris Agreement and the 2018 Intergovernmental Panel on Climate Change (IPCC), both of which seek to keep the rise of the average global temperature below 2°C compared to pre-industrial levels and preferably limit it to below 1.5°C compared to pre-industrial levels, emphasize a global effort to reduce the actual emissions of global greenhouse gases to zero by 2050.

The Task Force on Climate-Related Financial Disclosures (TCFD), which was created by the Financial Stability Board (FSB) at the request of G20 finance ministers and central bank governors, published its TCFD recommendations in 2017, guiding companies worldwide to calculate and disclose the financial impact of climate change on their businesses.

For years, SK chemicals has reacted intelligently to climate change trends by providing eco-friendly materials and total healthcare solutions. Our goal goes beyond merely carbon reduction initiatives. In fact, we have developed a transition plan for portfolios to green materials and the bio business as part of our commitment to a more fundamental response and change for the better.

In order to share the details of all the company's plans and activities with our stakeholders, SK chemicals has published its first TCFD Report. This will provide the public with information on our strategies and progress in tackling climate-related issues, allowing readers to fully understand the quantitative data of the impact of climate change on SK chemicals' business and financial strength.

We promote people's health and protect the environment. As such, SK chemicals aims to become a leading company in ESG management, chemical recycling, biomaterials, and the green energy business. In this context, our pledge to support the TCFD is only the beginning. Indeed, we are committed to fulfilling our business obligations to contribute to fighting global climate change. As such, this report marks just the first step of our planned actions and will serve as the basis for systematic management and monitoring of all climate change risks.

This TCFD Report has been prepared in accordance with the guidelines provided in the TCFD recommendations. SK chemicals used reliable data from renowned organizations such as the International Energy Agency (IEA) and Bloomberg to estimate and explain the financial impact disclosed in the report. Still, the projections and plans contained in the TCFD Report are subject to change due to variables related to numerous climate change factors and changes as well as uncertainties in business and market conditions. It should also be noted that SK chemicals is not obliged to assume responsibility for the information and projections presented in this report or to provide any guarantees.

Scope of Report

The non-financial data contained in this report includes data from SK chemicals' Green Chemicals Business at the company's headquarters in Pangyo, its Ulsan plant, the Dongtan Plastics Processing Research Lab, SK chemicals-Daejung, and SK chemicals Yantai. In cases where the data and performance results disclosed in this report differ from the reporting boundaries as stated above, the detailed scope has been specified in a separate notation. Discrepancies in reporting boundaries and any changes in reporting data are separately marked.

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1.1 CEO MESSAGE

SK chemicals CEO Cheol Kim

“SK chemicals will continue to strive for a better future for the planet and humanity.”

SK chemicals CEO Gwang-hyun Jeon

Valued SK chemicals stakeholders,

We would like to express our sincere gratitude to our stakeholders, all of whom have shown an unceasing interest in and exhibited constant support of SK chemicals through the pandemic.

Since we first adopted ESG values into our management practices in 2010, SK chemicals has prudently contemplated the objectives of all our business activities. Accordingly, we have established and implemented a corporate mission and vision which aim at protecting the environment and people’s health, and have worked relentlessly towards increasing both economic and social value since then. As a result, the company was recognized for its sustainability achievements in 2021, as was proven by our being listed on the Dow Jones Sustainability Korea Index (DJSI KOREA) and our ESG ratings being upgraded at home and abroad by MSCI and the KCGS.

Notably, 2021 was also a significant turning point in terms of our business portfolios. The sale of the composite materials and PPS business units allowed us to more closely focus on our existing flagship operations. Also, our equity investment in the recycling business resulted in the world’s first commercial production of chemical recycling products, while the smooth construction of our PO3G facility is making significant progress in our eco-friendly materials operations.

Additionally, we spun off and established SK multi utility (SKMU) as a subsidiary in a hopeful first step to achieving carbon neutrality and setting up a community energy supply (CES) business. Furthermore, the successful IPO of our subsidiary SK bioscience further materialized the company’s dream for the future and bolstered its financial stability.

Based on this growth engine and stable financial structure, SK chemicals is charting the direction of our future business in 2022 with our Green Materials and Bio Business front and center, and will pursue this goal to the fullest extent of our capabilities. At the same time, we will transform the Green Chemicals Business into a Green Materials Business by utilizing our existing business competencies in chemical recycling, biomaterials, and the green energy business, while also achieving Carbon Net Zero. The Life Science Business will continue to enhance the marketing capabilities of its existing strength in the musculoskeletal and nervous system field as it secures new pipelines based on AI/DT technology. Moreover, we will leverage our experience in developing new drugs and market network capacity as well as collaborate with external partners to reinforce our portfolio and expand our business fields to new areas, such as new technologies and biotherapeutics.

Together with our stakeholders, SK chemicals is working hard to make the world a better place for everyone. By constructing an eco-friendly PET circular economy, we will meet our carbon emission reduction objectives. We have also established an ESG Committee under the Board of Directors to discuss our overall ESG management at the Board level to effectively deal with climate-related issues. In addition, by amending the Investment Deliberation Committee’s regulations, the company prioritizes its environmental and social impact in the investment decision-making process.

We believe that these endeavors being made by SK chemicals contribute to our heightened ESG management practices and to the United Nations Sustainable Development Goals (UN SDGs). As we move forward, SK chemicals will continue to highly value the health and safety of humankind and the sustainability of life on the planet, with these initiatives playing an important role in making the world a better place. As we continue to make progress in our efforts, we will actively communicate with our stakeholders at every step of the way. We would like to request your continued support and interest in SK chemicals’ journey.

Thank you.

1.2 OUR BUSINESS PROFILE

Business Profile

GREEN CHEMICALS*

Copolyester	Functional Materials	Bio Materials
ECOZEN	SKY TRA	ECOTRION
SKY GREEN	SKY PURA	
SKY DMT	SKY BON	
SKY CHDM	SKY PEL	
ECOTRIA		

LIFE SCIENCE**

Pharmaceuticals		Vaccines
Tablet	Patch	Vaccines

* SK chemicals' countermeasures to climate-related issues focus on the Green Chemicals Business.
** Emissions from our Pharmaceuticals Business are negligible at the Cheongju site and LS Regional Office. Hence, these sites are excluded from this report. Data on the Vaccine Business at SK bioscience will be published in a separate report.

Business Areas and Infrastructure

Green Chemicals Business

The traditional price competition paradigm is shifting in the global chemicals industry to competition for green and recycling technologies aimed at sustainability and a circular economy. Europe, which has mandated recycled plastic use in all products sold within the EU, is now considering a new plastic tax of 0.8 euros per kilogram of discarded plastic. The U.S. is also in the process of legislating recycled plastic use in products for its market.

In step with the rising market demand for green products, SK chemicals is mobilizing all its R&D resources to secure the supply of green materials and development of green product technologies, including recycled plastics and bio-based plastics.

Copolyester

SK chemicals became the first Korean company to commercialize ECOTRIA, a post-consumer recycled (PCR) product, as part of our plan towards a green transition in our product portfolio. Our goal is to expand sales of SKYGREEN and achieve a 100% chemical recycling rate of our PETG by 2023. Competition within the copolyester market is expected to intensify in the near future, yet we will continue to be the clear forerunner in the industry, far outpacing the latecomers through our portfolio conversion to high value-added products and the development of eco-friendly and recycling technologies.

Life Science Business

The Life Science Business offers comprehensive solutions that range from diagnosing and preventing diseases to treating them. Based on our highly focused R&D investments in diverse fields, such as synthetic new medicines, natural substances, and biotechnology, we have generated stable sales and revenue as Korea's No. 1 pharmaceutical firm that markets medicines for musculoskeletal and nervous system diseases.

Looking ahead, SK chemicals is actively reinforcing its R&D capabilities by investing in open innovation to constantly expand our product portfolio and secure candidates for new medicine development. Through these efforts, we aim to grow past the domestic market and increase our market presence in developed markets worldwide. To this end, we have conducted joint research with AI specialists to identify new drug candidates based on artificial intelligence technology, while at the same time carrying out an efficient compound screening for medicinal efficacy and toxicity. At this point, we now aim to derive a large number of candidate compounds to develop therapeutics for intractable diseases.

General Information (As of Dec. 2021)

Company Name	SK chemicals Co., Ltd.
Business	Development, production, and sales of eco-friendly resins and pharmaceuticals
Headquarters	310, Pangyo-ro, Bundang-gu, Seongnam-si, Gyeonggi-do, Korea
Date of Establisment	July 1, 1969
No. of Employees	1,471 (Permanent)
Revenue	KRW 2 trillion 89.6 billion
Business Profits	KRW 555.2 billion
Net Profit During the Term	KRW 268.7 billion

1.2 OUR BUSINESS PROFILE

SK chemicals Global Network

SK chemicals' headquarters, called ECO Lab, is located in Pangyo, Seongnam City, Gyeonggi-do, with the Green Chemicals Plant located in Ulsan.

SK chemicals Suzhou Corporation, a wholly owned local subsidiary for producing and distributing SK chemicals products, was established in the Wujiang Economic & Technological Development Zone in Suzhou City, China in 2006. The Suzhou Corporation produces high-performance polyester coatings/adhesives for the Chinese market and then exports them to the global market. Today, its business continues to grow significantly sizewise.

In addition, SK chemicals commands a competitive global network based on our overseas sales subsidiaries in the U.S., Germany, and Shanghai, with branch offices in Japan and China as well as production subsidiaries in Suzhou and Yantai, China. SK chemicals will continue to expand its business areas and scale on its way to becoming a truly world-class specialty chemicals company.

Overseas Network

1. SK chemicals America
2. SK chemicals GmbH
3. SK chemicals Malaysia
4. SK chemicals Shanghai Co., Ltd.

Overseas Business Sites

1. Yantai, China
2. Suzhou, China

Overseas Offices

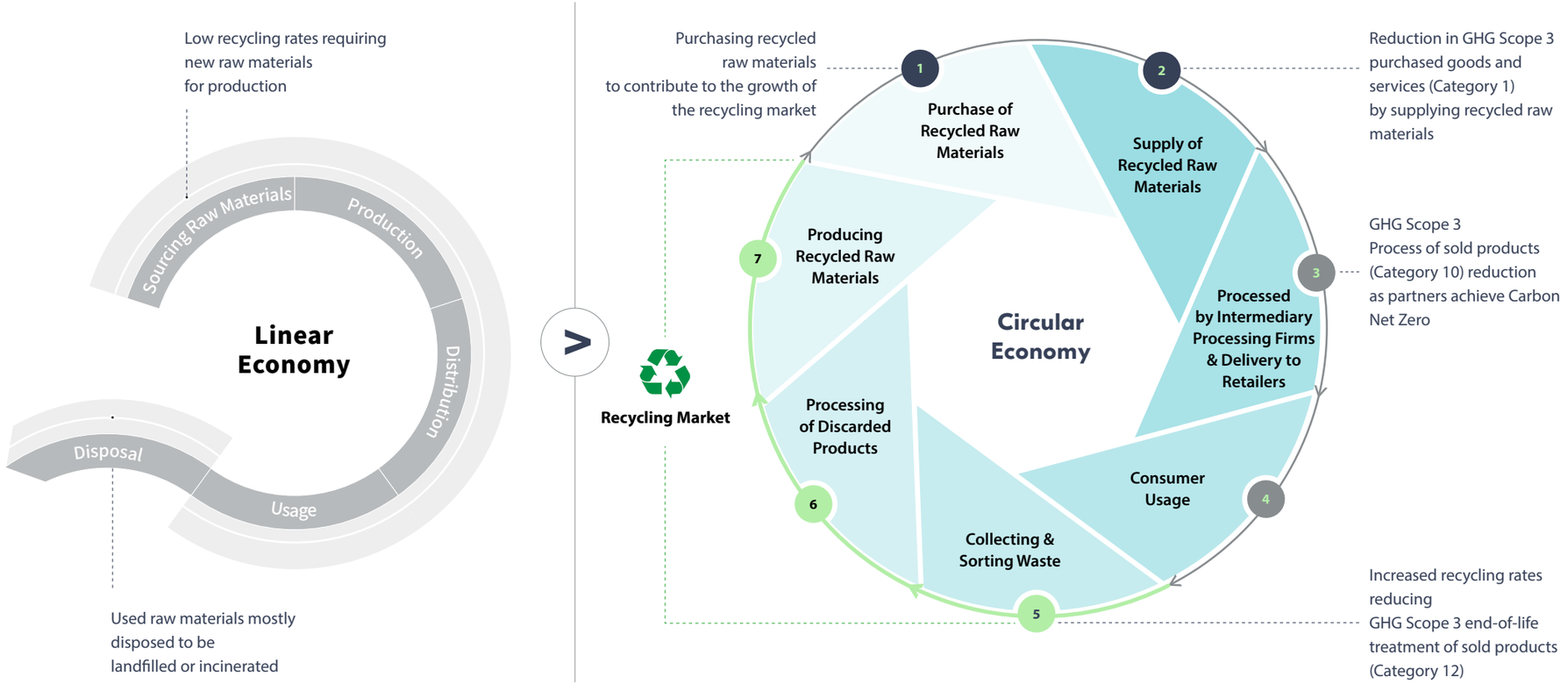
3. Guangzhou, China
4. Tokyo, Japan

Domestic Network

1. Pangyo (ECO Lab)
2. Ulsan (Ulsan Plant)

1.3 SK CHEMICALS' DIRECTION FOR CLIMATE ISSUE RESPONSE: BUILDING A CIRCULAR ECONOMY ECOSYSTEM

A Carbon Net Zero Strategy through a Circular Economy Ecosystem



The universal application of plastics ranges from small objects, such as toothbrushes, shoes, and clothes, to electronic devices, including smartphones, computers, and TVs, as well as heavy industries, like automobiles, IT, and construction. Their limitless utility, which arises from their flexibility and lightweight nature, reaches every aspect of our lives. However, the environmental impact of plastics is no longer negligible due to their long decomposition period and hazardous chemical substances. To address this issue, SK chemicals is building an eco-friendly production process and a circular economy ecosystem to reduce greenhouse gas (GHG) emissions and minimize the environmental impact of plastics.

The strategies of SK chemicals' initiatives are aimed at reducing GHG emissions and responding to climate change issues, and are centered on expanding the circular economy system. We plan to increase the share of recycled materials in the raw materials used in manufacturing chemicals to minimize their environmental impact and reduce purchased goods and services (category 1) emission in our value chain's GHG (Scope 3). Moreover, our increased use of recycled raw materials can reduce the number of discarded plastics, which in turn will lead to reduced GHG emissions associated with end-of-life treatment of sold products (Scope 3, Category 12).

As a key player with the power to expand the green circular economy and lead the growth of this market, SK chemicals is closely working with various stakeholders, from partners and consumers to governments at all levels. We will also play a pioneering role in achieving carbon neutrality through a life cycle assessment encompassing every step of the product lifecycle, including product planning, disposal, and recycling.

1.4 SK CHEMICALS' APPROACH TO CLIMATE CHANGE RESPONSE

Strategies for Net Zero Operations & Chemicals

VISION

Providing Eco-friendly Materials and Total Healthcare Solutions as a Global Leading Company

STRATEGY

1	2
Short & Mid-term Transition Strategy **Net Zero Operations**	**Long-term Transition Strategy** **Net Zero Chemicals**
Key Matters: Introducing hydrogen and increasing the use of renewable energy for fuel use at operations Achieving carbon Net Zero at all operating premises **Reduction Target Scope:** Scope 1: Direct emissions from our operations Scope 2: Indirect emissions associated with the purchase of energy sources (electricity, steam, etc.)	**Key Matters:** Expanding the use of recycled raw materials and products in a circular economy ecosystem **Reduction Target Scope:** Scope 3: Emissions across the value chain, including emissions from the consumption of our products
Fuel conversion + **Expansion of renewable energy** = **Achieving eco-friendly workplaces**	**Recycled products** + **Recycled raw materials** = **Building an eco-friendly circular economy ecosystem**

GOVERNANCE

Climate-Related Risk Management System

Plastic pollution was one of the critical agenda at the 5th United Nations Environment Assembly, which was held in February 2022. The Assembly reached an agreement to enact an international convention by 2024 for monitoring the entire lifecycle of plastics. Various environmental regulations on plastics are subsequently expected to be implemented in countries around the world. For its own part, SK chemicals has also formulated short-term and mid- to long-term strategies for achieving carbon Net Zero in order to minimize the environmental impact of the materials it produces.

SK chemicals is responding to climate change issues in a two-track approach: Net Zero Operations for achieving carbon neutrality at all our business sites and Net Zero Chemicals in our products by increasing the use of green materials. First, we will achieve carbon neutral business sites by converting our fuel and energy sources into green energy, such as hydrogen and renewable energy. In the long run, we are working towards expanding our use of eco-friendly materials, including recycled materials, and reducing the proportion of waste from our products. Eventually, we plan on building and developing a circular economy ecosystem that reduces greenhouse gas emissions throughout the entire value chain.

To this end, SK chemicals will establish the necessary governance to address climate change response and achieve carbon neutrality, enhance our resilience in dealing with climate change issues, and bolster our position as a world leader in eco-friendly materials and total healthcare solutions.

2

Governance and Risk Management

SK chemicals operates an efficient governance system centered on its Board of Directors. The BOD is the top decision-making body that oversees the company's management issues, monitoring and checking all ESG management elements, including climate change. At SK chemicals, senior management defines, identifies, and responds to the company's climate-related risk and opportunity factors through the ESG Council and regularly reports on critical issues to the BOD through the ESG Committee.

Under the mission of promoting people's health and protecting the environment, SK chemicals is developing a solid governance foundation that reflects climate change issues in its business management. At the same time, it has become a leading global provider of green materials and total healthcare solutions.

2.1 SK CHEMICALS' GOVERNANCE OF CLIMATE ISSUE RESPONSE

Composition of the Board of Directors and Subcommittees

Board of Directors

Voting on crucial management matters, communication between shareholders and senior management

2 internal directors, 4 independent directors, 1 non-executive director

Audit Committee	Independent Director Nomination Committee	ESG Committee	Personnel Committee
Accounting and business monitoring, investment risk review	Recommendation of candidates for independent directors to be elected at the general shareholders' meeting	Business consulting and review of ESG management, including mid-to long-term strategies	Review of executives' personnel issues
4 independent directors	3 independent directors	1 internal, 2 independent directors	2 independent directors, 1 non-executive director

Composition of the ESG Committee

Name	ESG Committee
Members	Independent directors | Ahn Yang-ho, Park Jeong-soo Internal director | Jeon Kwang-hyun
Objectives	- Providing advice on and reviewing business strategies and ESG management direction - Setting ESG performance goals in consideration of environmental and socially responsible management policies - Implementing and improving the risk management framework, strategically reviewing financial and non-financial risks and opportunities
Functions	- Reviewing ESG implementation results & current year plan accomplishments - Reviewing crucial non-financial risk factors and issues as well as countermeasures - Reviewing stakeholder communication results, including ESG ratings at home and abroad - Reviewing the results of support for ESG competency-building and internalization - Reviewing environmental and social issues referred by the chairman of the Committee - Reviewing other key ESG or strategic issues requiring the Committee's review and agenda delegated by the Board of Directors

Operation of the Board of Directors

SK chemicals advocates for an accountable management system centered on the BOD. At SK chemicals, senior management is independent of the owners, while the Board chair is appointed from among the independent directors. A sound and effective BOD constitutes the foundation of successful corporate governance. SK chemicals' BOD oversees and directs corporate-wide climate change and business strategies.

SK chemicals enacted its Corporate Governance Charter in March 2021. The charter defines and details shareholders, the Board of Directors, the audit organization, the protection of stakeholder rights, and all policies for business operations monitored by the market. The section pertaining to the BOD articulates transparent management principles that set out independence, diversity, and expertise in the composition of the BOD.

As of March 2021, SK chemicals' BOD consisted of two internal directors and four independent directors. In order to ensure the system of checks and balances functions over senior management, the Board's chair is elected from among the independent directors, with the majority of the Board members required to be independent directors. Directors are not allowed to have concurrent job positions under Korea's Commercial Act and are not allowed to work for any company that brings about a conflict of interest. A director's reappointment is determined at the end of each term depending on their performance evaluation results during their tenure.

The Board of Directors has subcommittees in place for higher efficiency and expertise in its operation. In particular, all new business projects are reviewed against SK chemicals' mission of promoting people's health and protecting the environment. Whether each one is in line with the task in question depends on its contribution to the quality of life, environmental protection, and/or minimizing our environmental impact. New projects and investments are discussed and finalized by the ESG Committee to ensure accountable decision-making.

The ESG Committee considers environmental and socially responsible management policies when setting goals for ESG-related activities and subsequently reviews all detailed action plans. It also identifies risks and opportunities in the business sector through a risk management framework. In addition, it examines strategies for responding to financial and non-financial risks and opportunities. In order to revitalize the ESG Committee, we reported on the ESG Master Plan and ESG Key Indicators in the third quarter of 2021. Moreover, the spin-off of Utility Corporation (SK multi utility) was concluded as part of our 2040 Net Zero initiative. In March 2022, we reported on the materiality analysis results to the ESG Committee and discussed vital management issues. In April, we revised the ESG Committee Regulations to strengthen ESG management's effectiveness and clarify the Committee's activities.

Furthermore, we amended the Investment Deliberation Committee's regulations to align them with K-Taxonomy, which contains all the necessary principles and standards for the classification of green economic activities laid out by Korea's Ministry of Environment. Also, going over the ESG Review Results Report was added as a required step to the investment deliberation process so as to check all ESG-related risks and follow-up monitoring of each countermeasure to mitigate environmental and social risks based on the review results.

With respect to the Personnel Committee, it monitors and approves the implementation of sustainability efforts, ESG strategies, and goal attainments to determine the Board's compensation. Also, the Personnel Committee's evaluation/remuneration deliberation and voting process follows all Personnel Committee Regulations.

2.2 SK CHEMICALS' CLIMATE RISK MANAGEMENT

Climate-related risks vary with geographical location and industrial characteristics—operations, supply chains, customers, and other factors. Their impact and significance also depend on response strategies and further initiatives of SK chemicals.

SK chemicals has an integrated, enterprise-wide risk management system that identifies and monitors risks to minimize any negative impact on our business operations. Under the direction of the head of the Management Support Division, we review and manage every risk factor involving our business management, such as finance, compliance & ethics, the environment, and human rights. The department in charge establishes internal regulations and guidelines for each type of risk and continuously monitors these risks. Depending on the situation, it then reports the monitoring results and countermeasures to the BOD.

The transition risks and physical risks associated with climate change responses have an impact on SK chemicals' financial and non-financial performance. Therefore, it is critical that we strengthen our resilience capabilities against any and all climate-related impacts. SK chemicals runs materiality tests against the level of impact that climate change risks have on our operations in consideration of a given period (short-/mid-/long-term) and their financial impacts (changes to capital-raising costs and profit/loss performance due to specific projects and/or investments) to discern potential risks.

The ESG department oversees the financial and non-financial risks that may occur in the course of investments and management policies and strategies, as well as our transition to a low-carbon ecosystem. It also cooperates with the relevant departments to discuss and review material issues related to the risk management of the company. In addition, the ESG department identifies the impact of climate-related issues on our business and operational activities. According to the types of risk concerns—investment/project management, finance, and legal issues—it consults with the relevant operational departments to discern and assess the materiality of such risks. The results are then reported to senior management.

SK chemicals' senior management is well aware of the climate risks and opportunities associated with the company's strategies, business plans and risk management. We always consider the actual and potential impacts of these factors on our business activities and profits. We also assess the short-term and long-term impacts of climate-related risks and ensure that SK chemicals' Net Zero initiatives and activities are in line with the Republic of Korea's Nationally Determined Contribution (NDC) for achieving its National Greenhouse Gas Reduction Target by 2030 under the Paris Agreement.

All investments and business projects are considered with respect to their level of exposure to climate risks, something that is also reflected in the company-wide risk management system and which the chief ESG officer oversees procedurally. In addition, this same officer is in charge of establishing policies and procedures to assess, monitor, and report on climate-related risks, and supervises the effective controlling and disclosure of these climate risks. In the event of material issues, the chief ESG officer apprises the ESG Committee and the BOD on all of them.

Climate Risk Management Framework

1	**Identification of climate risks**	- When investing in a new business or conducting a project with high climate-related risks, the ESG department collaborates with operational departments of strategy, business promotion, and operations to identify the material risks that could have an impact on SK chemicals in accordance with global sustainability standards.
2	**Assessment of climate risks**	- The ESG department may take into account climate risk standards (risk volume, operational activities and capabilities, risk profile) for assessing any investment or operational risk. - The assessment scope can be adjusted according to the nature of SK chemicals' business sector, size, and nature of operations and transactions, with the metrics being set based on the assessment results.
3	**Management/ Controlling of climate risks**	- The investment and business sectors with high climate risks are subject to the approval of the CEO, regular internal staff review, and consultations with external experts to improve management practices, after which they are assigned to the relevant chief officers so as to become on-going businesses. - Manageable risk exposures and attainable improvement targets are carefully determined in the climate-related metrics.
4	**Report on climate risks**	- The ESG department reports on the transitional status and monitoring results of climate-related risk exposure levels against the preset metrics and targets. - Policy transition for the management of climate risks is carried out in each business sector along with data collection and analysis, such as on greenhouse gas emissions. - External audits are commissioned on the accuracy, clarity, comparability, and timeliness of data disclosures on climate risks, including the identifying, assessing, and managing of the risks.

3

Climate-Related Risks & Opportunities

Climate change risks and opportunities have an impact on the business environment in various ways. SK chemicals has identified risks and opportunity factors in consideration of society's vulnerability to being exposed to climate change and the subsequent impact on our business operations. We have also assessed the transition risks and physical risks according to the materiality of these factors. As a result, we fully realized the need and significance of carrying out the proper responsive measures to social and environmental issues arising from climate change.

For more systematic management of the impact and significance of climate risks and opportunities on our business operations, SK chemicals plans to elaborate on our climate change scenario analysis and the financial impact review of the changes. Based on these findings, we will develop a more realistic and effective response mechanism.

3.1 DEFINITIONS OF CLIMATE CHANGE RISKS & OPPORTUNITIES

Climate Change Risks and Opportunities

SK chemicals has set a timeline for business transformations and the achievement of the company's climate change goals by short-, medium-, and long-term periods. With the streamlining of management practices across the company, including the production processes, we save on energy and water use, while at the same time reducing greenhouse gas emissions so as to improve our environmental performance results. On top of our efforts to minimize discharging air and water pollutants, we also have waste recycling policies in place to increase our waste recycling rate, which includes discovering new waste recycling businesses and the development of innovative recycling technologies. Furthermore, we plan to obtain certification on our waste recycling processes in the immediate future. In short, we fulfill our corporate responsibility in pursuing a sustainable environment, which is why we have set laudable environmental metrics and targets, while also establishing and putting into operation an efficient management system for the proper chemical substance use in raw materials, products, and processes.

Defining the Risks and Opportunities Arising from Climate Change Issues

In order to take advantage of our climate change responses as an opportunity, SK chemicals established and now operates its own set of Investment Expense Regulations, which clearly spell out all the responsibilities and authority mechanisms according to the specific financial impact, including capital expenditures, R&D investment, and investment assets and expenses. Annual budgets are drawn up each year to reflect the risks and opportunities posed by climate change. As a financial impact exceeding KRW 2 billion is defined as a "significant impact," any investments exceeding KRW 2 billion are subject to the review and determination of the Investment Review Committee. Whether they are capital expenditures, R&D investments, or business investments, new projects including eco-friendly projects to deal with climate-related issues, are all subject to the consideration of the CEO after a resolution is passed by the Investment Review Committee. Afterwards, capital expenditures and R&D investments are then carried out by the head of the respective business division or the CEO, according to the size of the budget.

SK chemicals identifies significant financial or strategic impacts by using economic values (EVs), such as the investment amount, revenue, and projected business growth rate, as well as social values (SVs) that include greenhouse gas emissions, energy savings (renewable energy use), and the total number of plastic recycled products.

Business Timelines

Short term	Medium term	Long term
Time period **2021 to 2022**	**Time period** **2022 to 2030**	**Time period** **2030 to 2040**
Rationale · Company-wide management optimization, including production processes	**Rationale** · Phase-in of the use of hydrogen fuel at our premises · Expansion of the use of renewable energy · Reduction of greenhouse gas emissions by switching our fuel source of steam suppliers	**Rationale** · Creation of a circular economy through the establishment of a chemical substance management system for use in raw materials and production processes

Climate Change Factors

Policies and Regulations	Markets	Reputation	Technology	Natural Disasters
- Carbon emission regulations (carbon tax, carbon border adjustment mechanism) - Regulations on plastic use and recycling - Expanding the transition to a renewable energy ecosystem - Declining carbon credits that lead to an excess in quotas, which also results in growing carbon expenses	- Expanded market for eco-friendly materials and a circular economy - Changes in consumer and market preference	- Expanded initiatives related to climate change - Shift of investment criteria to low-carbon/decarbonization initiatives	- Transition to low-carbon businesses	- Efforts to raise awareness and support for countermeasures to natural disasters

3.2 CLIMATE CHANGE SCENARIOS: RISK & OPPORTUNITY MAPPING

Climate Change Scenario Analysis

SK chemicals conducted extensive industry analysis and document surveys to form a pool of climate change risk and opportunity factors for materiality analysis of their financial impact and occurrence. The analysis results turned up that the top nine most likely factors with high financial impacts were related to national energy policy and markets. The material risk factors were found to be R&D expenses for developing recycling products and capital expenditures for carbon reduction and energy efficiency under the government regulations on carbon emissions and plastic recycling, while material opportunity factors were found to be a possible increase in the sale of post-consumer recycled (PCR) products under initiatives aimed at developing green materials and promoting a circular economy. Consequently, SK chemicals has set its direction moving forward on responsive measures and will continue to manage climate change risk and opportunity factors based on the results of the materiality analysis.

SK chemicals' Materiality Analysis of Climate Change Risk and Opportunity Factors

Risk Factors

Policies and Regulations	1	Reduced export product revenue due to the introduction of a carbon pricing system
	2	Growing demand for R&D investments and capital expenditures for production facilities for recycling products
	3	Increase in energy costs and facility investment costs
	4	Demand for investment in greenhouse gas reduction facilities and energy efficiency facilities
Markets	5	Customers' demand for eco-friendly products
	6	Reduced sales of conventional products due to changes in consumer preferences
Reputation	7	Growing concerns of customers and investors
	8	Decreasing value of investments in petrochemical businesses
Technology	9	Growing investment expenses for low-carbon transition of product portfolio and process
Natural Disasters	10	Rising cost of recovery and loss of business opportunity in the event of a disaster
	11	Increased operating costs of business sites, such as air conditioning and heating facilities

Opportunity Factors

Policies and Regulations	A	Ensuring price competitiveness of products by achieving carbon Net Zero and thereby minimizing the impact of the carbon pricing system
	B	Policy drives to expand the recycling of products to promote recycled plastics market growth
	C	Transitioning to a clean energy ecosystem to reduce greenhouse gas emissions
	D	Reducing greenhouse gas emissions and energy costs at business sites
Markets	E	Developing eco-friendly materials (recycling, bio) to meet market demand
	F	Promoting plastics recycling and PCR manufacturing as part of a circular economy initiative
Reputation	G	Proactive responses to climate-related initiatives to strengthen the corporate image as a green business
	H	Increase in our investment value arising from the sale of low-carbon products
Technology	I	Dual growth in the performance of carbon reduction and product sales through the expansion of a low-carbon product portfolio
Natural Disasters	J	Improving the operating environment through the preparation of preventive measures

3.3 THE IMPACT OF CLIMATE CHANGE ON SK CHEMICALS: EVALUATING THE RISKS & OPPORTUNITIES

Climate Change Risk Factors' Correlation to Business Opportunity Factors

SK chemicals analyzed the climate change risks and opportunity factors in the aspects of policies and regulations, markets, reputation, technology, and natural disasters.

Policies and Regulations

Stricter regulations on carbon emissions and plastics use and recycling poses the risk of a decrease in SK chemicals' revenue from exporting conventional products, but they also suggest an opportunity in preempting the recycled plastics market through the development of recycled products.

Markets

The shift in consumer preferences to green materials and a circular economy is projected to feed the growth of related investments, facilitating the development of green material products and technologies. Additionally, the growing demand for green materials could act as an opportunity factor for SK chemicals, which aims to become a first mover in leading the green circular economy.

Reputation

Our proactive responses to global initiatives and regulations will enhance our public image as a green business, with positive effects expected in terms of reputation and consumer preference.

Technology

Although there is a potential risk of increased investment costs for the low-carbon transition of product portfolios and processes, we also anticipate opportunities for carbon reduction outcomes through the expansion of a low-carbon product lineup, an increase in product sales performance, and expanded opportunities for shared growth.

Natural Disasters

While the cost of SK chemicals' business opportunity loss is likely to increase due to the growing frequency in extreme weather, such as typhoons, floods, and heavy rainfall, as well as natural disasters, including dust storms and rising temperatures, SK chemicals is already coming up with preventive measures to improve its operating environment.

Business Risks & Opportunities

Financial Impact: Small Financial Impact: Large

Classification	Category	Climate Change Factors	Timeline	Risk	Opportunity
Transition	Policies and Regulations	Carbon emission regulations (carbon tax, carbon border adjustment mechanism)	Mid-term	· Reduced export product revenue due to the introduction of a carbon pricing system	· Ensuring price competitiveness of products by achieving Net Zero carbon emissions and thereby minimizing the impact of the carbon pricing system
		Regulations on plastic use and recycling	Mid-term	· Growing demand for R&D investments and capital expenditures for production facilities for recycling products	· Policy drives to expand the recycling of products to promote recycled plastics market growth
		Expanding the transition to a renewable energy ecosystem	Mid-term	· Increase in energy costs and facility investment costs	· Transitioning to a clean energy ecosystem to reduce greenhouse gas emissions
		Declining free carbon credits that lead to an excess in quotas, which also results in growing carbon expenses	Mid-term	· Demand for investment in greenhouse gas reduction facilities and energy efficiency facilities	· Reducing greenhouse gas emissions and energy costs at business sites
	Markets	Expanded market for green materials and a circular economy	Mid-term	· Customers' demand for eco-friendly products	· Developing eco-friendly materials (recycling, bio) to meet market demand
		Changes in consumer and market preferences	Mid-term	· Reduced sales of conventional products due to changes in consumer preferences	· Promoting plastics recycling and PCR manufacturing as part of a circular economy initiative
	Reputation	Expanded initiatives related to climate change	Short-term	· Growing concerns of customers and investors	· Proactive responses to climate-related initiatives to strengthen the corporate image as a green business
		Shift of investment criteria to low-carbon/decarbonization initiatives	Mid-term	· Decreasing value of investments in petrochemical businesses	· Increase in our investment value arising from the sale of low-carbon products
	Technology	Transition to low-carbon businesses	Long-term	· Growing investment expenses for low-carbon transition of product portfolio and process	· Dual growth in the performance of carbon reduction and product sales through the expansion of a low-carbon product portfolio
Physical	Natural Disasters	Typhoon, flooding, heavy rainfall, and other extreme weathers	Short-term	· Rising cost of recovery and loss of business opportunity in the event of a disaster	· Improving the operating environment through the preparation of preventive measures
		Dust wind, rising temperature	Long-term	· Increased operating costs of business sites, such as air conditioning and heating facilities	

3.4 CLIMATE-RELATED PHYSICAL RISKS TO SK CHEMICALS

Climate Risk Assessment at Our Ulsan Operation

Physical Climate Risk Assessment Process

No.	Hazard Factors	> Exposure Identification	> Vulnerability Check	> Event	> Expected Damage	Risk Assessment Results
1	Typhoons with heavy rainfall	Lowlands	Poor drainage	Flooding	Loss of life, damages to property	Extreme
2	Rise of sea levels	Industrial complexes	Lowlands	Flooding	Damages to property	Extreme
3	Heavy snow, cold snaps	Road traffic	Vehicle traffic	Accidents	Loss of life	High
4	Typhoons with strong winds	Business sites	Loss of facilities and installations	Damage to structures	Damages to property, delays in projects	Medium
5	Typhoons with heavy rainfall	Streams and brooks	Countercurrent of external water	Overflow	Loss of life, damages to property	Medium
6	Droughts	Industrial complexes	Water supply shortage/ Water pollution	Industrial water supply disruption	Stop in operations, damages to property	Low
7	Heat waves, tropical nights	Outdoor laborers	Extended hours of work	Heat-related illnesses	Loss of life, declining production efficiency	Low

Ulsan Climate Risk Assessment

The increasing frequency of extreme weather events, such as heat waves, floods, and wildfires, is increasing the risk of corporate losses due to climate change. SK chemicals' Ulsan plant is located near the beach, exposing it to a high risk of direct damage from climate disasters, including typhoons, tsunamis, and river flooding. Direct damage, such as the loss of factory facilities, can lead to collateral damage, the most obvious of which would be declining productivity and project delays.

SK chemicals has identified the potential risks of climate disasters to our Ulsan operation based on findings from the Ulsan Research Institute (URI)*, a policy research organization located in Ulsan. Based on the findings, we have prepared countermeasures to prevent flooding damage caused by heavy rainfall and property damage caused by a rise in sea levels—the two greatest risks that threaten the Ulsan operation.

SK chemicals' facilities meet the necessary building structure standards to withstand 34 m/s wind storms that may bring about damages caused by storms and flooding, such as from heavy rainfall, snowfall, and strong winds. In preparation for potential inundation due to rising sea levels and stronger typhoons, we are proactively monitoring the conditions of adjacent drainage ditches. In addition, if damage from a typhoon or heavy rainfall is expected, we immediately stop outside work to prevent any loss of life. In response to not only the damage caused by physical devastation but also damage to the sale of products, SK chemicals changed the means of product transportation, from truck loads to containerized delivery, and built an automated warehouse to improve the efficiency of storage and delivery management.

* Source: Research on Climate Impact Reduction Measures through Risk Assessment, Ulsan Research Institute, Apr. 2021

4

Climate Strategy & Financial Impacts

The climate change risks and opportunity factors that SK chemicals has identified and evaluated may vary in the degree of impact on the organization and businesses depending on the climate change scenario that will unfold in the future. In particular, the financial impact of these factors will be a significant variable in the business planning for SK chemicals, which analyzed the financial impact of climate change response using the IEA's STEPS* and SDS**.

We also forecast changes in sales and profits in SK chemicals' key business areas according to future changes in carbon pricing systems and policies. SK chemicals will continue to anticipate and prepare for a wide range of variables in our sustained efforts to reach our goal of achieving Net Zero emissions. In this way, we also seek to refine our climate change strategy and minimize uncertainties in the business environment.

* STEPS: Stated Policies Scenario
** SDS: Sustainable Development Scenario

4.1 SK CHEMICALS' STRATEGIC DIRECTION FOR CLIMATE-RELATED ISSUE RESPONSE

SK chemicals sees both risks and opportunities in responding to climate change, which drives up market demand for green materials and recycled plastics as much as it causes stricter regulations on greenhouse gas emissions and plastic waste generated from business activities. Based on our materiality assessment results, SK chemicals has drawn up strategic direction to seize opportunities while minimizing risks amid a mixed market environment of risks and opportunities.

After grouping the five most significant factors by Net Zero strategies for our business sites and value chain, each group was divided into short-, mid-, and long-term strategies in consideration of the scope of the areas requiring Net Zero initiatives and the required technology level.

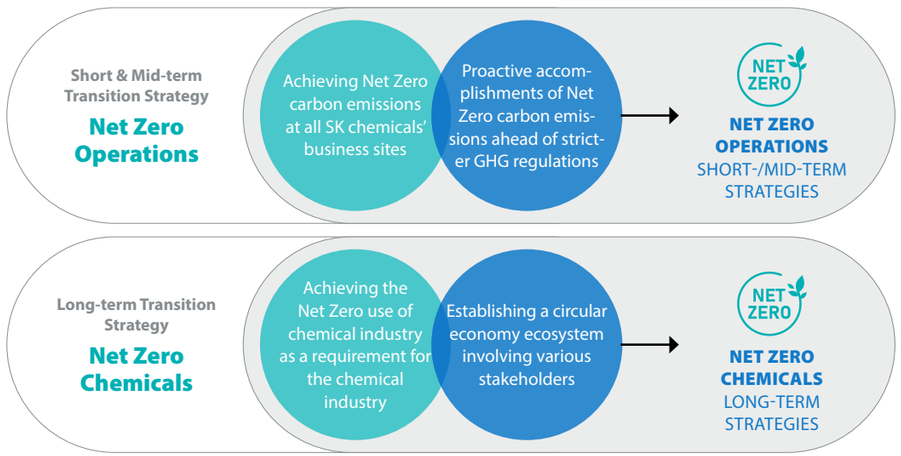
Developing SK chemicals' Strategic Direction for Climate Change Response

Key Risk and Opportunity Factors Concluded

Risk	1	Reduced export product revenue due to the introduction of a carbon pricing system
	2	Growing demand for R&D investments and capital expenditures for production facilities for recycling products
	4	Demand for investment in greenhouse gas reduction facilities and energy efficiency facilities
Opportunity	A	Ensuring price competitiveness of products by achieving Net Zero carbon emissions and thereby minimizing the impact of the carbon pricing system
	C	Transitioning to a clean energy ecosystem to reduce greenhouse gas emissions
	E	Developing eco-friendly materials (recycling, bio) to meet market demand
	F	Promoting plastics recycling and PCR manufacturing as part of a circular economy initiative

Risk and Opportunity Factors Grouping and Strategic Approach

Setting Strategic Pathways



4.1.1 SK CHEMICALS' STRATEGIES FOR CLIMATE CHANGE RESPONSE

SK chemicals' climate change response strategies set the direction for effectively responding to the rising risks and opportunities that will be presented by climate change.

We used the absolute contraction approach (ACA), which is based on the Science-Based Targets initiative (SBTi), and established a Net Zero Roadmap in line with the goal of keeping the rise of the average global temperature below 1.5°C.

Our short- and medium-term strategies aim at expanding the use of green and renewable energy sources to reduce the Scope 1 and Scope 2 emissions generated at our business sites under the goal of achieving Net Zero Operations initiatives.

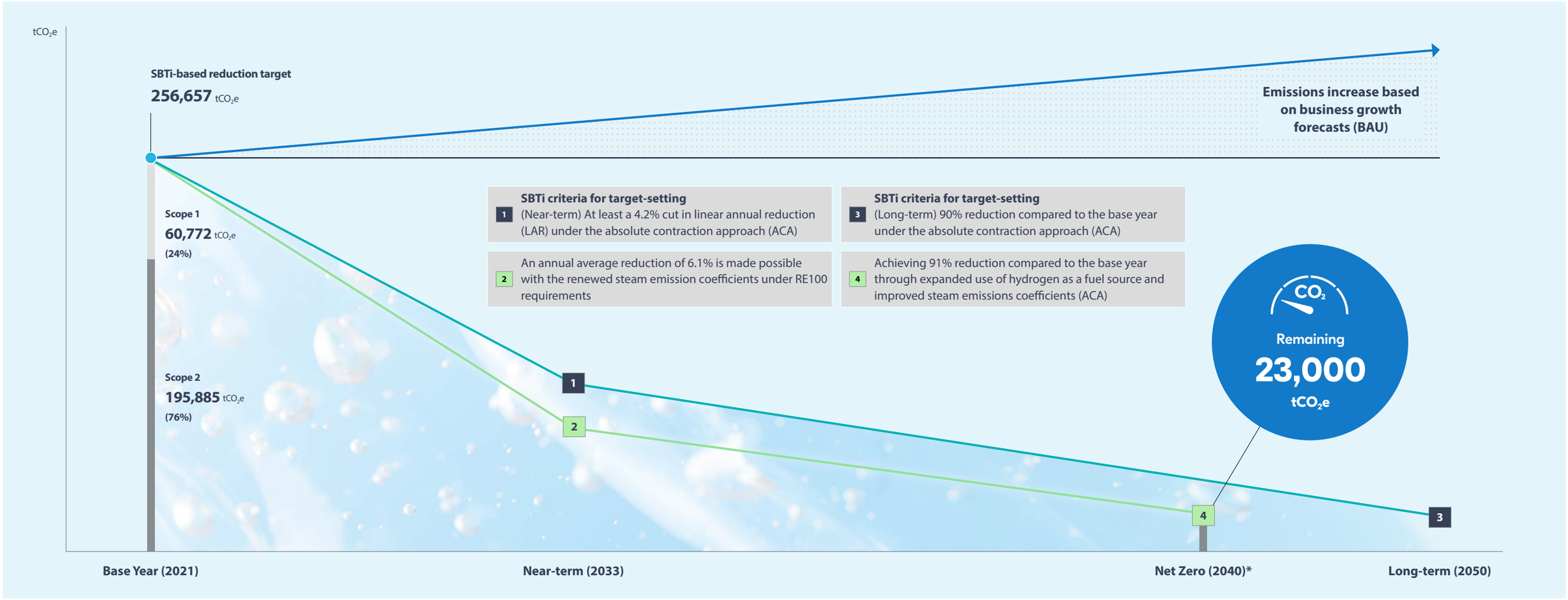
The long-term response strategy goes beyond Net Zero Operations to reach Net Zero Chemicals. As a first mover leading the eco-friendly circular economy ecosystem, we will realize a bottle-to-bottle circular economy through the chemical recycling business and strengthen our ESG management system by promoting the production/sale of CR-PET (chemically recycled PET) and CR-copolyester.

To realize our Net Zero Operations initiative, SK chemicals has singled out particular objects to achieve a 20% PET waste recycling rate for domestic collection by 2030. At the same time, we will continue to cooperate with local communities and stakeholders to build a circular economy ecosystem.

4.2 NET ZERO OPERATIONS_DIRECTION

SK chemicals established a goal of Net Zero Scope 1 and 2 emissions by 2040 in accordance with the criteria of the Science-Based Targets initiative (SBTi) to participate in the implementation of greenhouse gas reductions, a global climate change response challenge. We plan to join and acquire approval from the SBTi in 2023.

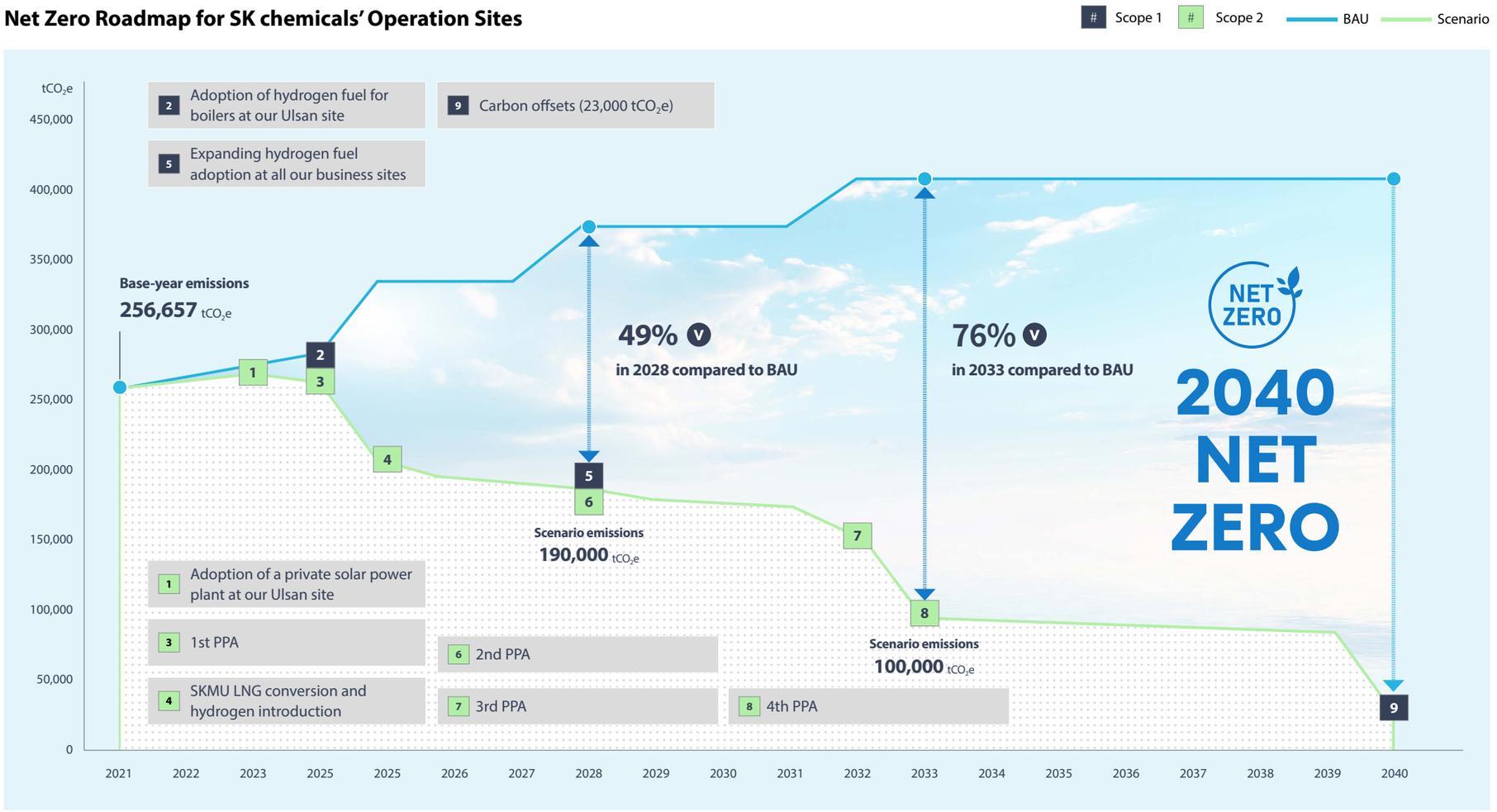
Net Zero Roadmap at SK chemicals' Business Sites



* The remaining emissions can be zeroized by carbon offsetting.

4.2.1 NET ZERO OPERATIONS_SCOPE 1&2

Net Zero Roadmap for SK chemicals' Operation Sites



NET ZERO Roadmap for SK chemicals' Operation Sites

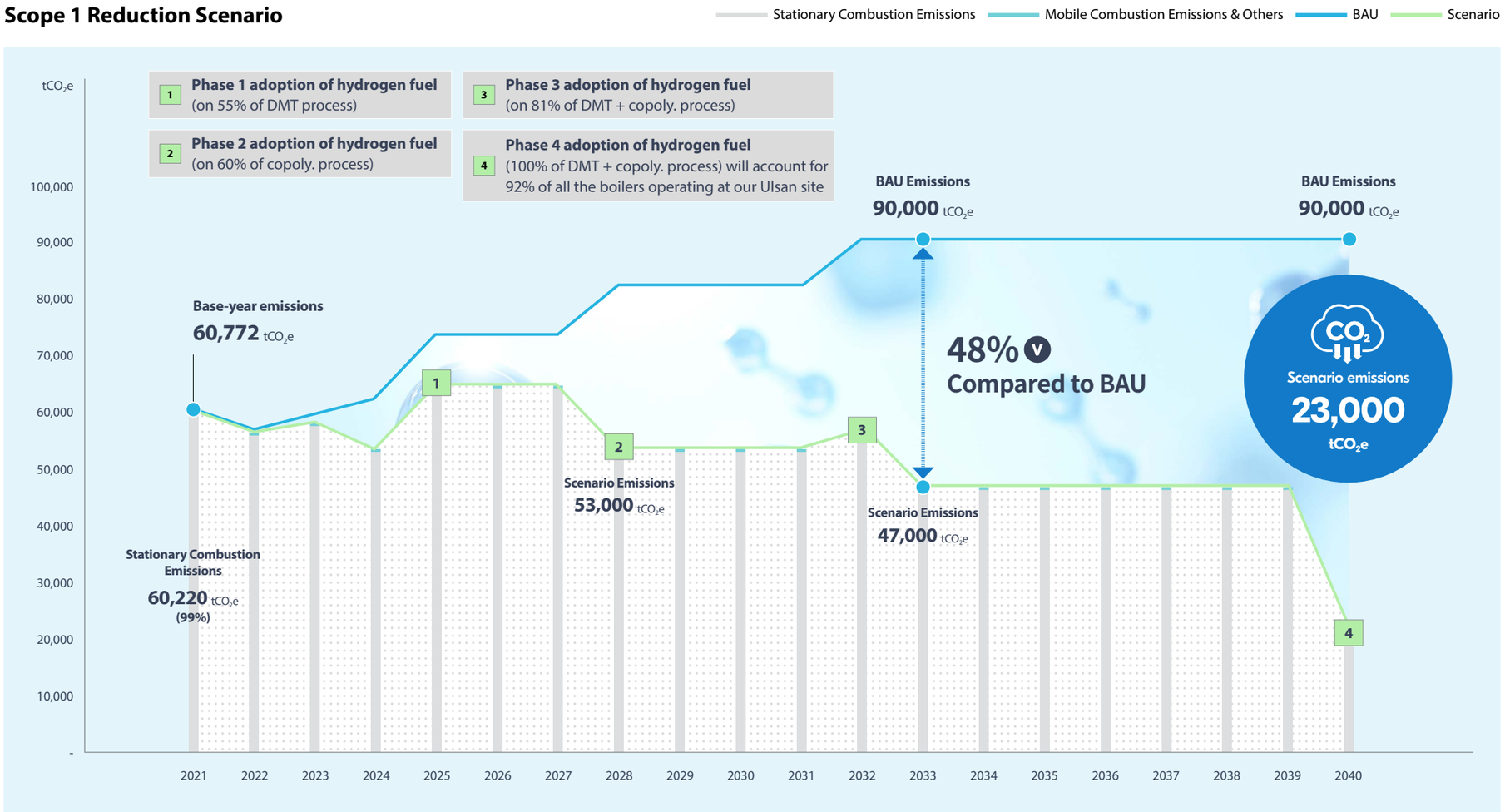
The key strategy for cutting our Scope 1 emissions is transitioning to hydrogen as the fuel source for the boilers at our Ulsan site. SK chemicals plans to introduce hydrogen fuel in 2024 and will then gradually expand the percentage of hydrogen fuel to replace 92% (in calories) of stationary combustion emissions by 2040. As a result, the GHG emissions reduction effect from our transition to hydrogen in 2024 is estimated at 76% of BAU.

In order to achieve Net Zero Scope 2 emissions, we will expand the use of renewable energy by installing a private power station and introducing PPA contracts at our Ulsan site. In addition, SK multi utility, a supplier of steam to SK chemicals' operations, plans to replace the current coal-fueled steam production system with green energy sources like LNG and hydrogen. The expected reduction from the expanded use of renewable energy sources is estimated at 72,000 tCO_2e in 2040 compared to BAU. Furthermore, the improved steam emission coefficient is expected to lower the GHG generated from steam use to approximately 800 tCO_2e from the 130,000 tCO_2e emissions in 2021, the base year.

For the remaining 23,000 tCO_2e emissions that will still need to be dealt with despite SK chemicals' reduction efforts, we will achieve the 2040 Net Zero initiative by utilizing external offset projects or external carbon credits.

4.2.2 NET ZERO OPERATIONS_SCOPE 1

Scope 1 Reduction Scenario

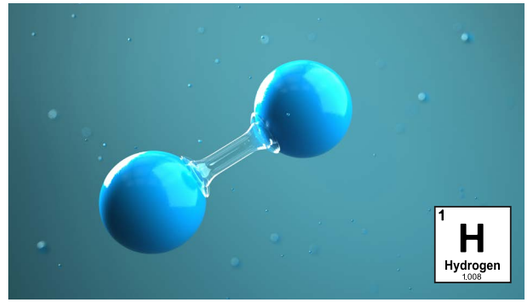


Scope 1 Reduction Scenario : Adopting Hydrogen Fuels

Scope 1 emissions account for 24% (60,772 tCO_2e) of SK chemicals' total Scope 1+2 emissions. As 99% (60,220 tCO_2e) of our Scope 1 emissions come from stationary combustion, SK chemicals has determined fuel conversion for stationary combustion as a key strategy for reducing our Scope 1 emissions and devised a fuel conversion plan for boiler facilities at our Ulsan site, which claims the bulk of our stationary combustion emissions.

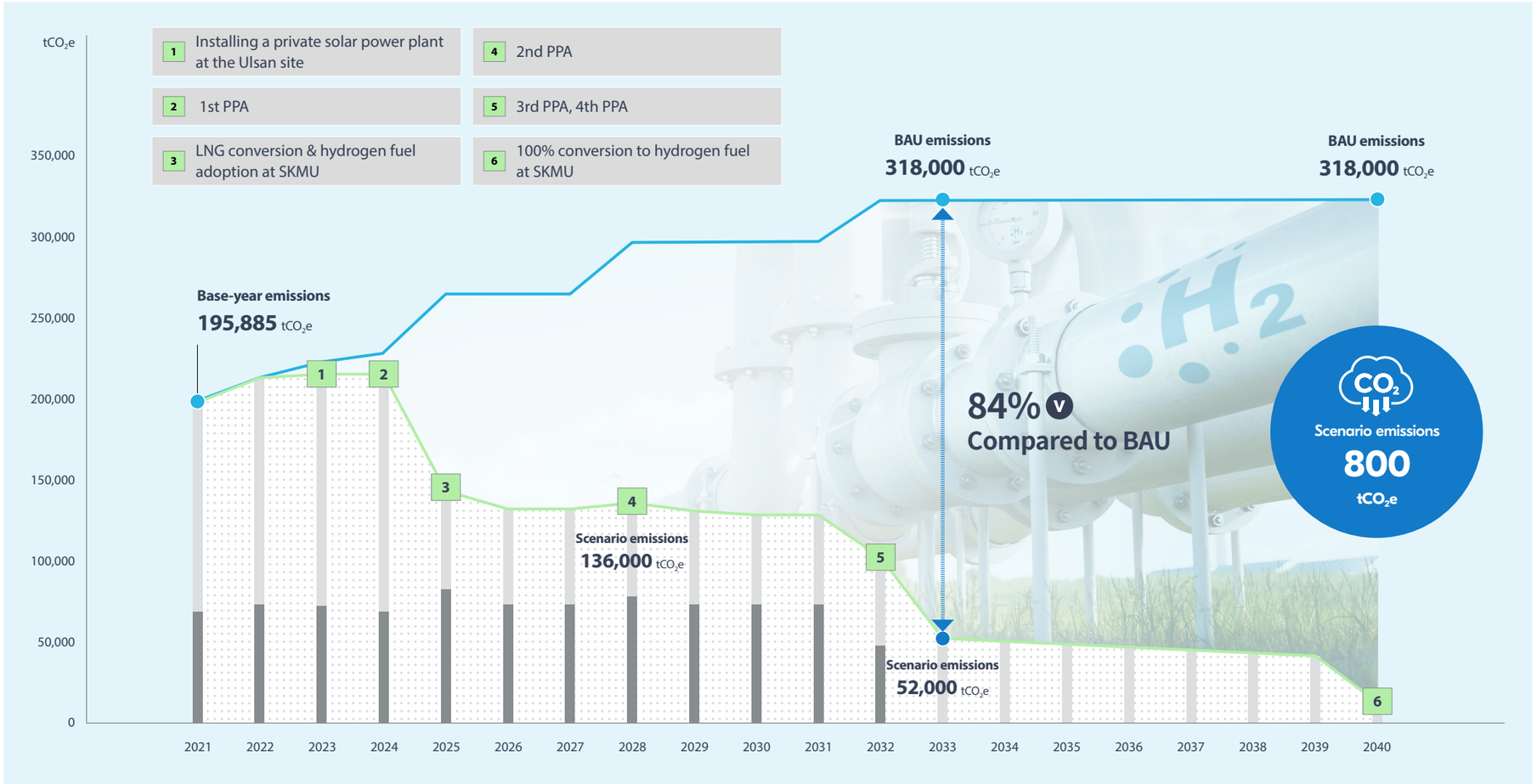
Under this boiler fuel conversion plan, hydrogen fuel will be introduced sequentially from 2024 onwards so as to power 92% of all our boiler facilities with hydrogen by 2040.

SK chemicals will closely analyze the domestic and foreign hydrogen market and related policy trends to achieve the goal of gradually expanding the use of hydrogen fuel and furthering the feasibility of this roadmap.



4.2.3 NET ZERO OPERATIONS_SCOPE 2 (ELECTRICITY & STEAM)

Scope 2 Reduction Scenario

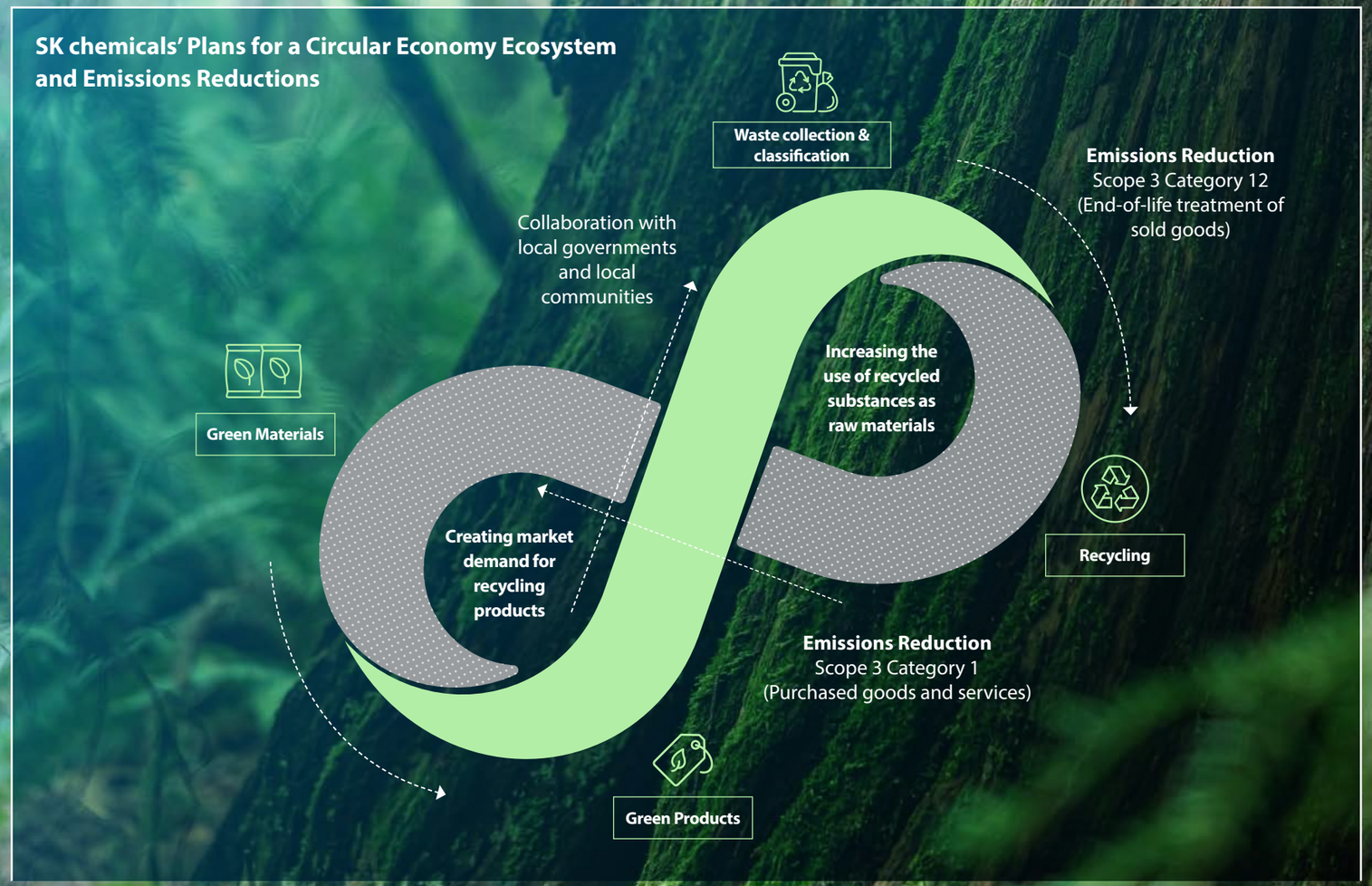


Scope 2 Reduction Scenario : Expanding the Use of Renewable Energy and Steam made from Green Energy Sources

Scope 2 emissions account for as much as 76% (195,885 tCO_2e) of Scope 1+2 total emissions by SK chemicals. Of this, 129,560 tCO_2e, or 66% of the Scope 2 emissions, come from our steam use, and the remaining 35% (66,325 tCO_2e) is derived from power use. In order to cut our emissions from steam use, SK chemicals is collaborating with SK multi utility, an energy subsidiary that supplies steam to SK chemicals, to convert the fuel used in steam production from conventional coal to low-carbon LNG and hydrogen.

As with our power use, we will reduce emissions by expanding the use of renewable energy through private powerplant and power purchase agreements (PPAs). Specifically, our Ulsan site will actively expand the use of renewable energy through PPAs in accordance with the government's plan to create a large-scale offshore wind farm.

4.3 NET ZERO CHEMICALS



Roadmap to Achieve Net Zero Chemicals

SK chemicals' ultimate goal of achieving Net Zero lies in achieving Net Zero emissions of greenhouse gases, including Scope 3 emissions, in the entire life cycle of our products.

Therefore, a circular economy ecosystem is integral to achieving Net Zero emissions, including Scope 3 emissions.

In the conventional linear economy, production activities require continuous excavation and extraction of natural resources, which inevitably leads to a significant environmental impact, such as resource depletion, water pollution, and greenhouse gas emissions.

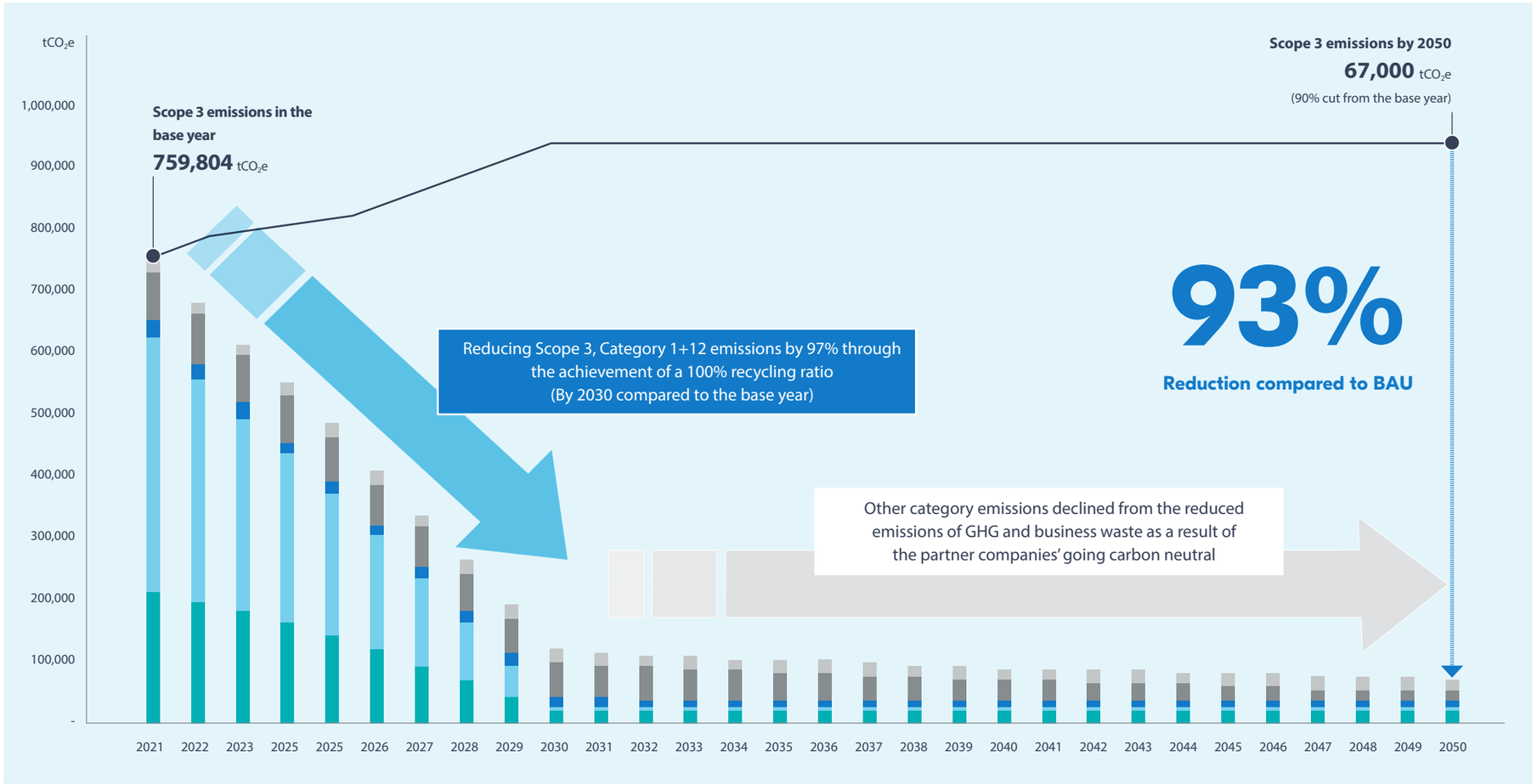
On contrary, in a circular economy the repetitive reuse of resources in production activities maximizes the efficiency of resource use to complete a sustainable economic system that minimizes the negative environmental impacts and the amount of waste ordinarily generated by the linear economy.

As it promotes the utilization of reusable raw materials, the proliferation of a circular economy system will also reduce greenhouse gas emissions from SK chemicals' value chain. In other words, conversion to green materials can reduce greenhouse gas emissions (Scope 3, Category 1) from the production of raw materials, and an increased recycling rate of end-of-life (EOL) products can significantly reduce greenhouse gas emissions (Scope 3, Category 12) from the disposal of EOL products.

SK chemicals is closely communicating with various stakeholders, including partner companies, consumers, and local governments, in order to build a circular economy ecosystem. At the same time, we are actively carrying out activities such as expanding infrastructure.

4.3.1 NET ZERO CHEMICALS_ SCOPE 3

Scope 3 Reduction Roadmap through Further Growth in the Recycling Ratio

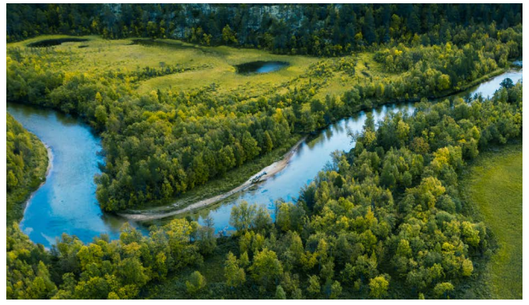


Scenario for Establishing a Circular Economy

As of 2021, SK chemicals' Scope 3 emissions accounted for 75% of its total greenhouse gas emissions. We classified the key categories that account for 92% (approximately 760,000 tCO_2e) of these kinds of emissions with the aim of cutting the emissions by 91% of the base-year emissions by 2050 through an absolute contraction approach, with the ultimate goal being to achieve Net Zero.

In particular, Category 1 emissions (purchased goods and services) and Category 12 emissions (end-of-life treatment of sold products), which collectively account for about 80% of our Scope 3 emissions, are forecast to go down as much as 97% (approximately 610,000 tCO_2e) by as early as 2030.

With the processing of sold products (category 10) and waste generated in operations (category 5), which together claim a large percentage of our emissions, we will achieve our emission reduction targets through greenhouse gas reduction activities alongside our partner companies as well as responsible management of the waste generated in operations in line with the government's carbon neutrality goals.



4.4 A SCENARIO-BASED ANALYSIS OF THE FINANCIAL IMPACTS OF CLIMATE-RELATED ISSUES

Key Processes and Factors for Financial Impact Analysis

Financial Impact Analysis Process	Analysis Scope	Scenario Determination	Financial Metrics Selection
Key Factors & Content	**Climate-Related Opportunity Costs** Analysis of the cost benefit of energy and carbon costs that can be reduced when timely responding to climate-related issues	**BAU** A scenario whereby energy use and carbon emissions remain unchanged at 2021 levels **Achieving Net Zero** A scenario of achieving Net Zero and realizing successful energy transition and carbon reduction by 2040	- Transition costs to achieve Net Zero - Analysis of the transition costs required to achieve Net Zero and the costs saved by energy conversion and carbon reduction efforts
	Climate-Related Risks An analysis of the financial risks posed by new regulations induced by climate change	**STEPS** A conservative scenario that assumes policy and market changes are as expected or according to schedule **SDS** A scenario that assumes a transition to a sustainable society	- Changes in pre-tax profit under a carbon tax system - Analysis of the decline in pre-tax profit in our main businesses—copolyester and chemical recycling—under a carbon tax system
Significance of Analysis by Sector	**"Diagnosing current levels of responding to climate change and forecasting future impacts"**	**"Predicting future market changes through an understanding of upcoming future markets and policies"**	**"Establishing the necessary strategies to minimize the financial impacts of climate change"**

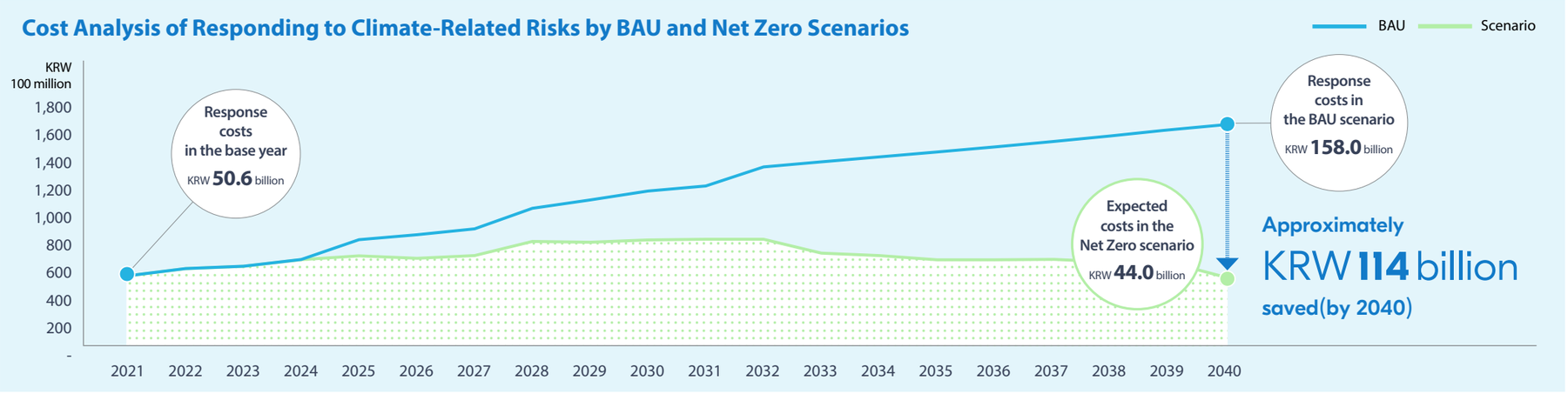
Climate-related scenarios provide the information required for developing the relevant countermeasures to potential challenges that society may face in the future regarding markets, policies, and energy prices. SK chemicals has employed a climate scenario-based analysis to determine the business and financial impacts of climate-related issues on our operations.

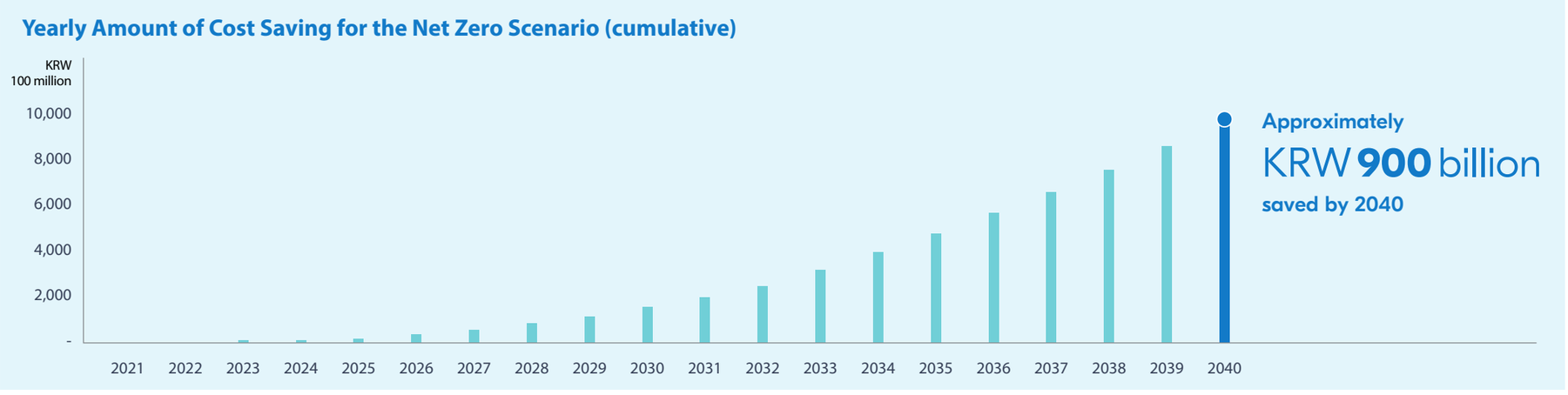
Since the financial impacts caused by climate-related issues can be both negative and positive for SK chemicals, we took into account both climate-related risks and opportunities for the financial impact analysis.

Different scenarios were applied to each financial impact analysis. To assess the opportunity cost related to climate change issues, we used a BAU scenario and a 2040 Net Zero scenario, with the analysis of climate-related risks relying on two scenarios published by the International Energy Agency (IEA): SDS and STEPS.

Based on the selected scenario for the opportunity cost analysis, we used the energy and carbon costs required to achieve Net Zero as our financial metrics. With respect to the financial metrics for assessing climate-related risks, we used the pre-tax profits under the newly introduced carbon tax system in our key business areas.

4.4.1 COST ANALYSIS OF CLIMATE CHANGE RESPONSES





* The costs of responding to climate-related issues were calculated by using the forecast data when using each fuel source and power grid/PPA and carbon price, as well as SK chemicals' fuel usage and carbon emissions data by 2040 as calculated for the Net Zero Roadmap.

As massive amounts of additional investments are predicted to be needed in order to meet Net Zero goals, we analyzed the impact of investment costs on our financial position. We began by assuming two scenarios: the achievement of Net Zero by establishing a green circular economy ecosystem, and the BAU scenario, which assumes we continue to operate at current levels. The analysis results of SK chemicals' energy and carbon costs as of 2040 found that the Net Zero scenario could save approximately KRW 100 billion compared to the BAU scenario and that the Net Zero scenario will have a positive impact on SK chemicals' financial position. In addition, the cumulative amount of annual cost savings is expected to reach approximately KRW 900 billion by 2040.

Achieving Net Zero at SK chemicals' business premises inevitably entails various transition costs. However, the global climate change response trend is expected to raise the cost of purchasing conventional fossil-fueled energy and the carbon cost to be paid in proportion to carbon emissions. Furthermore, inadequate investments in the conversion costs will lead to a significant amount of subsequent energy and carbon costs.

In the end, the additional costs for achieving Net Zero at our business sites will result in cost savings in the long run.

4.4.2 CLIMATE-RELATED SCENARIO ANALYSIS

Climate-Related Scenario Analysis

	About the Scenario	Key Business Impacts	Key Financial Impacts[1]
STATED POLICIES SCENARIO (STEPS)[2]	- A scenario that reflects policies that have been applied or officially established to curb climate change as of 2021 - Although relatively conservative, most likely to be feasible	**Production Unit Price** - Frequent droughts with increased water use, likely causing additional costs - Rising temperatures undermining productivity of production processes **Supply Chain and Transportation** - Bad weather impeding shipments/deliveries on the transportation value chain	- Repairing existing plants with increased CAPEX during the construction or relocation of new sites - Increase in OPEX and cost of raw materials to adapt to existing sites - Decrease in sales volumes due to reduced production volume and efficiency as well as supply chain disruption
SUSTAINABLE DEVELOPMENT SCENARIO (SDS)[3]	- A scenario that assumes the achievements of the targets for curbing an average global temperature rise within 1.5°C as recommended by the 2015 Paris Agreement and the energy targets recommended by the SDGs. - A progressive scenario that assumes all current Net Zero pledges by countries worldwide are achieved in full and widespread efforts, such as sectoral technology development, introduction, and investments, are made	**Fuel/Emission Costs** - Rising electricity and fuel costs pushing up production costs **Feedstocks/Supply Chains** - Reduced oil demand and rising natural gas prices **Sales Volume** - Curbed demand for high carbon-emission products with high carbon taxes - Increased demand for low-carbon energy products - Increased demand for plastic-recycled products	- Increase in CAPEX for investing in carbon efficiency, building new plants or relocating existing plants - Increase in OPEX due to rising fuel and raw material costs - Increase in sales of low-carbon products - Decrease in sales of high-carbon products

1) Based on the information provided by the IEA World Energy Model (WEM)
2) Raising the greenhouse gas reduction targets in the global community and Korea's countermeasures, published by the Korea Institute for International Economic Policy (2020)
3) Analysis performed by EY Consulting Firm, who used STEPS and the IEA report on global carbon emissions

SK chemicals thoroughly examines its mid- and long-term business strategies by analyzing climate-related scenarios to effectively manage climate-related risks and opportunities that will affect our business.

Many of the climate-related scenarios predict that the petrochemical sector will be able to maintain its share of the market—perhaps expand as well—even when global demand for crude oil decreases. The universal application of plastics will make them even more valuable and important to various industries, including electric vehicles, over time. Nevertheless, stricter carbon emissions regulations and a possible change in consumer preferences are the remaining risk factors.

SK chemicals relied on climate-related scenarios to analyze the risks and opportunities in a complex market and highly regulatory, volatile environment. In particular, we are applying both conservative and progressive scenarios to establish a path forward in terms of our business strategies so that we can respond proactively. At the same time, we will continue to manage our business strategies so that they continually reflect the changing market environment.

4.4.3 CARBON COST EFFECTS ON OPERATING PROFIT

Key Assumptions

1

Analysis based on the operating profits of the Green Chemicals Business Unit

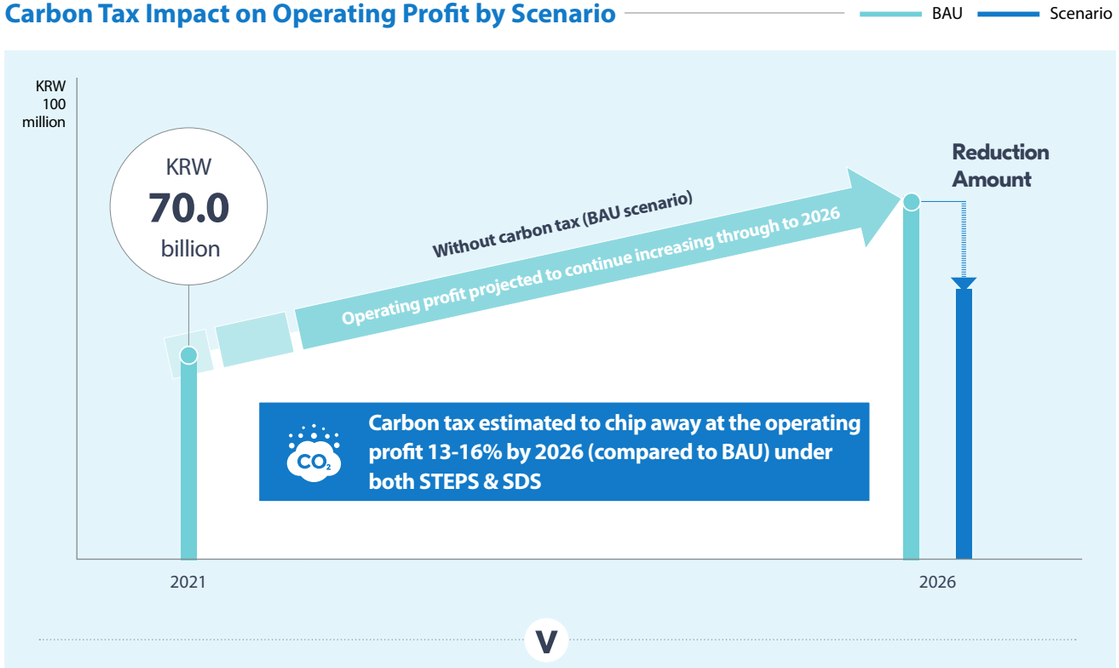
2

Export revenues after the scenario-based adjustment of border carbon tax rates and before deducting from BAU operating profit

- Average export ratio of the Green Chemicals Business revenue over the last three years
- STEPS-based carbon border tax rate[1]: 1.90%
- SDS-based carbon border tax rate[2]: 2.30%

1) Raising the greenhouse gas reduction targets in the global community and Korea's countermeasures, published by the Korea Institute for International Economic Policy (2020)
2) Analysis performed by EY Consulting Firm, who used STEPS and the IEA report on global carbon emissions

Carbon Tax Impact on Operating Profit by Scenario



Transition to Net Zero operation sites to minimize any adverse financial impacts

Transitioning into an eco-friendly chemical business will not only bring additional revenue growth for SK chemicals but will also minimize the negative financial impact of policy and regulatory risks, such as a carbon tax, on our operating profit.

We analyzed the financial impact of a carbon tax utilizing both STEPS and SDS. The results showed that SK chemicals will likely suffer a 13 to 16% drop in operating profit in either of these scenarios.

In response, SK chemicals will strive to reduce greenhouse gas emissions from our operations by introducing hydrogen fuels and expanding renewable energy alternatives at all our operational sites, with the aim of achieving Net Zero at every business site by 2040 so as to minimize the negative financial impact of a carbon tax.

5

Metrics & Targets

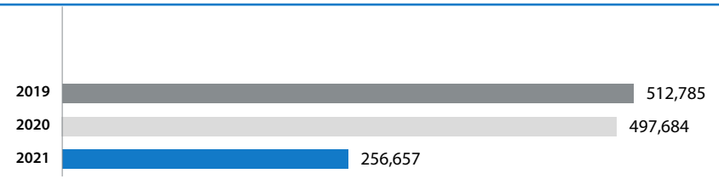
SK chemicals applies specific metrics to measure and control identified climate-related risk and opportunity factors as well as the strategies and countermeasures to respond to them. SK chemicals will index and meticulously manage measurable factors in response to climate-related issues, such as our transition to greenhouse gas reduction fuels, increased use of renewable energy, and accomplishments against the Net Zero target. Specifically, we will continue to disclose and communicate with our stakeholders on our Net Zero initiative and the implementation process for achieving our Net Zero goals.

The indicators and objectives established by SK chemicals are part of our efforts to share in our journey of responding to climate-related issues with all stakeholders. Moving forward, we will continue to work hard to lead the way in addressing climate-related issues.

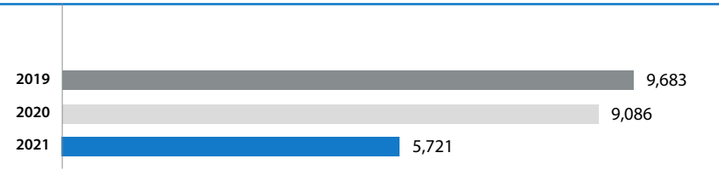
5.1 SK CHEMICALS' CLIMATE-RELATED ISSUE RESPONSE METRICS

GHG Emissions & Energy Use

Current Status of GHG Emissions		Unit	2019	2020	2021
Total Volume of GHG Emissions	Total	tCO_2e	512,785	497,684	256,657
	Scope 1		403,124	399,090	60,772
	Scope 2		109,661	98,594	195,885



Energy Use		Unit	2019	2020	2021
Use	Total Consumption	TJ	9,683	9,086	5,721



Net Zero Goals (Scope 1+2)

Goals	Unit	'22	'23	'24	'25	'26	'27	'28	'29	'30	'31	'32	'33	'34	'35	'36	'37	'38	'39	'40	Goals	Goals year
Hydrogen Fuel Adoption for Boilers*	%	0	0	38	38	38	38	60	60	60	60	60	80	80	80	80	80	80	80	100	100% achieved	2040
Replacement with Electric Vehicles	%	0	10	14	19	27	37	52	72	100	-	-	-	-	-	-	-	-	-	-	100% achieved	2030
RE100 Accomplishments	%	0	2	3	4	5	8	11	16	23	33	48	100	-	-	-	-	-	-	-	100% achieved	2033
Hydrogen Conversion at SKMU	%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	100	100% achieved	2040

* Hydrogen Fuel Adoption for Boilers represent the average rate of adopting hydrogen fuel to the three boilers in the copolyester and DMT processes at our Ulsan site (excluding the CHDM process)

Reducing Greenhouse Gas Emissions and Achieving Net Zero Goals

SK chemicals is committed to achieving Net Zero goals in full, including the emissions in our business value chain, by transitioning our portfolio to eco-friendly materials and products, as well as eliminating greenhouse gas emissions from our premises. To that end, we are taking a two-track approach for our Net Zero strategy by dividing it into a mid-term strategy for our business sites and a long-term strategy for achieving Net Zero throughout our entire value chain. We have also developed key performance indicators to assess our progress against targets for each strategy.

In order to achieve Net Zero at our premises, we plan to convert the fuel source for copolyester and DMT process boilers to 100% hydrogen by 2040 and to switch to electric vehicles to reduce emissions from mobile combustion. In addition, we will achieve Net Zero by that same date through the active introduction of renewable energy to achieve a 100% renewable energy conversion rate by 2034. On top of that, we will gradually reduce greenhouse gas emissions at all our sites by means such as adopting green fuels at SK multi utility, a subsidiary that supplies steam to SK chemicals' sites. SK chemicals' total Scope 1 and 2 greenhouse gas emissions in 2021 were 256,657 tCO_2e.

SK chemicals will set greenhouse gas target emissions and per-unit targets and energy usage targets for 2022 in accordance with the newly established SBTi target level and will actively continue our relentless efforts to fully eliminate emissions.

5.1 SK CHEMICALS' CLIMATE-RELATED ISSUE RESPONSE METRICS

Water Pollutant Discharge [1)]

		Unit	2019	2020	2021
Water Pollutant Discharge	Total BOD Emissions	ton	78.86	194.25	323.36
	Total COD Emissions	ton	72.20	113.21	194.62
	Total SS Emissions	ton	4.82	7.14	10.83
	Total Water Pollutant Emissions	ton	155.88	314.61	528.81
	Total Per-unit Water Pollutant Discharge	ton/KRW 100 million	0.014	0.026	0.025

Waste Discharge [1)]

		Unit	2019	2020	2021
Waste Discharge	Total amount of general waste generated	ton	25,050	25,870	27,192
	Total amount of designated waste generated	ton	9,459	10,054	12,075
	Total amount of waste generated (general+ designated)	ton	34,510	35,924	39,267
	Total amount of waste incinerated	ton	2,793	2,574	3,138
	Total amount of waste landfilled	ton	4,523	6,021	3,618
	Total amount of recycling	ton	26,914	27,060	32,365
	Total recycling rate [2)]	%	78	75	82
	Total Per-unit Waste Amount	ton/KRW 100 million	3.1	3.0	1.9

1) Operational scope: SK chemicals (Pangyo/Ulsan/Cheongju), SK multi utility (Ulsan), SK bioscience (Andong) included
2) Recycling rate certified by ZWTL Silver in 2022 (May 2021–April 2022)

5.1 SK CHEMICALS' CLIMATE-RELATED ISSUE RESPONSE METRICS

Net Zero Target (Scope 3)

Scope 3 Greenhouse Gas Emissions (GC Business Unit)

	Category	Emissions(tCO_2e)
1	Purchased goods and services	210,236
2	Capital goods	29,193
3	Fuel-and energy-related activities	20,559
4	Upstream transportation and distribution	4,141
5	Waste generated in operations	24,985
6	Business travel	243
7	Employee commuting	2,636
8	Upstream leased assets	NA
9	Downstream transportation and distribution	NA
10	Processing of sold products	82,867
11	Use of sold products	NA
12	End-of-life treatment of sold products	421,159
13	Downstream leased assets	NA
14	Franchises	NA
15	Investments	33,785
	Total	829,804

Net Zero Goals (Scope 3)

Goals	Unit	'22	'25	'30	'35	'40	'45	'50	Goals	Goals year
Percentage of Recycled Copolyester	%	20	50	100	100	100	100	100	100% achieved	2030
Recycling Targets	%	55	72	100	100	100	100	100	100% achieved	2030

Scope 3 Greenhouse Gas Emissions (2021)_tCO_2e

829,804

2050 Net Zero 100% achieved

100%

Scope 3 Output & Management Plan

SK chemicals will estimate and continue to manage our Scope 3 greenhouse gas emissions in order to reduce greenhouse gases not only at our premises but also throughout the entire value chain.

For estimating Scope 3 GHG emissions, SK chemicals selected overarching categories for consideration in the estimation and calculation methodology for each specific subcategory. Based on this approach, we collected the necessary activity data and emission coefficients. Using this collected data, we then calculated the emissions in accordance with the Scope 3 emissions estimation guidelines published by the GHG Protocol, with the estimations ultimately audited by a third-party verification agency on the limited scope of the main categories. The third-party verification not only increased the reliability of our data but also led to improvements in the templates and methodologies for collecting raw data, which laid the groundwork for data management for future emission measurements.

SK chemicals' main sources of Scope 3 greenhouse gases emissions fall into Categories 1 and 12. Knowing that a transition to a circular economy is an effective strategy to reduce both emissions, SK chemicals will continue to work tirelessly with brand owners, local governments, and global companies to develop the policies and markets necessary for a seamless transition to a circular economy.

SK chemicals will continue to manage emissions across the value chain based on calculated Scope 3 emissions to meet Net Zero target, including Scopes 1, 2 & 3, by 2050.

TCFD INDEX

TCFD Recommended Disclosures	Pages
Governance	
a) Describe the board's oversight of climate-related risks and opportunities	10-11
b) Describe management's role in assessing and managing climate-related risks and opportunities	10-11
Strategy	
a) Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term	14-16, 18
b) Describe the impact of climate-related risks and opportunities on the organization's business, strategy, and financial planning	26-29
c) Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2°C or lower scenario	19-25
Risk management	
a) Describe the organization's processes for identifying and assessing climate-related risks	10-11
b) Describe the organization's processes for managing climate-related risks	11
c) Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management	10-11
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	31, 33
b) Disclosure Scope 1, Scope 2, and, if appropriate, Scope 3 greenhouse gas (GHG) emissions, and the related risks	31, 33
c) Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	31-33


SK chemicals