

Responsible Chemical & Energy Leader

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- Our Approach to ESG
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ABOUT THIS REPORT

Overview

Hanwha TotalEnergies Petrochemical publishes the 2025 Sustainability Report to ensure transparent disclosure of its sustainability performance and initiatives across the environmental, social, and governance (ESG) domains. Now in its second edition, this report is designed to strengthen engagement with stakeholders by presenting detailed outcomes and future plans in nine priority areas of sustainability management. The content is structured around four core pillars—Governance, Strategy, Risk Management, and Metrics & Targets—to provide a clear and comprehensive view of the company’s approach and progress in each area.

Reporting Principles

This report has been prepared in accordance with the Global Reporting Initiative (GRI) Standards 2021, the globally recognized framework for sustainability reporting. In addition, it incorporates the recommendations of the Sustainability Accounting Standards Board (SASB) to disclose activities related to key industry-specific issues. All financial information included in the report is based on the Korean International Financial Reporting Standards (K-IFRS).

Reporting Boundary

The financial performance presented in this report is based on the consolidated financial statements, while non-financial performance is limited to the domestic operations of Hanwha TotalEnergies Petrochemical as a separate legal entity.

Reporting Period

This report covers Hanwha TotalEnergies Petrochemical's financial and non-financial performance from January 1 to December 31, 2024. For enhanced timeliness and relevance, certain performance indicators are extended to include results from the first quarter of 2025. In addition, quantitative data is reported for the past three years (2022–2024) to enable year-over-year trend analysis.

Reporting Cycle

Hanwha TotalEnergies Petrochemical publishes this report annually. Through annual publication, the company seeks to actively gather stakeholder feedback and incorporate it into its management activities. (The previous report was published in August 2024)

Report Reliability

Independent assurance has been conducted on the financial information disclosed in this report. The non-financial data has been verified by the British Standards Institution (BSI), an independent third-party organization, based on the four principles of inclusivity, materiality, responsiveness, and impact, thereby ensuring objectivity and credibility.

Publisher

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Interactive PDF

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CEO MESSAGE

Dear Valued Stakeholders, I would like to extend my sincere gratitude for your continued interest and support in Hanwha TotalEnergies Petrochemical’s journey toward sustainability.

The year 2024 was marked by heightened uncertainty across global markets, driven by a delayed economic recovery, fluctuations in oil and energy prices, and oversupply of petrochemical products.

This challenging external environment has persisted into 2025 and is expected to remain a key concern, further reinforcing the need for sustainable management.

In response, **Hanwha TotalEnergies Petrochemical** is prioritizing financial stability while preparing for long-term transformation, with a focus on strengthening a resilient and sustainable management framework. This approach will allow us to respond flexibly to change while steadily delivering on our mid- to long-term goals across the environmental, social, and governance (ESG) pillars.

We will begin by further strengthening our environmental management systems and continuing our transition toward eco-friendly practices in line with global standards.

Our long-term strategic priorities include reducing carbon emissions, minimizing environmental impact, and expanding circular economy initiatives.

To that end, we are carrying out a range of improvements to maximize energy efficiency across all stages of our manufacturing processes, with plans to scale these efforts company-wide. At the same time, we are continuously increasing the use of eco-friendly process technologies and renewable energy sources.

Through these actions, we aim not only to contribute to a carbon-neutral society but also to strengthen our ability to respond effectively to the escalating climate crisis.

We are also committed to creating sustainable value in partnership with all our stakeholders—including customers, shareholders, employees, business partners, and local communities—through relationships built on trust.

Safety remains our top priority and is never subject to compromise. In response to strengthening safety regulations such as the Serious Accidents Punishment Act, we are focused on deeply embedding a culture of safety across the organization—one that is voluntarily practiced by all employees and partners.

At the same time, we are advancing responsible management practices that promote mutual growth with our employees and partners, and foster shared prosperity with local communities. Through these ongoing efforts, we are steadily enhancing accountability and transparency across our entire supply chain.

Lastly, we aim to further expand our sustainability and risk management capabilities across the organization, grounded in a transparent and accountable governance structure.

We remain fully committed to complying with all applicable laws and international standards, preventing risks in advance, and conducting our business with integrity.

By holding ourselves to standards that go beyond legal and ethical requirements, we seek to deepen trust with our stakeholders and work together to build a more sustainable future.

We sincerely ask for your continued trust and support as **Hanwha TotalEnergies Petrochemical** advances on its journey toward a sustainable future. Thank you.

September 2025
Chief Executive Officer

Laurentius Na (Sang Seop Na)

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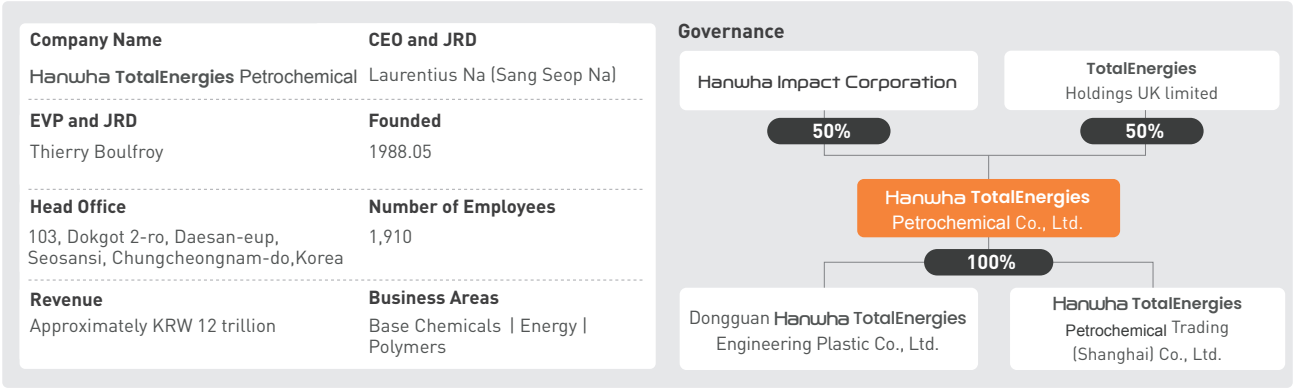
COMPANY OVERVIEW

Company Profile

Established in 1988, **Hanwha TotalEnergies Petrochemical** is a comprehensive energy and chemical company that produces base chemicals, energy, and polymers using condensate, naphtha, and LPG as primary feedstocks. High-quality products are supplied as essential raw materials across diverse industries, including electronics, automotive, aviation, and textiles, with a focus on stable and reliable delivery to support market leadership. Supported by industry-leading technology and competitiveness, the company aims to shape a sustainable future while creating new value for people, the environment, business partners, and customers.

Global Operations

To ensure the production and distribution of high-quality products, **Hanwha TotalEnergies Petrochemical** continues to expand its global footprint through a broad network of domestic and international operations. Production facilities are located in Daesan, Korea, and Dongguan, China. Sales and support offices are established across five key markets: Korea, China, Japan, Singapore, and Europe. The Daesan Plant is the first in Korea’s petrochemical industry to operate all three of the following core facilities: NCC (Naphtha Cracking Center), CFU (Condensate Fractionation Unit), and BTX (Aromatics) production facilities. This fully integrated production system—from feedstock processing to final product output—enables high operational efficiency and supports a diversified portfolio spanning polymers, base chemicals, and energy. The Dongguan Plant, a composite resin facility established in 2009 in southern China, was designed to provide fast and reliable service to customers in the region. Products manufactured at this site are distributed in close collaboration with sales offices in Shanghai, Beijing, Shenzhen, Tokyo, and Singapore as part of the company’s efforts to expand its global market share.



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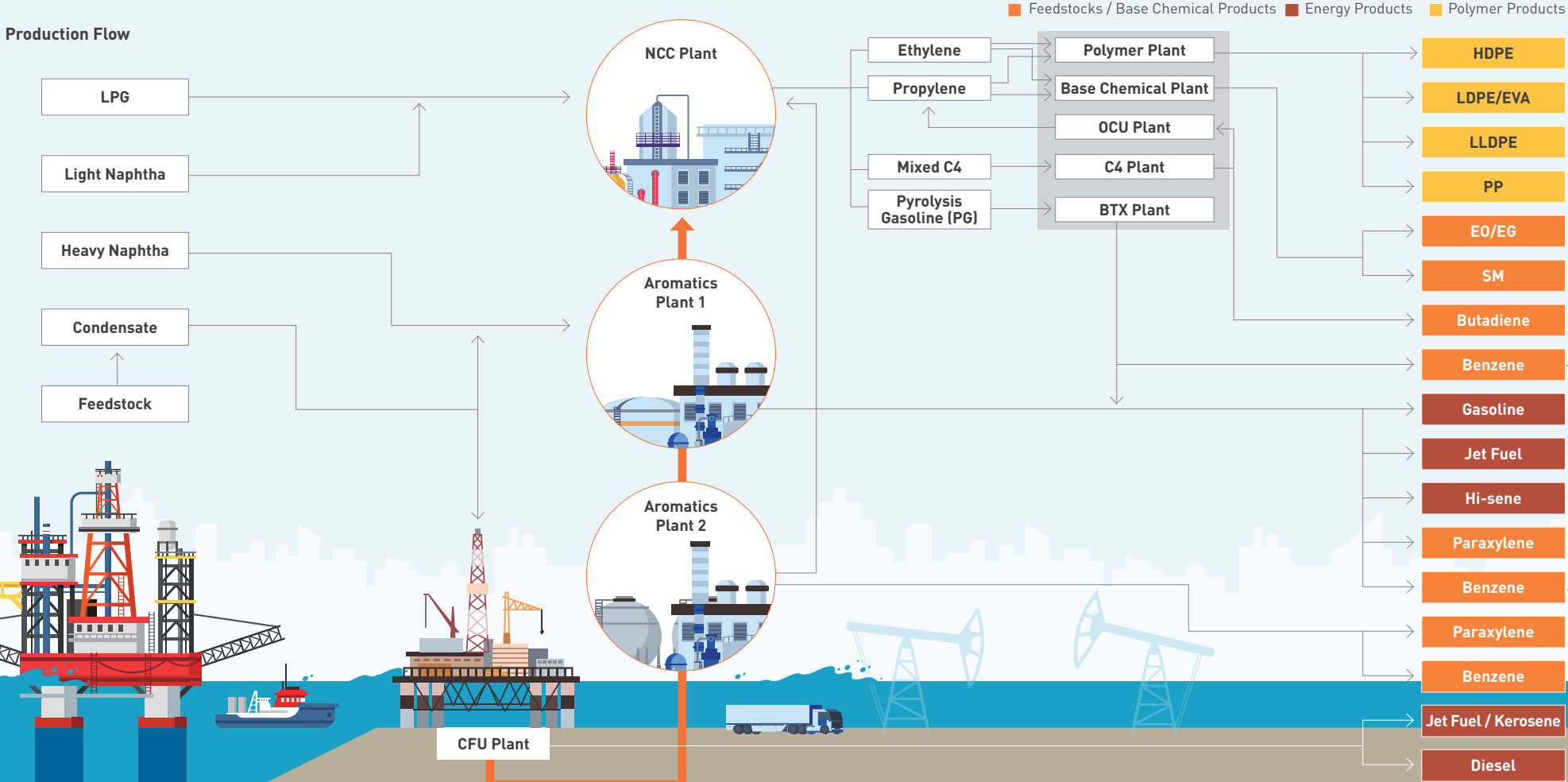
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Hanwha TotalEnergies Petrochemical is a comprehensive energy and chemical company headquartered in Korea, with two subsidiaries in China: a trading subsidiary in Shanghai and a manufacturing subsidiary in Dongguan. The company supplies high-quality raw materials essential to a wide range of industries, including electronics, automotive, aviation, and textiles, through a stable and reliable supply system. Its operations are structured into three core segments. The Base Chemical segment produces ethylene, propylene, and styrene monomer using condensate and naphtha as primary feedstocks. The Energy segment manufactures refined petroleum products such as jet fuel, diesel, and gasoline. The Polymers segment offers a broad portfolio of resins, including LDPE, EVA, HDPE, and PP, to meet the evolving needs of downstream industries.



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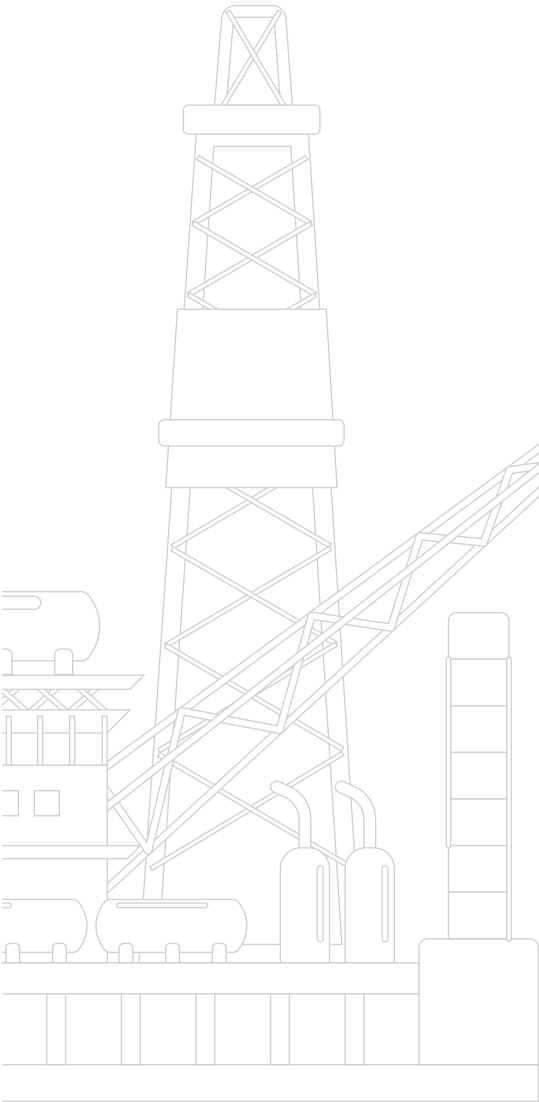
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BUSINESS OVERVIEW

Hanwha TotalEnergies Petrochemical produces key base chemicals essential to the petrochemical industry—including ethylene, propylene, paraxylene (PX), and styrene monomer (SM)—and supplies them to downstream customers. PX and SM, the company’s flagship base chemical products, are produced at Korea’s largest annual capacities of 2 million tons and 1.04 million tons, respectively, continuously strengthening its competitiveness in scale.



SM Styrene Monomer	SM is a liquid product with a distinctive aromatic odor, produced through the reaction of ethylbenzene, which is synthesized from benzene and ethylene. It is primarily used as a raw material for polystyrene (PS) and acrylonitrile butadiene styrene (ABS), which are plastics commonly found in home appliances such as televisions and refrigerators. SM is also used in the production of synthetic rubber (SBR) through polymerization with butadiene.
EO/EG Ethylene Oxide / Ethylene Glycol	EO is a colorless gas at room temperature with high reactivity, making it suitable for use as a sterilizing and fumigating agent in medical equipment and packaging containers. It is also used in the production of synthetic detergents and other chemical compounds.
BD Butadiene	BD is a gaseous material with a characteristic odor at room temperature. It is extracted from C4 fractions, a by-product of naphtha cracking. BD is primarily used as a raw material in the production of synthetic rubbers such as styrene-butadiene rubber (SBR) and butadiene rubber (BR), which are widely used in tires and other applications.
PX Paraxylene	PX is a clear, transparent liquid produced by the distillation or reforming of xylenes at the aromatics plant. It is used as a feedstock for purified terephthalic acid (PTA), an intermediate material for the production of synthetic fibers and PET bottles.
BZ Benzene	BZ is a liquid aromatic compound with a distinctive odor, produced at the aromatics plant alongside toluene and xylene. It is used as a raw material in the production of styrene monomer (SM).
Circular Base Chemicals	Hanwha TotalEnergies Petrochemical manufactures sustainable products using pyrolysis oil derived from plastic waste that is difficult to recycle mechanically. These products have received ISCC PLUS certification. Applicable products include Circular SM, Circular BD, Circular BZ, and others.
Bio-circular Base Chemicals	Hanwha TotalEnergies Petrochemical produces sustainable products using renewable plant-based feedstocks such as used cooking oil. These products are certified under ISCC PLUS and can be supplied with a certificate upon customer request. Applicable products include Bio-circular SM, Bio-circular BD, Bio-circular BZ, and others.

BASE CHEMICAL

Amid rising oil prices and declining interest in fossil fuel production, there is growing demand for a stable supply of eco-friendly products and alternative feedstocks. The Base Chemicals business is responding to these shifts by expanding the supply of sustainable products through customer-tailored R&D initiatives.

In addition, the company operates internal systems that manage plant operations, raw material traceability, and logistics, ensuring efficient production and stable delivery. Moving forward, **Hanwha TotalEnergies Petrochemical** will continue to drive business growth by proactively addressing market risks and securing a stable supply of eco-friendly products.

Chemical stocks

Paints

Adhesives

Electronic Materials

Pesticide Solvents

Inks

BUSINESS OVERVIEW

Hanwha TotalEnergies Petrochemical produces a broad range of high-quality energy products—including gasoline, diesel, jet fuel, by-product fuel oil, LPG, and solvents—based on its in-house Condensate Fractionation Unit (CFU) and two aromatics plants. In addition to ensuring a stable domestic supply, the company is accelerating its expansion into both domestic and international energy markets by strengthening its portfolio of high value-added products.

Gasoline	High-quality gasoline is produced and sold using intermediate oil fractions generated from petrochemical processes. Following the completion of the gasoline production facility in 2010, exports of premium gasoline to Japan began, and since 2012, domestic supply has expanded through Korea National Oil Corporation to discount gas stations. This product meets environmental standards while maximizing fuel efficiency and engine output, ultimately enhancing driving performance.
Jet Oil	Hanwha TotalEnergies Petrochemical has been producing and supplying jet fuel for aircraft turbine engines since 2010. In particular, the product has earned recognition for its exceptional quality, having passed the rigorous quality inspections of BP, the world’s largest jet fuel trader.
Diesel	Hanwha TotalEnergies Petrochemical produces ultra-low sulfur diesel (ULSD, 10 ppm) for vehicles using advanced desulfurization facilities, meeting the world’s highest quality standards. The product maximizes fuel efficiency and engine performance while significantly reducing emissions such as nitrogen oxides, making it an environmentally responsible option. It is mainly exported to Australia and Japan. In 2024, a biodiesel blending facility was completed to enable stable domestic supply that complies with Korea’s diesel quality standards for vehicles.
LPG	Hanwha TotalEnergies Petrochemical has been importing and supplying LPG since 2010 through its own dedicated storage tanks. The product delivers excellent combustion performance with easy ignition and flame control, and is enhanced with an odorant injection to improve safety in use. LPG is widely used in applications ranging from automotive fuel to propane and butane gas burners.
Solvent	Hanwha TotalEnergies Petrochemical produces a wide range of hydrocarbon solvent products that meet the specifications of major domestic and international customers. These solvents are used across diverse applications, including paints, adhesives, pesticides, wood coatings, oil extraction, rolling and cutting oils, as well as in the petrochemical and pharmaceutical industries. The company has also commercialized high-purity heptane and eco-friendly de-aromatized solvents, which are now available in the market.
Hi-sene	By-product fuel oils generated during the production of petrochemical products are registered as By-product Fuel No. 1 (kerosene type) and By-product Fuel No. 2. By-product Fuel No. 1, branded as Hi-sene, is an eco-friendly light oil product with low sulfur content. It can be used without additional dust collection equipment and is suitable for year-round use thanks to its low pour point, which prevents freezing. Hi-sene is compatible with kerosene for boilers and diesel-fired systems without requiring any equipment modifications.

ENERGY

The oil and energy industry is increasingly exposed to regulatory and environmental risks, including the EU’s introduction of the Carbon Border Adjustment Mechanism (CBAM) and Korea’s national roadmap for carbon reduction. These developments are reshaping the industry landscape, making change no longer optional but inevitable.

Hanwha TotalEnergies Petrochemical is actively exploring next-generation green energy businesses—such as Sustainable Aviation Fuel (SAF)—as part of its efforts to respond proactively to these shifts. In doing so, the company aims to enhance social and environmental value while securing the long-term sustainability of its business.

Gasoline

Aviation Fuel

Bunker-C

LPG

Solvent

Hi-sene

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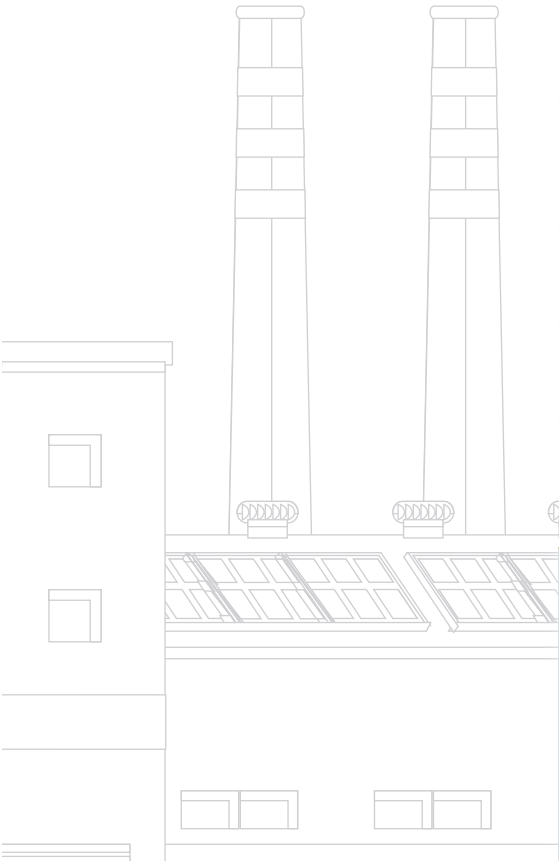
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BUSINESS OVERVIEW

Polymers are essential materials often referred to as the "rice of industry," serving as key raw and intermediate materials across diverse sectors. **Hanwha TotalEnergies Petrochemical** leverages base petroleum—like 1.53 million tons of ethylene and 1.12 million tons of propylene produced annually at its Naphtha Cracking Center (NCC)—to supply both general-purpose and high value-added polymer products. These include EVA used in solar panels and HDPE used for bottle caps, reinforcing the company’s leadership in the high-performance synthetic resin market.



LDPE Low-Density Polyethylene	Low-density polyethylene (LDPE) is one of Hanwha TotalEnergies Petrochemical's core polymer products. With excellent processability, flexibility, and transparency, LDPE is widely used in packaging films, wire and cable coatings, and disposable items. The company also manufactures linear low-density polyethylene (LLDPE), which offers similar properties with improved stiffness, making it well suited for high-strength film applications.
EVA Ethylene-Vinyl Acetate Copolymer	EVA is a synthetic resin produced through the copolymerization of ethylene and vinyl acetate. As the vinyl acetate content increases, both the density and flexibility of the material also increase. It is widely used in various applications, from foam-molded products such as sneaker soles to film adhesives. The company's EVA for solar panels, one of our flagship products, was recognized for its technological excellence when it was selected as a world-class product in 2015 by the Korean government.
HDPE High-Density Polyethylene	High-density polyethylene (HDPE) is a synthetic resin produced through the polymerization of ethylene and is one of the most widely used plastic materials in everyday life. With excellent impact resistance and cold resistance, it is commonly used for containers, plastic crates, and similar applications. Hanwha TotalEnergies Petrochemical produces HDPE using a state-of-the-art low-pressure polymerization process, and the products are globally recognized for their superior processability and quality.
PP Polypropylene	Polypropylene (PP) is a thermoplastic resin manufactured by polymerizing propylene. It is the lightest among commodity plastics, while offering high mechanical strength, excellent heat resistance, and relative transparency. Thanks to its ease of molding and processing, PP is widely used in home appliance components such as blenders, irons, and coffee pots, as well as in textile applications.
Circular Polymer	Hanwha TotalEnergies Petrochemical manufactures sustainable products using pyrolysis oil derived from plastic waste that is difficult to recycle mechanically. These products are ISCC PLUS certified and can be accompanied by the certificate upon customer request. Applicable products include Circular HDPE, Circular LDPE, Circular LLDPE, Circular EVA, Circular PP
Bio-circular Polymer	Hanwha TotalEnergies Petrochemical also manufactures sustainable products using renewable plant-based feedstocks such as used cooking oil. These products are ISCC PLUS certified and can be accompanied by the certificate upon customer request. Applicable products include Bio-circular HDPE, Bio-circular LDPE, Bio-circular LLDPE, Bio-circular EVA, Bio-circular PP

POLYMER

As the call for corporate action on climate change and sustainable development grows stronger, the chemical industry is also seeing a shift in demand. More companies are seeking eco-friendly materials for green product manufacturing, along with increased interest in reusing chemical substances during production.

To keep pace with these evolving expectations, **Hanwha TotalEnergies Petrochemical** is expanding its offering of sustainable polymers, including circular and bio-circular products derived from naphtha. By delivering environmentally responsible materials of the highest quality, the company enables its customers to manufacture greener products—creating shared environmental and social value in the process.

Bottle caps

Food containers

Plastic boxes

Disposable products

Film adhesives

Film products

Our Approach to ESG

Special Comment

Executive Vice President, Hanwha TotalEnergies Petrochemical

I am pleased to introduce Hanwha TotalEnergies Petrochemical' sustainability management activities and achievements through this year's report. Sustainability is an art of living, a responsibility we embrace at every level of our organization.

At Hanwha TotalEnergies Petrochemical, ESG is a core enabler of long-term growth, resilience, and trust. Our approach goes beyond compliance. We aim to integrate environmental, social, and governance principles into our daily business strategy and operations. On the environmental front, we are putting our efforts in reducing carbon emissions, not only but also by improving energy efficiency. We are also expanding circular economy activities, a must for our company as a Responsible Petrochemical Company. We will continue to increase the share of renewable energies in our operations, while pursuing investing in cleaner technologies.

Socially, people are our first asset — prioritizing safety, respect, equity, and mutual growth with our employees, partners, and communities. We are fostering a culture of proactive safety and strengthening our social responsibility across the value chain. In Governance, we comply with the highest standards of transparency, ethics, and risk management. Our ESG governance framework ensures clear accountability and oversight across all levels of the company.

As we are facing growing global challenges, we remain committed to building a sustainable and inclusive future—together with our stakeholders.

Thank you for your continued trust and support.



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Our Approach to ESG

Hanwha TotalEnergies Petrochemical is advancing a structured, phased implementation framework to embed sustainability across its operations. Starting with the establishment of a dedicated organization and management system in 2021, the company formulated mid- to long-term strategies and goals in 2023. In 2024, it further enhanced this framework by aligning the nine key focus areas with the four pillars of Governance, Strategy, Risk Management, and Metrics & Targets.



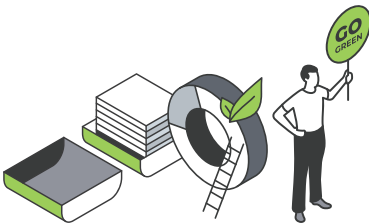
Establishment of a Management System

Forming a dedicated committee and organization to promote sustainability management

- Launch the ESG Committee and ESG Management Team

Conducting a Double Materiality Assessment

- Identify key ESG issues



Mid- to Long-Term Strategic Direction and Goal Setting

Defining the direction and targets for sustainability management

- Reflect key issues identified through the double materiality assessment in the medium-term strategy

Establishing Mid-Term Strategies Across ESG Pillars

- 3 Strategic Directions: Pursuing eco-friendly management and achieving net-zero emissions by 2050, Embedding a safety-first culture and fostering shared growth, Building a sound and transparent corporate culture
- 9 Key Focus Areas: Achieving carbon reduction, Building a circular economy, Minimizing environmental impact, Ensuring workplace health and safety, Advancing human rights and talent management, Establishing a sustainable supply chain, Promoting strategic social contribution, Strengthening proactive risk management and response, Ensuring legal and ethical compliance

Advancement of the Sustainability Management Framework

Enhancing the operational maturity across environmental, social, and governance areas

- 9 Streamline execution by mapping the nine key focus areas to the four strategic pillars: Governance, Strategy, Risk Management, and Metrics & Targets

Key Focus Areas

Environment	Social	Governance
1 Achieving carbon reduction	4 Ensuring workplace health and safety	8 Strengthening proactive risk management and response
2 Building a circular economy	5 Advancing human rights and talent management	9 Ensuring legal and ethical compliance
3 Minimizing environmental impact	6 Establishing a sustainable supply chain	
	7 Promoting strategic social contribution	

Governance

Governance: The roles and responsibilities of the governance structure in overseeing and managing sustainability-related issues

Strategy

Strategy: Strategic approaches and plans to address sustainability-related issues, including risks and opportunities, and to guide implementation direction

Risk Management

Risk Management: Processes for identifying, assessing, and managing sustainability risks and integrating them into the overall business strategy

Metrics & Targets

Metrics & Targets: Mid-term targets for each key focus area and key metrics to support performance evaluation and management

Navigation

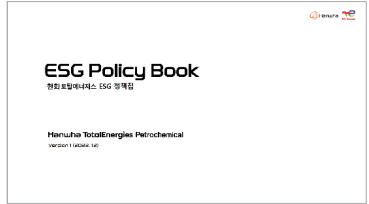
Details on Hanwha TotalEnergies Petrochemical's key achievements and future plans for the nine key focus areas—aligned with the four pillars of Governance, Strategy, Risk Management, and Metrics & Targets—are available in the ESG Progress section of this report.

Strategic Approach to Sustainability Management

Hanwha TotalEnergies Petrochemical is building a structured governance framework to support sustainable growth by establishing a clear ESG strategy and refining its sustainability management framework. This ensures consistent direction and alignment from the company’s mission to operational execution. The company has also published the comprehensive ESG Policy Book, which consolidates the principles, guidelines, and policies that guide employee conduct and decision-making across all business activities. The Policy Book is available on the company website.

Strategic Approach to ESG

Strategic Directions		Key Focus Areas	Goal	Page
Environmental	Pursuing eco-friendly management and achieving net-zero emissions by 2050	① Achieving Carbon Reduction	Establish and implement a carbon reduction roadmap (e.g., process optimization, energy reduction)	20P
		② Building a Circular Economy	Build a sustainable circular production system (e.g., chemical/mechanical recycling of plastic waste)	27P
		③ Minimizing Environmental Impact	Reduce environmental pollutants and ensure compliance with environmental regulations	30P
Social	Embedding a safety-first culture and fostering shared growth	④ Ensuring Workplace Health and Safety	Strengthen activities to embed a safety culture (e.g., compliance management, system-based operations, accident prevention/health promotion, emergency response)	37P
		⑤ Advancing Human Rights and Talent Management	Embed human rights management Talent acquisition, organizational culture improvement, labor-management harmony	43P
		⑥ Establishing a Sustainable Supply Chain	Build a sustainable supply chain (e.g., responsible supply chain management, shared growth with business partners)	52P
		⑦ Promoting Strategic Social Contribution	Promote regional co-prosperity, talent development, and eco-friendly initiatives	56P
Governance	Building a sound and transparent corporate culture	⑧ Strengthening Proactive Risk Management and Response	Establish and operate an enterprise-wide risk management system (e.g., risk prevention, emergency response in case of incidents)	61P
		⑨ Ensuring Legal and Ethical Compliance	Establish a culture of compliance (e.g., framework refinement, communication, training, monitoring)	64P



▶ Hanwha TotalEnergies ESG Policy Book

Sustainability Highlights

Hanwha TotalEnergies Petrochemical presents its 2024 ESG-related activities and performance across key issues in the Environmental, Social, and Governance domains.

■ Environment ■ Social ■ Governance

Carbon Reduction

> 23P

Introduce renewable energy sources

Sign PPA contract and initiate power-in

Circular Economy

> 28P

Acquire international certifications

Obtain GRS certification for mechanical recycling
Acquire ISCC PLUS certification for bio-circular co-processing

Circular Economy

> 28P

Waste-to-Resource

Sign an agreement for a project to convert waste plastic film into high-quality raw material resource.

Workplace Health and Safety

> 38P, > 73P

Achieve zero serious safety incidents

Zero fatalities among employees and business partners

Human Rights and Talent

> 49P

Earn family-friendly certification

Enhance employee satisfaction through a supportive work environment

Social Contribution

> 57P, > 73P

Expand employee volunteer participation

Employee volunteer participation rate: 39% in 2023 → 49% in 2024

Risk Management

> 74P

Strengthen information security

Zero personal data breaches

Compliance

> 66P

Embed compliance practices

Deliver 27 training sessions in 2024 with participation of approximately 1,700 employees



Sustainability Management Framework

Board of Directors

Hanwha TotalEnergies Petrochemical recognizes transparency and robust governance as core enablers of sustainable management. The Board of Directors is composed of three inside directors and three non-executive directors, as stipulated by relevant laws and the Articles of Incorporation. Directors are appointed at the General Meeting of Shareholders based on their expertise, accountability, and diverse backgrounds. To enhance operational efficiency, the Representative Director concurrently serves as the Chair of the Board. The company’s two major shareholders, who hold equal ownership stakes, oversee the Board’s activities and performance through a system of mutual checks and cooperation.

Shareholder Composition and Ownership Ratio



Board Composition*


Category	Name	Date of Appointment	Expertise	Career Highlights	Nationality	Date of Birth	Gender
Inside Director (Joint Representative Director (JRD))	Laurentius Na (Sang Seop Na)	2023.03.24	Chemical Engineering, R&D	JRD, Plant Manager, VP of Technology, and VP of Strategic Planning, Hanwha TotalEnergies	Republic of Korea	1965.10	Male
	Thierry Boulfroy	2020.07.20	Chemical Engineering, Management	JRD of Hanwha TotalEnergies Plant Manager of Feluy plant (Belgium) of TotalEnergies Executive leader in Petrochemical operations, mainly in Asia	France	1963.10	Male
Inside Director	Dohoon Lee	2024.09.23	Chemical and Biological Engineering, R&D	SVP of Planning & Strategy BU, VP of Planning Div., VP of Advanced Technology Research Div., Hanwha TotalEnergies	Republic of Korea	1971.03	Male
Non-executive Director	Kyongwon Moon	2024.09.23	Management	CEO of Hanwha Impact , SVP of Strategy & Planning BU, Hanwha TotalEnergies VP of Strategy Div., Hanwha Solutions	Republic of Korea	1967.11	Male
	Thomas Maurisse	2024.06.27	Management	Director of TotalEnergies Holdings UK Limited , SVP of Refining & Petrochemicals Orient and Growth, TotalEnergies	France	1980.05	Male
	Yves Houilliez	2023.03.24	Chemical Engineering, Safety & Environment	VP of Korea & Manufacturing Middle East and Asia, Refining&Petrochemicals Orient and Growth, Refining&Chemicals, TotalEnergies	France	1963.06	Male
Auditor	Sungbin Lim	2024.09.23	Finance, Management	Director of Hanwha Impact , VP of Corporate Affairs & Finance, Hanwha Impact	Republic of Korea	1977.07	Male
	Jungwon Shin	2020.01.31	Management	Country Chair of TotalEnergies Korea	Republic of Korea	1966.07	Male

* As of publication date in September 2025

Sustainability Management Framework


BOD Committee

To enhance the efficiency of Board operations and ensure objectivity and transparency in the decision-making process for remuneration, **Hanwha TotalEnergies Petrochemical** has established the Compensation Committee in accordance with Article 29(2) of its Articles of Incorporation. Formed in 2006, the Committee consists of four registered directors and has been delegated with professional authority to review and supervise on matters such as the upper limit of director remuneration, significant changes in employee compensation, and other key remuneration-related issues. Details of the Committee’s activities are disclosed in the business report. The company ensures the Committee’s independence so it can fulfill its assigned roles and responsibilities in a transparent and accountable manner.




Compensation Committee

- Review of executive compensation and other related matters
- Composed of 4 registered directors (2 inside directors, 2 non-executive directors)




Board Diversity and Expertise

Hanwha TotalEnergies Petrochemical strives to strengthen the diversity and expertise of its directors to support the company’s continued growth in a rapidly evolving business environment. The company imposes no restrictions or discrimination based on gender, race, ethnicity, nationality, or place of origin when appointing directors. The current Board comprises a multinational group of directors with deep expertise and extensive experience across areas such as management, economics, accounting, finance, and technology. Leveraging their respective backgrounds, the directors provide objective insights and expert guidance on key business matters and strategic decisions. To further enhance the Board’s capabilities, the company has developed training programs tailored to its directors. In 2024, a special lecture was delivered to all executives, including inside directors, under the theme “Corporate Challenges and Environmental Shifts Driven by ESG Risks.”



Diversity

- Directors are appointed without any discrimination based on gender, race, ethnicity, nationality, or place of origin



Expertise

- The Board is composed of directors with extensive expertise and experience in management, economics, accounting, finance, and technology

Board Operations

Hanwha TotalEnergies Petrochemical holds Board meetings at least once every quarter and convenes additional meetings in a timely manner based on the urgency and importance of the agenda. In accordance with Article 30 of the Articles of Incorporation, resolutions are adopted with the approval of at least two-thirds of the directors in attendance. In 2024, a total of nine Board meetings were held. In addition to approving financial statements and business plans, the Board regularly reviewed and supervised key non-financial matters, including quarterly safety and environmental performance reports (such as GHG emissions), annual compliance activities, and annual business risk assessments.

2024 Board Operation Performance*

Number of Meetings	Number of Agenda Items:	Approval Rate	Attendance Rate
9	40 (27 resolutions, 13 reports)	100%	94.8%(100% for inside directors and 91.7% for non-executive directors)

* Non-executive directors abstained from voting on agenda items related to companies in which they concurrently served as directors

Remuneration for Registered Directors

Hanwha TotalEnergies Petrochemical provides remuneration to registered directors within the limits reviewed by the Compensation Committee and approved at the General Meeting of Shareholders. Compensation is structured in accordance with the Executive Compensation Regulations and includes fixed components such as base salary and position-based pay. Performance-based bonuses are determined through a comprehensive evaluation of both overall business performance and the achievement of individual performance goals. In addition, the company provides various employee benefits in accordance with internal policies, including private pension plans, tuition assistance, holiday allowances, and welfare points. Retirement benefits are calculated based on the average salary and years of service, in accordance with the Executive Severance Pay Regulations.

Sustainability Management Framework

ESG Committee and Net Zero Task Working Group

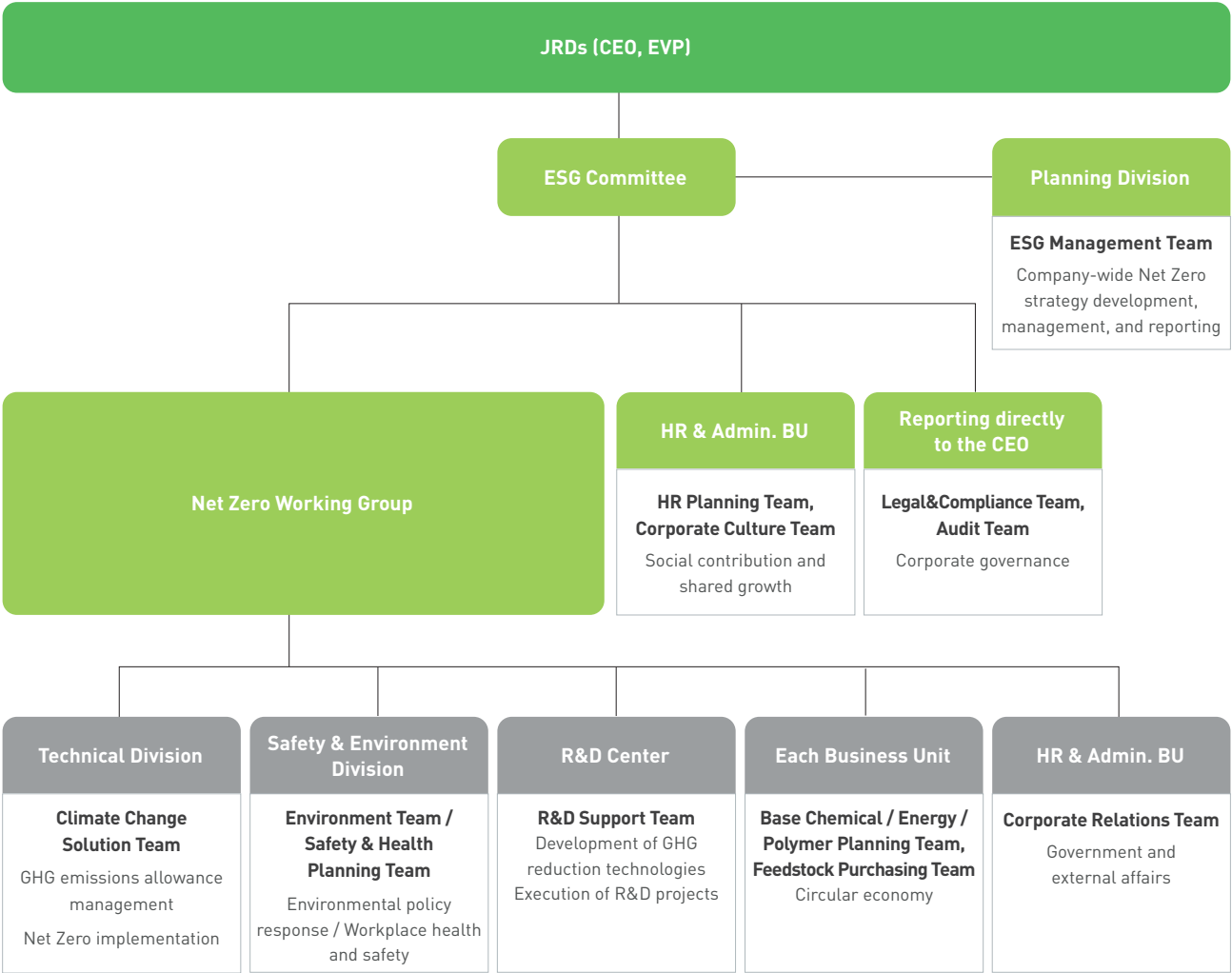
ESG Committee

To strengthen the company’s ability to address environmental, social, and governance (ESG) issues in a timely and structured manner, **Hanwha TotalEnergies Petrochemical** established an ESG Committee in December 2021. The committee is chaired by the JRDs and operated by a designated working team, with participation from BU leaders and Division leaders. The committee convenes annually to support company-wide decision-making on ESG matters, including policies, regulations, and strategic initiatives.

In 2024, the ESG Committee held one meeting to review and supervise on seven key topics: the carbon neutrality strategy, monitoring of GHG emissions, carbon reduction technology initiatives, circular economy development, safety and environmental health management, and compliance Programs.

Net Zero Working Group

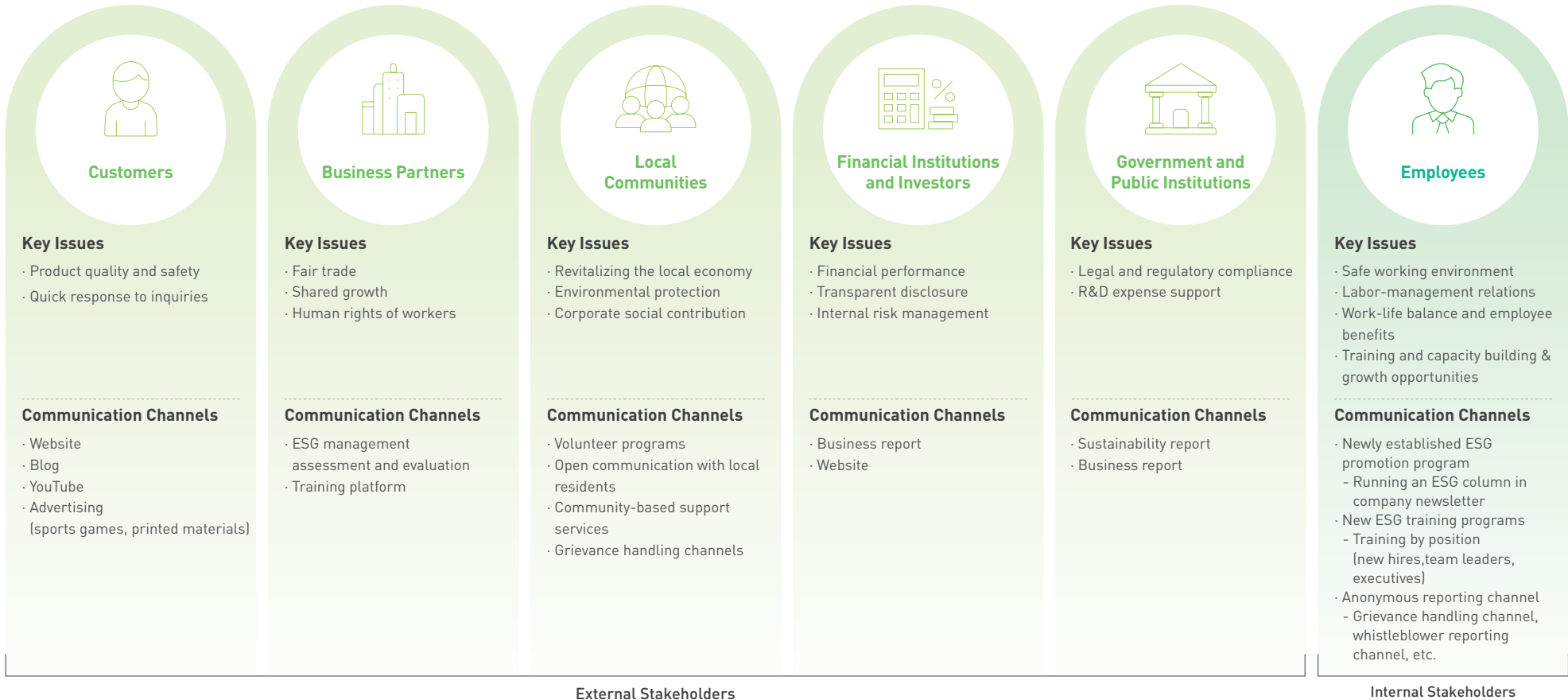
Hanwha TotalEnergies Petrochemical operates the Net Zero Working Group under the ESG Committee. Led by the leader of Planning & Strategy BU, the group is a cross-functional body comprising representatives from Technology, Safety & Environment, R&D, each business unit, and HR & Admin. BU. It convenes semi-annually to review the company’s carbon neutrality strategy and direction, monitor the implementation process, and address any emerging issues.



Stakeholder Communication

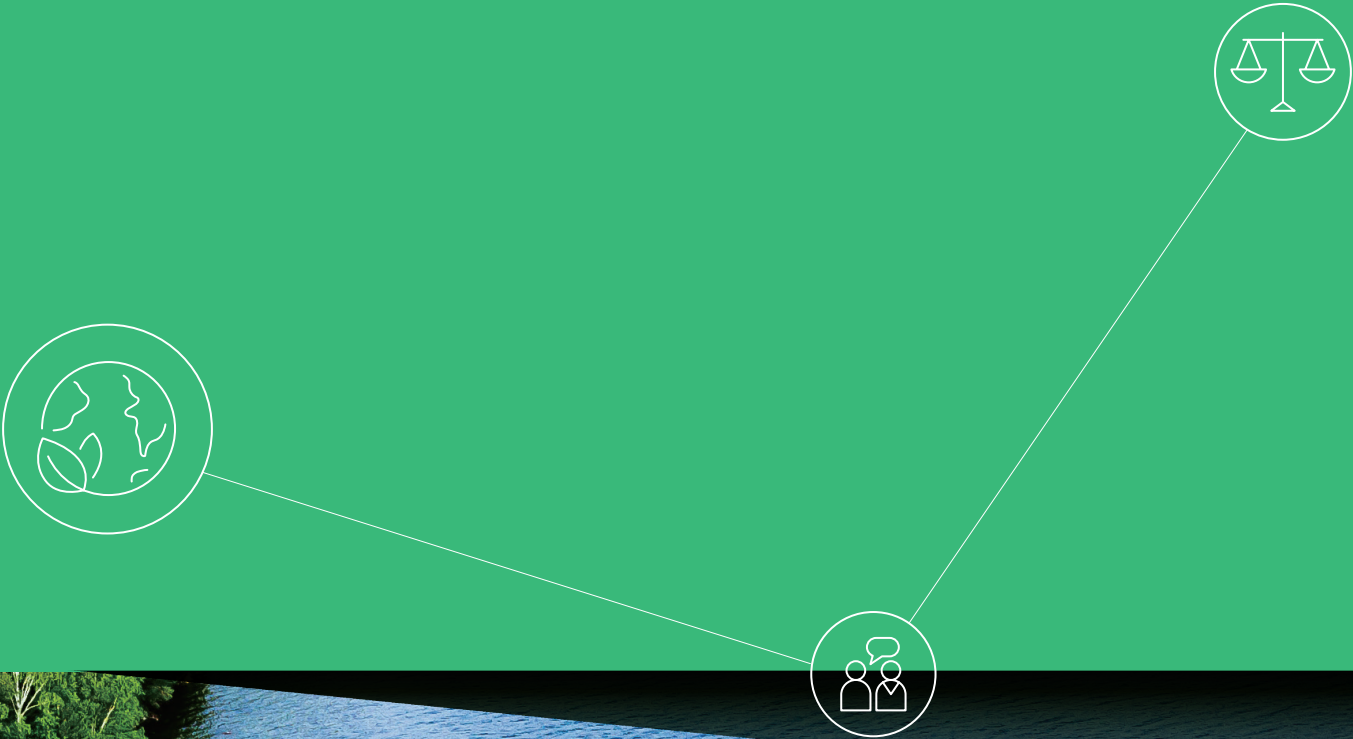
Engaging stakeholders is a key driver of **Hanwha TotalEnergies Petrochemical's** sustainable management and long-term growth. The company fosters open and continuous communication through a range of engagement channels that enable active participation from both internal and external stakeholders. To better reflect stakeholder input in its business operations, the company collects and incorporates feedback into its decision-making processes. **Hanwha TotalEnergies Petrochemical** also shares updates on its sustainability initiatives and ESG performance across environmental, social, and governance areas through regular publications such as the Sustainability Report. Internally, the company is committed to embedding ESG values into its organizational culture and building a shared understanding among employees through ongoing engagement efforts.

Stakeholder Engagement

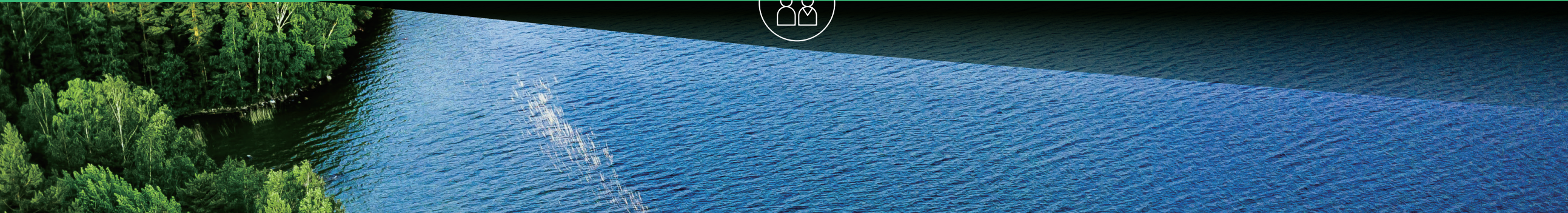


ESG Progress

- Introduction
- Our Approach to ESG
- ESG Progress
- Appendix



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Achieving Carbon Reduction

Special Comment

Leader of Planning & Strategy BU, Hanwha TotalEnergies Petrochemical

At Hanwha TotalEnergies Petrochemical, we see sustainability as something that should be at the heart of everything we do. Over the years, we have built up experience and insight that have helped us take a more strategic and structured approach to sustainable management. We have been working to embed sustainability into our core operations — from setting company-wide strategies to managing risk and planning for the future. Our goal is not just to deliver short-term results, but to build long-term value for the company.

In line with global efforts to fight climate change, we have developed a carbon neutrality roadmap and are steadily putting it into action. This includes finding ways to cut emissions by improving process efficiency, investing in energy optimization, and using renewable energy through power purchase agreements (PPAs).

We also take carbon emissions into account from the very beginning when planning and launching new businesses. By doing so, we are working to shape and realize sustainable business models that allow us to strike a balance between responding to the climate crisis and achieving long-term growth.

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Achieving Carbon Reduction

Governance

Hanwha TotalEnergies Petrochemical recognizes the impact of climate change on its business operations and has established a company-wide climate governance framework to systematically address climate-related risks and opportunities.

Oversight of Climate-Related Risks and Opportunities

ESG Committee

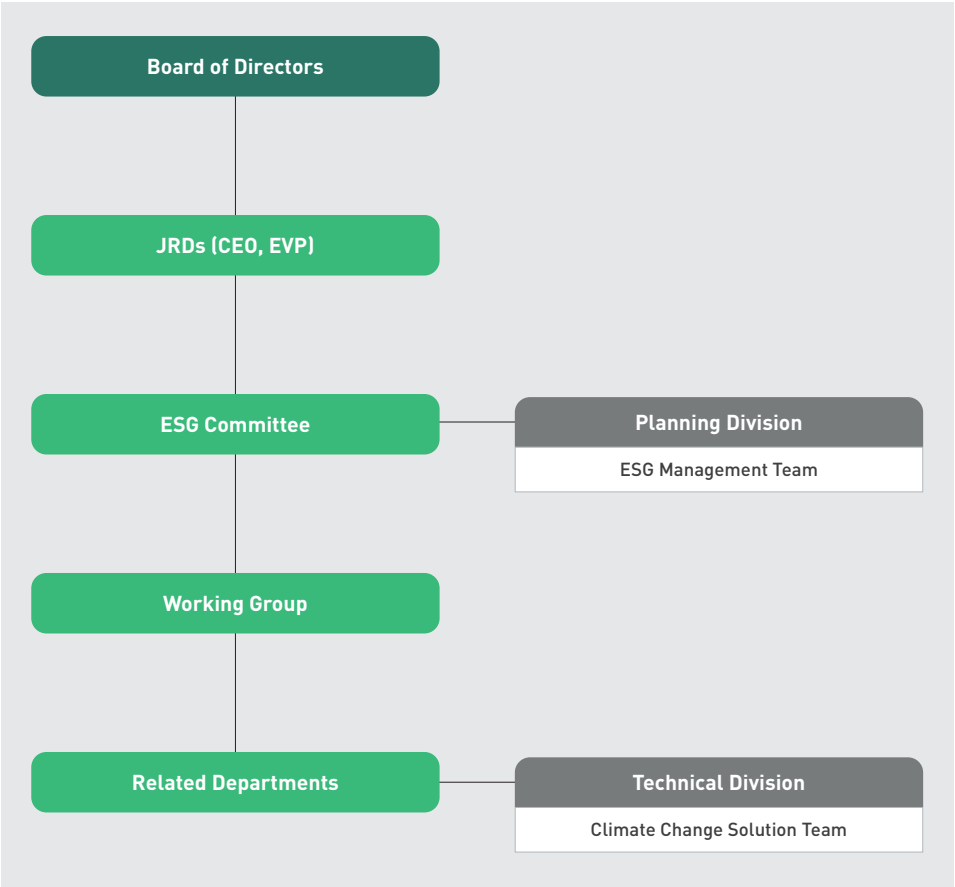
To proactively and effectively address climate change-related risks and opportunities, Hanwha TotalEnergies Petrochemical established the ESG Committee and a dedicated ESG Management Team in 2021. Through the ESG Committee, the company’s senior leadership (JRDs) oversees all ESG matters, including the carbon neutrality strategy and GHG reduction initiatives. The committee meets annually. In 2024, senior management reviewed detailed implementation plans for the company’s mid- to long-term carbon neutrality strategy, including GHG emissions performance and reduction targets. Climate change indicators have also been incorporated into the KPIs of executives and departments, promoting organization-wide awareness and active participation in carbon reduction efforts.

[Detailed View](#) ➡ 17P

Board of Directors

Hanwha TotalEnergies Petrochemical’s Board of Directors receives quarterly reports on the company’s GHG emissions and projected performance. The Board also monitors the detailed implementation of mid- to long-term carbon reduction strategies at least once a year. In addition, it conducts an annual review and oversight of company-wide business risks—including those related to climate change—and corresponding response measures. The Board is also responsible for the final review and approval of investments related to climate change.

[Detailed View](#) ➡ 16P



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Achieving Carbon Reduction

Strategy

The ESG Management Team at **Hanwha TotalEnergies Petrochemical** is responsible for analyzing the potential financial impacts of climate change-related risks and opportunities and for establishing appropriate response strategies. These are integrated into the company-wide business risk assessment process to ensure alignment with the overall corporate strategy.

Analysis of Climate Change Risks and Opportunities

Short-term ●●● Mid-term ●●● Long-term ●●●

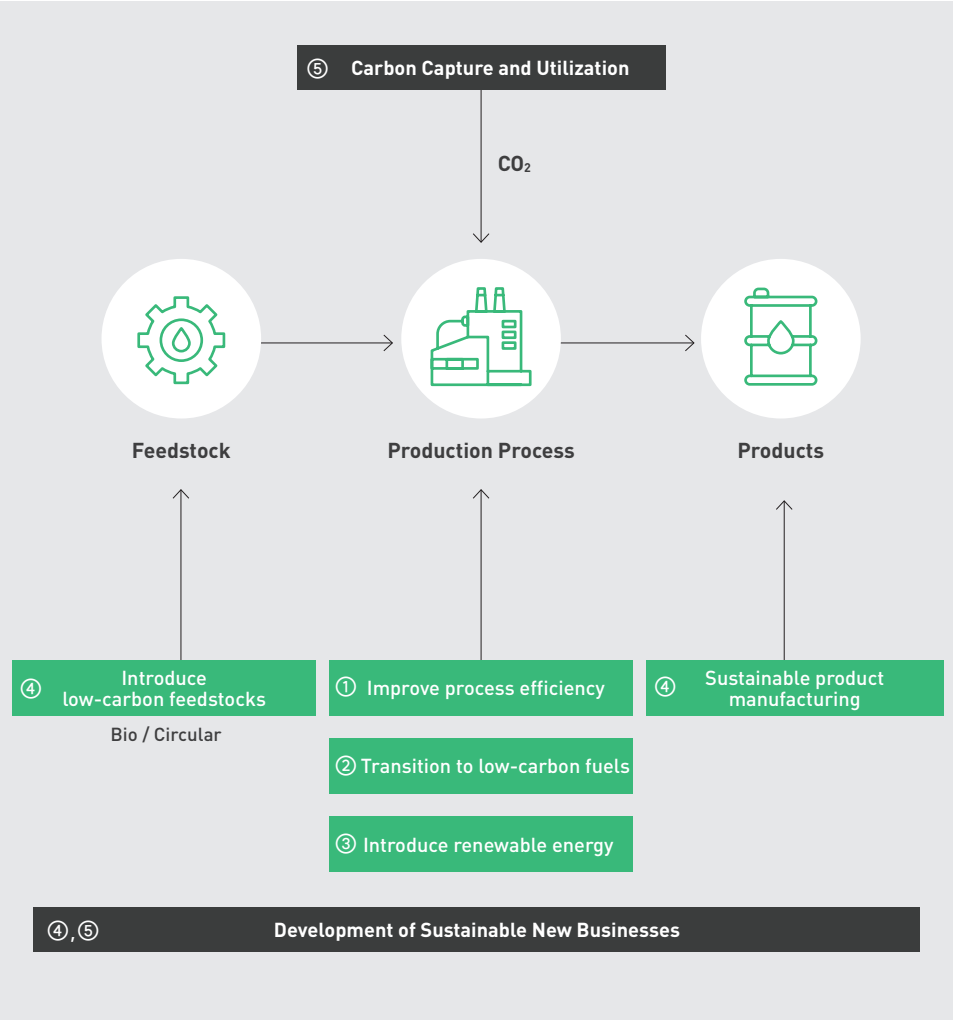
Type		Risk and Opportunity Drivers and Potential Financial Impacts		Response Strategies	Timeframe	Page
Risk	Transition	Policy and Legal	<ul style="list-style-type: none">• Increase in emissions costs due to rising GHG prices• Increase in compliance costs due to tighter regulations such as mandatory emissions reporting• Higher operating expenses from exposure to greenwashing-related litigations and associated fines• Rising energy costs due to stricter regulations on fossil-based products and fuels	<ul style="list-style-type: none">• Establish net-zero target for Scope 1 & 2 by 2050 and implement 2030 carbon reduction roadmap• Implement enterprise-wide integrated risk management• Minimize electricity cost volatility by promoting renewable energy contracts	●●●	25P
		Technology	<ul style="list-style-type: none">• Increased transition costs due to shifts in technology trends toward low-carbon and eco-friendly options	<ul style="list-style-type: none">• Develop eco-friendly and low-carbon technologies	●●●	24P
		Market	<ul style="list-style-type: none">• Decline in demand and sales of fossil-based products due to changing customer preferences	<ul style="list-style-type: none">• Expand low-carbon circular products and actively pursue sustainability certifications such as ISCC Plus• Expand use of low-carbon fuels/raw materials and promote sustainable new businesses	●●●	24, 28P
		Reputation	<ul style="list-style-type: none">• Negative impact on talent attraction and retention, as well as reduced capital availability, due to the perception as a high-emission business	<ul style="list-style-type: none">• Establish climate response governance• Actively pursue sustainable new business opportunities	●●●	21P, 24P
	Physical	Acute	<ul style="list-style-type: none">• Decreased production volume and increased health and safety costs due to more frequent extreme weather events such as cyclones and floods	<ul style="list-style-type: none">• Strengthen company-wide EHS systems and prepare preemptive risk mitigation plans	●●●	40P
		Chronic	<ul style="list-style-type: none">• Increased operational costs resulting from greater volatility in weather patterns, including changes in precipitation and rising average temperatures	<ul style="list-style-type: none">• Identify and analyze long-term threats through continuous monitoring	●●●	40P, 62P
Opportunity	Resource Efficiency		<ul style="list-style-type: none">• Reduced operating costs through process efficiency improvements driven by the need to minimize energy consumption	<ul style="list-style-type: none">• Continue carbon reduction efforts by improving process efficiency and reducing energy consumption	●●●	23P
	Energy Resources		<ul style="list-style-type: none">• Lower carbon costs through expanded use of low-carbon energy sources in response to rising demand for renewable energy	<ul style="list-style-type: none">• Expand procurement of renewable energy	●●●	23P
	Products/Services and Market		<ul style="list-style-type: none">• Increased revenue from entering and expanding in markets with growing demand for eco-friendly and low-carbon products	<ul style="list-style-type: none">• Secure competitiveness in eco-friendly business through low-carbon circular product expansion	●●●	24P, 28P
	Market		<ul style="list-style-type: none">• Expansion of new business opportunities driven by the growth of the sustainable materials market	<ul style="list-style-type: none">• Discover new opportunities in sustainable businesses	●●●	24P
	Resilience		<ul style="list-style-type: none">• Enhanced supply chain reliability through preemptive measures against physical risks, such as securing production and shipping capabilities under diverse conditions	<ul style="list-style-type: none">• Develop weather risk mitigation measures through ongoing monitoring and pre-assessment	●●●	40P, 62P

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Achieving Carbon Reduction

Strategy

Strategic Approach to Carbon Reduction



① Improving Process Efficiency and Reducing Energy Consumption

Improving process efficiency to reduce energy use is a key strategy that enables both carbon reduction and cost competitiveness. As a proven approach with clearly measurable impact, it not only reduces the burden of purchasing carbon credits but also contributes to lowering overall energy costs. To date, it is considered the only reduction measure that consistently demonstrates economic viability. **Hanwha TotalEnergies Petrochemical** conducts in-depth analyses of energy usage across its production processes and implements step-by-step optimization initiatives based on the findings. Going forward, the company will continue to expand its efforts to improve efficiency through technology-driven reduction activities.

② Transitioning to Low-Carbon Fuels

As part of its efforts to reduce direct emissions from production, **Hanwha TotalEnergies Petrochemical** is actively exploring the transition to low-carbon fuels. Introducing fuels with lower carbon content presents a dual benefit—not only lowering emissions but also enhancing energy efficiency through fuel switching. Recognizing this as a key medium- to long-term strategy, the company is currently conducting phased evaluations of the technical and economic feasibility of using low-carbon fuels—such as byproduct hydrogen and methane—in major heaters and boilers. Based on these studies, the company is identifying viable paths for implementation.

③ Introducing Renewable Energy

In 2024, **Hanwha TotalEnergies Petrochemical** entered into a Power Purchase Agreement (PPA) with a renewable energy supplier. Under this agreement, solar-based renewable electricity has been gradually supplied to the Daesan plant starting in the first quarter of 2025. The company plans to procure approximately 16 GWh of renewable electricity annually by the first half of 2026. In addition, the company is expanding its renewable energy portfolio by installing solar power systems within underutilized areas of the plant site. As of now, a total of 1,104 kW of solar capacity has been installed and is in operation. The renewable energy usage is annually certified by the Korea Energy Agency in the form of Renewable Energy Guarantees of Origin (REGO).

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Achieving Carbon Reduction

Strategy

④ Introducing Low-Carbon Feedstock and Exploring Sustainable Business Opportunities

As part of its transition strategy toward a sustainable, low-carbon society, **Hanwha TotalEnergies Petrochemical** is focusing on incorporating low-carbon and sustainable feedstock, such as waste-derived materials. These materials are carefully selected based on their circularity and overall environmental impact, and are integrated into existing production processes to yield more sustainable products. Through this approach, the company aims to reduce carbon emissions across the entire product life cycle and maximize environmental value.

In parallel, the company is actively exploring new sustainable business opportunities, including biofuels applicable to various modes of transportation—such as aircraft, automobiles, and ships—with a particular focus on Sustainable Aviation Fuel (SAF). These emerging businesses go beyond conventional green transitions, offering strategic advantages in capturing early leadership in the global low-carbon market and enabling agile responses to evolving energy demands. Furthermore, they are expected to serve as robust growth engines that enhance both the sustainability and profitability of the company’s overall business portfolio.

⑤ Developing Carbon Capture and Utilization (CCU) Technologies

In preparation for a carbon-neutral future, **Hanwha TotalEnergies Petrochemical** is working to secure foundational CCU technologies by participating in national R&D projects in collaboration with leading domestic research institutions. The company’s focus lies in two main areas: CO₂ capture processes and technologies for CO₂ utilization and conversion into valuable resources.

Carbon Capture Technology Development

Hanwha TotalEnergies Petrochemical is currently developing a proprietary technology to directly capture CO₂ from the flue gas of its naphtha cracking center (NCC), which is the largest source of CO₂ emissions within the petrochemical complex. This includes the development of a CO₂ absorbent optimized for NCC operations and aims to secure design data for future large-scale commercial applications through pilot plant demonstrations.

A pilot plant for validating the CO₂ capture technology is currently under construction and is scheduled to begin operation in 2025. In parallel, the company is conducting tests under various CO₂ concentrations and operating conditions to expand the applicability of its CO₂ capture process technologies across different industrial settings.

Carbon Utilization Technology Development

Hanwha TotalEnergies Petrochemical is actively researching various CO₂-to-resource technologies to meet evolving industrial needs, including the production of feedstock and fuel from captured CO₂. Current efforts focus on converting CO₂ into e-Naphtha and e-SAF through hydrogenation reactions, as well as reforming CO₂ with methane to produce syngas. These innovations are aimed at securing technologies that can respond to the growing demand for “green feedstock” in the petrochemical industry.

Developing Eco-Friendly Advanced Materials

Beyond carbon reduction technologies, the company is also advancing research into new biodegradable plastics as part of its commitment to environmentally responsible management. In response to the global issue of plastic waste, **Hanwha TotalEnergies Petrochemical** is developing a differentiated polymerization technology that ensures both biodegradability and functional performance of materials. Pilot-scale testing is currently underway to verify production efficiency, and the new biodegradable plastic is expected to be applicable across a wide range of uses, including films, waste collection bags, and agricultural mulch films.

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Achieving Carbon Reduction

Strategy

Carbon Reduction Roadmap

To address climate change, **Hanwha TotalEnergies Petrochemical** has established a carbon reduction target of cutting greenhouse gas emissions by 34% by 2030 compared to its 2021 business-as-usual (BAU) level, along with a long-term goal of achieving Net Zero by 2050. The company is continuously refining its carbon reduction strategies to ensure steady progress toward these targets.

Carbon Neutrality Action Plan



Establishing a Net Zero Management System (Net Zero System)

Hanwha TotalEnergies Petrochemical has established a carbon emissions management system to quantify GHG emissions across its sites and implement its carbon reduction targets. The Net Zero System enables monthly tracking of emissions by process compared to allocated allowances, management of carbon liability cost calculations, verification of Emissions Trading Scheme (ETS) statements and monitoring plans, and standardization of emissions data. Through this system, the company aims to strengthen execution of its reduction targets while responding effectively to the rising costs associated with carbon regulations.

Conducting Life Cycle Assessment (LCA)

To respond to global carbon regulations such as carbon border adjustment mechanisms and meet the growing market demand for sustainable products, **Hanwha TotalEnergies Petrochemical** is building a system that enables calculation, verification, and management of product-level carbon footprints using the LCA methodology.

Internal Carbon Pricing

Hanwha TotalEnergies Petrochemical applies an internal carbon price to incorporate the cost of greenhouse gas emissions into the economic assessment of mid- to long-term business plans and investments. This approach supports strategic decision-making related to carbon neutrality by helping the company mitigate potential climate-related risks and identify new opportunities.

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Achieving Carbon Reduction

Risk Management

Risk Management

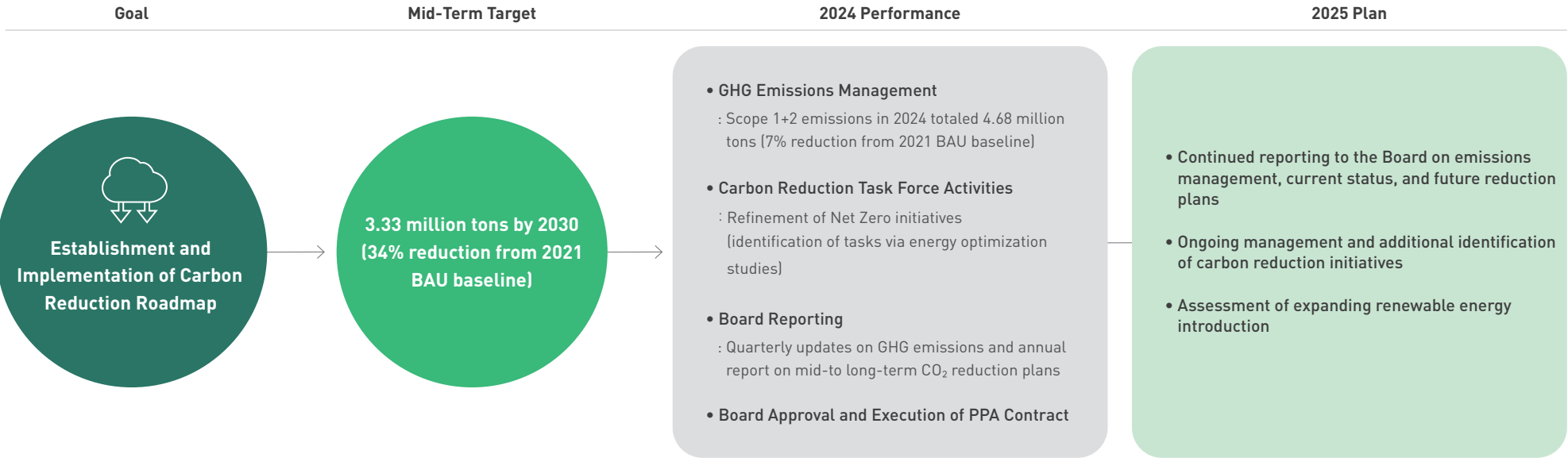
Hanwha TotalEnergies Petrochemical integrates climate change-related risks into its company-wide business risk assessment and management processes. The company identifies potential risks such as water scarcity and natural disasters including typhoons, and evaluates their likelihood and potential impact based on internal risk assessment criteria. For material risks identified through this process, the company establishes appropriate response strategies and incorporates them into its overall business strategy.

[Detailed View](#) 62-63P

Metrics & Targets

Targets and Performance

As a designated entity under the national Emissions Trading Scheme (ETS), Hanwha TotalEnergies Petrochemical calculates and manages its Scope 1 and Scope 2 GHG emissions in accordance with ETS guidelines. To address climate change, the company has established a Net Zero target for 2050 and set an interim reduction goal for 2030. In 2024, the company emitted approximately 4.68 million tons of GHGs. Through initiatives such as improving process efficiency and introducing renewable energy, this represents around seven percent reduction compared to the baseline year. However, due to increased production volumes, total emissions in 2024 rose by approximately 110,000 tons compared to 2023. Hanwha TotalEnergies Petrochemical remains committed to advancing its carbon reduction efforts and will continue to pursue targeted reduction initiatives moving forward.



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Building a Circular Economy

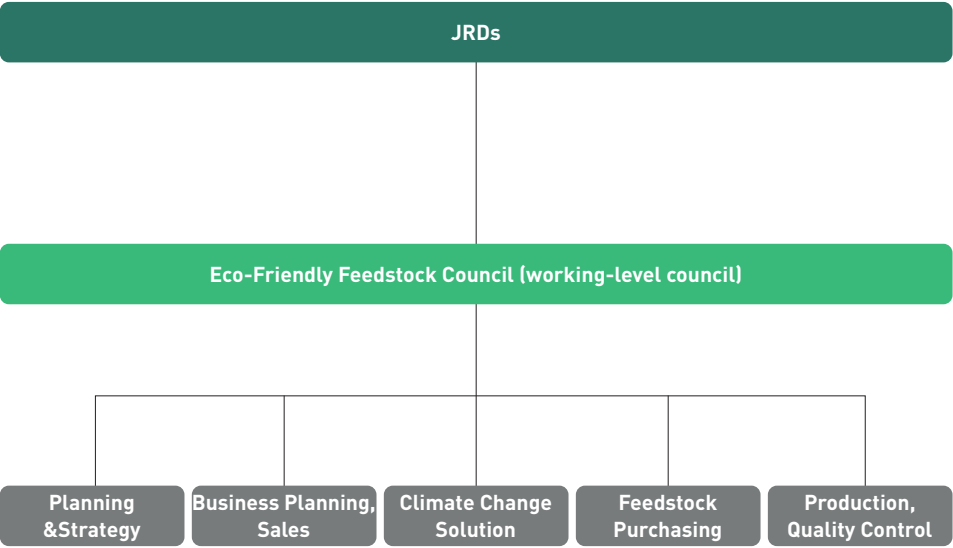
Governance

Governance

As companies increasingly focus on responding to climate change and securing engines for sustainable growth, there is growing demand for eco-friendly materials, along with rising expectations for the reuse and recycling of chemical substances. In response, **Hanwha TotalEnergies Petrochemical** established the Eco-Friendly Feedstock Council to promote a circular economy. The company is working to build a system for sourcing sustainable raw materials and producing sustainable products, with the goal of providing customers with environmentally responsible, high-quality solutions.

Eco-Friendly Feedstock Council Operations

Hanwha TotalEnergies Petrochemical operates an internal council to systematically promote its circular economy initiatives. The Eco-Friendly Feedstock Council meets monthly to establish company-wide plans for the mass production of sustainable products, including circular products, and to discuss relevant issues.



Strategy

Strategic Approach

Hanwha TotalEnergies Petrochemical produces sustainable products using waste-derived materials and is actively working to expand these efforts. Through continuous business development, the company aims to take the lead in building a circular economy.

Chemical Recycling Business

Hanwha TotalEnergies Petrochemical produces and sells sustainable circular products using pyrolysis oil derived from waste plastics and circular naphtha. The company continues to expand this business as part of its efforts to build a resource circulation system that reduces waste and promotes the circular use of plastic materials.

- Holds ISCC (International Sustainability & Carbon Certification)
- Signed an agreement in 2024 with four cities in Chungnam Province (Cheonan, Asan, Seosan, and Dangjin) to promote high-quality recycling of waste plastic film and support the transition to a circular economy

Mechanical Recycling Business

Hanwha TotalEnergies Petrochemical produces and supplies sustainable products (Compound PP) by utilizing waste plastic materials in collaboration with major domestic automakers and electronics manufacturers. Through these efforts, the company actively supports its customers' initiatives to reduce carbon emissions.

- Acquired GRS (Global Recycled Standard) certification for mechanical recycling in 2024
- Signed a resource circulation agreement with LocknLock in 2024 to collect waste plastic from old food containers and recycle it into materials for heated floor mats

Waste Oil-to-Resource Business

Hanwha TotalEnergies Petrochemical produces bio-based circular products through a co-processing method that utilizes used cooking oil. The company is reviewing facility upgrades and the construction of a dedicated plant to expand this effort toward the production of Sustainable Aviation Fuel (SAF). Through these initiatives, it contributes to carbon reduction and the development of a circular economy in the aviation industry.

- Acquired ISCC PLUS Co-processing certification in 2024 and holds ISCC EU (Trader) certification

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Building a Circular Economy

Risk Management

Risk Management

Hanwha TotalEnergies Petrochemical actively monitors changes in customer demand, market developments, and technology trends related to sustainable circular products. By assessing potential impacts in advance, the company works to identify and address risks before they materialize during the course of business.

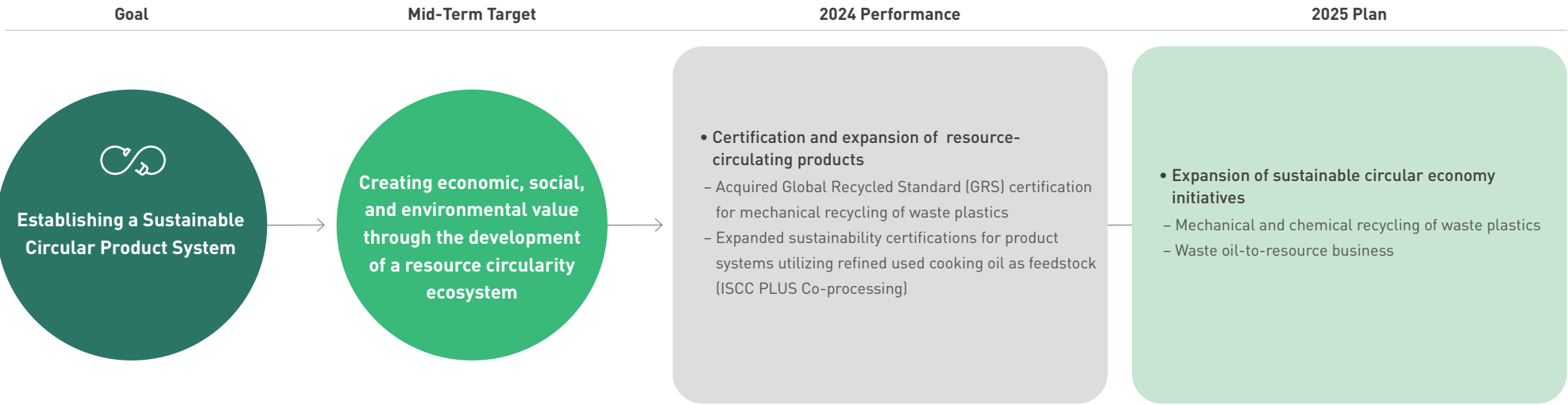
Risks associated with its sustainable circular product business are also evaluated as part of the company’s annual enterprise-wide risk assessment. The findings are reflected in product and technology development plans, enabling the company to manage related risks in a structured manner.

[Detailed View](#) 62-63P

Metrics & Targets

Targets and Performance

Hanwha TotalEnergies Petrochemical has established mid-term targets to promote and realize a circular economy, focusing on waste-to-resource initiatives and enhancing product circularity across all life cycle stages. The company regularly reviews its annual action plans and performance to ensure steady progress.



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Minimizing Environmental Impact

Special Comment

Chief of Daesan Complex, Hanwha TotalEnergies Petrochemical

Minimizing environmental impact across all business operations is one of our core responsibilities in securing a sustainable future.

At Hanwha TotalEnergies Petrochemical, we are committed to reducing our environmental footprint, improving resource efficiency, minimizing waste, and strengthening efforts to protect the environment. We continue to invest in pollution prevention systems and in-process control technologies to reduce emissions, and we conduct thorough environmental impact assessments for all new or modified projects.

We make it a priority to stay ahead of regulatory changes by regularly monitoring updates to environmental laws and adjusting our practices before they take effect. Environmental responsibility is something we actively integrate into our day-to-day operations—because we believe real change only happens when action is built into how we work.

To us, these are not just compliance costs—they are long-term investments in sustainable growth. And moving forward, we will continue to engage openly with our stakeholders to build a more transparent and responsible approach to environmental management.

Minimizing Environmental Impact

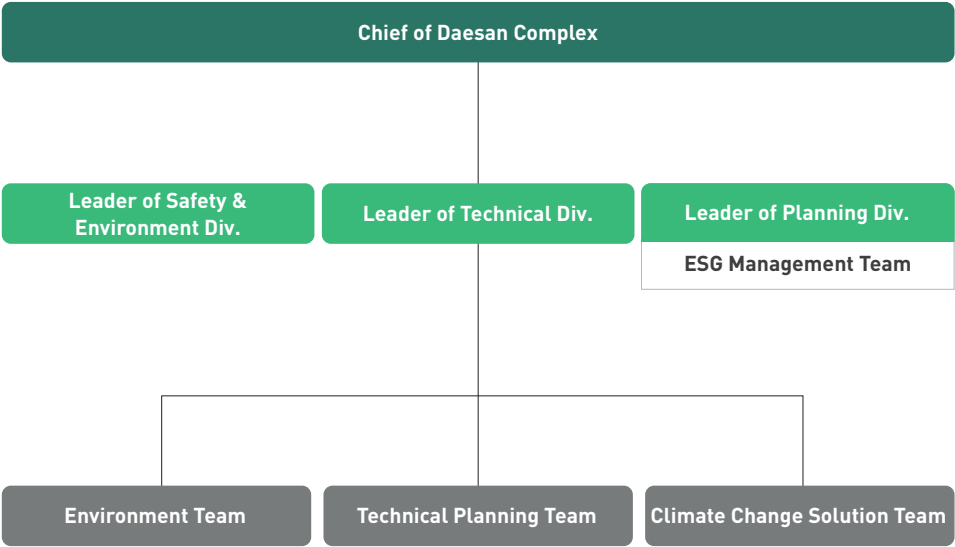
Governance

Environmental Management Governance

Hanwha TotalEnergies Petrochemical has adopted an environmental management system aligned with international standards to minimize negative environmental impacts across all operations, products, and services, and to fulfill its social responsibilities. This system is implemented systematically and reviewed regularly for effectiveness and relevance through external audits and certifications conducted by independent experts. Based on these reviews, the company continues to improve its environmental practices.

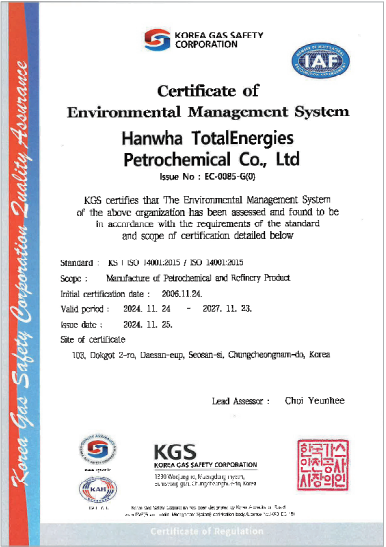
Organizational Structure

Hanwha TotalEnergies Petrochemical has established a company-wide environmental management governance system, which serves as the foundation for strengthening its decision-making processes. The Senior Plant Manager at the Daesan Plant has been appointed as the Chief Officer for Environmental Management, working in coordination with various teams—including the Safety & Environment Division, Environmental Team Leader, Climate Change Response Team, Technology Planning Team Leader, and ESG Management Team. Together, they review response plans for major environmental incidents, approve environmental measures and manuals, conduct EMS audits, assess energy-saving initiatives, and develop ESG management strategies.



Environmental Management System Environmental Management System Certification (ISO 14001)

Hanwha TotalEnergies Petrochemical has established an environmental management system aligned with global standards and acquired ISO 14001 certification. The company undergoes annual surveillance audits and full recertification audits every three years.



ISO 14001 Certificate

Environmental Management Training

To enhance environmental awareness among employees, Hanwha TotalEnergies Petrochemical provides regular safety, health, and environment (SHE) training for all staff. The company also offers mandatory training programs for personnel responsible for air, water, and hazardous chemical management.

Environmental and Safety Incident Response System

The company has established an emergency response system to prepare for potential environmental and safety incidents. It also conducts company-wide drills to ensure readiness and effective incident management.

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Minimizing Environmental Impact

Strategy

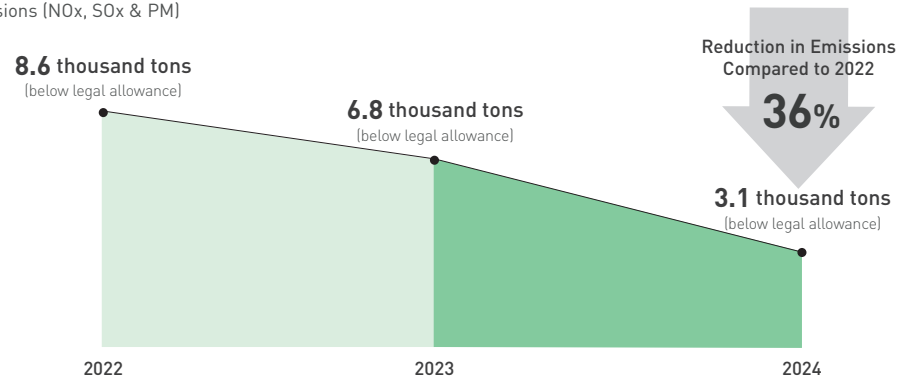
Environmental Management Strategy

Managing Air Pollutants and Ensuring Regulatory Compliance

Hanwha TotalEnergies Petrochemical recognizes the significant impact of air pollutants generated during manufacturing processes on both human health and the environment. In response, the company enforces strict internal management standards that go beyond legally required levels. Air pollutants are continuously monitored in real time using the Tele-Monitoring System (TMS)*, and regular measurements are conducted at selected facilities. The company also operates nitrogen oxide (NOx) reduction systems—including Selective Catalytic Reduction (SCR) and Fuel Gas Recirculation (FGR)—and uses Regenerative Thermal Oxidizers (RTOs) to reduce volatile organic compounds (VOCs). A Leak Detection and Repair (LDAR) system has been implemented across all plants to manage fugitive emissions.

To further reduce air emissions, the company continues to invest in pollution control technologies such as electrical dust collectors and burner replacements. As part of these efforts, a total of 64 TMS units have been installed on heaters and other key equipment across its facilities, and targeted investments have been made to replace burners for NOx reduction.

Total Air Pollutant (NOx, SOx & PM) Emissions **
Emissions (NOx, SOx & PM)



Efforts to Manage and Reduce Hazardous Chemical Emissions

Hanwha TotalEnergies Petrochemical operates CheMiR (Chemical Management including REACH), an integrated system for the safe handling of chemicals used at its sites. The system consolidates regulatory information for each substance into a database and maps hazardous chemicals to job roles to assess exposure risks and prevent incidents.

The company also prepares chemical exposure scenarios in advance and conducts regular training based on manuals for emergency reporting and initial response procedures. In addition, it continuously updates its monitoring and control protocols for newly regulated toxic substances to prevent chemical accidents and major public hazards.

As part of its emission reduction efforts, **Hanwha TotalEnergies Petrochemical** completed the installation of Regenerative Thermal Oxidizers (RTOs)*** and connection to storage tanks in 2024 to reduce volatile organic compound (VOC) emissions.

Management of Hazardous Chemical Emissions (Top 5 Substances)

	2022	2023	2024
P-Xylene	13.7 tons	13.4 tons	12.3 tons
Benzene	4.8 tons	4.1 tons	3.8 tons
Toluene	4.8 tons	4.1 tons	4.1 tons
Styrene	4.6 tons	4.1 tons	3.5 tons
1,3-Butadiene	1.0 ton	1.0 ton	1.0 ton

* Tele-Monitoring System (TMS): A system installed at air pollutant-emitting facilities to transmit real-time data on emissions of air pollutants such as nitrogen oxides (NOx), sulfur oxides (SOx), and particulate matter (PM).
** Based on the calculation standards stipulated in the Special Act on the Improvement of Air Quality in Air Control Zones.
*** Regenerative Thermal Oxidizer (RTO): A type of air pollution control facility that collects and incinerates low-concentration volatile organic compounds (VOCs) and odorous substances.

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Soil Contamination Management

Hanwha TotalEnergies Petrochemical conducts regular soil contamination assessments and remediation efforts in accordance with applicable regulations. This includes periodic monitoring of soil management facilities at its sites and tracking potential sources of contamination. Every two years, the company commissions specialized agencies to assess soil quality and determine whether any contamination is present. If contaminated areas are identified, professional remediation firms are engaged to carry out soil decontamination, followed by official verification from accredited soil inspection agencies.

In 2023, the company conducted regular soil inspections on 96 storage tanks, all of which were deemed compliant. In 2024, an additional 80 tanks underwent similar inspections as part of efforts to strengthen systematic soil monitoring. The next round of soil assessments is scheduled for 2025.

Beyond routine inspections, the company also performed internal reviews in 2024 to assess the need for enhanced soil management. These proactive measures are part of its commitment to minimizing soil contamination risks and have helped lay the foundation for a more robust environmental risk prevention framework going forward.

Waste Management and Recycling Enhancement

Hanwha TotalEnergies Petrochemical endeavors to establish a resource circulation system throughout its entire production and sales operations, including raw material procurement, transportation, and product distribution. To minimize waste generation, the company prioritizes managing key waste sources and promotes a circular economy by ensuring proper waste separation and improving resource recovery rates. The company periodically analyzes waste generated from its production processes to assess its environmental impacts on surrounding areas, including local communities. Waste storage facilities are managed to prevent potential environmental hazards, and all stored waste is handled by legally authorized third-party contractors. The entire waste disposal process is recorded and monitored through the government’s official system. Contractors are subject to regular due diligence audits to verify legal compliance in waste handling and disposal.

In 2024, **Hanwha TotalEnergies Petrochemical** expanded its recycling efforts by identifying new qualified contractors for recyclable waste streams, such as wastewater sludge, spent catalysts, and used adsorbents. In 2025, the company plans to further strengthen its waste management system by investing in new storage facilities to ensure the safe handling of leachate from water and wastewater sludge.

Waste Management

		2022	2023	2024
Total Waste Generated		17,421 tons	19,526 tons	21,649 tons
General Waste	Total Waste Generated	9,787 tons	11,190 tons	11,687 tons
	Recycled	6,356 tons	6,239 tons	8,907 tons
Designated Waste	Total Waste Generated	7,634 tons	8,336 tons	9,962 tons
	Recycled	7,441 tons	7,673 tons	8,572 tons
Recycled Waste (General + Designated)		79%	71%	81%
Waste Disposal Cost		KRW 1.1 billion	KRW 1.7 billion	KRW 1.9 billion

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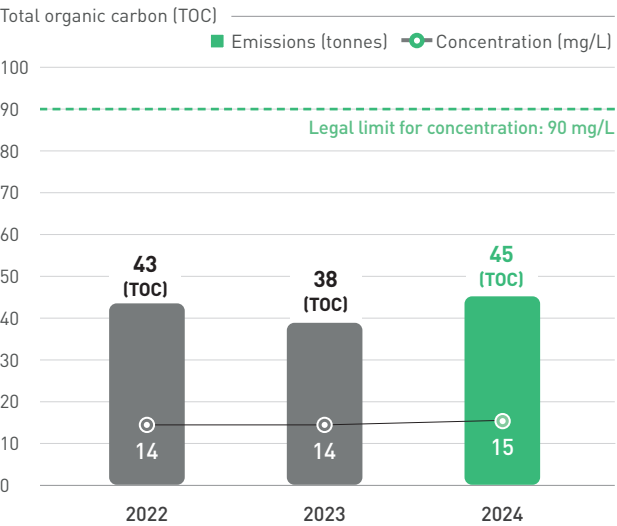
Strategy

Water Pollutant Management

Hanwha TotalEnergies Petrochemical operates an on-site wastewater treatment facility to manage water pollutants in a systematic and controlled manner. Wastewater from each plant is first routed through oil-water separators and then transferred to equalization basins. It undergoes primary treatment using the activated sludge process, in which microorganisms break down organic pollutants, followed by advanced treatment through sand and activated carbon filtration before final discharge.

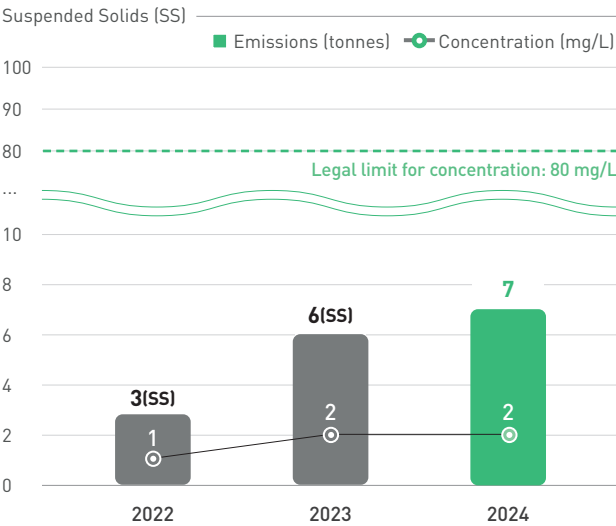
The treated effluent is monitored in real time through the Tele-Monitoring System (TMS), which transmits data on pollutant concentrations—such as Total Organic Carbon (TOC) and Suspended Solids (SS)—directly to regulatory authorities.

Water pollutant emissions management



In addition, the company monitors 63 designated water pollutants, including benzene and phenol, on a quarterly basis. These substances are managed using internal standards that are stricter than legal requirements. Continuous investments in facility upgrades further reinforce efforts to minimize pollutant discharge.

In 2024, **Hanwha TotalEnergies Petrochemical** carried out several optimization initiatives to improve the efficiency of its wastewater treatment process. These included the use of microbial activation enzymes, optimization of dissolved oxygen (DO) levels, and lab testing of powdered activated carbon. These measures are expected to enhance pollutant removal efficiency and ensure the consistent quality of discharged water.



Water Resource Management and Wastewater Reuse

To reduce water resource consumption and minimize wastewater discharge, **Hanwha TotalEnergies Petrochemical** monitors both water usage and effluent volumes across its operations. The company actively implements measures to reduce discharge and increase reuse, reinforcing its commitment to efficient water resource management. Key wastewater process improvements include the installation of primary pretreatment facilities at each plant, real-time monitoring systems for influent water quality, dedicated pretreatment for high-concentration wastewater, continuous operation of advanced treatment systems, and regular cleaning of main collection basins to reduce suspended solids. In addition, the company sets annual quantitative targets for reducing waste generation and increasing recycling rates. Wastewater discharge and Total Organic Carbon (TOC) emissions are managed through performance-based KPIs, supporting a structured and measurable approach to sustainability in water management.

Water Usage Management

	2022	2023	2024
Total Water Usage	27,962,477 tons	25,644,173 tons	27,474,568 tons
Water Reuse Volume	4,246,052 tons	3,539,358 tons	4,194,978 tons
Reuse Rate	15%	14%	15%
Wastewater Discharge Volume	2,796,091 tons	2,835,993 tons	2,964,299 tons

* In 2022, water pollutant emissions were managed based on Chemical Oxygen Demand (COD). For consistency with 2023–2024 data, values have been recalculated using TOC standards.

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Environmental Risk Management

Hanwha TotalEnergies Petrochemical regards minimizing environmental impact as a key priority in its sustainability efforts and works proactively to mitigate risks associated with its business operations.

Monitoring of Environmental Regulations

The company regularly monitors legislative trends and updates related to environmental regulations. Any changes in relevant laws and policies are reviewed monthly and shared across the organization to preemptively manage potential risks. This process helps prevent legal violations and supports the ongoing enhancement of environmental management at all sites.

Environmental Impact Assessment

Hanwha TotalEnergies Petrochemical conducts regular environmental impact assessments in accordance with the Environmental Impact Assessment Act to evaluate the effects of its operations on the surrounding environment. In line with regulatory requirements, the company also performs annual follow-up environmental impact assessments. In 2024, such an assessment was carried out for an industrial complex development project, confirming that air quality, marine water quality, and noise levels all met the relevant standards. The results were submitted to the Ministry of Environment and are used as a basis for regulatory compliance and future environmental improvement initiatives.

Investment in Pollution Reduction

To reduce pollutant emissions and transition toward more environmentally responsible operations, **Hanwha TotalEnergies Petrochemical** continues to invest in eco-friendly infrastructure. In 2024, the company made significant environmental investments, including the installation of an Ultra Low NOx Burner (ULNB) on the xylene heater to reduce nitrogen oxide (NOx) emissions and the addition of Regenerative Thermal Oxidizers (RTOs) with direct connections to storage tanks at the NCC plant to reduce volatile organic compound (VOC) emissions. Moving forward, the company plans to further expand the adoption of eco-friendly facilities, applying rigorous internal standards that go beyond regulatory requirements.

Green Bond

In February 2022, **Hanwha TotalEnergies Petrochemical** issued green bonds worth KRW 70 billion to fund environmental improvement projects. The full proceeds were allocated to the construction of air pollution control facilities within the company’s production sites. By 2024, the capital had been deployed as planned for key environmental initiatives, including the expansion of smokeless flare systems, aromatics recovery from off-gases, and installation of Regenerative Thermal Oxidizers (RTOs) within production processes. These investments are expected to reduce heat, noise, and CO2 emissions from petrochemical operations, while also ensuring compliance with emission thresholds for odorous substances. **Hanwha TotalEnergies Petrochemical** remains committed to protecting the health of nearby communities and contributing to environmental improvement in the region by effectively reducing air pollutants and carbon emissions and promoting resource circulation.

* Regenerative Thermal Oxidizer (RTO): A type of air pollution control facility that captures and incinerates low-concentration volatile organic compounds (VOCs) and odorous substances using a heat recovery-based combustion system

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Metrics & Targets

Environmental Management Goals and Performance

Hanwha TotalEnergies Petrochemical has set mid-term environmental goals and conducts continuous performance reviews against its annual action plans to minimize the environmental impact of its business activities and support environmental protection.

Goal	Mid-Term Target	2024 Performance	2025 Plan
<div>Reducing Environmental Pollutants</div>	Ensuring compliance with air pollutant emissions standards	Maintained stable compliance with legal standards	Strengthen management focused on major emission sources
	Reducing water pollutant discharges	Kept key indicators such as SS and TOC consistently below regulatory thresholds	Promote emission reductions through technology upgrades and predictive operations
	Controlling hazardous chemical emissions (benzene)	Achieved compliance through facility upgrades and targeted mitigation measures	Continue targeted improvement efforts based on additional assessments
	Expanding waste recycling	Increased recycling rates, contributing to a more circular resource system	Improve general waste storage systems to further enhance recycling performance

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Workplace Health and Safety

Special Comment

Leader of Safety and Environment Div., Hanwha TotalEnergies Petrochemical

At Hanwha TotalEnergies Petrochemical, we view the health and safety of our employees, business partners, and neighboring communities as a fundamental pillar of sustainable growth.

With a clear goal of achieving zero safety incidents, we are working to reach world-class standards across our safety culture, competencies, systems, and technologies. From a systems perspective, we have established a mature safety and health management framework that meets global top-tier standards, including achieving Level 8 of the ISRS and a P grade in the PSM assessment. In line with the Korean government’s roadmap for reducing serious industrial accidents, we are strengthening our risk assessment-centered prevention framework. Our initiatives include enhancing the quality of existing risk assessments, adopting advanced video-based risk assessment approaches, and standardizing pre-work safety briefings such as Tool Box Meetings.

On the cultural and competency front, we consider safety leadership essential to fostering a safety-first culture. We have developed a dedicated safety leadership program and are actively operating it, extending its scope to our business partners to encourage shared growth. Guided by the slogan, “Let’s dedicate one hour a day to focus solely on safety, led by our managers,” we hold Safety Core Time sessions every morning, where executives, managers, employees, and partners engage in on-site communication to build mutual understanding and awareness around safety.

From a technology standpoint, we are working to create advanced workplaces that strengthen the reliability of safety management by complementing human efforts with technology. To that end, we are proactively introducing technologies such as VR-based training, AI-based monitoring and video analysis, and wireless gas detection systems to drive improvements in our safety practices.

Workplace Health and Safety

Governance

Safety and Health Management Governance

Hanwha TotalEnergies Petrochemical is enhancing its safety and health governance framework to ensure the safety of employees and stakeholders. With a goal of achieving zero safety incidents, the company establishes and implements annual strategies and detailed plans for safety and health, aiming to build a workplace where safety and environmental protection are treated as top priorities.

Organizational Structure

Hanwha TotalEnergies Petrochemical receives approval from the Board of Directors each year for its safety and health plans and operates a self-directed safety and health management system across all production sites.

To ensure efficient and systematic safety and health practices, the company has established a company-wide line-staff type¹⁾ management structure, with the Chief of Daesan Complex serving as the overall safety and health officer. Each division and department appoints dedicated personnel and teams responsible for safety and environmental matters.

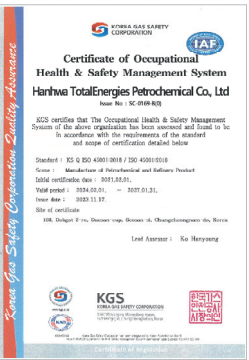
The Safety and Health Management Committee, led by the Chief Safety Officer (CSO), includes executives from each division and team leaders of safety and environmental departments. This structure supports objectivity, balanced decision-making, and a streamlined reporting process. The committee meets twice a year to review and approve key items such as safety goals, management policies, budgets, staffing, and compliance with the Serious Accidents Punishment Act.

A separate Health and Safety Committee also convenes quarterly to deliberate and approve safety-related matters, including the establishment and evaluation of safety plans and implementation guidelines aimed at preventing occupational accidents and illnesses. Meeting outcomes are shared with all employees to ensure transparency and facilitate ongoing monitoring.

SHE Safety and Health Management System Certifications

Hanwha TotalEnergies Petrochemical has established a globally recognized Safety, Health, and Environment (SHE) management system through the integrated certification of ISO 45001 and ISO 9001 by the International Organization for Standardization. This reflects the company's comprehensive approach to safety, health, and quality management. In 2021, the company earned Level 8 in the International Safety Rating System (ISRS) evaluation, demonstrating the ongoing advancement and maturity of its safety and health management system. As no company in the refining or petrochemical sector has achieved Level 9 or 10 to date, this rating is considered the highest in the industry. Hanwha TotalEnergies Petrochemical has also received the top ratings in Korea's process safety evaluation system: a P grade (highest) for the Process Safety Report, which assesses the implementation and performance of process safety management systems, and an A grade (highest) for the Safety Improvement Plan. These certifications are consistently maintained, underscoring the robustness of the company's process safety management system.

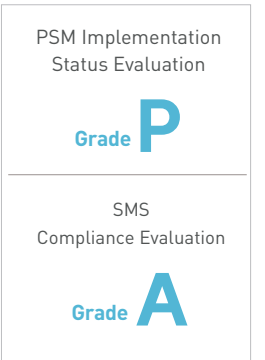
Occupational Health and Safety Management System (ISO 45001)*



International Safety Rating System (ISRS)



Process Safety Management (PSM/SMS)



* ISO 45001: International standard for management systems of occupational safety and health set by the International Organization for Standardization (ISO); PSM: Evaluation of a systematic process safety management system based on 12 elements; SMS: Evaluation of comprehensive safety management regulations and system operation system; International Safety Rating System (ISRS): Internationally-recognized safety rating assessment by DNV GL, an international standards certification organization

1) A line-staff-type organization combines the strengths of both line and staff safety management systems. In this model, safety plans are prepared by the staff department and executed through production departments (line), ensuring both expertise and operational effectiveness, making it especially well suited for large-scale industrial sites

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Workplace Health and Safety

Strategy

Safety and Health Management Strategy

Building a Trusted Compliance System

Hanwha TotalEnergies Petrochemical has designated compliance with relevant domestic and international laws and regulations as the top priority of its safety, health, environment, and quality (SHEQ) policy, and continues to emphasize the importance of compliance management across all operations. To support the consistent implementation of legal requirements and best practices, the company conducts quarterly on-site inspections led by top management, along with ongoing monitoring and feedback from the Audit Team and the Safety and Environment Audit Team. These efforts help establish a strong culture of compliance throughout the organization. In addition to legally mandated inspections and audits, the company also seeks voluntary improvement by engaging external experts—such as the Korea Gas Safety Corporation (KGS)—to conduct objective evaluations of compliance with safety and health laws and international standards. To systematically and promptly respond to changes in safety and health-related laws, regulations, and public notices, **Hanwha TotalEnergies Petrochemical** tracks monthly legislative updates and develops appropriate response plans. These plans are reflected in internal policies (business procedures) and technical standards (guidelines for facilities and equipment), in accordance with the company's internal management system.

Fostering a Culture of Compliance and Strengthening Safety and Health Competencies

Hanwha TotalEnergies Petrochemical continuously enhances training programs to strengthen the safety and health competencies of all employees. A structured, in-house training system has been developed and is regularly updated based on employee feedback, including periodic surveys to identify training needs.

Safety Leadership Training

Provided by job position:
Executives, Team leaders,
Shift Managers (F/M),
All Employees



Safety Skill-Up Training

Provided by job function:
SHE Coordinators, Office Staff,
Specialists, Safety Staff,
Field Operators



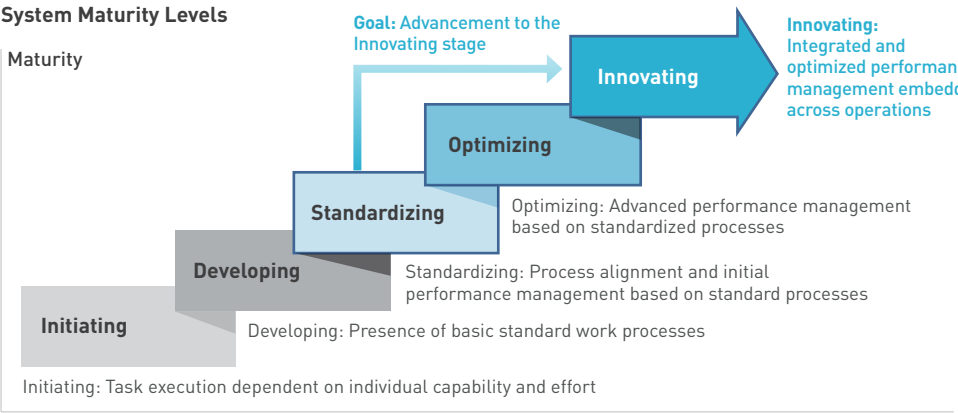
VR Safety Experience Training

Target groups:
Production and Maintenance
Departments



Enhancing the Effectiveness of the SHE System

Hanwha TotalEnergies Petrochemical is restructuring its proprietary SHE system framework and streamlining operations through the implementation of "One-Maestro"—a global best practice SHE framework developed and adopted by TotalEnergies. This initiative aims to improve system maturity and strengthen performance management by moving beyond the basic Standardizing stage of process and performance alignment, and advancing toward the Innovating stage, which focuses on optimization and integration. Through this transition, the company seeks to elevate its SHE maturity to a global top-tier level.



Driving Digital Innovation in SHE Management

To achieve zero safety and environmental incidents and to use SHE resources more efficiently, **Hanwha TotalEnergies Petrochemical** is advancing its SHE management system by incorporating digital technologies. In 2024, the company launched efforts to build AI-based systems, including the deployment of an AI chatbot that provides employees with data-driven insights for accident prevention and regulatory compliance. In addition, an AI-based Q&A platform has been introduced to collect employee feedback and accumulate operational expertise.

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Workplace Health and Safety

Risk Management

Safety and Health Risk Management

Hanwha TotalEnergies Petrochemical is strengthening efforts to minimize safety and health risks at its production sites, with the aim of fostering a work environment where safety is the highest priority.

Targeted Management of Serious Accident Risk Factors

To prevent serious industrial accidents, Hanwha TotalEnergies Petrochemical operates a Serious Accident Prevention Program that identifies and manages high-risk factors. Under the direction of the Chief of Daesan Complex, the company holds a Risk Management Committee twice a year to share risk assessments and management strategies across divisions, encouraging mutual benchmarking. In addition, high-risk facilities and equipment are selected annually and reviewed through joint inspections conducted with external experts, including system evaluations and safety audits of plant operations.

On-Site Risk Management

In line with the Serious Accident Reduction Roadmap by the Ministry of Employment and Labor, Hanwha TotalEnergies Petrochemical continues to enhance the effectiveness of its risk assessments by strengthening risk identification, information sharing, and employee engagement. In 2024, the company conducted regular job-specific risk assessment consultations with external experts and improved its methodologies by incorporating actual near-miss cases from its operations.

Improving Safety Awareness

Since 2024, Hanwha TotalEnergies Petrochemical has operated a company-wide Safety Core Time program to promote a safety-first culture and encourage voluntary employee participation. Managers take the lead in on-site safety practices, building shared awareness with frontline personnel. The company also runs regular safety campaigns and shares international incident cases across the organization to support ongoing safety culture improvements.

Health Management and Medical Examinations

Hanwha TotalEnergies Petrochemical operates a comprehensive health management program to help employees work in a safe and pleasant environment, while also supporting the well-being of their families. Going beyond basic legal compliance, the company continues to expand voluntary health promotion initiatives. As part of its compliance with occupational health regulations, the company conducts a range of assessments, including general, comprehensive, and special health checkups, as well as evaluations for musculoskeletal disorders, cardiovascular and cerebrovascular conditions, and job stress. Workplace environment monitoring is performed twice a year to identify and control hazardous factors, helping to protect both employees and partner company personnel. Since the introduction of environment monitoring, there have been no cases where exposure levels exceeded legal limits. All results are shared transparently with employees, and feedback from labor unions is actively reflected in future assessments through biannual briefing sessions.

Legal Requirements		Voluntary Programs	
Every 6 months	Annually	Every 3 years / Annually	As needed
Workplace Environment Monitoring <ul style="list-style-type: none">Measure exposure to hazardous factors such as noise, dust, and harmful chemicals	Health Checkups <ul style="list-style-type: none">Maintain and promote employee health	Physical Health Support <ul style="list-style-type: none">Wellness clinics and health consultations<ul style="list-style-type: none">Personalized exercise programs and consultations for individuals with health conditionsInfluenza vaccination<ul style="list-style-type: none">Financial support for flu shots	Mental Health Support <ul style="list-style-type: none">Psychological counseling and aromatherapy<ul style="list-style-type: none">Counseling available upon requestStress management support
Every 3 years	Every 2 years	As needed	Monthly
Musculoskeletal Disorder Assessment <ul style="list-style-type: none">Identify and reduce risks to prevent musculoskeletal disorders	Cardiovascular and Job Stress Assessment <ul style="list-style-type: none">Assess risk of cardiovascular and cerebrovascular diseasesAssessment of Job Stress Factors and Levels	Health Events & Campaigns <ul style="list-style-type: none">Body fat reduction and smoking cessation programs<ul style="list-style-type: none">Health promotion through physical activitiesSupport for smoking cessation	CPR Training <ul style="list-style-type: none">Cardiopulmonary resuscitation training

Workplace Health and Safety

Risk Management

24/7 Emergency Response System

Hanwha TotalEnergies Petrochemical has established a comprehensive 24/7 emergency response system to ensure rapid and accurate handling of contingencies. The company develops and manages emergency response scenarios based on site-specific risk assessments, identifying more than 700 potential scenarios that are reviewed and updated annually. To enable real-time situational awareness across its 3.3 million square meter site, the company has implemented a location-based mapping system that integrates fixed and mobile CCTV with mobile gas monitoring systems. This infrastructure supports immediate identification of incident locations and the swift execution of appropriate countermeasures. Companywide emergency response drills are conducted semiannually, with participation from both employees and partner companies. These exercises include emergency communication drills for executives and managers, mobile fire brigade training, scenario-based emergency response drills, and hands-on fire suppression training. These efforts ensure the organization remains well-prepared to respond to major safety and environmental incidents such as fires, explosions, leaks, and serious industrial accidents.

In 2024, **Hanwha TotalEnergies Petrochemical** conducted two companywide emergency response drills involving approximately 1,000 employees and partner company personnel to strengthen its readiness for major safety and environmental incidents such as fires, explosions, and chemical leaks, as well as serious industrial accidents. In the first half of the year, the company also took part in the Ready Korea joint drill—a comprehensive disaster response exercise conducted in collaboration with both public and private sectors. The drill involved more than 550 participants from 35 organizations, including central government ministries such as the Ministry of the Interior and Safety, Ministry of Environment, Ministry of Employment and Labor, and Ministry of Health and Welfare, as well as local governments.



2024 1H Ready Korea Drill



2024 2H Company-Wide Emergency Response Drill

Supporting Safety Management Capacity of Partner Companies

Hanwha TotalEnergies Petrochemical operates a range of partnership programs to support and encourage proactive safety management among its partner companies.

Support for Safety Competency Enhancement

 System	<ul style="list-style-type: none">• Safety and health assessments and consulting support, establishment of a dedicated contractor system (HTC Partner Platform), etc.
 Competency/ Safety awareness	<ul style="list-style-type: none">• VR training, safety leadership programs, safety and health events and campaigns, recognition of outstanding partner companies and workers
 Work Environment Improvement	<ul style="list-style-type: none">• Support for workplace environment monitoring, installation of employee rest areas
 On-Site Safety Management Support	<ul style="list-style-type: none">• Financial support for safety and health management in subcontracted projects, operation of safety support teams for project supervision• Provision of safety inspection, guidance, and training materials, support for facilities and protective equipment required for accident prevention, safety inspections and audits for construction equipment, certification allowances for contractor safety managers, etc.

Contractor Safety and Health Evaluation System

To promote continuous improvement in contractor safety practices, the company has introduced Audit Protocol – Contractor Safety Management System (AP-CSMS), an evaluation system that assesses the effectiveness of each contractor’s safety management system. Safety-related criteria account for more than half of the overall evaluation when selecting new contractors, ensuring that safety capabilities are prioritized. In addition, safety and health eligibility assessments are factored into contract decisions, and safety performance makes up approximately 70% of the total score in supplier performance evaluations.

Introduction

Our Approach to ESG

ESG Progress

- Environmental
- ①Achieving Carbon Reduction
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- ③Minimizing Environmental Impact
- Social
- ④Workplace Health and Safety
- ⑤Human Rights and Talent Management
- ⑥Sustainable Supply Chain
- ⑦Strategic Social Contribution
- Governance
- ⑧Proactive Risk Management and Response
- ⑨Legal and Ethical Compliance

Appendix

Workplace Health and Safety

Metrics & Targets

Health and Safety Goals and Performance

Hanwha TotalEnergies Petrochemical has established mid-term goals to embed a strong safety and health culture across its operations. Annual action plans and performance are continuously monitored to ensure progress.

	Goal	Mid-Term Target	2024 Performance	2025 Plan
	Compliance Management	<ul style="list-style-type: none">Establish a regulatory compliance framework to build trust	<ul style="list-style-type: none">Monitor regulatory changes and integrate updates into internal policies and work processes	<ul style="list-style-type: none">Establish an AI-powered system for regulatory monitoring
	System Management	<ul style="list-style-type: none">Strengthen the effectiveness of the SHE management system	<ul style="list-style-type: none">Execute the SHE management system enhancement projects	<ul style="list-style-type: none">Continue system enhancement projects and IT consulting efforts
	Accident Prevention & Health Promotion	<ul style="list-style-type: none">Prevent serious industrial accidents	<ul style="list-style-type: none">Convene the company-wide Serious Accident Risk Review Committee twice a yearConduct safety inspections of high-risk facilities and systems (e.g., automated warehouses)	<ul style="list-style-type: none">Maintain operation of the company-wide Serious Accident Risk Review CommitteeConduct safety inspections of high-risk facilities and systems (e.g., piers)
		<ul style="list-style-type: none">Enhance on-site risk management	<ul style="list-style-type: none">Strengthen the effectiveness of risk assessments and toolbox meetings (TBMs)Operate the Safety Core Time program to enhance on-site safety practices	<ul style="list-style-type: none">Strengthen performance-based feedback mechanisms (e.g., incentives and penalties)
		<ul style="list-style-type: none">Promote safety leadership	<ul style="list-style-type: none">Introduce an internal coaching program and enhance performance feedback mechanismsStrengthen focused management for shift supervisors (F/M)	<ul style="list-style-type: none">Expand the scope of safety leadership training from team leaders to front-line supervisors
		<ul style="list-style-type: none">Strengthen safety competencies	<ul style="list-style-type: none">Establish tailored competency management plans by position and job grade	<ul style="list-style-type: none">Broaden the target group for basic operator safety training (from new hires to early-career employees)Enhance supervisor training by incorporating internal safety standards
		<ul style="list-style-type: none">Advance health management and wellness initiatives	<ul style="list-style-type: none">Conduct regular workplace environment measurements and promote voluntary health management programs	<ul style="list-style-type: none">Continue programs initiated in 2024 as part of long-term implementation
	Shared Growth with Partners	<ul style="list-style-type: none">Foster shared growth with business partnersEnhance safety management capabilities of business partners	<ul style="list-style-type: none">Provide consulting and evaluation support for contractor safety management systemsSupport leadership development through consulting and VR-based safety training programs	<ul style="list-style-type: none">Advance the contractor safety management system evaluation frameworkSustain support for leadership consulting and VR-based safety training
	Emergency Response	<ul style="list-style-type: none">Establish a comprehensive emergency response frameworkAdvance the emergency response system	<ul style="list-style-type: none">Enhance initial emergency response capabilities by deploying a Rapid Response TeamBuild real-time communication channels for emergency situations	<ul style="list-style-type: none">Establish emergency response protocols for vulnerable timeframes (e.g., night shifts, holidays)

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Key Focus Areas for Sustainability

- ① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨

Human Rights Management

Special Comment

Leader of HR & Admin. BU, Hanwha TotalEnergies Petrochemical

At Hanwha TotalEnergies Petrochemical, we are committed to practicing people-centered management that respects every stakeholder involved in our business—from our internal teams to our external partners and broader society. To do this, we have put in place dedicated structures and policies that reflect this core value.

We fully support globally recognized principles on human rights and work diligently to uphold them in everything we do. That means constantly reviewing the potential impact our business may have on society, and ensuring that none of our policies or practices compromise human dignity. Building systems that allow for this level of scrutiny is something we continue to prioritize.

We believe that respecting human rights is not only the right thing to do—it is also key to enhancing both the financial and non-financial value of our company. Ultimately, it lays the foundation for long-term, sustainable growth, and we are doing our utmost to ensure that everyone, inside and outside the company, shares in that understanding.

Every outcome we achieve—large or small—reflects our unwavering commitment to human rights. We will keep striving to ensure that Hanwha TotalEnergies Petrochemical's approach becomes a global benchmark.

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Human Rights Management

Governance

Governance for Human Rights Management

Hanwha TotalEnergies Petrochemical is committed to respecting the human rights of its employees and all stakeholders, and to upholding the principles of human rights management throughout its operations. We support internationally recognized standards, including the Universal Declaration of Human Rights, the UN Guiding Principles on Business and Human Rights, and the ILO Declaration on Fundamental Principles and Rights at Work. We also comply with all relevant domestic laws that incorporate these global principles.

The company takes a proactive approach to identifying and eliminating potential human rights risks. In the event of any violation, we respond promptly and work to address the root cause of the issue to ensure a lasting resolution.



Strategy

Human Rights Management System

Human Rights Policy

Hanwha TotalEnergies Petrochemical has established a human rights policy that outlines the fundamental principles for implementing human rights management across its operations.

Human Rights Policy

1 Non-Discriminatory Work Environment

Hanwha TotalEnergies Petrochemical is committed to providing a work environment free from discrimination. We do not tolerate any form of discrimination based on race, ethnicity, nationality, religion, disability, gender, place of birth, political opinion, gender identity, sexual orientation, beliefs, or age in our employment practices.

2 Fair Wages and Benefits

We comply with all relevant labor laws regarding wages and compensation, and treat all employees fairly based on their competencies and performance. We also strive to enhance employee well-being through appropriate benefit measures that respect individual dignity.

3 Freedom of Association and Collective Bargaining

We respect the rights of all employees to form associations and engage in collective bargaining, as guaranteed by labor laws. No employee shall face disadvantages for participating in legitimate union activities. We also faithfully implement outcomes reached through mutual consultation.

4 Prohibition of Forced Labor and Working Hour Management

We respect the rights of all employees to form associations and engage in collective bargaining, as guaranteed by labor laws. No employee shall face disadvantages for participating in legitimate union activities. We also faithfully implement outcomes reached through mutual consultation.

5 Prohibition of Child Labor

The company does not employ child labor under any circumstances and upholds international and domestic standards in this regard.

6 Occupational Safety and Health

We maintain systems to ensure the safety and health of all employees, provide regular training, and comply with all safety- and health-related laws, regulations, and internal policies, including those on working hours.

7 Responsible Supply Chain Management

We require all suppliers and business partners to uphold their human rights responsibilities. In the event of a serious violation, we may request corrective action or take other appropriate measures to address the issue.

8 Environmental Rights

We comply with applicable environmental laws and regulations, and are committed to carbon neutrality, environmental sustainability, and resource circularity to ensure the protection of environmental rights.

9 Protection of Consumer Rights

We take every precaution to ensure that our products and services do not cause harm to the life, health, or safety of consumers. All processes are carried out in strict accordance with relevant laws and standards.

10 Protection of Personal Information

We respect the personal information of all stakeholders, including employees, investors, business partners, customers, and local communities, in accordance with relevant laws and regulations. A robust information security framework is in place, and no personal data is collected or used without the individual's prior consent, nor is it used for any unauthorized purpose.

11 Responsibility to Protect Human Rights in Local Communities

As a responsible member of the communities in which we operate, Hanwha TotalEnergies Petrochemical respects and protects the fundamental rights of local residents. This includes the rights to life, property, safety, and a healthy environment, and we strive to ensure that our business activities do not infringe upon these rights.

Human Rights Management

Risk Management

Human Rights Risk Management

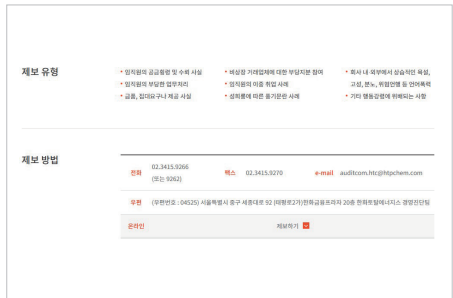
Hanwha TotalEnergies Petrochemical maintains open communication channels to continuously listen to employee voices through its internal reporting system. To foster a healthy and safe working environment, we actively provide training to prevent human rights violations such as sexual harassment, workplace bullying, and verbal abuse. In addition, we are committed to building a clean and transparent organizational culture and are continuously working to improve our systems and practices to uphold this standard.

Statutory Workplace Training Programs



Human Rights Reporting and Grievance Channels

To ensure swift recognition and response to potential human rights issues—such as workplace harassment, sexual misconduct, or discrimination—Hanwha TotalEnergies Petrochemical operates a dedicated hotline. All reports are handled with strict confidentiality, and the identities of whistleblowers and the details of their reports are thoroughly protected. We strictly prohibit any form of retaliation against individuals who report concerns and are committed to protecting their rights and well-being throughout the process.

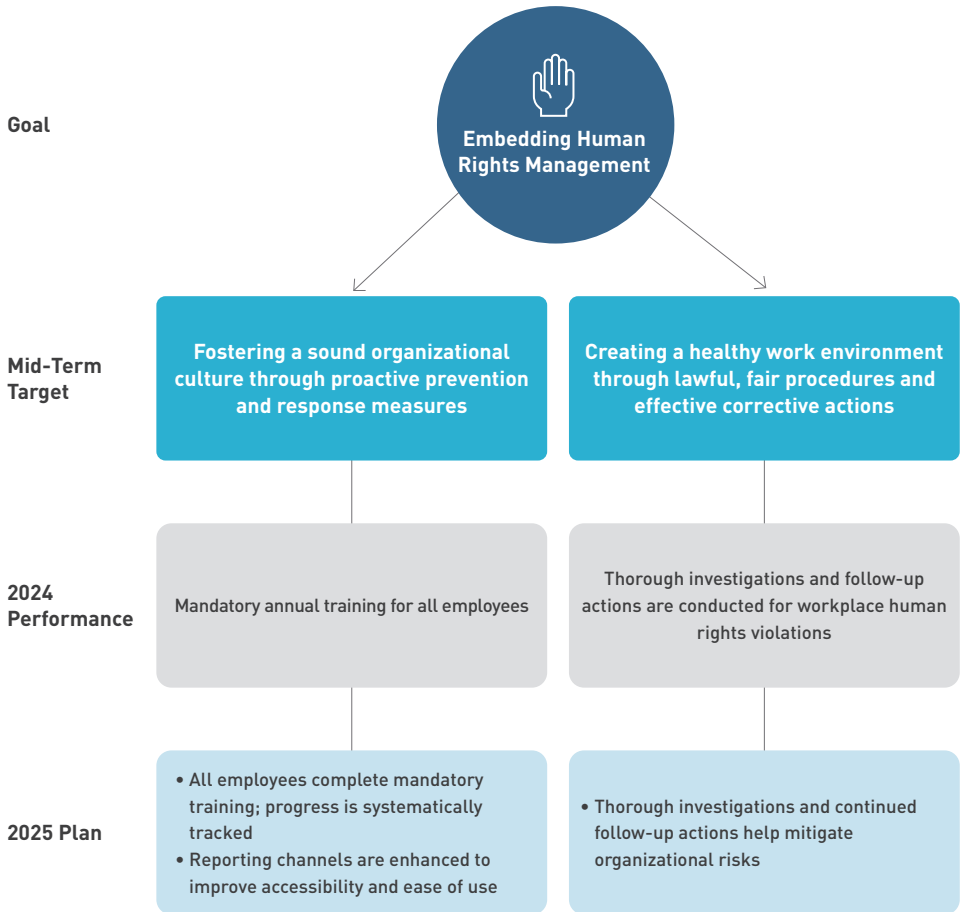


Operation of Human Rights Hotline
(Including sexual harassment and habitual verbal abuse)

Metrics & Targets

Human Rights Management Goals and Performance

Hanwha TotalEnergies Petrochemical has established mid-term goals for the systematic implementation of human rights management and continuously monitors its annual action plans and performance.



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Talent Management

Special Comment

Leader of HR Division, Hanwha TotalEnergies Petrochemical

Hanwha TotalEnergies Petrochemical is committed to attracting and retaining employees with the highest levels of potential and capability. To achieve this, the company operates a fair and transparent internal recruitment process that enables the continuous identification and selection of outstanding talent. In 2024, a number of key personnel at the managerial level were secured, contributing meaningfully to the enhancement of the company's overall competitiveness.

The company has also diversified its recruitment branding channels to engage potential candidates more effectively, and is actively communicating its talent management principles to a broad range of stakeholders. In response to the rapidly evolving business environment, Hanwha TotalEnergies Petrochemical has conducted internal capability assessments to ensure top-level competitiveness. Based on these findings, the company has significantly overhauled its talent development framework to support both career development and the enhancement of core competencies, while laying the foundation for self-directed growth. Hanwha TotalEnergies Petrochemical will continue to respond to change with agility, while remaining firmly committed to its core value of respecting and empowering talent.

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Talent Management

Governance

Talent Management Governance

Hanwha TotalEnergies Petrochemical regards high-performing talent as a core driver of sustainable growth and as key contributors to global value creation. The company is committed to building an organizational environment in which employees are empowered to fully realize their capabilities. To that end, the company continuously evaluates and enhances workplace systems and conditions to support employee engagement and productivity. It also promotes alignment between its corporate mission and the roles of individual employees through a clearly defined talent philosophy. Under the slogan “Great Challenger,” the company has established a new talent profile built on three core mindsets: ownership, exceptional distinction, and adaptability to change. Through structured communication campaigns, leadership development, and internal training programs, the company has strengthened organization-wide understanding and adoption of these values. A group of internal instructors has also been developed to serve as key facilitators in disseminating the new talent model across all levels of the workforce. These initiatives are designed to embed the company’s approach to talent into its organizational culture and ensure alignment with business objectives. Talent identification and development efforts are conducted based on capability, performance, and potential, without regard to gender, age, race, religion, or educational background. Recognizing the strategic importance of diversity and inclusion in driving innovation and growth, Hanwha TotalEnergies Petrochemical is also working to gradually increase the representation of women in its workforce as part of its long-term human capital strategy.

Talent Management Structure



Talent Model



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Talent Management

Strategy

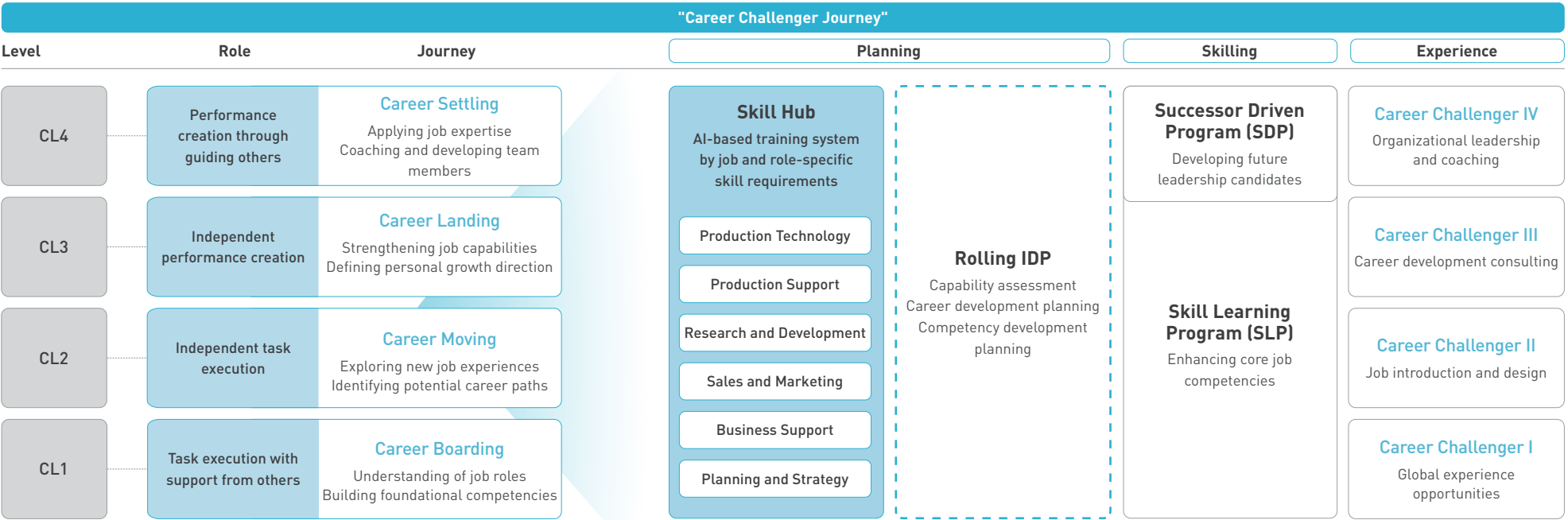
Talent Management Strategy

Consistent and Fair HR Practices (Evaluation and Compensation)

Hanwha TotalEnergies Petrochemical fosters a horizontal organizational culture by operating under a unified job title system (“Pro”). The company has established a role-based human resources framework that evaluates performance at the current Career Level (CL) and offers promotion opportunities based on both demonstrated outcomes and potential to take on responsibilities at the next level. This approach enables high-performing talent to grow rapidly within the organization. All HR decisions—including promotions, evaluations, and compensation—are made strictly without discrimination based on gender, age, or educational background. The company continues to enhance fairness and transparency in its HR practices through systems such as a promotion point mechanism and KPI-based performance evaluation.

Support for Employee Development (Talent Growth)

Hanwha TotalEnergies Petrochemical is committed to nurturing core talent by supporting the personal growth and professional development of its employees. To this end, the company provides a wide range of learning opportunities, including not only mandatory training in areas such as safety and ethics, but also programs such as job rotation, academic sponsorship, intensive language courses, and the Global Talent Program—all aimed at strengthening job-related capabilities. A key part of this effort is the Individual Development Plan (IDP) system. Under this program, employees annually define their own career development plans, assess the skills they need to acquire, and receive structured feedback from their supervisors. Through this approach, the company promotes personalized, long-term growth and empowers employees to take ownership of their development journey.



Talent Management

Strategy

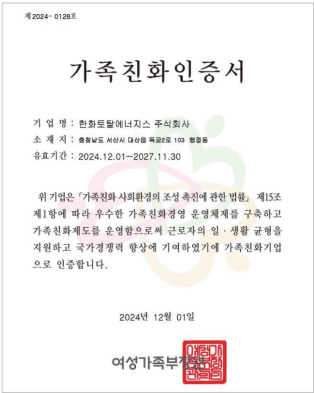
Enhancing Employee Well-being and Workplace Satisfaction

Hanwha TotalEnergies Petrochemical offers a comprehensive range of employee benefits programs designed to support quality of life and promote a stable, motivated workforce. The company provides both fixed working hours and flexible work arrangements to help employees maintain a healthy work-life balance. In addition, refresh leave and sabbaticals allow employees to take meaningful time away from work and return recharged.

As part of its family-centric approach, the company supports employees beyond the workplace through benefits such as tuition assistance for children and in-house daycare centers. These programs reflect a commitment to creating an environment where employees and their families can thrive together.

Temporary employees are provided the same level of benefits as permanent staff, with the exception of long-term programs that require extended service or staged repayment. Hanwha TotalEnergies Petrochemical continues to refine its offerings by listening closely to employee feedback and staying informed on emerging workforce trends.

In recognition of its ongoing efforts, the company was officially certified as a Family-Friendly Company by the Ministry of Gender Equality and Family in December 2024. This certification reflects excellence in policy implementation, regulatory compliance, and employee satisfaction. Looking ahead, the company remains committed to expanding and improving its family-supportive initiatives to meet the evolving needs of its people.



Certified as a Family-Friendly Company in 2024

Key Employee Benefits

Leave Benefits



- Annual Leave 15+4**
- 4 days of refresher days in addition to statutory annual leave
- Long Service Leave Rewarding commitment**
- Additional vacation provided every 10 years of service

- Family Events & Holiday Support Because the best memories linger**
- Support for key milestones: marriage, childbirth, child's enrollment, parents' anniversaries, and more
- Sabbatical leave A well-deserved break every 7 years**
- One month of paid sabbatical leave granted after 7 years of service

Work & Life Balance



- Family & Maternity Benefits Support for working parents**
- One month of paid paternity leave per childbirth
 - Leave and assistance for fertility treatment
 - Childcare leave available before and after children start school

- Tuition Support From preschool to higher education**
- Education assistance available from daycare to college
- Medical Support Caring for employees and their families**
- Medical expense support for employees, spouses, and children, including reimbursement-type medical coverage; annual check-ups for employees and spouses; dental care for employees

Flexible Work Arrangements



- Staggered Working Hours Flexible start and end times**
- Employees can choose working hours such as 7-4, 8-5, or 9-6
- Job Rotation System Empowering employees to shape their own career path**
- Career development supported through job rotation based on individual planning

- Cyber Training Center Learning without boundaries**
- Employees may take up to three online courses per month
 - OPIC language test fees covered
- Compressed Work Schedule Use accrued overtime hours for shorter workdays**
- Accrued OT hours can be used to reduce working hours
- Training Programs Investing in future leaders**
- Support for master's and doctoral studies (for selected employees)
 - Overseas technical training opportunities

Housing Assistance



- Housing Financing Assistance Helping employees build stability**
- Interest support for home or rental loans for non-homeowners

- Benefits Points Program Flexible benefits for everyday needs**
- Points usable for leisure, shopping, wellness, and personal development
- Shared Offices Work anywhere, stay connected**
- Access to coworking spaces in Seoul & Seosan

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Talent Management

Risk Management

Talent Management Risk Management

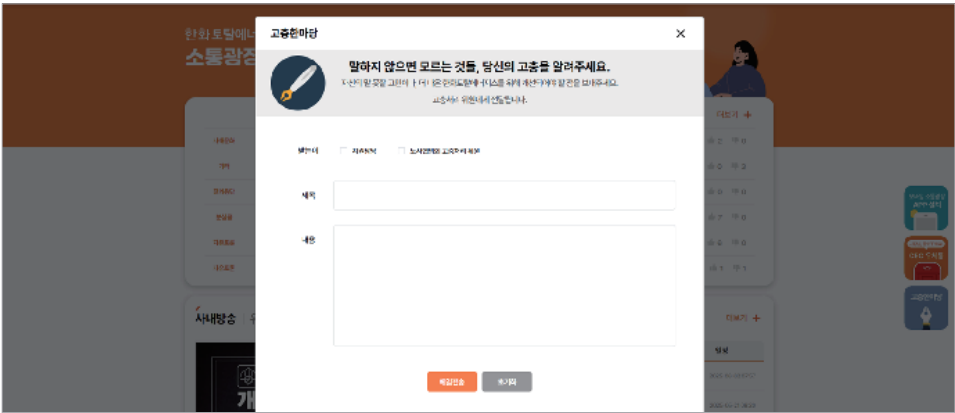
Fostering stable labor-management relations through the protection of employee rights and legal compliance

Hanwha TotalEnergies Petrochemical is committed to safeguarding fundamental labor rights—including the freedom of association, collective bargaining, and collective action—in full compliance with the Constitution and applicable labor laws. The company has formalized its commitment to constructive and respectful labor relations through the Declaration of Labor-Management Harmony and Peace. In line with labor regulations, the company engages in collective bargaining, wage negotiations, labor-management council meetings, workshops, and internal engagement programs aimed at strengthening mutual trust and maintaining a healthy labor-management culture.

Labor-Management Harmony Initiatives

- Monthly Dialogues: Labor policy and workplace issues shared with department heads and production supervisors, including discussions on working hours and collective bargaining matters
- Management Issue Sharing: Company-wide communication of monthly performance results and major management updates through business briefings
- Events: Support for over 30 employee clubs, benchmarking visits to global best-practice companies, organizational culture campaigns, internal broadcasting, and employee engagement programs
- Networking Activities: Dialogue sessions between executives and employees, and Young-HTC (junior board) activities
- Employee Grievance Channel: Operation of the Grievance Forum, a dedicated channel for submitting and addressing employee concerns

Employee Grievance Channel



Labor-Management Council

Hanwha TotalEnergies Petrochemical complies with the Constitution and relevant labor laws to ensure the protection of employee rights, including the right to organize and the right to collective bargaining. The company operates a Labor-Management Council to promote open communication, cooperation, and mutual development, while also supporting employee well-being. The council discusses and agrees on matters such as recruitment, job assignments, training and development, wage structures and payment methods, workplace safety and health, and other issues related to improving working conditions and employee welfare.

- Labor-Management Council Operation Guidelines
 - Regular council meetings held four times a year / attended by representatives from both labor and management
- 2024 Labor-Management Council Activities:
 - The company held quarterly Labor-Management Council meetings to foster a safer and more comfortable work environment. Through joint participation and cooperation, the council reviewed and addressed 12 agenda items related to workplace improvements and employee health and wellness.



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Talent Management

Metrics & Targets

Talent Management Goals and Performance

Hanwha TotalEnergies Petrochemical sets clear goals to advance ESG through talent management. The company focuses on securing top talent, respecting diversity, fostering stable labor relations through mutual respect and cooperation, and building a culture that encourages employee participation and engagement. These goals are pursued through ongoing, structured efforts.

Goal	Mid-Term Target	2024 Performance	2025 Plan
Talent Acquisition	Employee Development Support Establishing Top-Tier Talent Development Systems	<ul style="list-style-type: none">Fully overhauled the talent development systemRolled out a global HRIS (Workday) to enable self-directed growth	<ul style="list-style-type: none">Establish individual career development plans and support capability building
	Strategic HR Governance Establish HR governance that supports the achievement of strategic objectives	<ul style="list-style-type: none">Enhanced recruitment branding and secured high-potential talent	<ul style="list-style-type: none">Expand the talent pipeline in alignment with future business strategySystematize leadership and key talent development programs
Organizational Culture Improvement	Embedding the Great Challenger Culture Foster a growth-driven mindset to enable exceptional performance	<ul style="list-style-type: none">Redefined and embedded the company's talent philosophyRan workplace culture improvement campaigns	<ul style="list-style-type: none">Strengthen the job rotation systemExpand flexible work arrangements across the organization
	Organizational Vitality and Change-Oriented Culture Expand positive employee experiences and enhance communication	<ul style="list-style-type: none">Communicated the company's vision, mission, and growth strategy across the organizationStrengthened vertical communication through reverse mentoring and peer-level dialogue programs	<ul style="list-style-type: none">Identify and address factors that hinder organizational vitalityBroaden employee and family engagement initiatives
Labor-Management Harmony	Building a Healthy Labor Culture Strengthen trust and communication in labor-management relations	<ul style="list-style-type: none">Supported leadership effectiveness for team leaders (monthly dialogues and management workshops)Expanded employee engagement initiatives (e.g., overseas benchmarking and club activities)	<ul style="list-style-type: none">Build a collaborative labor-management partnership grounded in shared growth

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Key Focus Areas for Sustainability

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Sustainable Supply Chain

Special Comment

Leader of Material & Purchasing Div., Hanwha TotalEnergies Petrochemical

“Non-compliance is more expensive.”

At Hanwha TotalEnergies Petrochemical, we are committed to conducting procurement activities that are fair, transparent, and fully compliant with both domestic and international regulations—as well as with our internal Material & Purchasing management policies. We continuously reinforce internal alignment and strengthen our systems to ensure that ethical behavior is embedded throughout the procurement process. Our goal goes beyond simply avoiding violations; it lies in consistently applying our code of ethics across all levels of the organization—from individuals to teams. This persistent effort has shaped our procurement culture and made us a trusted customer to our partners. In the long run, this approach also helps reduce unnecessary costs and risks.

We operate with a clear belief: “Our suppliers’ competitiveness is our competitiveness.” With that in mind, we select partners who offer outstanding performance in quality, pricing, and delivery. At the same time, we strive to create a healthy, competitive environment that enables our suppliers to grow stronger.

As a true partner, we actively support suppliers in strengthening areas where improvement is needed. When long-term business potential is identified, we focus on stable relationship building through partnership and supplier relationship management. This allows us to minimize risks such as sudden cost spikes or supply disruptions and build a more resilient value chain.

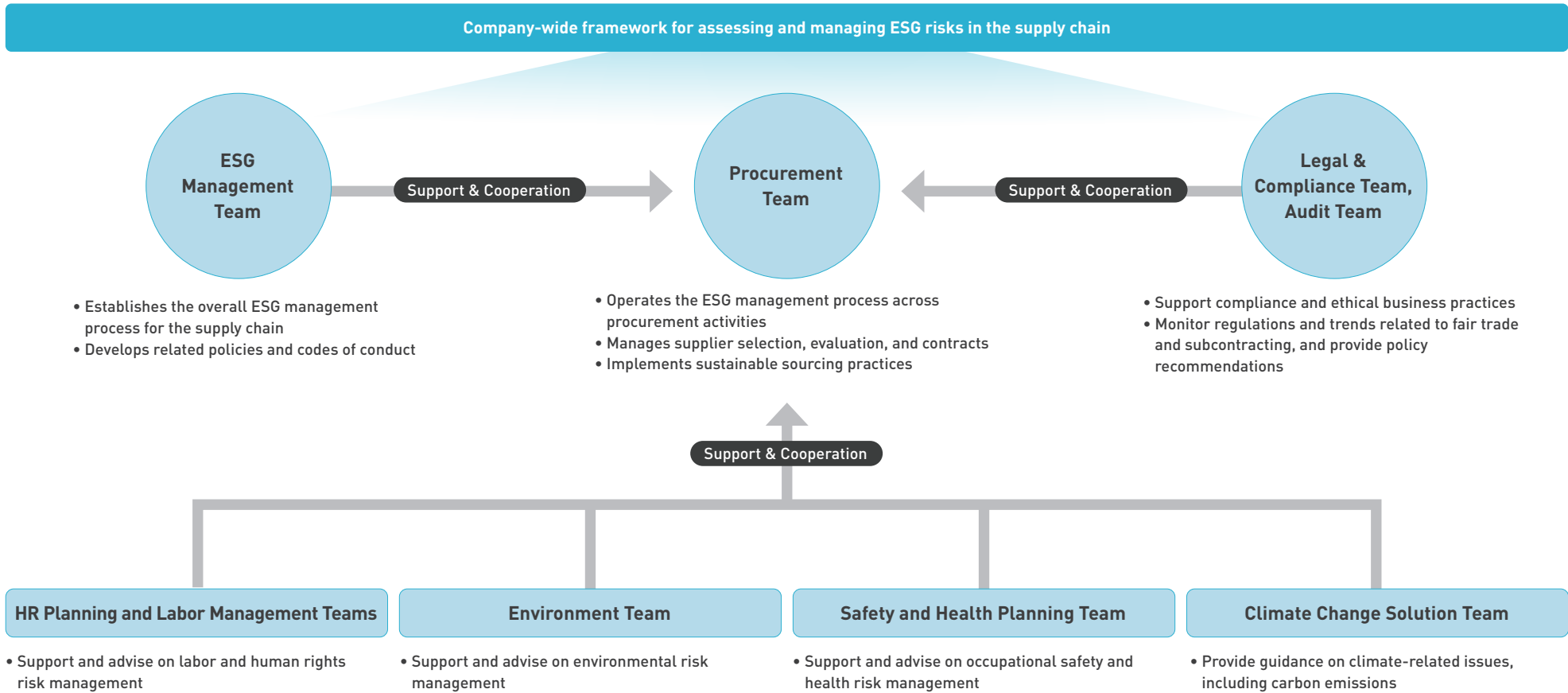
Sustainable Supply Chain

Governance

Sustainable Supply Chain Governance

Hanwha TotalEnergies Petrochemical has established a cross-functional collaboration framework led by the Material & Purchasing Division to build a sustainable supply chain and manage ESG-related risks across the supply network.

Sustainable Supply Chain Implementation Structure



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Sustainable Supply Chain

Strategy

Sustainable Supply Chain Strategy

Fair Trade Practices

Hanwha TotalEnergies Petrochemical promotes fair and transparent trade practices to foster sound, mutually beneficial relationships with its suppliers. To this end, the company has established internal guidelines for supplier contracts and operates an internal review committee. The guideline was designed to ensure that the interests of small and medium-sized suppliers are adequately reflected during contract negotiations and to prevent the abuse of bargaining power. It serves as the foundation for building a reasonable and equitable trading environment. The internal review committee is composed of five members, including executives responsible for subcontracting and compliance. For contracts exceeding KRW 2.5 billion, the committee reviews the fairness of the contract terms, the pricing process, and legal compliance, including adherence to subcontracting regulations, before the agreement is finalized.

Strategic Supply Management (SSM)

At **Hanwha TotalEnergies Petrochemical**, the Purchasing teams under the Materials & Purchase division is tasked with three core missions. First, (I) we aim to build a strategically structured supply management system that encompasses all procurement-related domains—from purchasing regulations and policies to procurement processes, supplier management, materials control, and information systems. This approach goes beyond the traditional procure-to-pay scope, extending to the full lifecycle from demand generation and settlement to consumption and disposal of materials. Based on this strategic foundation, (II) we strive to enable efficient and effective procurement decision-making, delivering optimal service to internal stakeholders. Ultimately, (III) by improving cost efficiency and driving down expenses across procurement and materials management, SSM contributes directly to the company’s long-term, sustainable profitability.

Supplier ESG Code of Conduct

Hanwha TotalEnergies Petrochemical has established a Supplier ESG Code of Conduct that defines clear expectations for its partners in key areas such as labor and human rights, health and safety, environmental responsibility, and ethical business conduct. The Code is grounded in international standards, global best practices, and applicable legal requirements. It is shared with all relevant partners and made publicly available through the company’s official website and supplier portal.

Structure of the Supplier ESG Code of Conduct

① Labor and Human Rights

- Voluntary employment
- Protection of underage workers
- Compliance with working hours
- Wages and benefits
- Humane treatment
- Prohibition of discrimination and harassment
- Freedom of association



② Safety and Health

- Occupational safety
- Emergency preparedness and response
- Occupational injury and illness
- Industrial hygiene
- Physically demanding work
- Machine and equipment safety
- Sanitation, food, and housing
- Safety and health training



③ Environment

- Acquisition of environmental permits
- Pollution prevention and resource reduction
- Hazardous substance management
- Solid waste management
- Air emissions
- Substance restrictions
- Water management
- Energy consumption and greenhouse gas emissions



④ Ethical Business Practices

- Business integrity
- Prohibition of improper advantage
- Disclosure of information
- Protection of intellectual property
- Fair business, advertising, and competition
- Protection of identity and prohibition of retaliation
- Responsible sourcing of minerals
- Protection of personal information



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Sustainable Supply Chain

Risk Management

Supply Chain Risk Management

Regular Supplier Assessments

Hanwha TotalEnergies Petrochemical conducts annual evaluations of its suppliers to assess their performance and operational status. These assessments target suppliers that account for approximately 80% of the company’s annual transaction volume, helping us measure their contributions and identify potential risks in the delivery of goods and services. Beyond risk identification, the results are also used as a basis for supplier selection. This not only helps prevent improper relationships or misconduct involving employees but also ensures that competitive and high-performing suppliers are not unfairly disadvantaged.

Supplier ESG Assessments

To build a more sustainable supply chain, Hanwha TotalEnergies Petrochemical carried out a pilot ESG assessment in 2024 targeting selected domestic and international suppliers. The evaluation, conducted online, covered 98 indicators across the environmental (E), social (S), and governance (G) dimensions—including environmental management, climate action, energy use, water and waste management, labor and human rights, health and safety, social contribution, ethics, and ESG awareness. A total of 96 suppliers participated in the assessment. The results not only offered insights into current ESG performance across the supply base, but also helped us identify areas for improvement. These findings will serve as a foundation for formalizing our supplier ESG evaluation framework and establishing a more structured and forward-looking management process.

Supplier Reporting Channel

Hanwha TotalEnergies Petrochemical operates a dedicated reporting channel on its official website, allowing all suppliers across the supply chain to raise concerns related to unfair practices, improper demands, unethical conduct, or human rights violations in connection with their business dealings with the company. All submissions are directed to the appropriate departments for review and action. Anonymity is strictly protected, and measures are in place to ensure that no retaliation or disadvantage results from reporting.

제보 유형

• 임직원의 공공행위 및 수뢰 사실

• 비상장 거래업체에 대한 부당지분 장여

• 회사 내 외부에서 상습적인 폭력, 고성, 분노, 위협행위 등 언어폭력

• 임직원의 부당한 업무지시

• 임직원의 이중 취업 사례

• 기타 행동강령에 위배되는 사항

• 금융, 장대요구나 계급 사실

• 성희롱에 따른 불기쁜한 사례

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온라인

제보하기

제보 내용에 대한 처리 결과는 최대한 빠른 시일내 전화나 E-Mail로 통보드립니다.
제보자의 비밀은 절대적으로 보호되며, 실명 제보를 원칙으로 합니다.

Metrics & Targets

Goals and Performance in Supply Chain Management



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Strategic Social Contribution

Special Comment

Leader of Communication Div., Hanwha TotalEnergies Petrochemical

At Hanwha TotalEnergies Petrochemical, we are committed to fulfilling our corporate social responsibilities based on Hanwha Group’s philosophy of “Together, Further.” We value the importance of building a better future together with our local communities, and continue to implement a wide range of programs in areas such as regional development, talent cultivation, environmental protection, and cultural engagement.

We also provide various opportunities for our employees to participate voluntarily, helping them feel a sense of pride and achievement. Through these efforts, we strengthen communication with the community and lay the foundation for sustainable development.

We will continue striving to create social value and promote mutual growth through ongoing social contribution, as we work toward a better and more fulfilling society for all.

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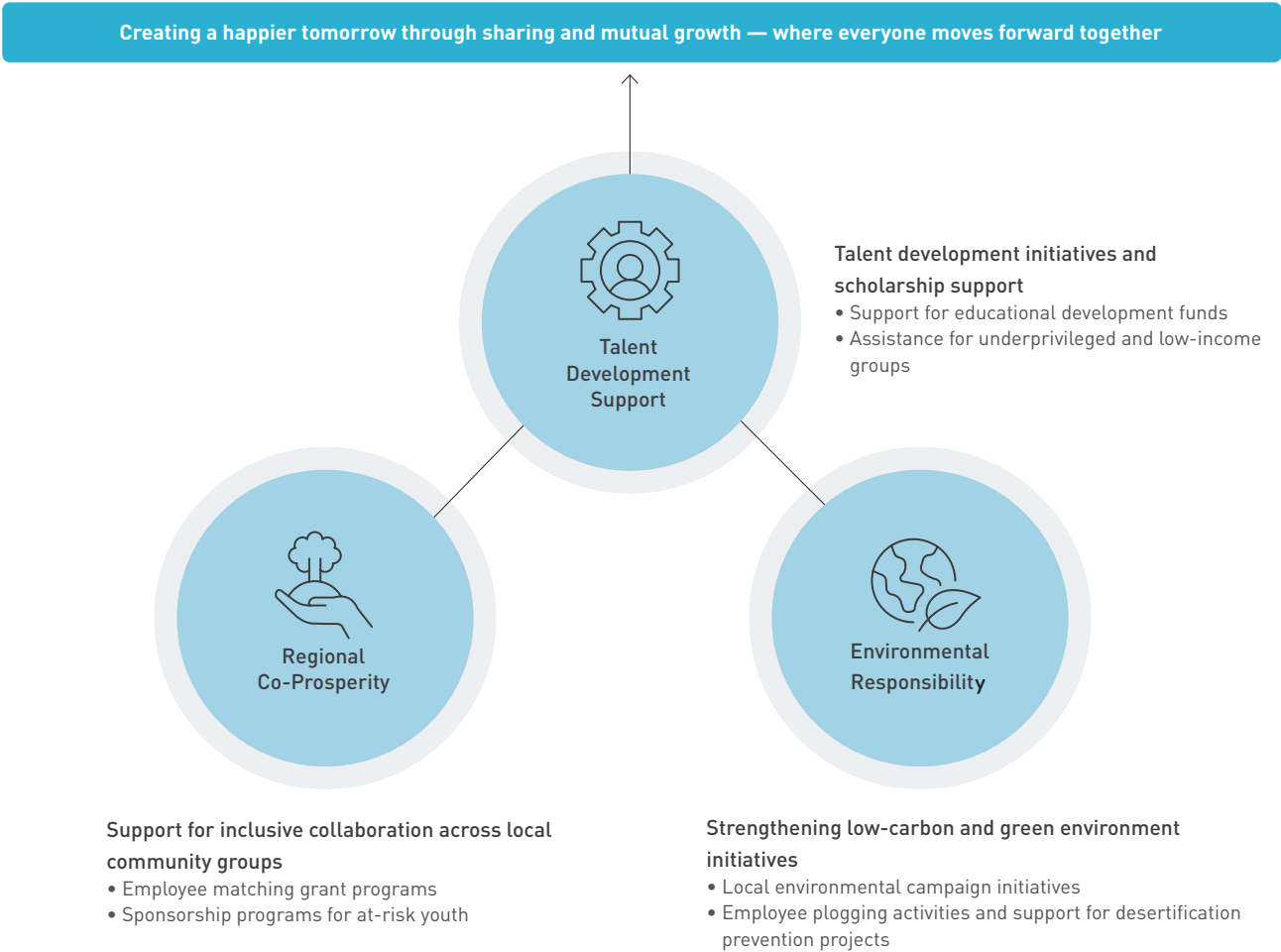
Strategic Social Contribution

Governance

Social Contribution Governance

Hanwha TotalEnergies Petrochemical pursues a specialized and differentiated approach to social contribution, guided by the Hanwha Group philosophy of “Together, Further.” The company aims to make a meaningful impact in local communities and promote shared growth by focusing on practical support and the creation of social value. To fulfill corporate responsibilities and contribute to a more inclusive and compassionate society, a social contribution strategy has been established, centered on regional co-prosperity, talent development, and Environmental Responsibility. These efforts align with the company’s long-term vision of building a better world alongside its neighbors. This commitment is also reflected in the Code of Ethics and management principles, which clearly outline the duty to act as a responsible member of the community. To support this, internal participation programs are in place to encourage employee involvement in social contribution activities and to foster a sense of satisfaction and pride. For donations exceeding a certain threshold, the matter is reported to and approved by the Board of Directors, ensuring proper oversight and accountability at the governance level.

Vision and Strategic Framework



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Strategic Social Contribution

Strategy

Social Contribution Strategy

Mutual Growth with Local Communities

Hanwha TotalEnergies Petrochemical promotes mutual growth with local communities through various initiatives, including the donation of social contribution funds via employee-led giving programs and the sponsorship of underprivileged groups such as people with disabilities and children.

Community Contribution Fund

Hanwha TotalEnergies Petrochemical contributes to the local community by providing social contribution funds to organizations such as the Seosan Office of Education, the Seosan Volunteer Center, and the Seosan Vocational Center for the Disabled. These funds help support a wide range of programs for low-income families, individuals with disabilities, and local youth. The fund is made possible through donations from employees and a corporate matching grant—reflecting the company’s ongoing commitment to shared prosperity and community well-being.

April Improving Work Conditions for People with Disabilities

Hanwha TotalEnergies Petrochemical donated a work vehicle to help improve the working environment for people with disabilities in the local community.



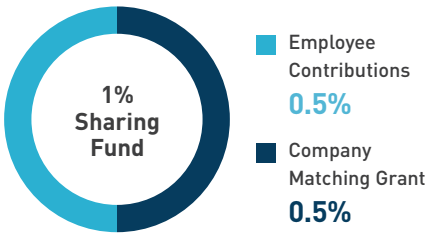
May Celebrating Parents’ Day with Local Seniors

To express gratitude and respect, we hosted a festive gathering for senior citizens in the community, creating a meaningful opportunity for connection and appreciation.



1% Sharing Fund

At Hanwha TotalEnergies Petrochemical, the 1% Sharing Fund is a joint initiative made possible through monthly contributions of 0.5% from employees, matched equally by the company. This shared effort reflects a spirit of mutual support and social responsibility across the organization. To ensure transparent and fair use of the fund, the company has established a Social Contribution Committee that oversees and directs the fund toward impactful and professional community engagement efforts.



September Baseball Game Outing for Children from Underserved Groups

We invited local children from vulnerable backgrounds to a home game of our regional professional baseball team, aiming to boost their self-esteem and provide an enjoyable community experience.



November Support for North Korean Resettlers

We offered financial support to help North Korean resettlers, now part of our community, establish stable and independent lives.



Strategic Social Contribution

Strategy

Talent Development Support

Hanwha TotalEnergies Petrochemical remains committed to fostering future talent in the local community through ongoing support initiatives.

April Support for Self-Reliance of Youth Leaving Care

Financial assistance was provided to seven young individuals aging out of the child protection system at age 19, helping them lay the foundation for independence and prepare for their future.



November Scholarships for Local High School Students

Thirty students recommended by their school principals received "Hope Scholarships" to support their academic pursuits. This program, which began in 2013, marked its 12th year in 2024, having supported a total of 252 students to date.



December Donation of Idle IT Equipment to Local Schools

A total of 64 unused monitors were donated to the local Office of Education to support computer-based learning at nearby schools.



Environmental Initiatives

Hanwha TotalEnergies Petrochemical carries out a range of initiatives to address climate change and protect the natural environment.

April Walking Challenge for Forest Restoration in Mongolia

Hanwha TotalEnergies Petrochemical held a month-long "Chemist Walking Challenge," engaging over 750 employees and their families. Participants collectively exceeded the target of 100 million steps. In recognition of this achievement, the company donated funds to support the creation of the "Hanwha TotalEnergies Petrochemical Forest" in Mongolia, a region severely affected by desertification due to reckless development and climate change.



June Fry Release for Marine Ecosystem Restoration

Hanwha TotalEnergies Petrochemical held a fry release event to support the recovery of marine biodiversity in nearby coastal waters. A total of 250,000 juvenile fish, including rockfish and flatfish, were released. The company also supported projects to seed clams, further contributing to the restoration of local fishery resources. In 2024, the program was expanded to additional fishing communities, reflecting input from local cooperatives.



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Appendix

Strategic Social Contribution

Risk Management

Social Contribution Risk Management

Hanwha TotalEnergies Petrochemical advances its strategic social contribution agenda through three key pillars: local co-prosperity, talent development, and environmental responsibility. As an active member of the community, the company prioritizes listening to stakeholders, identifying local challenges, and working collaboratively to drive meaningful solutions. With a clear understanding that corporate citizenship directly impacts trust and long-term sustainability, the company has implemented a risk management framework to preemptively address potential issues—such as conflict with local communities or gaps in stakeholder expectations—and to ensure its efforts remain aligned with societal needs.

Metrics & Targets

Goals and Performance in Social Contribution

Committed to fulfilling its corporate social responsibilities, **Hanwha TotalEnergies Petrochemical** has set concrete objectives for its community engagement initiatives. These efforts aim to create lasting, shared value—helping build a society where the company, its neighbors, and broader communities can thrive together.

Goal	Mid-Term Target	2024 Performance	2025 Plan
Local Co-Prosperity	<ul style="list-style-type: none">Strengthening collaboration with local communities across different social groupsSupporting local income growth and reinvestmentProviding assistance to local organizations and villagesPromoting public interest initiatives in the community	<ul style="list-style-type: none">Purchasing rice and agricultural products from local farmsSupporting infrastructure development and improvement in nearby communitiesHosting community events for senior citizensProviding work vehicles for disabled individuals and facilities such as agricultural wells	<ul style="list-style-type: none">Continue building on 2024 efforts with a focus on practical, community-rooted initiatives that generate meaningful impact
Talent Development	<ul style="list-style-type: none">Supporting youth development programs and funding initiativesAssisting local adolescents in achieving independence	<ul style="list-style-type: none">Supporting at-risk and marginalized youth through empowerment programsProviding scholarships to local studentsOffering assistance to youth aging out of care	<ul style="list-style-type: none">Expand programs that support youth development in the region
Environmental Sustainability	<ul style="list-style-type: none">Promoting marine ecosystem restoration along the local coastlineAdvancing low-carbon and green environmental campaigns	<ul style="list-style-type: none">Releasing fry to restore marine ecosystemsPromoting eco-friendly initiatives such as local tree planting and environmental campaignsSupporting shellfish seeding projects for local fisheries	<ul style="list-style-type: none">Introduce employee-centered volunteer activities tied to real-life needsSustain environmental initiatives, including fry releases, coastal restoration, and local reforestation campaigns

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Proactive Risk Management and Response

Governance

Enterprise Risk Management Governance

Hanwha TotalEnergies Petrochemical operates a company-wide risk management governance framework to proactively identify and address potential risks arising from the evolving global business environment. This system is designed to ensure stable operations and long-term business continuity.

Under the leadership of the Business Planning division, the framework encompasses all potential risk areas—from strategic, market, and operational risks to non-financial risks such as reputation, human resources, legal compliance, and infrastructure. Each risk is clearly defined, assessed, and addressed through tailored mitigation measures.

The results of the enterprise risk assessment and management activities are reported annually to the Board of Directors and are systematically managed with direct oversight and support from top management, reinforcing risk management as a critical component of corporate governance.

Risk Management Governance Structure



Strategy

Enterprise-wide Risk Response and Management Framework

Hanwha TotalEnergies Petrochemical updates its list of potential business risks each year by reviewing a range of external and internal factors. Based on internal risk management criteria, risks are assessed for severity, and those classified as material are identified separately and managed with greater focus.

Category	Type	Description
Strategy	Growth Strategy	<div>· Failure to identify and execute timely investment opportunities</div> <div>· Slower growth due to insufficient response to changes in external conditions, markets, regulations, and policies (including transition risks from climate change)</div>
	Market Conditions	<div>· Volatility in crude oil and feedstock prices, along with supply instability</div> <div>· Global economic downturn and product demand & price decrease</div> <div>· Disruptions in procurement of sub-materials, equipment, or supplier-related issues</div>
Market	Client/Partner Issues	<div>· Counterparty insolvency or bankruptcy</div>
	Transactions / Trade Regulatory Compliance	<div>· Protectionist trade policies, anti-dumping claims, and FTA-related trade disputes</div> <div>· Non-compliance with trade-related regulations such as the Fair Trade Act and the Petroleum Business Act</div>
Operations	Production Disruptions	<div>· Operational shutdowns due to fires, equipment failures, or natural disasters (including physical risks from climate change)</div> <div>· Production disruptions caused by insufficient port or storage infrastructure</div>
	Logistics Issues	<div>· Shipment delays or stoppages due to logistics issues such as union strikes</div>
	Financial Risks	<div>· Errors in financial reporting or tax interpretation</div> <div>· Risks related to cash flow, liquidity, and foreign exchange</div>
External Reputation	Corporate Image	<div>· Safety and environmental incidents</div> <div>· Corporate social responsibility issues</div> <div>· Negative media coverage and reputational risks</div>
Other / Support Functions	Human Resources	<div>· Labor disputes and industrial actions</div> <div>· Generational workforce transitions</div> <div>· Loss of key talent and expertise</div>
	Information Security / Infrastructure	<div>· Cyberattacks, including hacking and data breaches</div> <div>· IT infrastructure failures due to power outages, fires, or other disruptions, leading to system and service downtime both internally and externally</div>

Compliance Risk Management in Environment, Social, and Economic Areas

Non-compliance with domestic or international laws and policies can lead not only to financial penalties but also to serious, long-term damage to corporate value. Hanwha TotalEnergies Petrochemical continuously monitors the latest regulatory developments and government policy trends across environmental, social, and economic areas to ensure full compliance. The company complies with environmental regulations on pollutant and GHG emissions through facility upgrades and transparent disclosure of information. It also works to maintain a safe and compliant workplace by improving rest facilities, conducting emergency drills, and reinforcing hazardous substance management systems. In addition, to prevent risks related to unfair business practices such as antitrust violations or collusion, the company operates an internal accounting control system and conducts compliance inspections and training across its domestic and international sites.

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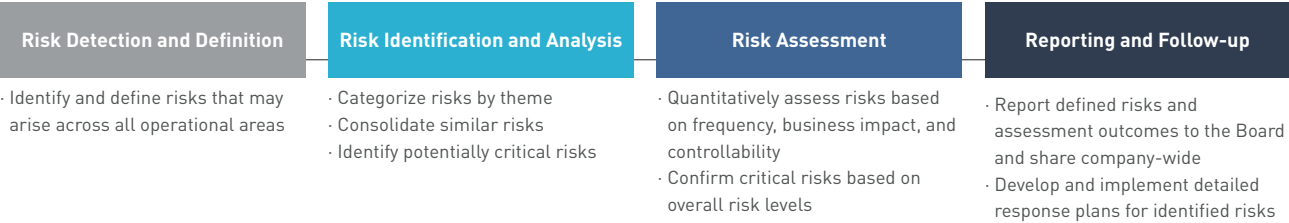


Proactive Risk Management and Response




Risk Management

Enterprise Risk Management Process

Hanwha TotalEnergies Petrochemical manages potential business risks through a structured process that includes risk detection and definition, identification and analysis, evaluation, and reporting with follow-up actions. This systematic approach enables the company to proactively mitigate risks that may arise across its operations.



Environmental / Social / Economic Compliance Risk Response Activities

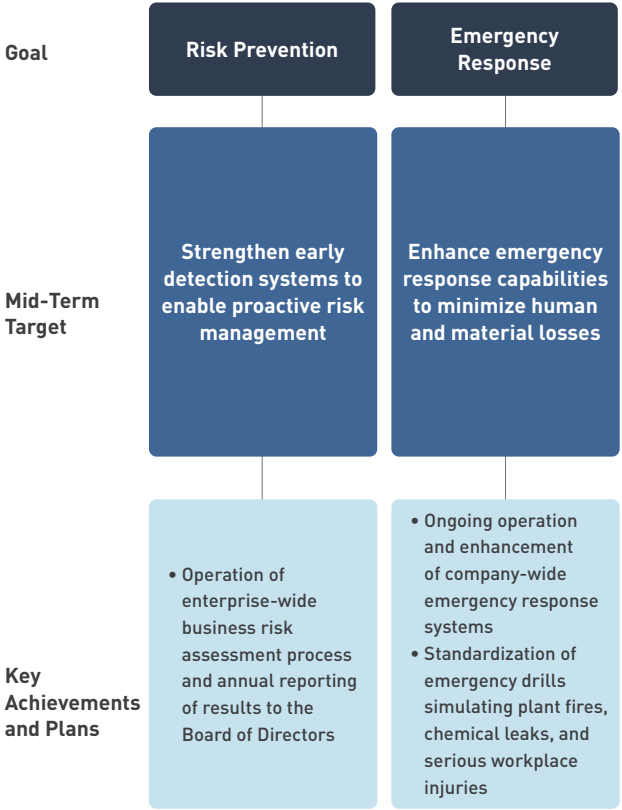
Category	Relevant Laws	Response Activities	Timeline
 Environmental	Air Quality Control Act	Calculate and manage total allowable emissions	2024 (Every 5 years)
	Integrated Environmental Act	Install RTO* and upgrade relevant facilities	H2 2025
	Clean Air Conservation Act	Improve systems to comply with air pollutant emission standards	H2 2026
	Chemicals Control Act - including the Designation of Toxic Substances	Apply for permits and enhance handling facilities for newly designated toxic substances (e.g., cobalt oxide) and revised content levels (e.g., methanol)	H2 2026
 Social	Rules on Occupational Safety and Health Standards	Reinforce flame arrester systems on 4 storage tanks	H2 2025
		Align hazardous substance management with revised regulatory enforcement dates	H2 2023
	Enforcement Decree of the Framework Act on Fire Services	Report outcomes of emergency response drills to local fire departments Review site-specific requirements presented during fire prevention briefing and establish action plans accordingly	H2 2024
	Serious Accidents Punishment Act	Analyze violation cases and address gaps in the safety management system	Annually
 Economic	Monopoly Regulation and Fair Trade Act		
	Act on the Promotion of Collaborative Cooperation between Large Enterprises and SMEs	Deliver job-specific compliance training for all employees Conduct on-site compliance inspections and training at overseas operations Implement internal accounting control system	Annually
	Subcontracting Act		

* Regenerative Thermal Oxidizer (RTO): A combustion system designed to treat volatile organic compounds (VOCs) through thermal oxidation using heat recovery.

Metrics & Targets

Company-wide Risk Management: Goals and Performance

Hanwha TotalEnergies Petrochemical establishes mid- to long-term goals for each response activity associated with identified enterprise-wide risks and is committed to enhancing the Company’s sustainability through effective implementation.



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Legal and Ethical Compliance

Special Comment

Leader of Legal & Compliance Team, Hanwha TotalEnergies Petrochemical

Compliance serves as the foundation for sustainable growth and a key value in building a company that earns lasting trust. At Hanwha TotalEnergies Petrochemical, we’re going beyond simply following the law—we’re working to make compliance an integral part of our everyday culture.

The Legal & Compliance Team is focused on spreading a strong compliance mindset across the organization and continuously strengthening it. We’re enhancing our systems to detect risks early, while also providing training and communication programs that help employees incorporate compliance naturally into their daily work.

Legal and Ethical Compliance

Governance

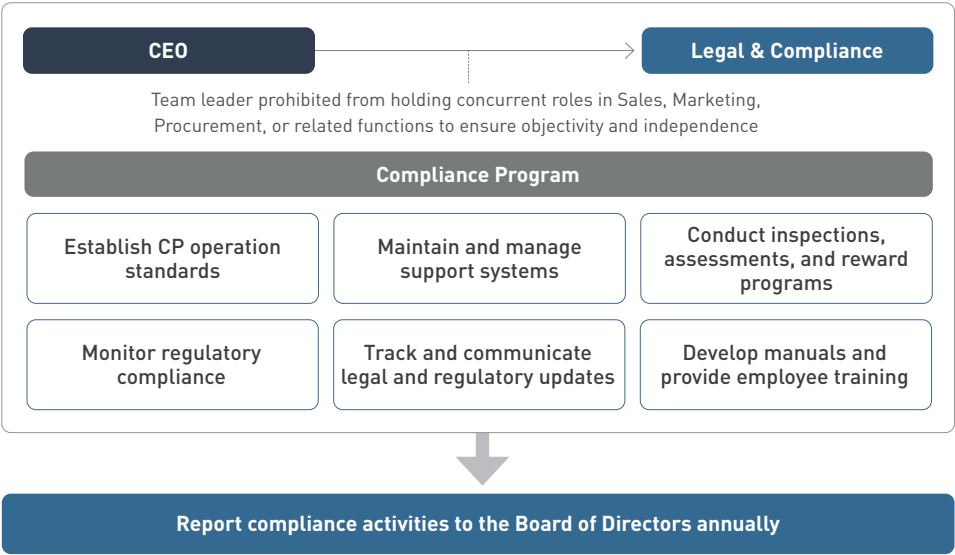
Compliance Management Framework

Compliance is more than adhering to rules and regulations—it is a core management pillar that supports corporate sustainability and external trust. To ensure effective compliance, a clear accountability structure and an independent, trustworthy governance system— including internal reporting channels—are essential.

Compliance Organization and Operations

At **Hanwha TotalEnergies Petrochemical**, the Legal & Compliance Team—reporting directly to the CEO—oversees all compliance-related matters. A regular reporting structure is in place to keep both the Board of Directors and senior leadership informed. Notably, the leader of the Legal & Compliance Team attends every board meeting to closely monitor compliance risks and ensure that a compliance perspective is thoughtfully integrated into the company’s highest decision-making processes. Through these efforts, the company is steadily building a culture where decisions are shaped by integrity and responsibility, across all levels of the organization.

Execution Structure and Key Responsibilities



Internal Reporting System

Hanwha TotalEnergies Petrochemical operates an internal reporting system (HOT-LINE) to promptly detect and respond to potential compliance violations. The identity of whistleblowers and the content of their reports are kept strictly confidential, and the company strictly adheres to protective procedures to ensure that no disadvantage or retaliation arises from a report.

HOT-LINE Operation

Reportable Issues

- Violations of the Fair Trade Act or the Subcontracting Act
- Acts by employees instructing, participating in, or condoning such violations
- Serious breaches of other laws or violations of company regulations

Reporting Channels

- Phone: +82-0-3415-9272
- Online: Company website > Sustainability > Compliance Management > Report

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Legal and Ethical Compliance

Strategy

Compliance Management Strategy

Compliance is not just about having systems or regulations in place—it must be nurtured into a culture where all employees participate voluntarily and practice it in their daily work. **Hanwha TotalEnergies Petrochemical** positions compliance as a core foundation of sustainable management and is committed to embedding it throughout the organization by offering diverse training programs and structured communication initiatives.





Compliance Communication Programs

Hanwha TotalEnergies Petrochemical carries out a range of communication initiatives to help all employees better understand and engage with compliance in their everyday roles. To make compliance-related topics—such as policies, issues, and potential risks—more accessible, the company utilizes various internal channels including newsletters, in-house magazines, and bulletin boards to raise awareness and encourage participation. A key highlight is the annual Compliance Week, which serves as a key moment for reflection and participation. Beginning with a message from the CEO, the campaign includes interactive content and events that offer employees meaningful opportunities to experience and strengthen the culture of compliance.

Compliance Training Programs

Hanwha TotalEnergies Petrochemical operates a comprehensive set of compliance training programs to help embed compliance as an integral part of the organizational culture. Company-wide annual training is offered to all employees to strengthen both understanding and practical capabilities in compliance. Tailored training is also provided across all levels—from onboarding programs for new hires to advanced sessions for executives and employees in high-risk roles. Special training tailored to the needs of each business unit is also provided to help identify and mitigate operational risks that may otherwise be overlooked. To enhance effectiveness and accessibility, compliance training is delivered through a variety of formats, including live online sessions, on-site programs, and case-based learning. English-language training is also offered to overseas offices and non-Korean employees, ensuring consistent compliance practices across diverse operational environments.

Compliance General Training



① Anti-corruption training – Shenzhen

② General compliance training – Germany

③ Workplace harassment prevention training for executives and team leaders

HTC Compliance Week



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Legal and Ethical Compliance

Risk Management

Compliance Risk Management

In compliance, proactive prevention is more critical than responding after a problem has occurred. Identifying potential high-impact risks in advance and addressing them preemptively is essential. To support this, **Hanwha TotalEnergies Petrochemical** has built a proactive risk management system tailored to the unique characteristics of each business area and its operational environment. This approach enables risks to be managed flexibly and appropriately based on their likelihood and severity. Through ongoing monitoring activities, potential risks are continuously assessed. In the event of a violation, prompt corrective action is taken, followed by measures to ensure the same issue does not happen again.

Preemptive Compliance Risk Detection

Hanwha TotalEnergies Petrochemical operates a forward-looking compliance risk management system to identify potential issues early and prevent violations before they occur. For high-risk operations, the company applies prior review procedures, external screening, and internal control standards to ensure risks are detected and addressed in a timely manner. This proactive approach goes beyond responding to individual incidents—it lays the groundwork for sustainable, organization-wide compliance built on prevention and continuous awareness.

Third-Party Due Diligence Procedures

Hanwha TotalEnergies Petrochemical operates a third-party due diligence process to detect and manage compliance risks related to economic sanctions, anti-corruption, and anti-money laundering. All counterparties are screened through World-Check One, a global financial data platform provided by LSEG. For new vendor onboarding, the company collects a Due Diligence Questionnaire to proactively identify potential risks related to bribery or conflicts of interest.

Review Process for Internal Transactions

Hanwha TotalEnergies Petrochemical conducts a review of internal transactions with affiliates in advance to minimize fair trade risks. Contracts are executed based on the results of this review, ensuring the appropriateness of each transaction. To improve both the effectiveness and efficiency of the process, the internal transaction checklist is regularly updated.

Partner Price Adjustment Questionnaire System

In line with recent revisions to the Win-Win Cooperation Act and the Subcontracting Act, **Hanwha TotalEnergies Petrochemical** operates a questionnaire system to assess whether the Price Adjustment System applies to specific transactions. The system is designed to help ensure fair compensation for partner companies. To mitigate legal risks and enhance regulatory understanding, the company also provides targeted training on the updated legislation.

Compliance Audits and Monitoring

Hanwha TotalEnergies Petrochemical conducts regular and ad-hoc audits across key risk areas to proactively prevent compliance violations. Priority areas—such as overseas sites and high-risk operations—are assessed through on-site inspections, document reviews, and interviews. Corrective actions are taken based on the results, along with follow-up measures to prevent recurrence.

Thematic Compliance Monitoring

Each year, **Hanwha TotalEnergies Petrochemical** selects specific compliance issues for focused review and evaluates the implementation status across the organization. During this process, employee surveys are also carried out to assess risk awareness levels, and the findings are used to identify areas for improvement.

Overseas Compliance Inspections

Hanwha TotalEnergies Petrochemical operates overseas business units in China, Japan, Singapore, and Germany. Regular on-site inspections are conducted to verify compliance with local laws and internal regulations. Where necessary, targeted training is provided to address key compliance issues and manage associated risks.

Legal and Ethical Compliance

Metrics & Targets

Compliance Goals and Performance

Hanwha TotalEnergies Petrochemical seeks to embed legal and ethical compliance across its corporate culture and to establish a clean, transparent organization in line with its role as a socially responsible global company. To carry this commitment forward in a lasting way, specific compliance goals are established and continuously refined to support steady, measurable progress.

Goal	Mid-Term Target	2024 Performance	2025 Plan
Compliance System Enhancement	Enhancement of Preemptive Risk Detection System	<ul style="list-style-type: none">Establishment of a review process for newly enacted or revised regulationsDevelopment and implementation of economic sanctions guidelines	<ul style="list-style-type: none">Improvement of Price Adjustment System questionnaireRevision of compliance manuals and guidelines
Compliance Communication	Promotion of Compliance-Oriented Organizational Culture	<ul style="list-style-type: none">Hosting of Compliance WeekQuarterly publication of Compliance Program newsletter	<ul style="list-style-type: none">Regular hosting of Compliance Week with enhanced contentMonthly publication of Compliance Program newsletter
Compliance Training	Establishment of Customized Training by Role and Job Function	<ul style="list-style-type: none">Delivery of general, level-specific, and role-based training (27 sessions, 1,758 participants)	<ul style="list-style-type: none">Ongoing delivery of general, level-specific, and role-based trainingSpecialized training on issue-specific topics
Compliance Monitoring	Development of Risk-Based Monitoring System	<ul style="list-style-type: none">Assessment of Price Adjustment System implementationSelf-assessment of workplace harassment awarenessOn-site inspections at overseas operations	<ul style="list-style-type: none">Follow-up review of previously identified compliance tasksMonitoring of high-risk compliance topics

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Economic

Economic and Business Performance

Creation of Economic Value					
Category		Unit	2022	2023	2024
Revenue		KRW million	13,991,229	11,481,661	11,797,662
Pretax Income		KRW million	90,735	-97,615	-349,475
Net Income		KRW million	68,787	-79,999	-271,302
* Based on consolidated financial statements					
Distribution of Economic Value					
Category		Unit	2022	2023	2024
Shareholders / Investors	Dividends and Interest	KRW billion	135	150	102
	Salaries	KRW billion	188	209	205
Employees	Benefits	KRW billion	56	61	68
	Stock-based Incentives	Shares	-	-	-
Partners	Procurement and Service Costs	KRW hundred million	121,222	99,301	102,009
Government	Corporate Tax	KRW billion	21	-19	-79
Local Communities	Social Contribution Investment	KRW hundred million	74	97	122
Research and Development Investment					
Category		Unit	2022	2023	2024
R&D Expenditure*		KRW million	38,613	47,310	51,070
* Total R&D expenditure before deduction of government subsidies					

Environmental

Environmental Management

GHG Emissions (Emissions at the time of credit submission)					
Category		Unit	2022	2023	2024
Total GHG Emissions (Scope 1+2)		tCO2eq	4,848,698	4,571,101	4,679,895
Scope 1		tCO2eq	4,074,991	3,786,004	3,926,152
Scope 2		tCO2eq	773,707	785,097	753,743
Energy					
Category		Unit	2022	2023	2024
Total Energy Consumption		TJ	108,567	105,075	106,382
Direct Energy Consumption	Total Consumption	TJ	90,754	86,524	88,792
	Gasoline	TJ	7	7	7
	Diesel	TJ	35	35	35
	Kerosene	TJ	15	14	14
	LNG	TJ	2	2	2
	Other (By-product Fuels)	TJ	90,694	86,465	88,733
	Total Consumption	TJ	17,814	18,551	17,534
Indirect Energy Consumption	Electricity	TJ	16,168	15,133	15,489
	Steam	TJ	1,646	3,418	2,045
Renewable Energy Consumption*	Total Consumption	MWh	319	556	610
* Based on self-consumed solar power generation					

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Pollutants					
Category		Unit	2022	2023	2024
Air Pollutants	Nitrogen Oxide (NOX) Emissions	ton	8,440	6,748	2,997*
	Sulfur Oxide (SOX) Emissions	ton	131	48	123
	Particulate Matter Emissions	ton	12	8	9
Water Pollutants	Total Organic Carbon (TOC)**	ton	49(COD)	38	45
	Suspended Solids (SS) Emissions	ton	3	6	7
* The expansion of the Tele-Monitoring System (TMS) has improved measurement accuracy, and the installation of Ultra Low NOx Burners (ULNB) at the NCC plant has contributed to reduced emissions.					
** Starting in 2023, the emission standard for water pollutants was changed from COD (Chemical Oxygen Demand) to TOC (Total Organic Carbon).					

Water Usage and Wastewater				
Category	Unit	2022	2023	2024
Total Water Usage	ton	27,962,477	25,644,173	27,474,568
Water Reuse Volume*	ton	4,246,052	3,539,358	4,194,978
Water Reuse Rate**	%	15	14	15
Wastewater Discharge Volume	ton	2,796,091	2,835,993	2,964,299
* Includes reuse of recovered condensate water.				
** Calculated as the proportion of reused water to total water withdrawal.				

Waste					
Category		Unit	2022	2023	2024
Total Waste Generated		ton	17,421	19,526	21,649
General Waste	Total Volume	ton	9,787	11,190	11,687
	Recycled	ton	6,356	6,239	8,907
Hazardous Waste	Total Volume	ton	7,634	8,336	9,962
	Recycled	ton	7,441	7,673	8,572
Waste Recycling Rate (General + Designated)		%	79	71	81
Waste Treatment Cost		KRW hundred million	11	17	19
* All waste is outsourced for treatment without internal processing.					

Environmental Investment and Revenue					
Category		Unit	2022	2023	2024
Eco-friendly Products*	Purchase Amount	KRW million	618	728	2,580
	Sales Revenue	KRW million	-	2,131	5,302
Environmental Investment		KRW million	39,430	94,048	20,071
* Based on internal performance tracking					
* Products certified by ISCC (International Sustainability & Carbon Certification) are classified as "eco-friendly products."					

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Social

Employee Status

Employment						
Category		Unit	2022	2023	2024	
Total Number of Employees		Persons	1,825	1,856	1,910	
By Employment Type	Regular Employees	Male	Persons	1,659	1,677	1,726
		Female	Persons	138	151	158
		Subtotal - Regular Employees (%)	Persons/%	1,797(98%)	1,828(98%)	1,884(98%)
	Non-regular Employees	Male	Persons	15	17	18
		Female	Persons	13	11	8
		Subtotal - Non-regular Employees (%)	Persons/%	28(2%)	28(2%)	26(2%)
By Gender	Male	Persons	1,674	1,694	1,744	
	Female	Persons	151	162	166	
By Age Group	Under 30	Persons	314	316	347	
	30s	Persons	600	614	641	
	40s	Persons	310	295	297	
	50s	Persons	574	596	586	
	60 and above	Persons	27	35	39	
Average Years of Service	Regular Employees	Years	14	15	15	
	Non-regular Employees	Years	0	1	1	
Female Leadership	Number of Female Managers (Manager or above)	Persons	45	51	55	
	Proportion of Female Managers	%	10.7	11.8	12.2	
	Number of Female Executives	Persons	-	1	1	
	Proportion of Female Executives	%	-	2.6	2.5	

Employment					
Category		Unit	2022	2023	2024
Employment of Socially Disadvantaged Groups (Regular + Non-regular)	Persons with disabilities*	Persons	42	40	43
	Veterans	Persons	51	50	49
	Foreign Nationals	Persons	-	-	-

* Based on the number reported to the Korea Employment Agency for Persons with Disabilities

New Hires					
Category		Unit	2022	2023	2024
Total Number of New Hires (Domestic only)		Persons	166	143	165
By Employment Type	Regular	Persons	124	129	149
	Non-regular	Persons	42	14	16
By Gender	Male	Persons	138	122	146
	Female	Persons	28	21	19
By Age Group	Under 30	Persons	126	104	122
	30s	Persons	24	21	30
	40s	Persons	4	6	14
	50s	Persons	3	3	4
	60 and above	Persons	9	9	5

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Employee Status

Employee Training and Evaluation					
Category		Unit	2022	2023	2024
Training Expenses	Total Training Expenses	KRW million	1,715	2,497	2,832
	Training Expenses per Employee	KRW thousand	939	1,348	1,483
Training Hours*	Total Training Hours	Hours	137,639	222,762	234,392
	Training Hours per Employee	Hours	75	120	123
Proportion of Employees Who Received Performance Evaluations	Regular Employees	%	97.0	98.0	98.0
	Contract Employees	%	3.0	2.0	2.0
	Male	%	92.0	91.0	91.0
	Female	%	8.0	9.0	9.0

* Since 2022, all internal training hours, including mandatory and job-related training, have been managed through a system-based platform.

Parental Leave					
Category		Unit	2022	2023	2024
Number of Employees Who Took Parental Leave*	Male	Persons	5	7	9
	Female	Persons	7	4	7
Number of Employees Who Returned After Parental Leave (Return Rate)**	Male	Persons (%)	3 (60)	5(71)	7(78)
	Female	Persons (%)	8(73)	3(43)	3(43)
Retention Rate After 12 Months of Return	Male	%	100	100	100
	Female	%	100	100	100

* Due to changes in the tracking standards, data for 2022–2023 have been updated.
** This figure is calculated by dividing the number of returnees by the number of leave users in the same year.

Occupational Health and Safety

Industrial Accidents					
Category		Unit	2022	2023	2024
Employees	Number of Fatalities	Cases	0	0	0
	Number of Accidents*	Cases	2	0	2
Partner Companies	Number of Fatalities	Cases	0	0	0
	Number of Accidents*	Cases	1	3	2

* Based on the Ministry of Employment and Labor’s industrial accident survey form.

Social Contribution

Volunteer Participation					
Category		Unit	2022	2023	2024
Social Contribution Activities	Total Volunteer Hours	Hours	6,159	7,590	8,814
	Volunteer Hours per Person	Hours	2.58	3.42	4.43
	Volunteer Participation Rate	%	33.1	39.4	49.65

* Based on internal social contribution system data.

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Governance

Board of Directors

Board Status					
Category		Unit	2022	2023	2024
Composition of Board		Inside Directors	Persons	3	3
Number of Board Meetings Held		Meetings	8	6	9
Board Attendance Rate	Non-executive Directors	%	87.5	75.0	91.7
	Non-executive Directors (Excluding Retired)	%	87.5	100.0	100.0
Board Agenda Items		Cases	41	37	40
Registered Directors	Headcount	Persons	6	6	6
	Total Compensation	KRW million	4,135	3,920	2,492
	Average Compensation per Person	KRW million	689	653	415
Audit (Committee) Members		Headcount	Persons	2	2
Compensation Committee	Number of Meetings Held	Meetings	1	1	1
	Attendance Rate	%	100	100	100
Shareholders with 5% or More	Hanwha Impact Corporation	%	50	50	50
	TotalEnergies Holdings U.K. Limited	%	50	50	50

Ethics and Compliance					
Category		Unit	2022	2023	2024
Legal and Regulatory Non-compliance	Total Number of Legal/Regulatory Violations (Environment, Safety & Health, Others)	Cases	4	0	3
	Monetary Sanctions for Legal/Regulatory Violations (Environment, Safety & Health, Others)	KRW million	55	0	9

Information Security					
Category		Unit	2022	2023	2024
Information Security Violations	Number of Personal Data Breaches	Cases	0	0	0
	Number of Improvements Based on Internal Information Security Assessment	Cases	8	7	5
Information Security Training		Persons	1,678	1,732	1,794

GRI STANDARDS

• **Statement of use**

Hanwha TotalEnergies Petrochemical reports sustainability information for the period from January 1, 2024 to December 31, 2024, following the reporting principles in accordance with the GRI Standards 2021.

• **GRI 1 used**

GRI 1: Foundation 2021

• **Applicable GRI Sector Standards**

As of the reporting date, no applicable GRI Sector Standards have been published for the industry classification (e.g., GICS) relevant to **Hanwha TotalEnergies Petrochemical**. Accordingly, the company has not applied any Sector Standards in this report.

General Disclosure

GRI Standard 2021	Indicator		Page	Remark
GRI 2: General Disclosures 2021	2-1	Organizational Details	6	
	2-2	Entities Included in the Organization's Sustainability Reporting	2	
	2-3	Reporting period, frequency and contact point	2	
	2-4	Restatements of Information	-	Explanatory footnotes have been included beneath the relevant data where changes have occurred.
	2-5	External Assurance	81	
	2-6	Activities, Value Chain and Other Business Relationships	7-10	
	2-7	Employees	72	
	2-8	Workers Who Are Not Employees	72	Refer to 2024 Business Report P.240
	2-9	Governance Structure and Composition	15-16	
	2-10	Nomination and Selection of the Highest Governance Body	15-16	
	2-11	Chair of the Highest Governance Body	15	
	2-12	Role of the Highest Governance Body in Overseeing the Management of Impacts	15-17	
	2-13	Delegation of Responsibility for Managing Impacts	17	
	2-14	Role of the Highest Governance Body in Sustainability Reporting	17	

GRI Standard 2021	Indicator		Page	Remark
GRI 2: General Disclosures 2021	2-15	Conflicts of Interest	15-16	
	2-16	Communication of Critical Concern	17	
	2-17	Collective Knowledge of the Highest Governance Body	16	
	2-18	Evaluation of the Performance of the Highest Governance Body	16	
	2-19	Remuneration Policies	-	Refer to 2024 Business Report P.241
	2-20	Process to Determine Remuneration	-	Refer to 2024 Business Report P.241
	2-21	Annual Total Compensation Ratio	-	Refer to 2024 Business Report P.241
	2-22	Statement on Sustainable Development Strategy	5	
	2-23	Policy Commitments	13	
	2-24	Embedding Policy Commitments	13	
	2-25	Processes to Remediate Negative Impacts	62-63	
	2-26	Mechanisms for Seeking Advice and Raising Concerns	50, 65	
	2-27	Compliance with Laws and Regulations	74	Refer to 2024 Business Report P.241
	2-28	Membership Associations	83	
	2-29	Approach to Stakeholder Engagement	18	
	2-30	Collective Bargaining Agreements	50	

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GRI STANDARDS

Material Topics

GRI Standard 2021	Indicator		Page	Remark
GRI 3: Material Topic 2021	3-1	Process to determine material topics	78	
	3-2	List of material topics	79	
Material Topic E1. Responding to Climate Change and Achieving Carbon Neutrality				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 305: Emission 2016	305-1	Direct (Scope 1) GHG emissions	70	
	305-2	Energy indirect (Scope 2) GHG emissions	70	
	305-7	Nitrogen oxides (NOX), sulfur oxides (SOx), and other significant air emissions	71	
Material Topic E2. Waste Management and Expansion of Resource Circulation Activities				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 306: Effluents and Waste 2016	306-1	Waste generation and significant waste-related impacts	33, 35	
	306-2	Management of significant waste-related impacts	33	
	306-3	Waste generated	71	
	306-4	Waste diverted from disposal	71	
	306-5	Waste directed to disposal (incineration, landfill, etc.)	71	
Material Topic E3. Expansion of Sustainable Business Portfolios and R&D for New Technologies				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
Non-GRI	No applicable topic-specific GRI Standards available			
Material Topic E4. Enhancing Energy Efficiency and Increasing Facility Investment				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 302: Energy 2016	302-1	Energy consumption within the organization	70	
Material Topic E5. Reduction of Pollutant and Hazardous Chemical Emissions				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 305: Emission 2016	305-7	Nitrogen oxides (NOX), sulfur oxides (SOX), and other significant air emissions	71	
Material Topic S1. Safety-first management and enhancement of the occupational health and safety system				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 403: Occupational Health and Safety 2018	403-1	Occupational health and safety management system	38	
	403-2	Hazard identification, risk assessment, and incident investigation	40	
	403-3	Occupational health services	40	

GRI Standard 2021	Indicator		Page	Remark
Material Topic S1. Safety-first management and enhancement of the occupational health and safety system				
GRI 403: Occupational Health and Safety 2018	403-4	Worker participation, consultation, and communication on occupational health and safety	39-40	
	404-5	Worker training on occupational health and safety	39	
	403-6	Promotion of worker health	40	
	403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	41	
	403-9	Work-related injuries	73	
Material Topic S2. Attracting Core Talent and Developing Employee Capabilities				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 401: Employment 2016	401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	49	
GRI 404: Training and Education 2016	404-1	Average hours of training per year per employee	73	
	404-2	Programs for upgrading employee skills and transition assistance programs	47-48	
Material Topic S3. Strengthening Co-Prosperity and Shared Growth with Partners				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 414: Supplier Social Assessment 2016	414-2	Negative social impacts in the supply chain and actions taken	55	
Material Topic S4. Expanding Community-Oriented Social Contribution				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 203: Indirect Economic Impacts 2016	203-1	Infrastructure investments and services supported	58-60	
Material Topic G1. Compliance with Environmental, Social, and Economic Regulations and Establishment of Response Systems				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
Non-GRI	No applicable topic-specific GRI Standards available			
Material Topic G2. Enhancing Soundness and Transparency in Corporate Operations				
GRI 3: Material Topic 2021	3-3	Management of material topics	13, 78-79	
GRI 205: Anticorruption 2016	205-2	Communication and training about anti-corruption policies and procedures	65-68	

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SASB STANDARDS

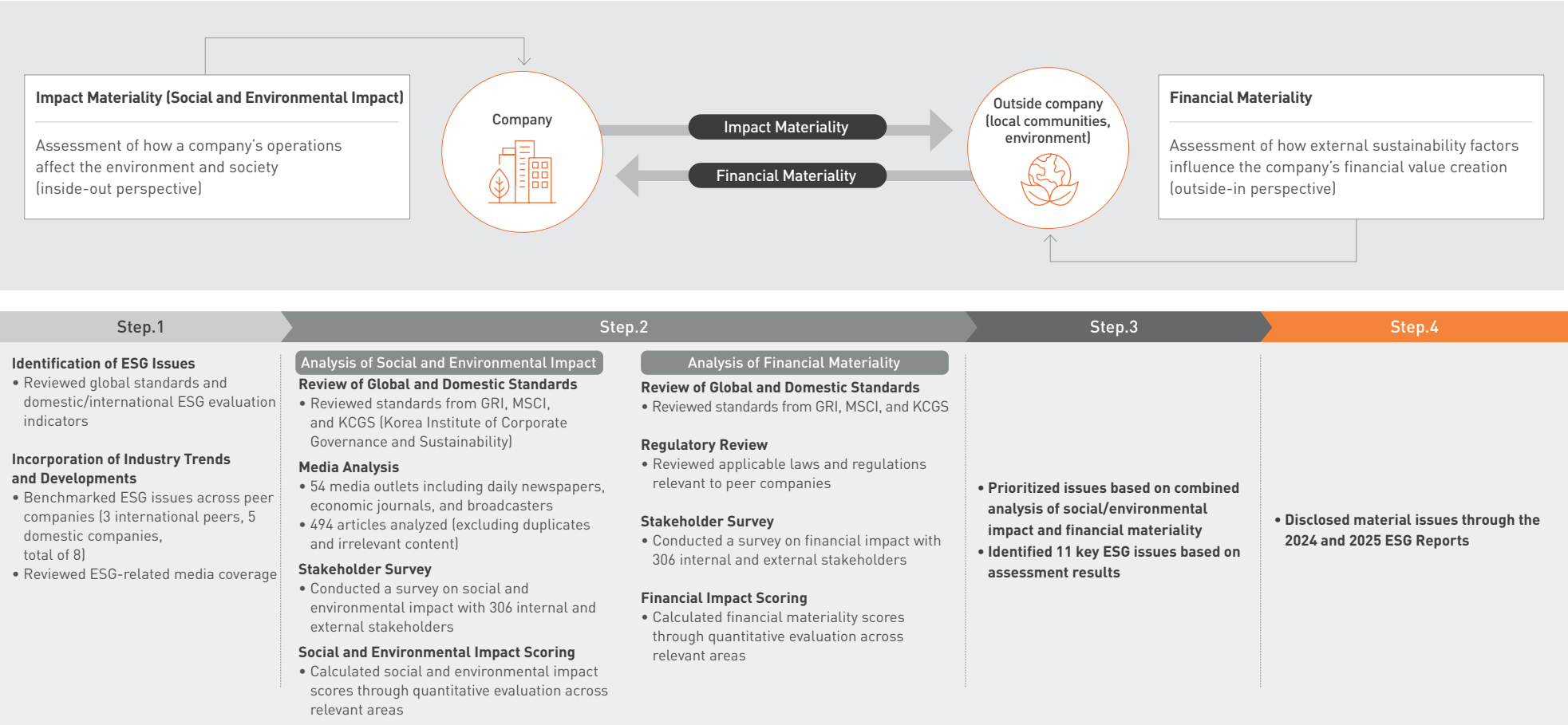
Chemical - Sustainability Disclosure Topics & Accounting Metrics

Topic	Accounting Metrics	Response and Page	Remarks
Greenhouse Gas Emissions	Gross global Scope 1 emissions	70	
	Percentage covered under emissions-limiting regulations	No relevant cases available	
	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	20-26	
Air Quality	NO _x emissions	71	
	So _x emissions	71	
Energy Management	Total energy consumed	70	
	Percentage grid electricity	Power received from the grid 1,809,423 MWh	
	Percentage renewable	-	
	Total self-generated energy	Power generated (STG/GTG#1/2/3/4) 1,032,450 MWh	
Water Management	Total water withdrawn in high or extremely high water-stress areas and percentage of total water withdrawn	No business sites located in high water-stress risk areas	
	Total water consumed in high or extremely high water-stress areas and percentage of total water consumed	No business sites located in high water-stress risk areas	
	Number of incidents of non-compliance with water quality and/or quantity permits, standards, and regulations (resulting in formal enforcement actions)	No violations of water quality permits or standards	
	Discussion of water-management risks and description of strategies and practices to mitigate those risks	34	
Hazardous Waste Management	Amount of hazardous waste generated	71	
	Percentage of hazardous waste recycled	71	
Occupational health and safety for the entire workforce	Total recordable incident rate (TRIR) for employees and contractors	73	
	Fatality rate for employees and contractors	73	
	Description of efforts to assess, monitor, and reduce long-term health risks	40	
Product Design for Use-phase Efficiency	Revenue from products designed with resource-efficiency during use phase	Not applicable	
Chemical Safety and Environmental Responsibility	Percentage of products by revenue that contain ingredients classified under the GHS as Category 1 or 2 health and environmental hazardous substances	Substances identified as having high potential risk to human health or the environment in relation to products are strictly controlled and restricted in use, beyond legal requirements.	
	Percentage of products by revenue that have undergone hazard assessment		
	Discussion of strategy to manage chemicals of concern and develop safer alternatives	32-34	
Environmental & Regulatory Risk Management	Discussion of governmental policies and regulations that significantly influence the industry; organization's position on those public policy issues	63	
Process Safety, Emergency Preparedness & Response	Process safety incident count	[Process Safety Incident Count]	
	Process safety incident rate	Tier 1: 1 case, Tier 2: 0 cases, Minor: 0 cases	
	Process safety incident severity rate	[Total Process Safety Incident Rate]	
		Tier 1: 0.11, Tier 2: 0.00, Minor: 0.00	
	Number of transportation incidents	No significant transportation incidents occurred during the reporting period	

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Double materiality considers two dimensions of impact: how environmental and social factors influence a company’s financial performance, and how the company’s operations, in turn, affect the broader environment and society. This concept reflects an evolving global perspective—one that looks beyond financial value alone to include a company’s wider responsibility to people and the planet. To align with this shift, **Hanwha TotalEnergies Petrochemical** carried out a double materiality assessment to identify the most credible sustainability topics and incorporate them into its business strategy. The methodology was based on the GRI Standards and informed by global frameworks, media analysis, benchmarking, and comprehensive surveys of internal and external stakeholders. Through this process, 11 key ESG issues were identified across environmental, social, and governance dimensions.



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Double Materiality Assessment

Materiality Assessment Results

Hanwha TotalEnergies Petrochemical identified 11 key ESG issues through a double materiality assessment. In the environmental category, “climate change response and achievement of carbon neutrality” was selected as a top priority. In the social area, the company highlighted “safety-first management and the strengthening of industrial health and safety systems.” For governance, “compliance with environmental, social, and economic regulations and the establishment of responsive systems” was recognized as a critical issue. These material topics are disclosed in detail throughout this report and will be reflected in the company’s mid-term sustainability strategy moving forward.

Assessment Results



Key ESG Issues		Topic Standards	Social and Environmental Impact Materiality		Financial Materiality	Integration into ESG Management Strategy		
E1	Responding to Climate Change and Achieving Carbon Neutrality	GRI 305-1,2, 305-7	2.89	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	3.54	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div>Environmental</div> <div>Pursuing eco-friendly management and achieving net-zero emissions by 2050</div>	① Achieving carbon reduction
E2	Waste Management and Expansion of Resource Circulation Activities	GRI 306-1~5	2.30	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.85	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		② Building a circular economy
E3	Expansion of Sustainable Business Portfolios and R&D for New Technologies	Non-GRI	2.56	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.32	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		
E4	Enhancing Energy Efficiency and Increasing Facility Investment	GRI 302-1	2.36	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.42	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		
E5	Reduction of pollutant and hazardous chemical emissions	GRI 305-7	1.84	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.23	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		③ Minimizing environmental impact
S1	Safety-first management and enhancement of the occupational health and safety system	GRI 403-1~7, 403-9	2.26	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.62	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div>Social</div> <div>Embedding a safety-first culture and fostering shared growth</div>	④ Ensuring workplace health and safety
S2	Attracting Core Talent and Developing Employee Capabilities	GRI 401-2, GRI 404-1,2	1.34	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.36	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		⑤ Advancing human rights and talent management
S3	Strengthening Co-Prosperity and Shared Growth with Partners	GRI 414-2	2.58	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.01	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		⑥ Establishing a sustainable supply chain
S4	Expansion of community-oriented social contribution activities	GRI 203-1	2.08	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	1.82	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		⑦ Promoting strategic social contribution
G1	Compliance with environmental, social, and economic regulations and establishment of response systems	Non-GRI	3.29	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	3.05	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	<div>Governance</div> <div>Building a sound and transparent corporate culture</div>	⑧ Strengthening proactive risk management and response
G2	Enhancing Soundness and Transparency in Corporate Operations	GRI 205-2	2.30	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>	2.90	<div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div>		⑨ Ensuring legal and ethical compliance

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Greenhouse Gas Assurance Statement

1. Target of assurance

Hanwha TotalEnergies Petrochemical Co.,Ltd. 2024 Greenhouse Gas Emission Energy Usage Specifications
2. Assurance Standards

Assurance guidelines for operating the GHG emission trading system, guidelines for reporting and certification of GHG trading systems, emission plans distributed to NGMS(National GHGs Management System)
3. Assurance Procedures

The assurance was conducted on the greenhouse gas emission specification according to the guidelines on the reporting and certification of the GHG emission trading system and the emission plan distributed to NGMS, and the assurance level was performed to satisfy the reasonable assurance level
4. Assurance Data

(Unit : tCO₂-eq/year)

Emission by Business site				
Business Emission Sector	Head Office	Seoul Branch	Local Office	Subtotal
Scope 1	3,959,648.619	280.543	0	3,959,929.161
Scope 2	754,373.31	520.047	16.406	754,909.762
Total	4,714,021	800	16	4,714,837

(Unit : tCO₂-eq/year)

Emission by Greenhouse Gas							
Greenhouse Gas	CO2	CH4	N2O	HFCs	PFCs	SF6	Total
Emissions	4,705,574.013	2,018.614	7,246.297	0	0	0	4,714,838.924

※Reference: There is a difference in the amount of emissions and total emissions by greenhouse gas and the sum of the emissions by business site.

5. Limitations

The assurance is applied with the sampling method in accordance with the assurance plan recognized by the National of Environmental Research for the specification of GHG emission and related data and information provided by Hanwha TotalEnergies Petrochemical Co.,Ltd., based on the “Regulated guidelines and emission plans distributed to NGMS.” Therefore, there is a limitation to the detection errors that can be caused by sampling limitation.
6. Opinions

Hanwha TotalEnergies Petrochemical Co.,Ltd.’s 2024 GHG emission Specification satisfies the materiality criteria and was prepared using accurate parameters and activity data as a whole. Therefore, it was decided that the greenhouse gas emissions described in the specification were “appropriate” according to the guidelines for reporting and certification of the greenhouse gas trading system.
7. Comprehensive Opinion

Through the assurance, it is certified that GHG emissions and energy consumption of Hanwha TotalEnergies Petrochemical Co.,Ltd. were appropriately collected, prepared and reported in accordance with the guidelines, and that emission facilities were calculated and reported without omission.

2025.08

President of Korea Gas Safety Corporation.

Gyurng-Goog Bahk

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To: The Stakeholders of Hanwha TotalEnergies Petrochemical Co.,Ltd.

Overview
BSI (British Standards Institution) Group Korea (hereinafter referred to as the "Assurer") was requested to verify the 2025 **Hanwha TotalEnergies Petrochemical** sustainability Report (hereinafter referred to as the "Report"). The Assurer is independent of **Hanwha TotalEnergies Petrochemical** and has no major operational financial interest other than the assurance.
This assurance opinion statement is intended to provide information related to the assurance of the **Hanwha TotalEnergies Petrochemical** report relating to the environment, social and governance (ESG) to the relevant stakeholders and may not be used for any purpose other than the purpose of publication. This assurance opinion statement was prepared based on the information presented by the **Hanwha TotalEnergies Petrochemical** and the assurance was carried out under the assumption that presented the information and data were complete and accurate.

Hanwha TotalEnergies Petrochemical is responsible for managing the relevant information contained within the scope of assurance, operating the relevant internal control procedures, and for all information and claims contained in the report. Any queries that may arise by virtue of this independent assurance opinion statement or matters relating to it should be addressed to **Hanwha TotalEnergies Petrochemical** only.

The Assurer is responsible for providing **Hanwha TotalEnergies Petrochemical** management with an independent assurance opinion containing professional opinions derived by applying the assurance methodology to the scope specified, and to provide the information to all stakeholders of **Hanwha TotalEnergies Petrochemical**. The Assurer shall not bear any other responsibility, including legal responsibility, to any third party other than **Hanwha TotalEnergies Petrochemical** in providing the assurance opinion and shall not be liable to any other purpose, purpose or stakeholders related thereto for which the assurance opinion may be used.

Scope
The scope of engagement agreed upon with **Hanwha TotalEnergies Petrochemical** includes the following:

- Reporting contents during the period from January 1st to December 31st 2024 included in the report, some data included the first quarter of 2025.
- Major assertion included in the Report, such as sustainability management policies and strategies, goals, projects, and performance, and the Report contents related to material issues determined as a result of materiality assessment.
- Appropriateness and consistency of processes and systems for data collection, analysis and review.
- In Accordance with the four principles of AA1000 AccountAbility in the report, based on the type of Sustainability Assurance based on AA1000AS v3 and if applicable, the reliability of the sustainability performance information contained in the report.

The following contents were not included in the scope of assurance.

- Financial information in Appendix.
- Index items related to other international standards and initiatives other than the GRI.
- Other related additional information such as the website, business annual report.

Assurance Level and Type
The assurance levels and types are as follows;

- Moderate level based on AA1000 AS and Type 1 (confirmation to the four principles as described in the AA1000 Accountability Principle 2018 in the report.)

Description and sources of disclosures covered
Based on the scope and methodology of assurance applied, the assurer reviewed the following Disclosures based on the sampling of information and data provided by **Hanwha TotalEnergies Petrochemical**.
[Universal Standards]
2-1 to 2-5 (The organization and its reporting practices), 2-6 to 2-8 (Activities and workers), 2-9 to 2-21 (Governance), 2-22 to 2-28 (Strategy, policies and practices), 2-29 to 2-30 (Stakeholder engagement), 3-1 to 3-3 (Material Topics Disclosures)
[Topic Standards]
203-1, 205-2, 302-1~1, 305-1~2, 305-7, 306-1~5, 401-2, 403-1~7, 403-9, 404-1~2, 414-2

Methodology
As a part of its independent assurance, the Assurer has used the methodology developed for relevant evidence collection in order to comply with the verification criteria and to reduce errors in reporting. The Assurer has performed the following activities;

- A top-level review of issues raised by external parties that could be relevant to organizations policies to provide a check on the appropriateness of statements made in the report.
- Discussion with managers and staffs on organization's approach to stakeholder engagement.
- Review of the supporting evidence related to the material issues through interviews with senior managers in the responsible departments.
- Review of the system for sustainability management strategy process and implementation
- Review of materiality issue analysis process and prioritization by reviewing materiality issue analysis process and verifying the results
- Verification of data generation, collection and reporting for each performance index and document review of relevant systems, policies, and procedures where available
- An assessment of the company's reporting and management processes concerning this reporting against the principles of Inclusivity, Materiality, Responsiveness and Impact as described in the AA1000 AccountAbility Principles Standard (2018).
- Visit of the **Hanwha TotalEnergies Petrochemical** Seoul Office to confirm the data collection processes, record management practices.

Limitations and approach used to mitigate limitations
The Assurer performed limited verification for a limited period based on the data provided by the reporting organization. It implies that no significant errors were found during the verification process, and that there are limitations related to the inevitable risks that may exist. The Assurer does not provide assurance for possible future impacts that cannot be predicted or verified during the verification process and any additional aspects related thereto.

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Competency and Independence
BSI (British Standards Institution) is a leading global standards and assessment body founded in 1901. BSI is an independent professional institution that specializes in quality, health, safety, social and environmental management with almost 120 years history in providing independent assurance services globally. No member of the assurance team has a business relationship with **Hanwha TotalEnergies Petrochemical**. The Assurer has conducted this verification independently, and there has been no conflict of interest. All assurers who participated in the assurance have qualifications as an AA1000AS assurer, have a lot of assurance experience, and have in-depth understanding of the BSI Group’s assurance standard methodology.

Opinion Statement
The assurer was carried out by a team of sustainability report assurers in accordance with the AA1000 Assurance Standard v3. Assurer planned and performed this part of our work to obtain the necessary information and explanations assurer considered to provide sufficient evidence that **Hanwha TotalEnergies Petrochemical’s** description of their approach to AA1000 Assurance Standard and their self-declaration of compliance with the GRI standards were fairly stated.
On the basis of our methodology and the activities described above, it is our opinion that the information and data included in the Report are accurate and reliable and the Assurer cannot point out any substantial aspects of material with mistake or misstatement. We believe that the economic, social and environmental performance indicators are accurate and are supported by robust internal control processes.

Conclusions
The Report is prepared in accordance with the GRI Standards. (Reporting in accordance with the GRI standards). The detailed reviews against the AA1000 AccountAbility Principles of Inclusivity, Materiality, Responsiveness and Impact and the GRI Standards are set out below.

Inclusivity: Stakeholder Engagement and Opinion
Hanwha TotalEnergies Petrochemical defined government/public institutions, financial institutions/investors, employees, local communities, business partners and customers as a Key Stakeholder Groups. In order to collect opinions by each stakeholder group in the context of sustainability, operated the stakeholder engagement process. **Hanwha TotalEnergies Petrochemical** was conducting a review of the stakeholder engagement process at the governance level in order to reflect the major issues derived through the stakeholder engagement process in sustainability strategy and goals. **Hanwha TotalEnergies Petrochemical** disclosed the results related to the process in the Report.

Materiality: Identification and reporting of material sustainability topics
Hanwha TotalEnergies Petrochemical implemented its own materiality assessment process in consideration of the major business and operational characteristics to derive important reporting issues related to sustainability. In the materiality assessment, **Hanwha TotalEnergies Petrochemical** conducted the analysis of global sustainability reporting or assessment standards, and analyzed international disclosure standards and evaluation indicators, benchmarking the same industry, and analyzing major regulatory issues to derive the impact and financial materiality. **Hanwha TotalEnergies Petrochemical** derived 11 key ESG issues through the relevant process, and disclosed GRI topic standards disclosures related to key ESG issues in the Report.

Responsiveness: Responding to material sustainability topics and related impacts
Hanwha TotalEnergies Petrochemical operated a management process for key ESG issues in the context of sustainability derived from the materiality assessment. **Hanwha TotalEnergies Petrochemical** established mid- to long-term sustainability plans and goals in according to the management methodology established to effectively reflect the expectations of key stakeholders. **Hanwha TotalEnergies Petrochemical** reviewed through major management organizations such as ESG working-level consultative bodies/strategic group teams/management consultative bodies, disclosed the process including policy, indicator, activity and response performance on key ESG issues in the Report.

Impact: Impact of an organization’s activities and material sustainability topics on the organization and stakeholders
Hanwha TotalEnergies Petrochemical identified the scope and extent of the impacts to the organization and key stakeholders in the context of the sustainability of the key ESG issues reported. **Hanwha TotalEnergies Petrochemical** established sustainability strategies and objectives based on the analysis results of major impacts, including risks and opportunities for key ESG issues at the governance level, disclosed mid- to long-term plans and strategic system in the Report.

Recommendations and Opportunity for improvement
The assurer will provide the following comments to the extent that they do not affect the result of assurance;
- It can be effective to advance the material assessment process established by Hanwha TotalEnergies, and to specify the frequency of assessment and relevant procedures to reflect changes in the reporting organization’s specific industry areas and business impact when conducting the assessment.
- It may be helpful to advance the sustainability management system by establishing an environmental and social performance indicator management system in key sustainability aspects and ensuring the reliability and accuracy of those performance indicators through internal control procedures.

GRI-reporting
Hanwha TotalEnergies Petrochemical provided us with their self declaration of compliance within GRI Standards. Based on our review, we confirm that social responsibility and sustainable development indicators with reference to the GRI Index. The Assurer confirmed that the Report was prepared in accordance with the GRI Standards and the disclosures related to the Universal Standards and Topic Standards Indicators based on the data provided by **Hanwha TotalEnergies Petrochemical**. The sector standard was not applied.

Issue Date: 22/08/2025
For and on behalf of BSI (British Standards Institution):

BSI representative



Jungwoo Lee
Lead Assurer, ACSAP



Seonghwan Lim
Managing Director of BSI Korea

BSI Group Korea Limited: 29, Insa-dong 5-gil, Jongno-gu, Seoul, South Korea
Hold Statement Number: SRA 789908

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Membership in Key Associations

Korea Plastic Pipe Research Society	Korea Industrial Safety Association, Western Chungnam Branch	Korean Standards Association (KSA)	The Federation of Korean Industries
The National Quality Master Association	Seosan Chamber of Commerce and Industry	Korea Industrial Technology Association	Korea Economic Research Institute (KERI)
Korea Chemicals Management Association	Korea Chemical Industry Association	Environmental Conservation Institute, Daejeon-Chungnam Branch	
The Korean Union of Chemical Science and Technology Societies	Korea International Trade Association (KITA)		

