HD HYUNDAI HEAVY INDUSTRIES

2023 HD Hyundai Heavy Industries Environmental Management Report

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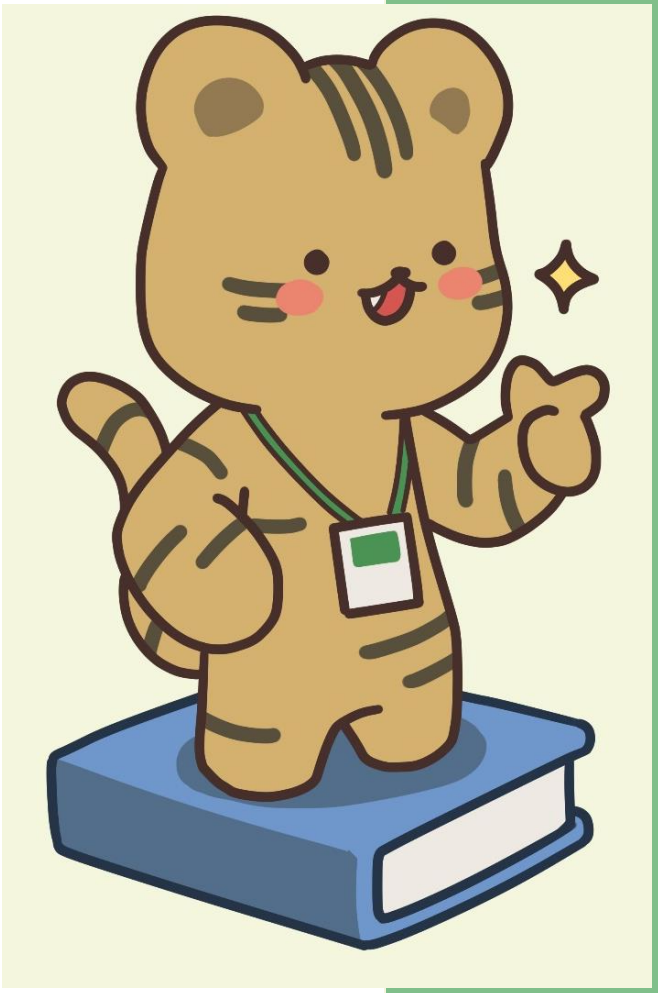
Contents

This report covers some of the activities in 2023 and the first half of 2024.

Environmental Management System



HHI ESG Mascot YUHWANG

Environmental Statement and Policy

HHI has issued a Manifesto for Environmental Management to achieve sustainable green growth and deliver a clean future to the next generation. HHI has also established and operated an environmental management policy and disclosed HSE policies and goals annually.

Manifesto for Environmental Management

MANIFESTO
FOR ENVIRONMENTAL MANAGEMENT

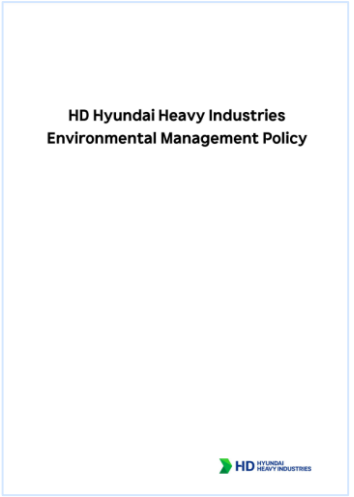
On the pathway to achieving green and sustainable growth through low-carbon and eco-friendly management that brings clean and hopeful futures for the next generation, all of us here at Hyundai Heavy Industries shall pledge to take our Seven Commitments of Environmental Management into real practices as follows:

1. We will achieve carbon neutrality to address climate change.
2. We will drive eco-friendly technologies for ships forward to low carbon green growth.
3. We will comply with domestic and international environmental laws and regulations.
4. We will strengthen our key pillars of environmental management based on ISO 14001.
5. We will take the lead in efficient use of resources through saving and recycling.
6. We will minimize pollutants in the production process.
7. We will make transparent disclosure of environmental information and establish good corporate culture for environmental management.

HD HYUNDAI HEAVY INDUSTRIES

HHI expresses its vision of environmental management and its intention to implement specific practices through the 'Manifesto For Environmental Management' to fulfill its social responsibilities as a sustainable global green company. The Manifesto For Environmental Management includes practices to internalize environmental management and outlines the top seven priorities for what needs to happen.

Environmental Management Policy



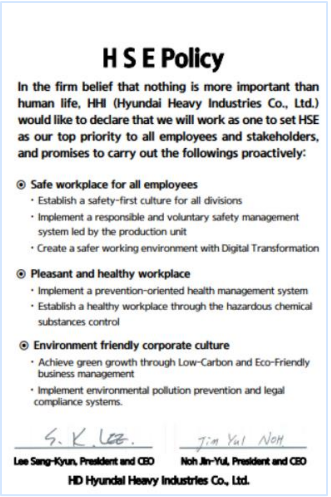
HD Hyundai Heavy Industries
Environmental Management Policy

HD HYUNDAI HEAVY INDUSTRIES

HHI is committed to fulfilling its social responsibility as a sustainable company with internal and external stakeholders by efficiently managing resources and energy and reducing environmental impacts across its business activities with the vision of a 'Future From the Ocean'. We have established and disclosed our environmental management policy.

(Main contents: purpose, coverage, governance (driving organization/driving system), implementation of environmental management policy)

Safety, Health, and Environment Guidelines



H S E Policy

In the firm belief that nothing is more important than human life, HHI (Hyundai Heavy Industries Co., Ltd.) would like to declare that we will work as one to set HSE as our top priority to all employees and stakeholders, and promises to carry out the followings proactively:

- Safe workplace for all employees
  - Establish a safety-first culture for all divisions
  - Implement a responsible and voluntary safety management system led by the production unit
  - Create a safer working environment with Digital Transformation
- Pleasant and healthy workplace
  - Implement a prevention-oriented health management system
  - Establish a healthy workplace through the hazardous chemical substances control
- Environment friendly corporate culture
  - Achieve green growth through Low-Carbon and Eco-Friendly business management
  - Implement environmental pollution prevention and legal compliance systems.

Lee Sang-Kyun, President and CEO — Noh Jin-Yul, President and CEO
HD Hyundai Heavy Industries Co., Ltd.

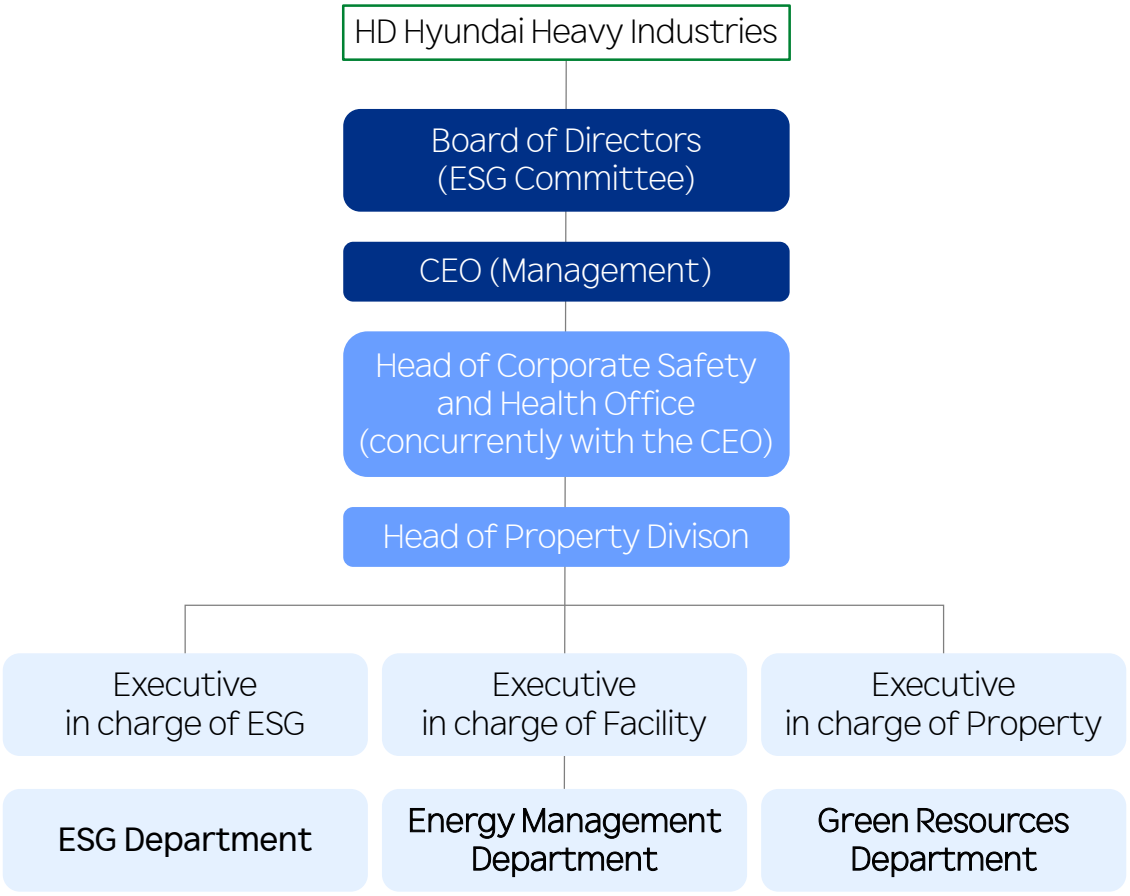
Environment Guideline 2024

Eco-friendly corporate culture

- Realizing green growth through low-carbon, green management
- Establishing an environmental pollution prevention and legal compliance system

Environmental Management Organizational Chart

HHI's environmental management organization is composed of the Board of Directors (BoD), CEO (management), and a dedicated environmental management team. The ESG Committee under the BoD of HHI receives reports on major environmental management achievements and plans, and reviews and approves significant environmental management issues, including the establishment of mid- to long-term environmental management strategies.



CEO (Chief ESG Officer)

- Operate an enterprise-wide environmental management system
- Establish key risk countermeasures and manage environmental management performance
- Report key issues and support decision-making to the Board of Directors (highest decision-making body) and the ESG Committee.

ESG Department (Organization dedicated to environmental management)

- Develop Environmental policy and institutional planning
- Create and implement a business plan and net-zero strategy
- Establish and manage the environmental management system (ESG KPI environmental indicators, preparation of environmental regulatory responses, environmental licensing and permitting, and environmental facility management)

Energy Management Department (Organization dedicated to energy management)

- Implement an energy-related policy and institutional planning, business planning, etc.
- Conduct Energy Management System (establishment and management of ESG KPI energy indicators, implementing and managing energy savings targets, etc.)

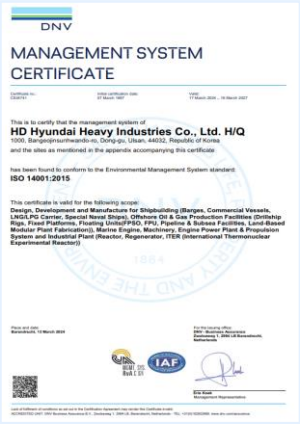
Green Resources Department

- Manage waste disposal
- Operate and manage Incineration plants, etc.

Environmental Management System Operations (Environment/Energy)

HHI has established an environmental and energy management system in accordance with the Environmental Management System (ISO 14001) and the Energy Management System(ISO 50001). HHI aims to systematically manage environment-related risks and opportunities through efficient management of environmental impact and energy across all business areas.

Achieve an Environmental Management System Certificate


DNV

MANAGEMENT SYSTEM CERTIFICATE

This is to certify that the management system of
HD Hyundai Heavy Industries Co., Ltd. H/Q
1000, Bangeojinsunhwando-ro, Dong-gu, Ulsan, 44032, Republic of Korea
and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Environmental Management System standard:
ISO 14001:2015

This certificate is valid for the following scope:
Design, Development and Manufacture for Shipbuilding (Barges, Commercial Vessels, LNG/LPG Carrier, Special Naval Ships), Offshore Oil & Gas Production Facilities (Drillship Rigs, Fixed Platforms, Floating Units(FPSO, FPU), Pipeline & Subsea Facilities, Land-Based Modular Plant Fabrication)), Marine Engine, Machinery, Engine Power Plant & Propulsion System and Industrial Plant (Reactor, Regenerator, ITER (International Thermonuclear Experimental Reactor))


HSE Objectives in 2024

"Achieving 1,000 days without a fatality accident through enterprise-wide safety management"

○ **Accomplishing the objectives of zero fatality accidents and an accident rate of 0.163 or less**
- Conducting worker-centered on-site risk assessments
- Strengthening safety management systems for high-risk work
- Improving employee safety capability with Safe Career Path
- Strengthening risk management capability by enhancing the integrated control center's capabilities
- Creating a total solution system for supporting in-house and external subcontractors

○ **Achieving a prevention-oriented health management system**
- Improving the health risk assessment system
- Establishing a health indicator management system
- Increasing the follow-up management of medical examinations and health promotion activities

○ **Implementing a sustainable, green management system**
- Climate change response through green management system implementation
- Strengthening green management by advancing the environmental management system

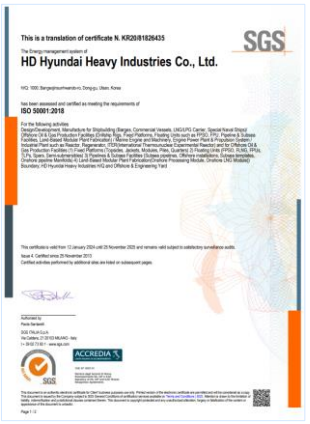
| Certification Authority: DNV

| Certification Period: March 2024 to March 2027

(Note : HHI was certified in 2023 and renewed its certification when the renewal period arrived.)

Regular training is conducted annually for HSE managers in each department, and internal auditors review whether the environmental impact assessment by department has been properly identified.
Additionally, external audits are performed by a third-party certification authority.

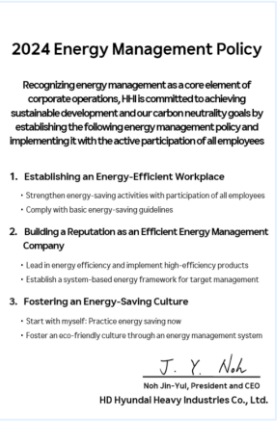
Acquire an Energy Management System


This is a translation of certificate N. KR20/81826435

SGS

The Energy management system of
HD Hyundai Heavy Industries Co., Ltd.

has been assessed and certified as meeting the requirements of
ISO 50001:2018


2024 Energy Management Policy

Recognizing energy management as a core element of corporate operations, HHI is committed to achieving sustainable development and our carbon neutrality goals by establishing the following energy management policy and implementing it with the active participation of all employees

1. **Establishing an Energy-Efficient Workplace**
   - Strengthen energy-saving activities with participation of all employees
   - Comply with basic energy-saving guidelines
2. **Building a Reputation as an Efficient Energy Management Company**
   - Lead in energy efficiency and implement high-efficiency products
   - Establish a system-based energy framework for target management
3. **Fostering an Energy-Saving Culture**
   - Start with myself: Practice energy saving now
   - Foster an eco-friendly culture through an energy management system

J. Y. Noh

Noh Jin-Yul, President and CEO
HD Hyundai Heavy Industries Co., Ltd.

| Certification Authority : SGS Korea

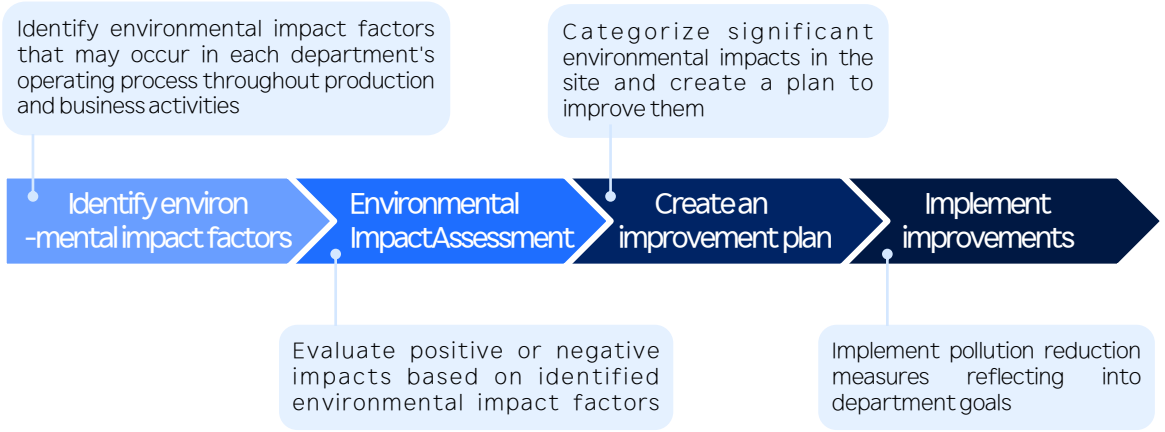
| Certification Period: November 2022 to November 2025

- Management of the company-wide energy goals and targets establishment
- Training for energy management department managers and internal auditors
- Review of the current status of energy legislation and compliance assessment
- Energy management performance evaluation, etc.

Environmental Management System Operations (Environment/Energy)

Environmental Management System (EMS) Management

HHI analyzes environmental impact factors by department and establishes improvement plans to reduce them, ensuring the appropriate operation of the environmental management system in accordance with ISO 14001. When assessing environmental impacts, the Environmental Facility Operation Department identifies potential impact factors from facility operations, diagnoses expected pollution levels, and creates improvement plans for significant factors, which are then reflected in detailed environmental goals for each department. Based on these goals, we are implementing pollution reduction plans and conducting chemical accident response training in departments that handle hazardous chemicals, thereby establishing a system to ensure the safety of workers in emergency situations.



Managing Environmental impacts in Business Investments and Operations

HHI has established an environmental impact improvement plan, considering the environmental impacts of all business activities (R&D, design, production, etc.) across the company, and implemented improvement activities according to the plan. Dedicated environment-related departments review the necessity and technical feasibility of new investment projects at the company level. The review examines relevant risk and opportunity factors, including environmental pollution risks, pollution risk reduction measures, and the need to obtain permits and licenses according to environmental laws.

Key points to review

- Business Viability (business strategy, growth potential, profitability)
- Economics (feasibility, effect analysis)
- Applicable laws and regulations
- Manage safety and environmental risks (Compliance with applicable laws/standards, Pollutant/greenhouse gas emission reductions)
- Energy
- ⋮

Environmental Management System Operations (Environment/Energy)

Manage Environmental Compliance

HHI manages a list of environmental laws and regulations related to its business activities and conducts an environmental compliance assessment annually to comply with existing environmental regulations and proactively respond to new environmental regulations. We also monitor updates to laws and regulations related to our business through legal authorities, conduct reviews of new and revised laws and regulations, and inform relevant departments about changes and response requirements. We endeavor to minimize the risk of violating laws and regulations by taking proactive measures and consulting with relevant departments, and if necessary, we also discuss countermeasures with industry peers. Detailed information about environmental compliance by field is disclosed on pages 11 to 21, and information on discussions with industry peers regarding environmental regulations can be found on page 25.

List of environmental laws and regulations	
Clean Air Conservation Act	Malodor Prevention Act
Special Act on the Improvement of Air Quality in Air Control Zones	
Water Environment Conservation Act	Waste Control Act
Act on the Allocation and Trading of Greenhouse-Gas Emission Permits	
Persistent Organic Pollutant Control Act	
Chemical Substances Control Act	
Soil Environment Conservation Law	Marine Environmental Management Act
Act on the Registration and Evaluation, etc. of Chemical Substances	
⋮	

▣ 환경법규 준수평가 체크리스트

관계 법규	준수사항	주기	확인대상	평가			확인내용	조치사항
				적합	보완	위반		
대기환경 보전법								

Establish a system for pre-qualifying for Health, Safety, and Environment (HSE) clearance

HHI is committed to complying with HSE regulations and mitigating the risk of regulatory violations by establishing a system to continually review HSE permit requirements for company-wide facility investments. In particular, we have enhanced efficiency by automatically integrating the results of preliminary reviews of safety, health, and environmental permit eligibility into the facility investment system.

Environmental Management Goals

HHI has established short-, medium-, and long-term goals for each major environmental area and is implementing various strategies to achieve them.

Key Environmental Management mid- and long-term goals

Key environmental management mid- and long-term goals	Target year	Goals	Key detailed strategies[1]
ISO 14001 (Environmental Management System) certification	2027	100% authentication rate	- Certify 100% of all business site (manufacturing, design, etc.) - Expansion of certification scope for small production operations by 2026 - All manufacturing and design sites are certified by 2027 - Consider immediate implementation of environmental management systems at new plant (business site)
Chemical emissions	2030	10% reduction in emissions compared to 2021 levels	- Develop paints with a low environmental impact, including those with low volatile organic compound (VOC) content - Apply low VOC paints in large paint shops : 30% by 2024, 45% by 2025, and 60% or more by 2026, Manage above 60% since then
Carbon neutrality (Greenhouse gas reduction goal)	2050	100% reduction in total emissions [Scope 1 + 2] compared to 2018 levels	- Energy efficiency (replacing old equipment and introducing high-efficiency equipment): 9% reduction - Fuel conversion (transition to low- and zero-carbon fuels): 30% reduction - Renewable energy adoption (external PPAs*, self-generation, etc.): 50% reduction - Carbon Offset(forest offsets, etc.): 11% reduction (* PPA: Power Purchase Agreement)

1. percentage of reductions, etc. may vary based on implementation strategy updates.

In addition, the information about the implementation of our short-term goals and strategies by environmental area can be found in pages 11-21.

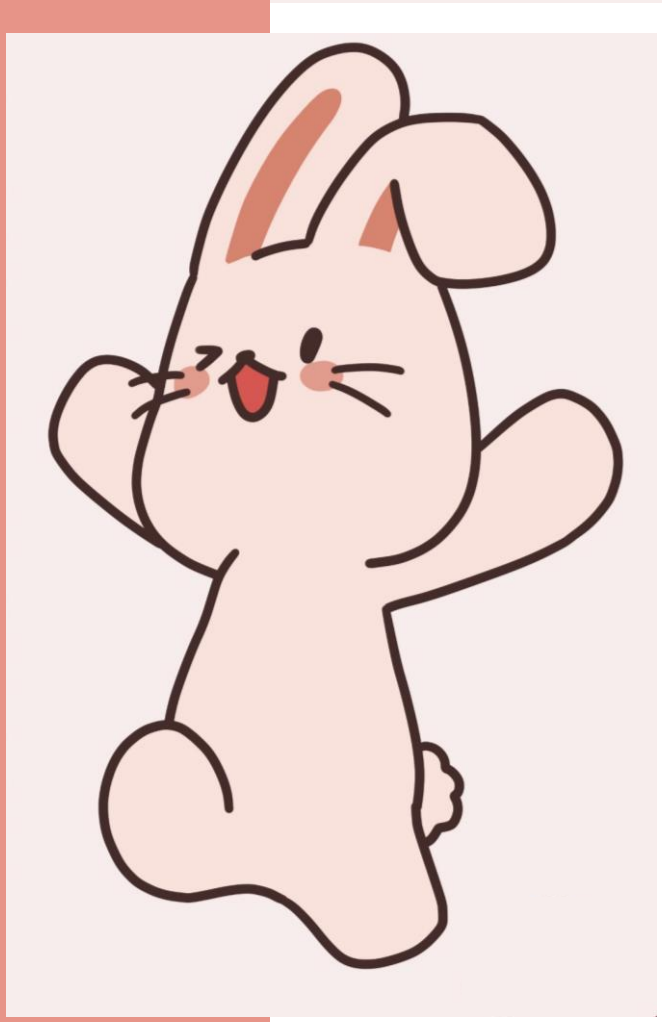
Manage Environment-related KPIs

HHI is implementing company-wide ESG KPIs by introducing department- and team-level KPIs in 2022, and CEO, executive, organizational, and department- and team-level KPIs in 2023. We also conduct performance evaluations for the CEO, executives, and departments (teams) to reflect the level of goal achievement according to ESG KPIs and link performance compensation to these evaluations. We consider the level of strategy (goal) achievement, individual efforts, and organizational contributions in relation to ESG KPIs, and perform a comprehensive evaluation of management efficiency and innovation. Performance compensation levels are then differentiated based on the evaluation results.

| Major environment-related KPIs

- CEO: Reduce energy consumption per unit (energy consumption amounts/revenue) year-on-year in 2023 (quantitative reduction target setting) and achieve the greenhouse gas emission (GHG) reduction target in 2024 (quantitative reduction target setting)
- Executives: Meet GHG emission reduction targets for 2023 and 2024 (quantitative reduction target setting), etc.
- Company-wide organization: Implementation of energy saving targets and stewardship activities, number of violations of environmental laws, etc.

Environmental Impact Management

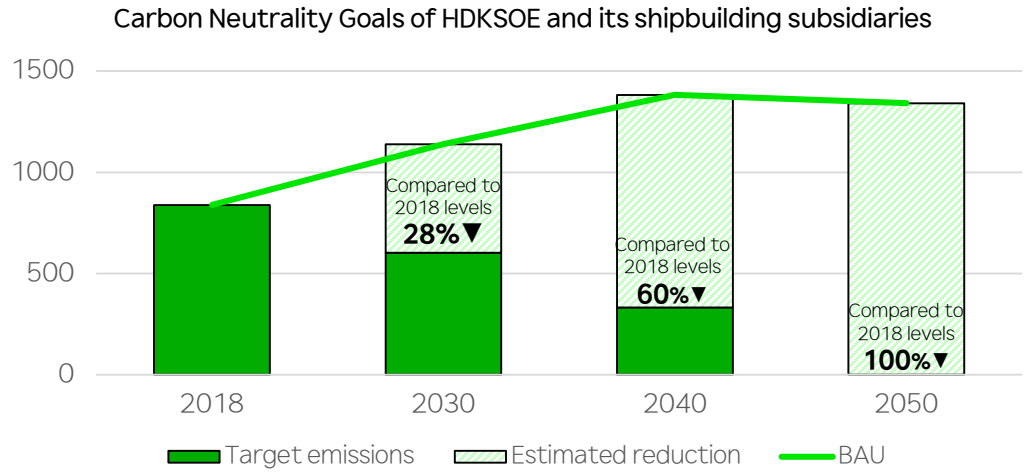


HHI ESG Mascot TOKKAENG

GHG/Energy Management

On May 3, 2023, HHI unveiled its 2050 Carbon Neutrality Implementation Roadmap with HD Korea Shipbuilding & Offshore Engineering (HDKSOE), HD Hyundai Mipo, and HD Hyundai Samho. Under the roadmap, we plan to reduce greenhouse gas emissions through energy efficiency, fuel conversion, and renewable energy adoption.

Net-zero Goals and Detailed Strategies



| Mid- to long-term goals

- 28% reduction (2030), 60% reduction (2040) and100% reduction (2050) compared to 2018 total emissions [Scope 1+2]

| Detailed strategy

- Energy efficiency (replacing old equipment and introducing high-efficiency equipment): 9% reduction
- Fuel conversion (transition to low- and zero-carbon fuels): 30% reduction
- Adoption of renewable energy (external PPA*, self-generation, etc.): 50% reduction (* PPA: Power Purchase Agreement)
- Carbon offsets (forest offsets, etc.): 11% reduction

※ Reduction percentages for each strategy may change as we continuously update our carbon neutrality roadmap to reflect advancements in reduction technologies.

Strengthening the Implementation of Carbon Neutrality

Organizational Structure	Key Tasks
TF 1 (2023)	
ESG, Finance, Energy	· Mid- to Long-Term Carbon Neutrality Roadmap Implementation Plan (Renewable Energy Adoption) Review · Analysis of Costs and Benefits of Renewable Energy Adoption
TF 2 (2024)	
ESG, Finance, Energy + Related organizations (general affairs, mechanical maintenance, etc.)	· Update and Feasibility Reassessment of the Mid- to Long-Term Carbon Neutrality Roadmap · Implementation of Renewable Energy Adoption · Expansion of Energy Efficiency and Fuel Conversion Measures

HHI operates the Carbon Neutrality Task Force (TF) to implement key carbon neutrality strategies and initiatives, including renewable energy adoption, energy efficiency, and fuel conversion. The task force also strengthens carbon neutrality efforts by updating the mid- to long-term carbon neutrality roadmap and reviewing its feasibility.

GHG/Energy Management

Greenhouse gas/Energy Reduction Activities

HHI is engaged in various activities to reduce greenhouse gases (GHGs) and energy consumption at all relevant stages of our operations.

1. Renewable Energy operation and Investment/Waste Heat Energy utilization
   - Adopt and operate small-scale solar power facilities : Dormitory, Production Technology Building 1, Main Gate, etc. (1.646TJ in 2023)
   - Recycle waste heat (450 TJ, Generated in 2023) from the incineration plant in-house and sell it externally

2. Energy Efficiency
   - Replace LED light fixtures
   - Introduce higher efficiency appliances in older facilities (e.g., air compressor efficiency)
   - Improve the way heating and cooling equipment operates, etc

3. Fuel Conversion
   - Replace oil-fired generators for ship commisioning to onshore high-voltage power facilities
   - Introduce energy-efficient gas heaters for shipbuilding
   - Adopt eco-friendly vehicles (e.g., electric vehicles), etc.

Additional energy-saving campaigns and energy-saving idea contests are detailed on page 29.

GHG Reduction Target and Performance

Year	Target and Performance
2023	-Target: Achieve an 18% reduction in greenhouse gas (GHG) emissions compared to 2015 levels, aiming for emissions within 640,858 tons, without additional purchases of GHG emissions allowances. -Performance: Emission of 639,878 ton
2024	-Target: Emission of 684,586 tons (The figures related to the carbon neutrality roadmap may change in accordance with modifications to the roadmap.).

Participate in CDP Initiatives

HHI is actively participating in both domestic and international climate change initiatives to comply with international regulations and achieve carbon neutrality. Since 2023, we have been involved in the Carbon Disclosure Project (CDP), where we have achieved a B rating and disclosed detailed carbon emissions information.

Link to view HHI's CDP results :
https://www.cdp.net/en/responses?queries%5Bname%5D=HD+Hyundai+Heavy+Industries

Comply with GHG Emissions Trading Obligations

HHI participates in the domestic greenhouse gas (GHG) emissions trading program. This system involves the government granting GHG emission allowances to companies, which then manage their GHG emissions reductions within their allowances.
For GHG and energy usage in 2023, HHI prepared an emission calculation plan and report in compliance with Article 21 (Submission and Verification of Plan for Calculating Greenhouse Gas Emissions) and Article 39 (Reporting and Verification of Emissions) of the Enforcement Decree of the Act on the Allocation and Trading of Greenhouse Gas Emission Permits. We received verification from a third-party organization, the Korean Standards Association. Following this verification, the report was submitted to the Ministry of Environment through the National Greenhouse Gas Management System (NGMS). HHI is committed to diligently fulfilling our obligations as a participant in the GHG emissions trading system.

GHG/Energy Management

Operating a GHG/Energy Management System

HHI has established and operated a monitoring system for systematic GHG and energy management.

Operation of a GHG management system

· Manage the monitoring of energy usage and GHG emissions by emission facility and business site through our proprietary system, HGMS (Company-wide Greenhouse Gas Management System)

Operation of energy use and demand management programs

· Operate an industrial ESS center

- A system that stores electricity and supplies it when needed, and enhances energy efficiency by reducing usage during peak power times

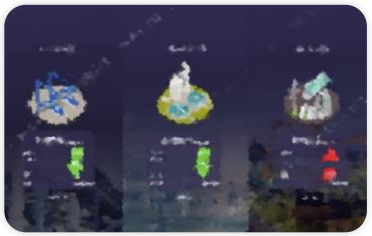
· Operate a factory energy management system (FEMS)

- A system for integrated analysis and management of electricity usage in the factory.

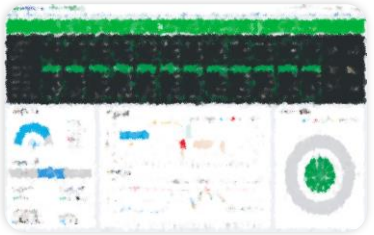
· Operate an integrated energy management system (Hi-Energy)

- Monitoring of energy (electricity,LNG) usage by factory and building, along with management of energy usage target and performance.
- System Development Status: Electricity and LNG systems are completed in 2023 and will be opened in 2024.

Company-wide Greenhouse Gas Management System (HGMS)



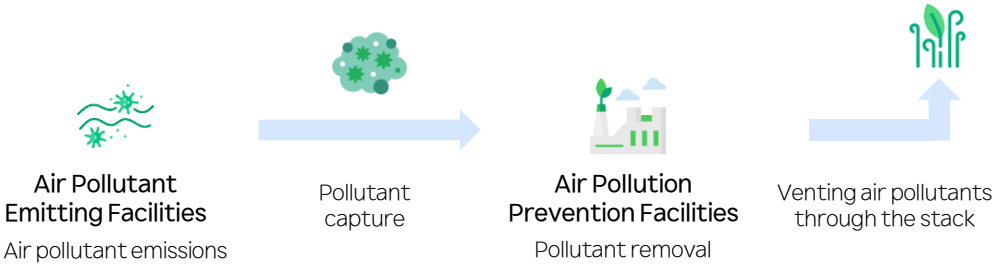
Integrated Energy Management System (Hi-Energy)



Energy Management System (FEMS)

Air Pollutant Management

HHI plans to develop and expand the use of environmentally friendly paints to reduce the generation of air pollutants in the first place, and to install optimal prevention facilities to minimize the discharge of air pollutants into the environment when pollutants are generated.



Efforts to Reduce Air Pollutant Generation/Emissions

HHI has developed and is progressively increasing the use of low volatile organic compound (VOC) paints to reduce air pollutant generation. We ensure the proper operation of facilities in compliance with relevant laws by setting internal emission control standards (within 30-70% of the legal emission allowance), tailored to the characteristics of each facility. These standards are managed more rigorously than the legal requirements through monthly self-inspections.
Additionally, facilities with high pollutant emissions are subject to continuous inspection, and those with high emission concentrations identified during self-measurements are managed by diagnosing the cause, implementing improvement actions, and re-measuring pollutants. Aging facilities requiring improvements receive annual investments.
To ensure proper operation of prevention facilities, we have established a fillings replacement cycle for each facility and will continue to manage air pollutant generation through semi-annual training for environmental facility site personnel.

Air Pollutant Emissions Reduction Goals and Performance

In 2023, HHI has signed a voluntary agreement with the Nakdong River Basin Environmental Office and Ulsan City Hall to reduce fine dust (dust and volatile organic compounds) emissions by at least 40% by 2024 compared to the baseline year (2016).
2023: Managed with the goal of reducing fine dust emissions by at least 20% compared to the baseline year, achieving a 40% reduction (exceeding the goal).
2024: Aim to achieve at least a 40% reduction in fine dust compared to the baseline year.

Operation of Air Pollutant Optimization Facilities

Prevention facility	Key installation processes	Key removed pollutants	Removal efficiency
RTO (Regenerative Thermal Oxidizer)	Pretreatment painting facility	Gaseous substances such as THC (Total hydrocarbons)	95% or more
CO (Catalytic Oxidizer)	Large-scale painting plant		90% or more
Adsorption facility	Painting facility		About 90%
Filtration and Dust Collection Facility	Rust removal facility, sorting facility, foundry sand processing facility	Particulate matter such as dust	90% or more
Inertial Dust Collection Facility	Sand blasting facility, foundry sand processing facility		About 70%
Centrifugal Dust Collection Facility	Woodworking facility, foundry sand processing facility		About 70%
Scrubber	Pretreatment painting facility	- Particulate matter such as dust - Gaseous substances such as THC	- About 80% - About 20% or more
Low-NOx Burner (Facility controlled by combustion adjustment)	Boilers, absorption chiller/ heaters	Nitrogen oxides(NOx)	69.8

Water/Wastewater Management

HHI continues to endeavor for reduced water usage in its business activities and manages wastewater disposal through its own treatment plants or specialized contractors. We handle this process appropriately, including entrusting as needed.

Water Use Reduction Activities

HHI has installed water-saving devices in most facilities and regularly inspects these installations, replacing any missing devices as needed. Additionally, we minimize water usage by reducing drainage to prevent freezing on quay walls and docks during winter. We are also in the process of developing a water and energy usage monitoring system (Hi Energy System), which will be utilized for future analysis and management of water usage.

Water Pollutant Discharge Reduction Activities

To reduce water pollutants generated at its plants, HHI applies in-house standards that are stricter than legal permissible discharge limits and manages these standards according to the type of facility and the characteristics of the pollutants. In addition, HHI conducts water quality analysis of wastewater generated at its plants once a semi-annually or twice a month through an external specialized agency and registers it in its own management system to continuously monitor the concentration of water pollutant discharges.

Wastewater Management Goals and Outcomes

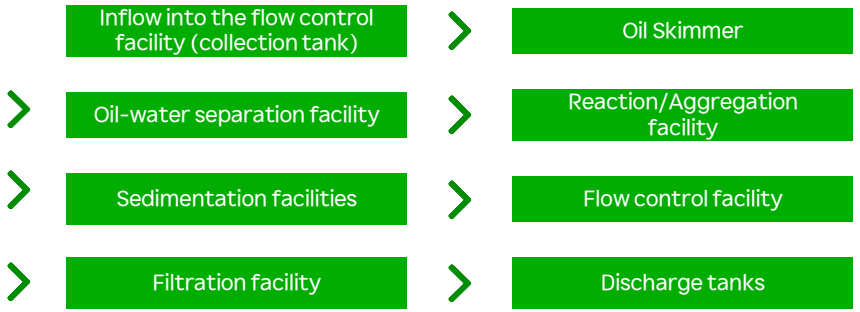
2023	Achieved a 1% annual reduction in wastewater emissions from 2020 (the baseline year) starting in 2022 and exceeded the 1% reduction in wastewater emissions
2024	Aim to discharge water pollutants within 30% of the permissible discharge limits

Efforts to Properly Treat Wastewater

| Water pollution prevention facilities (wastewater treatment plants)

: HHI operates one water pollution prevention facility (wastewater treatment plant) to directly remove and reduce water pollutants generated at its worksites. The incoming wastewater at this facility is treated using physicochemical methods to ensure it meets legal permissible discharge limits before being released to the Ulsan Bangeojin Water Quality Improvement Plant. Additionally, sediment from the wastewater treatment process is concentrated and dewatered from condenser and filter press facility and disposed of as sludge.

| Water Pollution Prevention Facility Flowchart



| Wastewater Treatment Entrusting

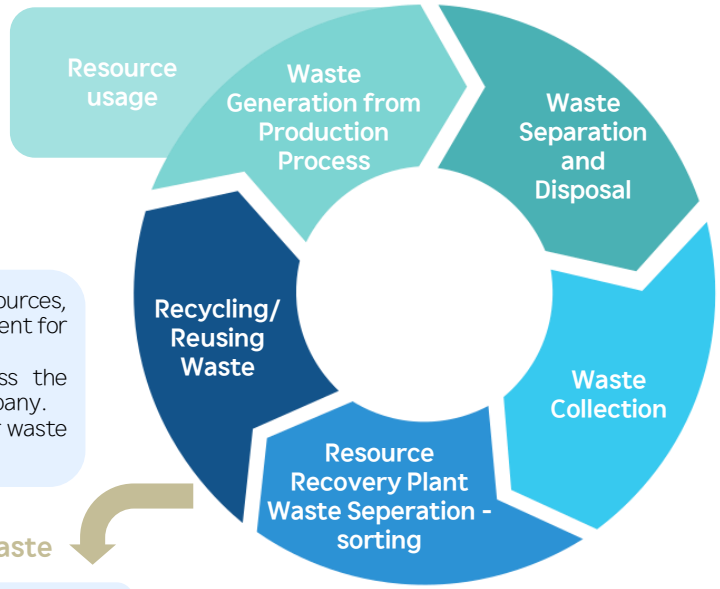
: When outsourcing, HHI uses specialized outsourcing companies to ensure proper processing.

Resource Recycling/Waste Management

HHI endeavors to optimize resource use, minimize waste generation as much as possible, and manage the generated waste by maximizing reuse and recycling.

Waste Management System

· Streamline resource usage
- Optimal design (structural simplification, total design of the ship's outfit, shape optimization of the engine, etc.)
-Developing highly efficient engine technology: Aim to reduce fuel consumption through advanced engine technologies.
- Process optimization (enhanced efficiency through production/design collaboration)
- Simplifying packaging (Shipping large engines, stern plates, and other components to the HHI shipbuilding division)



· Operation of waste separation bins:
- Red: Scrap metal
- Green : General waste exept scrap metal
- Yellow : Incombustible waste (grinding stones waste , etc.)
-Operation of designated waste storage facility: Separate facility for storing specific waste such as waste paint
· Periodic on-site inspections of waste separation and disposal practices

· If recycling is possible among waste resources, transfer them to the necessary department for reuse/recycling
· If internal recycling is difficult, process the waste through an external recycling company.
: Refer to page 17 for examples of major waste recycling cases

· Proper collection and transportation of waste through specialized collection companies (from site to in-house resource recovery plant)

· If the waste is difficult to recycle/reuse, carry out incineration (internal/outsourced) or landfill (entrusted) treatment.

· Separation and sorting the collected waste into recycling, incineration, and landfill categories at the resource recovery plant* (waste sorting center), and process accordingly
- Items that can be recycled internally are sorted separately and stored in a designated area.
- Establishment and operation of an internal waste management system (weighing program)

*Resource Recovery plant (waste sorting center)

Resource Recycling/Waste Management

Waste Recycling System

HHI ensures that when waste resources are generated, they are recovered, recycled, reused, and upcycled within the company's processes to the maximum extent possible for circular use.

| Key Cases of Waste Resource Recycling

01 Scrap metal from the process is sorted at a recycling plant, and recyclable scrap metal is used in the departments

Classification	Unit	2021	2022	2023
Reusing scrap metal	ton	1,330	1,492	1,631

· Self-Reuse quantities of the department are reported separately
· The above details reflect the reuse quantity aggregated by HHI's internal system

02 Recover waste heat from incineration plants and reuse it in plant operations

Classification	Unit	2021	2022	2023
Waste Heat Reuse	TJ	218	243	225

03 Scrap metal and other materials are processed by external contractors and then recycled internally based on their intended use

Classification	Unit	2021	2022	2023
Scrap Metal → Engine Castings	ton	9,176	10,776	11,436
Waste LUG → New LUG		1,361	1,667	1,738

04 Other cases

Classification	Details
Operating a Waste Wood Recycling Facility	Collecting and processing packaging boxes and SKIDs used for ship engine delivery from the engine machinery division to the shipbuilding division, and using them for waste wood recycling
Change in Waste Paint Liquid Treatment Method (recycling implementation)	Liquid wastes from paint and cleaning thinners generated during shipbuilding were previously outsourced for incineration, but some of these are recycled into Waste Oil Derived Fuel (WDF) through a contractor by providing separate collection containers and managing the area.
Introduction of Eco-friendly Work Uniforms	Introducing eco-friendly workwear made from company-generated plastic bottles

Waste Reduction Target and Performance

Year	Targets under the Circular Economy Performance Management System of an Act on Promotion of Transition to Circular Economy and Society
2023	· Target: Circular use ratio over 26.82% Terminal disposal ratio less than 32.38% · Results: Circular use ration of 51.98%, Terminal disposal ratio of 10.22% (exceeded target)
2024	· Target: Circular use ratio over 32.41%, Terminal disposal ratio less than 30.92%

Chemical Management

HHI ensures the safe handling of chemicals and endeavors to reduce chemical emissions and the use of hazardous substances.

Conduct Chemical Hazard Assessments

HHI conducts a preliminary hazard assessment of chemical products handled in the workplace to determine whether they can be introduced. HHI reviews MSDS registration, product hazards, and whether the product contains legally regulated substances before purchasing approved products.

Classification	Hazard assessment (unit: case)			
	Approvals	Conditional approvals		Unapproved
		Product Substitution	Accepting evidence	
2019	932	6	0	3
2020	3,337	7	5	13
2021	1,924	0	1	14
2022	2,466	11	4	250
2023	4,338	6	1	159

Unapproved* products are reviewed for substitutes by default. If it is necessary to handle products containing hazardous chemicals that are prohibited from being handled in-house, they are managed under strict controls after obtaining use authorization in accordance with the Chemical Substances Control Act.

* Unapproved
- Not registered with MSDS (MSDS compliant with Occupational Safety and Health Act)
- Contains hazardous chemicals that are not allowed to be brought into the workplace, etc.

Manage Hazardous Chemical Handling Facilities

Chemicals that are hazardous or pose risks are classified as hazardous chemicals. Appropriate handling facilities are established, and these chemicals are managed by trained site manager and handlers. The hazardous chemical handling facilities undergo regular internal inspections and annual external inspections by third-party organizations to prevent chemical accidents. In 2023, all hazardous chemical handling facilities were inspected by a third-party organization (Korea Gas Safety Corporation) and received appropriate approvals. (Information on training for accident prevention can be found on p.27.)

| 2023 Hazardous Chemical Facility Inspection Results

Inspections classification	Facility classification	Results
Scheduled checks (Chemical Substances Control Act)	manufacture	Suitable(1 location)
	manufacture (small quantities)	Suitable(5 locations)
	Outdoor storage	Suitable(1 location)
	Indoor storage (small quantities)	Suitable(5 locations)
total		Suitable for (12 locations: all facilities)

In 2024, institutional inspections of third-party hazardous chemical handling facilities were conducted, and all facilities received appropriate approvals.

Chemical Emissions Reduction Plan

In order to reduce the amount of emissions generated from the chemicals used in our business activities, HHI will gradually expand the use of paints with low volatile organic compound (VOC) content. We are also working to develop substitutes with less hazardous chemical content to reduce the amount of hazardous chemicals used.

Chemical Management Target

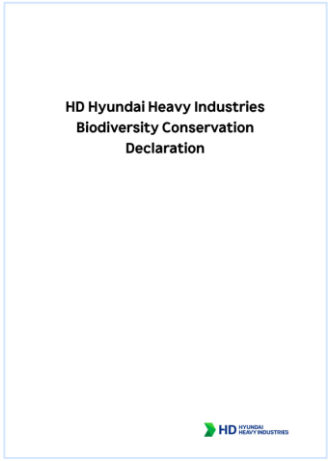
Year	Target and performance
2023	·Target: Reduce by 1% annually compared to 2021 starting from 2022 ·Performance: Approximately 12% reduction compared to 2021
2024	·Goal: Conduct monthly internal inspections of hazardous chemical handling facilities to prevent chemical accidents (zero chemical accidents).
2030	·Mid-to long-term goal*: 10% reduction compared to 2021 * Increased production due to the recovery of the shipbuilding industry is expected by 2030. Without ongoing efforts to reduce emissions, HHI's emissions would significantly increase. To mitigate this, we will continue efforts such as applying low volatile organic compound (VOC) paints.

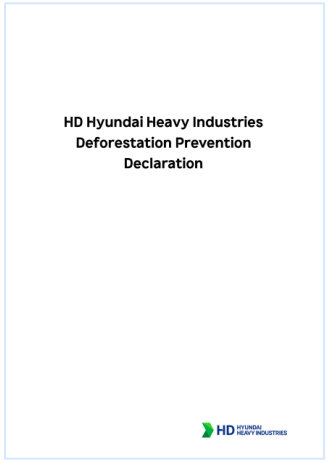
Biodiversity Management

HHI recognizes the importance of biodiversity conservation and aims to expand its biodiversity activities.

Declaration on Biodiversity Conservation and Deforestation Prevention

HHI has declared its commitment to biodiversity conservation and deforestation prevention to minimize the destruction of biodiversity and damage to forests during the shipbuilding process. We will continuously monitor the impact on biodiversity and forests throughout the shipbuilding process, and endeavor to achieve No Net Loss of biodiversity (NNL) and Net Positive Impact (NPI) in line with the goal of net zero carbon emissions by 2050. To this end, we comply with the requirements of international agreements such as the International Maritime Organization (IMO) and the International Union for Conservation of Nature (IUCN), and operate a cooperative system with local governments and non-profit organizations.





Biodiversity Conservation Activities

| Low-noise ship construction (Dolphin protection)

HHI is aware of the impact of underwater radiation noise generated by ship operations on marine life and is working to reduce it, especially since ship propeller noise overlaps with the frequency band of marine mammals such as dolphins. In addition, we have been developing 'Ship Underwater Radiation Noise Monitoring and Noise Reduction Technology' to protect the marine environment since 2020 with the Korea Research Institute for Shipbuilding and Offshore Plants (KRISO) and the Ministry of Trade, Industry and Energy (MOTIE), with the goal of securing the technology in 2024.

| Application of ballast water technology (Prevention of marine ecosystems disruption)

HHI has independently developed and employed its own ballast water treatment system called the “HiBallast” to remove microorganisms and pathogens contained in ballast water. The HiBallast earned a Type Approval from the IMO according to the International Maritime Organization (IMO) guidelines (G8).

| Planting nationally protected species for biodiversity conservation

As part of its biodiversity conservation efforts, HHI nationally protected species on its premises every year. In 2023, the company planted a total of 12,895 trees, including 12,735 nationally protected species such as white pine, Korean boxwood, wax-leaf privet and Forsythia, among shrubs and trees. For ground cover plants, a total of 8,191 plants were newly planted, including 5,518 nationally protected species such as leopard plant and liriope, and are currently being maintained.

Lifecycle Environmental Impact Reduction Efforts

HHI is committed to reducing the environmental impact of its business activities, including product manufacturing.

| Key efforts to reduce the environmental impacts of producing HHI's main product 'ships'

Classification	Raw material procurement	Design	Manufacturing	Use
Key environmental impact reduction efforts	· Purchase of Green Products : We purchase and use products certified with eco-labeled products, low-carbon products, and excellent recycling certified products (2023 green product purchases amount: KRW 297.2 billion) · Purchase of Recycled Steel : Some of the steel purchased and used in shipbuilding is produced by recycling scrap metal. (2023 Recycled steel purchases amount: KRW 59.5 billion) · Paint development : We are working to expand the application of low volatile organic compounds (VOCs) paints by jointly developing them with painting manufacturers.	· Proceeding with optimal design : We are minimizing the use of unnecessary steel and outfitting materials through structural simplification and integrated ship outfitting design and are making efforts to develop and apply pollutant reduction facilities in practice. · Environmentally Conscious Production Design : To minimize the unnecessary consumption of paints and thinners comprising volatile organic compounds (VOCs) , we apply the optimal design of paint specifications for each zone. · Development of Environmental Pollutant Reduction Technology : We are continuously developing proprietary technologies/systems for low-carbon ship design and striving to internalize/commercialize core technologies for zero-carbon ships.	· Process Improvement : Establishment of a virtual shipyard 'Twin Force' using digital twins / 3D realization of a real shipyard in a virtual space to reduce pollutants by reducing waiting time and reducing redundant work. ·Installation of Pollutant Reduction Facilities : When environmental pollutants are generated, we install appropriate prevention facilities to reduce the discharge of pollutants into the environment. · Recycling of Raw Materials : We are actively looking for processes that can reuse/recycle waste materials generated during the production process. · Application of New Paints : We are gradually expanding the use of paints with low VOCs content.	· Develop Low- and Zero-carbon (LZC) Ships : We are committed to developing Low- and Zero-carbon (LZC) Ships to reduce emissions in the process of ship operations. - Building the world's first supersized methanol-fueled container ship. - Constructing of the hybrid electric-powered ship "Blue Whale," equipped with an independently developed electric propulsion system by our group. · Improving Fuel Efficiency Performance of Ships : We are developing thruster, rudder, and fuel-saving devices, and are working to find their optimal combination to improve fuel efficiency and reduce underwater radiated noise. -Independently developed fuel efficiency improvement devices (Hi-PSD, Hi-Fin, Hi-Rudder Bulb) are effective in reducing greenhouse gas emissions from ships.

· LCA* Progress : HHI jointly developed a methodology for calculating LCA for a 174,000m³ liquefied natural gas (LNG) carrier in 2023. Through Life Cycle Inventory analysis/modeling and detailed methodology development, we calculated greenhouse gas emissions over the entire life cycle of one ship and analyzed the environmental impact at each stage of the ship's life cycle. We will make further efforts to reduce the environmental impact of products throughout the life cycle by utilizing the analysis results

* LCA(Life Cycle Assessment) : A method for quantitatively assessing the environmental impacts of products and services throughout their entire life cycle, from raw material extraction to production, use, and disposal.

Lifecycle Environmental Impact Reduction Efforts

Environmental Impact Reduction Efforts by Key Shipbuilding Processes

HHI incorporates environmental reduction technologies into all processes from product design to delivery, including developing technologies to reduce greenhouse gas emissions and environmental pollution, and building infrastructure through large-scale facility investments. In this way, we are preventing and minimizing environmental impacts caused by pollutants in the shipbuilding process and reducing energy consumption by improving the efficiency of production process facilities.

Steel pre-treatment and cutting

- Installing pollution prevention facilities to minimize pollutant emissions
- Automating the pre-treatment painting process
- Applying steel-cutting simulation techniques

Assembly

- Advancing LUG management to improve recycling rates
- Applying high-efficiency welding techniques

Preliminary Painting

- Developing and applying low volatile organic compound (VOC) paints
- Advancing management of coating thickness and painting process
- Introducing clean rooms in painting factories
- Establishing an integrated control system for painting factories

Common Measures

- Minimizing power consumption by using LED lighting
- Optimizing heavy equipment fuel usage through virtual simulation
- Operating in-house navigation systems
- Establishing an integrated control system for air compression facilities

Dock work

- Expanding the application of dust collection/ventilation systems within ships
- Developing and applying shatter-proof equipment and technologies for outdoor painting

Inspection

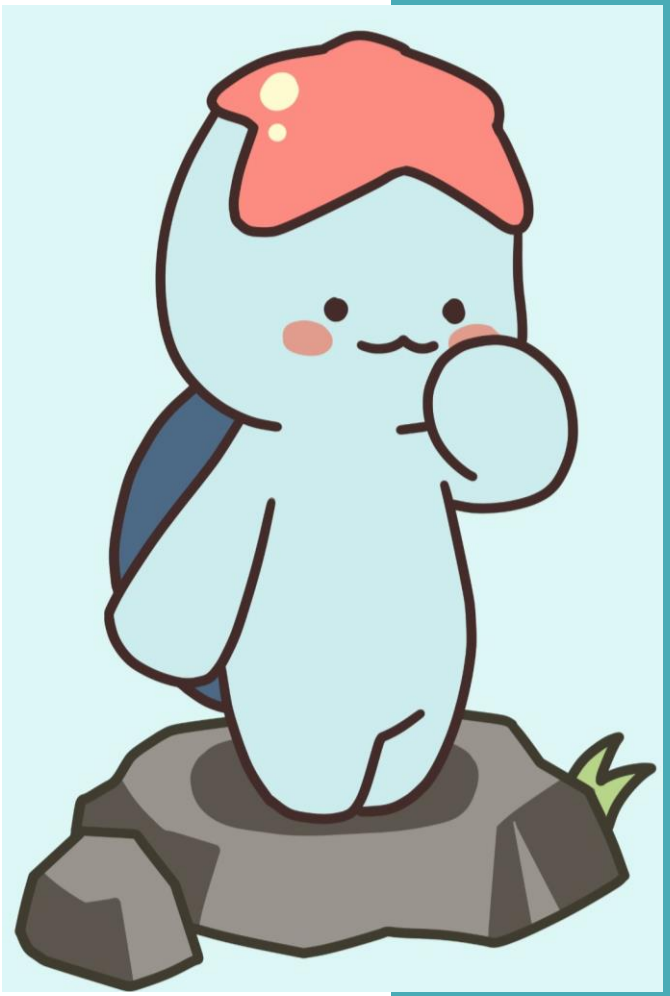
- Minimizing wastewater by changing pressure testing methods
- Virtualizing container demo tests for container ships
- Replacing radiographic testing with PAUT*

* PAUT(Phased Array Ultrasonic Testing)

Sea trials

- Using onshore high/low voltage power facilities during docking sea trials
- Minimizing exhaust gas pollutants by applying pollutant reduction facilities
- Enhancing operational efficiency by optimizing boiler air-fuel ratio

Internalizing Environmental Management



HHI ESG Mascot ESG (EUSSEUK)

Environmental Management Support/Communication

HHI conducts support activities for the environmental management of its suppliers and expands communication with local communities and other stakeholders.

Supplier Total Solution Support Business

HHI is implementing the "Total Solutions Support Program" to promote mutual growth with its supplier companies. On April 28, 2024, a "Total Solutions Support Program Memorandum of Understanding (MOU)" ceremony was held with representatives from six external supplier companies in attendance. The support will initially be provided to 40 external supplier companies, focusing on three areas: safety/environmental management, facility operations, and workforce management. This initiative is expected to offer practical assistance in resolving management risks for supplier companies and stabilize the supply chain.

| Key Environmental Management Support Activities

- Guidance on legal operations related to air pollutant, waste water, and chemical substances
- ESG/environmental training and consulting on appropriate operational measures

Key Activities to Support Suppliers in Improving Environmental Management

HHI, recognizing the challenges faced by its partner companies in meeting strengthened management standards for Hazardous Air Pollutants (HAPs) and Volatile Organic Compounds (VOCs)* due to the revision of the Clean Air Conservation Act, has been providing support since 2022. This includes investment support for VOCs reduction equipment and incentives for VOCs reduction activities for external partners.

1) HAPs (Hazardous Air Pollutants): Substances that can harm human health or the environment directly or indirectly through long-term exposure, even at low concentrations, and thus require air emission management.

2) VOCs (Volatile Organic Compounds): Hydrocarbons, including petrochemical products and organic solvents, that cause chemical reactions in the atmosphere, leading to the formation of photochemical oxidants like ozone and contributing to photochemical smog.

1. Support for investments in VOCs reduction equipment at external suppliers

In 2022, HHI, in collaboration with Seoul Guarantee Insurance, provided an advance payment of 5 billion KRW to support investment in VOCs reduction equipment for its supplier companies, actively supporting their environmental management efforts.

2. Incentives to support VOCs reduction efforts

In April 2022, HHI, along with HD Hyundai Mipo and HD Hyundai Samho, established a "Group Three Companies Supply Chain Risk Management Task Force." Based on this collaboration, the company included new provisions for operating costs of VOCs reduction equipment, additional painting costs for low-VOC paints, and environmental support funds in the revised unit price contracts with partner companies in 2023. Incentives were applied during payment, and this support continues as of 2024, actively aiding in the improvement of environmental management activities for external suppliers.

| Support status for 2023-2024

Items (Painting Support)	Supported suppliers	Support
Curved Block/T-Block	3 companies	Support for Operating Costs of VOCs Reduction Equipment
Curved Block	1 company	Support for Additional Painting Costs for Low-VOC Paints
Cell guide	1 company	
Hatch Cover	2 companies	Support for Operating Costs of VOCs Reduction Equipment
Cabin Block	3 companies	Support for environmental improvement charges
LPG Tank	1 company	

Environmental Management Support/Communication

Conducting Supplier Environmental Management Risk Assessments

HHI has established a supply chain risk management system, which includes financial assessments, supply evaluations, innovation and quality ratings, and other grade evaluations. Based on a code of conduct applicable to all partner companies, HHI provides guidelines, conducts awareness-raising and specialized training, identifies 'key suppliers' in advance, and suppliers perform self-assessments using checklists. Additionally, independent auditors (third-party organizations, external consulting firms) visit partner companies to conduct on-site inspections, risk identification, improvement recommendations, and ESG consulting support as part of the supply chain ESG risk assessment process. Starting in 2024, an ESG self-assessment including environmental risk evaluations will be conducted for 500 domestic supplier companies, with plans to expand this to all domestic supplier companies in the future.

| Results of the 2023 Environmental Risk Assessment

Classifications		Contents	Remarks
Environmental risk assessment metrics		- Goal Setting, Governance, Permits Acquisition, Regulatory Violations, Waste Management, Air Pollutant Management, Greenhouse Gas Management, Water and Wastewater Management, Noise and Vibration Management, Resource Recycling, Energy Conservation, Energy Management	- 3 items 10 questions
Environmental risks Evaluation results	- Supplier Companies Subject to Written Assessment	- 40 Companies	
	- Supplier Companies Subject to On-Site Assessment	- 20 Companies	
	- Supplier Companies with Identified Risks	- Risk Identified for 18 Companies	- Insufficient Establishment of Environmental Management Goals - Inadequate Greenhouse Gas Management System
	- Supplier Companies with Established Improvement Plans	- Improvement Measures Completed for 18 Companies	- Provision of Materials and Guidelines for Establishing Environmental Management Goals - Support for Greenhouse Gas Management System

※ Note : Support for risk improvement was provided following the assessment.

Environmental Management Support/Communication

Participation in the Safety and Environment Center of KOSHIPA

To proactively address the recently strengthened environmental and safety regulations, such as carbon neutrality and the Serious Accident Punishment Act, the Korea Offshore & Shipbuilding Association (KOSHIPA), in collaboration with major domestic shipbuilders, operates the "Shipbuilding & Offshore Safety and Environmental Center." By proactively preventing risks related to environmental and safety regulations, the center aims to minimize risks and enhance collective response capabilities through expanded cooperative channels within the shipbuilding industry.

Participation in the Ulsan Environmental Engineers Association

HHI is a member of the Ulsan Environmental Engineers Association. The association, comprised of environmental professionals working in the Ulsan region, hosts environmental technology seminars and presentations on environmental improvement cases. HHI regularly participates in these events to acquire information on the latest environmental prevention facilities and new technologies, and to engage in technical exchanges with environmental professionals involved in local public and private sector environmental work.

Participation in GHG Reduction Committees

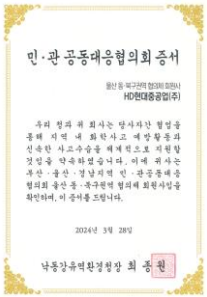
HHI joins quarterly greenhouse gas reduction research meetings with members of the KOSHIPA. These meetings focus on collaborative responses to the emissions trading system, strategies for reducing greenhouse gas emissions in the shipbuilding industry, and discussions on major issues related to greenhouse gas reduction.

Participation in the Chemical Safety Management Committee

The Dong-gu District Office of Ulsan Metropolitan City operates the 'Chemical Safety Management Committee,' which reviews and advises on key issues related to chemical substance safety management and chemical accident response. HHI is a member of this committee and participates in regular discussions with experts, government agencies, and private organizations to discuss chemical substance safety management in the local community.

Participation in the Public-Private Chemical Accident Response Council

The Nakdong River Basin Environmental Office manages the 'Public-Private Chemical Accident Response Council' for the Busan, Ulsan, and Gyeongnam regions. This council aims to quickly respond to chemical accidents, share emergency response resources, and strengthen regional coordination. Starting in 2024, HHI will be active as a member of the Ulsan Dong-gu and Buk-gu regional council, contributing to rapid initial response efforts in the event of chemical accidents in Ulsan and surrounding areas.


민·관 공동대응협의회 증서

HD현대중공업(주)

2024년 3월 28일

낙동강유역환경청장 최 종 원

Environmental Protection Activities

HHI regularly conducts environmental protection activities with local communities to fulfill its social responsibility for the preservation of the local environment.

1 Company 1 River cleanup

HHI has been consistently engaged in cleaning activities for the Jujeoncheon and Ungokcheon streams for over 20 years, aiming to maintain water quality and preserve aquatic ecosystems. The company conducts cleaning activities more than 10 times annually.
- Participation in Jujeoncheon and Ungokcheon cleaning activities (e.g., trash collection)
- 2023: A total of 17 cleaning activities conducted

Odor Patrol Activities

To prepare for odor and river pollution accidents in the Dong-gu area, HHI, in collaboration with local authorities and businesses, has established a voluntary environmental patrol team. This team monitors vulnerable areas and ensures rapid response in the event of incidents.
- 2023: Conducted weekly odor patrols every Tuesday from April to October

| Standby Patrol

HYUNDAI TECHNICAL HIGH SCHOOL

ILSAN BEACH

HHI OFFCHORE PLANT

HD Hyundai Construction Equipment MAIN ENTRANCE

| River Patrol

JUJEONCHEON

UNGOKCHEON

JEGICHEON

The 'HHI Dolphins' Protecting the Ocean

In 2019, HHI, in collaboration with the Ulsan Maritime Police Station, established the "HHI Dolphin Response Team." This initiative aims to minimize pollution damage by providing rapid initial response in the event of marine pollution incidents. Additionally, HHI and the Ulsan Maritime Police Station are working together to establish medium- and long-term projects for marine pollution prevention and to implement various improvement activities to reduce the discharge of marine pollutants.

Separation	Subtasks
Contrast	Development of an Internal Marine Pollution Emergency Manual
	Expansion of Marine Pollution Response Equipment
	Designation and Operation of Dedicated Marine Environmental Management Personnel for Each Dock
Correspondence	Establishment of a Rapid Response System for Marine Pollution accidents
	Regularization of Marine Pollution Response Training and Drills
	Activation of Autonomous Marine Pollution Response Teams
Manage	Fostering a Corporate Culture Prioritizing Marine Environmental Conservation
	Improvement of Work Environments with High Pollution Risks
	Comprehensive Marine Pollution Prevention Patrols on Land, Sea, and Air

Environmental Risk Prevention Training/Education

HHI conducts environmental accident response mock drills, self-inspections of environmental facilities, and environmental education to prevent environmental risks.

Environmental Accident Preparedness Training - ① Marine Pollution Prevention

HHI conducts annual oil pollution drills to strengthen its capability to respond to actual marine pollution. In 2023, we conducted a public-private partnership drill with Ulsan Maritime Police Station, the Korea Marine Environment Management Corporation, and HD Hyundai Mipo to review our response system at all stages.

- Major activities in 2023: Joint public-private coastal pollution response drill for oil spills (October 30, 2023)

1. Spill Reporting | 2. Incident Reception | 3. Installation the Oil boom | 4. Dropping the Sorbent | 5. Deploy TUG BOAT | 6. spray fire water | 7. Firefighting Water Spray | 8. Collectin of oil sorbent | 9. Remove the Oil boom | 10. Training reviews

Environmental Accident Preparedness Training - ② Chemical Accident Prevention

HHI's hazardous chemicals handling department conducts emergency drills twice a year, including fire evacuation drills and accident response drills, to ensure that facilities handling hazardous chemicals can respond quickly to actual emergencies. Each hazardous chemicals handling department has a systematic plan for responding to emergencies (emergency communication network, self-defense fire brigade, etc.), and strives to improve its ability to respond to environmental accidents by simulating various scenarios. This includes quick life-saving actions, minimizing damage to facilities, and effective use of disaster prevention equipment. After the drills, we diagnose vulnerabilities in accident scenarios and share them with employees to internalize accident response procedures.

- Major activities in 2023: Methanol leak response drill (October 31, 2023), Chemical accident emergency drill for engine fire and explosions (June 2, 2023)

1. Methanol Leak Detection | 2. Emergency Shutdown | 3. Emergency Valve Closure | 4. Situation Notification / Emergency Siren | 5. Evacuation | 6. Spill Response Operations | 7. Washing | 8. Review and Evaluation

Environmental Risk Prevention Training/Education

Environmental Facility self-inspection

HHI conducts monthly self-inspections of environmental facilities to manage environmental pollutant emissions and prevent environmental pollution accidents. We select and inspect target facilities every month, and collaborate with relevant departments to take remedial measures and properly manage operations in response to identified improvement needs.

| Self-inspection form

Environmental Education

HHI conducts environmental education and training on chemicals and marine pollution control training for employees, including suppliers. Chemical training is provided to employees (including employees and suppliers) at workplaces that handle hazardous chemicals to help them understand the basic concepts of chemicals and how to respond to unexpected chemical accidents.

| Chemical Education Performance Standards

	Unit	2021	2022	2023
Employees	Persons	9,352	10,743	11,157
Suppliers		12,263	10,673	14,872

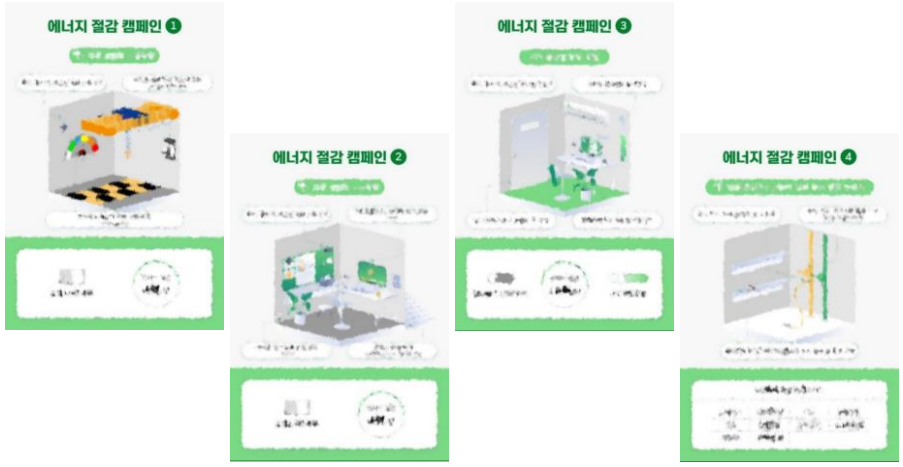
※ Note : based on chemical substance training for those facilities handling hazardous chemicals in accordance with the Chemicals Substances Control Act (employees and suppliers)

In addition, we provide training on the operation of the environmental management system for HSE representatives in each department. We also provide periodic training to users on how to utilize our own Greenhouse Gas Management System (HGMS) and Integrated HSE Management System (HiSEs), which are operated to manage environment-related facilities and emissions such as greenhouse gases and air pollutant, to help employees and suppliers understand environmental work and strengthen work efficiency. Furthermore, HHI operates the online learning platform 'Hi Class' to improve employees' work skills. Employees can take ESG education and environmental management strategy training through Hi Class.

Environmental Engagement Activities

Drive Energy Savings Campaigns and Energy Keeper Activities

HHI regularly conducts energy-saving campaigns for all employees and suppliers in the workplace. We also conduct weekly energy keeper activities to establish a culture of energy conservation. Through the energy keeper activities, unreasonable cases of energy waste (lighting, heating, cooling, leakage, water, etc.) in office and factory buildings are checked and improved, and the results of the checks are shared with the entire company to raise employee awareness of energy efficiency.



Energy Saving Idea Contest

HHI conducts a contest to discover excellent ideas for energy saving and to improve energy saving levels in the workplace.

2023 Energy Savings Ideas Competition	
Topics	- Energy Efficiency Improvement Ideas for Factories/Office Buildings - Practical Ideas for Everyday Company Life
Target	- Employees and suppliers
Duration	- December 2022 to January 2023
Performance	- 414 ideas received - Awarded 1 First Place, 4 Second Place, and 7 encouragement awards

Appendix

Appendix

HHI actively conducts activities to comply with laws and reduce environmental pollutant emissions in all areas of the environment, including air, water, chemicals, and waste. We will continue to endeavor to reduce environmental pollutant emissions through various efforts such as improving work processes and investing in prevention facilities.

GHG Scope 1&2

(Audience: All locations)

Category	Unit	2021	2022	2023
Total emissions (Scope 1+2)[1]	tCO_2eq	529,999	549,552	639,878
Direct emissions (Scope 1)		236,741	244,228	276,779
Indirect emissions (Scope 2)		293,262	305,331	363,104

1. There might be some differences in the sum of emissions amount since the emissions are rounded off to a whole number.

Energy

(Audience: All locations)

Category		Unit	2021	2022	2023
Total energy consumption[1]		TJ	9,406	9,887	11,511
Fuels			3,063	3,268	3,700
Steam			218	243	227
Electricity			6,130	6,382	7,590
Non-renewable energy consumption			6,128	6,380	7,588
Renewable energy consumption			2	2	2
Non-renewable energy generation	Steam	TJ	417	427	450
Renewable energy generation	Solar Power	MWh	167	161	223
	Wind power		1,674	393	0
Energy sales	Electricity	MWh	1,674	393	0
	Steam	TJ	199	184	225

1. based on GHG emissions submission, energy consumption by business site is rounded to the nearest whole number, which may cause some discrepancies in the total value.

This data was third-party verified at the time of publication of the 2023 Integrated Report.

Air Pollutants[1]

(Target: Headquarters (main plant))

Category		Unit	2021	2022	2023
NOx	Emissions	ton	60	49	33
SOx			0.616	4.461	1.802
Dust			31.820	18.279	16.930

1. When calculating NOx, fuel consumption, emission factor, and efficiency of prevention facilities were used. As for the calculation of SOx and dust, pollutant concentration measurement results, exhaust gas flow rate, and facility operation time were considered.

Water

(Target: Head office (Main Plant) and Offshore Plant)

Category		Unit	2021	2022	2023
Water provided by third parties[1]	Water Withdrawal	ton	3,058,754	3,095,418	3,421,160
Main Plant			2,487,737	2,504,169	2,621,224
Offshore plants			571,017	591,249	799,936

1. Service water, industrial water, etc.

Water Pollutants

(Target: Headquarters (main plant))

Category		Unit	2021	2022	2023
Effluents discharge	Emissions	ton	3,400	3,940	4,191
TOC[1] (Total Organic Carbon)		kg	17	21	33
BOD (Biological Oxygen Demand)			6	6	17
SS (Suspended Solids)			6	6	6

1. Since 2022, the Ministry of Environment has converted the organic matter measurement index from Chemical Oxygen Demand (COD) to TOC. Accordingly, data for 2021 represent COD emissions while data from 2022 indicate TOC emissions.

Appendix

Waste[1]

(Target: Head office (main plant), offshore plant, Pipe shop & hydro Test shop, Offshore Piping Fabrication Shop, Offshore Pipe Painting Shop, Munsan Shop, Hyundai Incineration Plant, Gunsan Shipyard

Category			Unit	2021	2022	2023
Total waste disposed[2]			ton	238,888	214,603	263,915
General Waste	Waste disposed			155,595	149,020	174,667
	Landfilled	Outsourced treatment		308	5,294	552
	Incinerated (energy recovery)	Internal treatment		27,767	29,648	36,557
		Outsourced treatment		0	478	534
	Recycled	Outsourced treatment		127,520	113,601	137,024
Hazardous Waste	Waste disposed			7,456	6,860	7,877
	Landfilled	Outsourced treatment		1,440	848	863
	Incinerated (energy recovery)	Internal treatment		0	65	58
		Outsourced treatment		1,994	1,824	1,953
	Recycled	Outsourced treatment		4,021	4,122	4,993
	Neutralized	Outsourced treatment		2	0	10
Construction Waste	Waste disposed (recycled)	Outsourced treatment		75,837	58,724	81,371

1. It is based on the figures reported in the Allbaro system of the Ministry of Environment, and some of them, such as waste paper and scrap metal, are based on their weight.
2. Since the amounts of waste discharged for each category are rounded up to whole numbers, there may be some differences with the sum of total waste disposed.

Environmental Education

(Target: Based on chemical substance training for those facilities handling hazardous chemicals in accordance with the Chemicals Substances Control Act (employees and suppliers)

Category		Unit	2021	2022	2023
Employees	Participants	Persons	9,532	10,743	11,157
Suppliers			12,263	10,673	14,872

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