

Hanwha Systems

Sustainability Report 2022

ABOUT THIS REPORT

INTERACTIVE User Guide

Hanwha Systems Sustainability Report was developed as an interactive PDF. It allows users to jump to the relevant sections and play videos to find more various issues.

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Overview

Year 2022 Hanwha Systems Sustainability Report outlines the company's achievements regarding its environmental, social and economic responsibilities and the sustainable management activities. The company seeks to communicate with stakeholders by disclosing the relevant information in a transparent manner every year.

Criteria

This report was prepared in accordance with the Global Reporting Initiative Standards (GRI), and also incorporated the Task Force on Climate-related Financial Disclosures (TCFD), Sustainability Accounting Standards Board (SASB), and United Nations Sustainable Development Goals (UN SDGs) to disclose issue-specific activities aligned with industrial features.

Reporting Period

This report recounts the company's environmental, social, and economic activities and performances between January 1, 2021 to December 31, 2021, and some achievements include information as of the first half of 2022. In addition, three-year quantitative data (2019-2021) were used to show the company's trends over the years.

Reporting Cycle

Yearly

Scope

In this report, Hanwha Systems collects and reports financial and non-financial data encompassing all the domestic and international defense and ICT plants. The financial data were collected in accordance with the Korean International Financial Reporting Standards (K-IFRS). For your convenience, we added notes to some information requiring attention to the scope and boundary of this report.

Assurance

The financial data contained in this report were independently audited by Deloitte Korea. All non-financial data were independently verified by the Korea Management Certification to ensure its objectivity and reliability.

Information

Please contact us for any questions about this report.

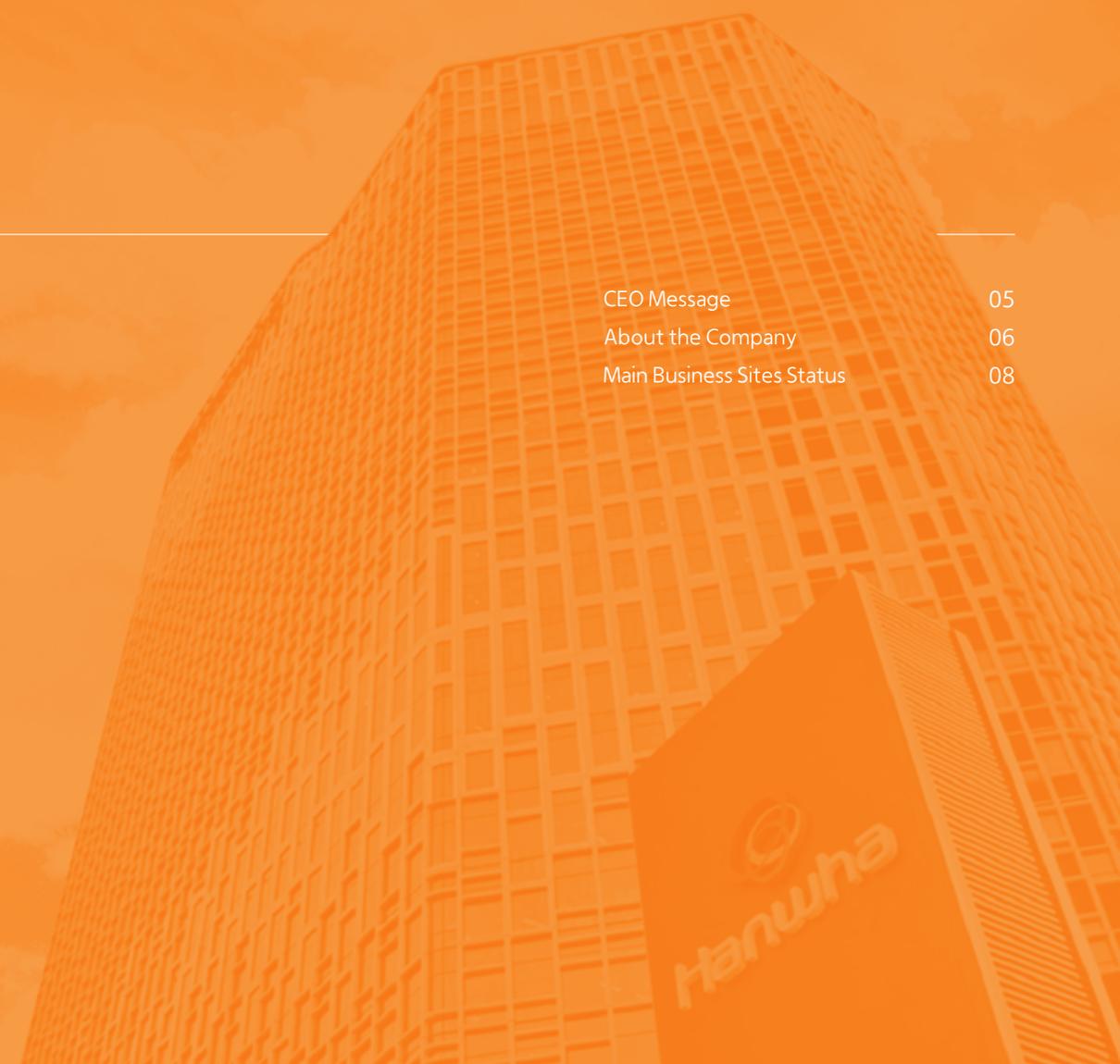
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CEO Message

The importance of corporate social responsibility is growing every day. Corporate social responsibility (CSR), which was previously confined to donations and social contribution activities, has been expanded to the concept of creating shared value (CSV), which pursues the creation of both social values and profits. Now we ought to comply with ESG requirements that encompass the environment, the society, the governance and other non-financial elements to be managed as the enterprise's objectives. All of these initiatives are showing that the demand and expectation for corporate social responsibilities are ever-increasing.

In order to manage its ESG performances and issues, in June 2021, Hanwha Systems established the ESG Committee within the Board of Directors. In November, we published our first Sustainability Report to share our ESG efforts and achievements.

Hanwha Systems expresses the deepest gratitude for your interest and support.
We will reward you by creating more values for you.

Hanwha Systems will enrich the world with green and ICT technologies.

Guided by the goal of "becoming an eco-friendly enterprise shaping people's future lives", Hanwha Systems seeks to contribute to the meaningful changes in the world through green technology by investing and making efforts in clean technology as well as reducing carbon emissions and energy. We carry out Urban Air Mobility (UAM) projects to develop green urban modes of transportation with drastically reduced noise and carbon emission. We are also leading to help people to pursue better lives through the hyper-connection, high-speed space Internet Technology.

We will contribute to local communities by espousing human rights, shared growth and social contribution activities.

Hanwha Systems has exerted dedicated efforts to protect human rights, achieve gender equality and guarantee diversity for its employees and partners. By creating jobs for the youth and creating flexible working environments, the company was named Korea's "Top Job Creator" by the Ministry of Employment and Labor for two consecutive years (2022 and 2021). As a "Warmhearted Enterprise", named by the Ministry of SMEs and Startups in 2021, the company raised a shared growth fund worth KRW 54.9 billions over a three-year period (2021-2023) to identify innovation-led and technology-innovating SMEs.

We will build a solid and transparent governance system.

Hanwha Systems has steadfastly enhanced its corporate ethics practices through fair trade and anti-corruption activities. In March 2022, in order to build a sound governance and ensure fair business activities, we established the Corporate Governance Charter. In addition, Hanwha Systems is the first publicly listed large company to ban "self-recommendation" of outside directors, and appointed a female outside director to bolster the transparency and diversity of its governance. The company also acquired the ISO 37301 (Compliance Management) and ISO 37001 (Anti-Corruption Management) certifications, which boosts our efforts for enhanced compliance management.

Dear stakeholders!

Hanwha Systems will continue to build a safer and more affluent world through "hyper-connectivity, hyper-intelligence, hyper-convergence" technologies. Also, by setting ESG management as the company's core value, we will lead continuous and sustainable growth of the corporate, along with the constant efforts in creating better values for all stakeholders.

Thank you,

Eoh Seong-cheol
CEO, Hanwha Systems



About the Company

Overview

As a global total solution company, Hanwha Systems is the only defense/IT firm in Korea offering advanced defense electronic technology and smart IT technology solutions.

Building on the defense electronics and competitive ICT solutions, Hanwha Systems creates new synergy combining defense and civilian sectors together. The company also boosts its digital innovation capabilities to make a leap forward into the future and identify and develop new engines for growth through the UAM business, the space internet business including low earth orbit satellites and communication antenna, and the electronic component business focused on automotive semiconductors.

Corporate Status

Name	Hanwha Systems
CEO	Eoh Seong-cheol
Founded on	January 11, 2000
Business	Manufacturing of other electronic components
HQ location	244 1gongdan-ro, Gumi-si, Gyeongsangbuk-do
Executives/employees	3,931

Vision and Strategy

Hanwha Systems dreams of a more affluent and safer future under its vision of “becoming a global leader in defense and ICT smart solutions”.

The Defense Division is Korea’s leading defense electronics company with expertise and know-how in cutting-edge technologies. The division plays a pivotal role in Korea’s national security, and leads Korea into the future of smart national defense. The ICT Division offers comprehensive IT solutions tailored for customers across a wide range of sectors. As a digital transformation leader, the division continues to innovate its businesses and bolster its competency.

In keeping up with the changes in the era of Industry 4.0, Hanwha Systems is actively engaged in identifying and investing in new businesses, such as UAM, low earth orbit satellites project, to proactively respond to the possible shifts and changes in the future. All of us at Hanwha Systems will continue to expand our business models and innovate ourselves to build a more affluent and safer society powered by hyper-connectivity, hyper-intelligence and hyper-convergence.

Vision	A global leader in defense and ICT smart solutions		
Mission	Build fuller and safer lives for all humanity through hyper-connectivity, hyper-intelligence and hyper-convergence.		
Strategic Goals	<p>Defense</p> <p>Maintain the leader status in the Korean defense electronics market and expand into global markets</p>	<p>ICT</p> <p>Boost profitability and pursue new businesses based on DT</p>	<p>New Businesses</p> <p>pre-occupy the air space market with advanced technologies.</p>
Strategic Tasks	<ul style="list-style-type: none"> • Surveillance and Reconnaissance Build the Full Line-up of MFR and boost exports Complete the Full Chain for surveillance/reconnaissance satellites • Command and Control-Communication-Cyber Build a hyper connectivity network using LEO satellites • Boost exports Expand markets around global hubs • Expand into private sector markets Night vision for self-driving 	<ul style="list-style-type: none"> • Promote the businesses as core solution-based businesses Expand the applications of financial/defense solutions: secure specialized solutions and expanded sales channels • IT services/management Expand customer services based on DT technologies • Build businesses based on new technologies AI/Big data solution, Tech-Fin (Gig Economy and e-Wallet) and Meta Campus Service Platform 	<ul style="list-style-type: none"> • UAM Secure and supply SeVTOL (Butterfly), UAM services and infrastructure • Satcom LEO-based solutions and service positioning mobility ESA

Major Milestone

Business	
2020	
JUN	Acquired the satcom antenna firm Pager Solution (UK); founded Hanwha Pager
JUN	Launched the AI brand HaiQV, accelerating digital transformation
NOV	Initiated development of Korea's first defense application of AI smart command and control service
DEC	Invested USD 30 millions in KYMETA, a US satcom antenna company
DEC	Landed the KDDX combat system and multifunctional radar project
2021	
FEB	Released QUANTUMRED, an intelligent thermal imaging camera module
JUL	Launched W1NE, a next-generation insurance core solution
SEP	Signed a mass-production contract of KRW 360 billions for "Military Satcom System-II" Net Control System
2022	
JAN	Signed an export contract of KRW 1.3 trillions for "Cheongung-II MFR" with UAE
FEB	Invested USD 300 millions in OneWeb
MAR	Launched domestic test flight of KF-21 AESA Radar
APR	Exported CMS for two corvettes in the Philippines
JUN	Hanwha Aerospace and Hanwha Systems invested USD 115 millions in Overair, US

ESG	
2020	
JUL	Selected as the Top Job Creator in Korea
OCT	Re-selected as a Green Enterprise
2021	
FEB	Adopted electronic voting system for the General Meeting of Shareholder
MAY	Named as Warmhearted Enterprise 2.0 by the Ministry of SMEs and Startups
JUN	Established the ESG Committee and the Sustainable Management Team
JUL	Selected as Korea's "Top Job Creator" Presidential Commendation by the Ministry of Employment and Labor
OCT	Received rating A in ESG evaluation by the Korea Corporate Governance Service
NOV	Published the first Sustainability Report
2022	
JAN	Established HSC's Corporate Code of Ethics
MAR	Established the Corporate Governance Charter
May	Hanwha Systems-Military Mutual Aid Association raised a defense venture fund worth of KRW 80 billions

Hanwha Systems at a glance

Revenue	KRW 2.1 trillions
Operating profits	KRW 112 billions
Credit rating (corporate bonds)	AA- (Stable, 2021) by Korea Investor Service Ratings Korea Ratings

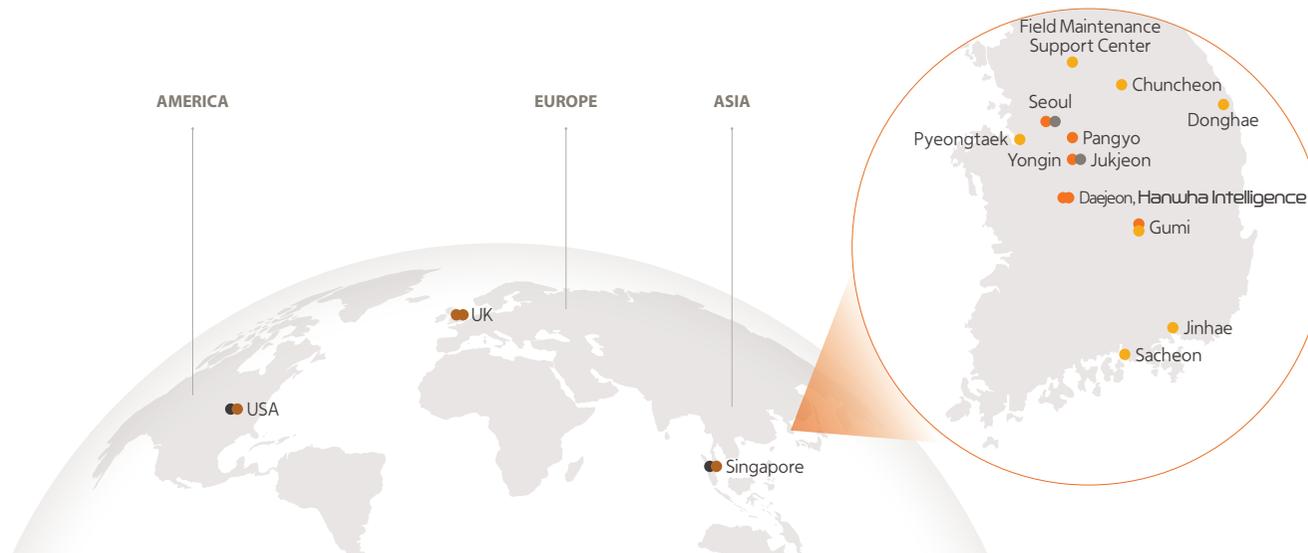
2021 External ESG Rating

<p>Korea Corporate Governance Service ESG Rating A</p> <p>The Korea Corporate Governance Service has been providing ESG evaluation services for Korean listed companies since 2011. In 2021, Hanwha Systems was rated A, thereby proving the level of its sustainable management system.</p>  <p>Integrated rating</p>  <p>Society</p>	<p>Sustainvest ESG Rating A</p> <p>Sustainvest evaluates the ESG management of around 1,000 listed companies in Korea. In 2021, Hanwha Systems was rated A for its outstanding ESG performance.</p> <p>ESG Information, Analytics & Investment</p>  <p>SUSTINVEST</p>  <p>Environment</p>  <p>Governance</p> 
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Main Business Sites Status

Business Sites at Home and Abroad

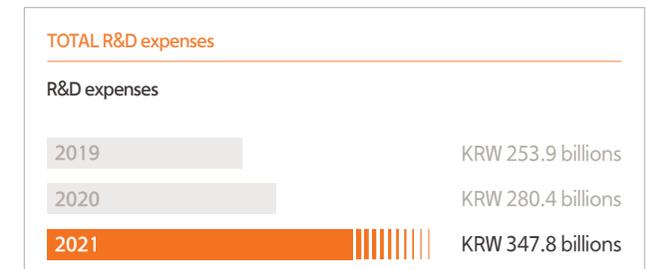
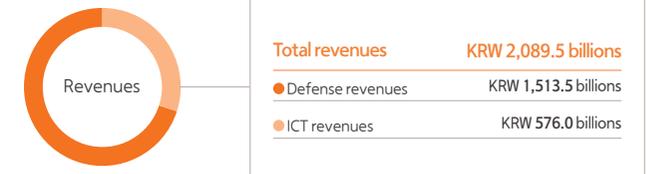
Defense	● Domestic Network	6 locations	• Seoul Site, Pangyo R&D Center, Yongin R&D Center, Gumi Site and Hanwha Intelligence
	● Domestic Customer Centers	7 locations	• Field Maintenance Support Center, Chuncheon Customer Support Center, Donghae Customer Service Center, Pyeongtaek Customer Service Center, Sacheon Office, Gumi Customer Service Center and Jinhae Customer Service Center
	● International Network	2 locations	• Europe(2): UK(Hanwha Systems UK LTD), HANWHA PHASOR LTD
ICT Division	● Domestic Network	2 locations	• Seoul Site and Jukjeon IDC
	● International Network	2 locations	• USA(1): Hanwha Systems USA Corporation • Singapore(1): H FOUNDATION PTE, LTD.



Our Business

2021 Key Financial Figures

(Consolidated financial statements, Dec. 31, 2021)



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ESG Management System

ESG Management

In order to build a sustainable future for all stakeholders, in 2011, Hanwha Systems established the ESG Charter and Policies to set out its commitment to, and directions for, ESG management. “Hanwha Systems protects the environment and implements ESG management practices for the well-being and prosperity of the society.” Under this charter, the company declared four ESG policies (environment management, ‘Right-path’ management, human rights management and responsible management), reaffirming its firm commitment to ESG.

In addition, based on the ESG Charter and Policies, the company sets out key guidelines and tasks for ESG management. Hanwha Systems plans to lead the way to a sustainable future by taking the following missions under its four management directions: build a “green digital future”; build a “sustainable business partnership”; foster a “safe and pleasant work environment and respect executives and employees”; establish a “transparent and fair governance”.

ESG Charter	“Hanwha Systems protects the environment and implement ESG management practices for the well-being and prosperity of the society.”			
ESG Policies	Hanwha Systems recognizes the seriousness of climate crisis and global warming, and implements environmental management practices to revitalize the earth’s environment.	Hanwha Systems implements ‘Right-path’ management practices to actively engage and lead the efforts for addressing inequality, unreasonable practices and discrimination, and other social issues that undermine the growth of society.	Hanwha Systems protects the health and safety of its executives and employees, and implements human rights management practices to protect the humanity’s universal values and human rights.	Hanwha Systems implements responsible management practices to promote the interests of all stakeholder and contribute to the national and social growth through transparent and fair management.

ESG Strategy

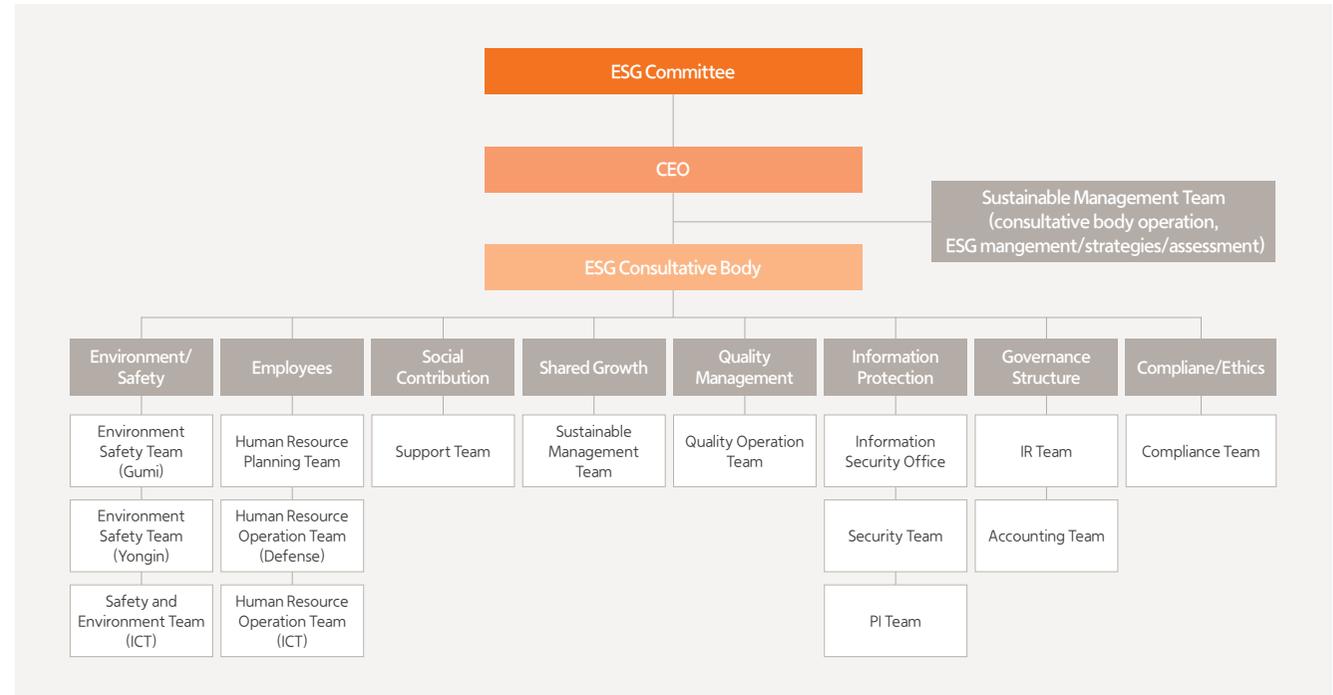
ESG Management Mission	Hanwha Systems works toward a sustainable future and promotes the interests of all stakeholders.			
Directions of ESG Management	Green Digital future society	Sustainable business partnership	Safe and pleasant work environment and respect for executives and employees	Transparent and fair governance structure
ESG Management Tasks	<ul style="list-style-type: none"> • Green future businesses • Green smart factories • DT-based improvement of energy efficiency 	<ul style="list-style-type: none"> • Shared growth with partners • Establish fair trade culture • Engagement/communication with local communities and economies 	<ul style="list-style-type: none"> • Safety management and disaster response capabilities • Smart working environment • Human rights management and human rights risk management 	<ul style="list-style-type: none"> • Sound and healthy governance • Compliance and ethical management • Anti-corruption management

ESG Management Governance

Hanwha Systems has set up the ESG Committee under the Board of Directors to lead the ESG efforts and the ESG Consultative Body to engage all related departments into company-wide ESG business activities. The ESG Committee reviews, deliberates, and make decisions on key ESG-related issues. Since its foundation in June 2021, the committee has convened each quarter to discuss the relevant issues.

As an organization dedicated to ESG management, the Sustainable Management Team develops HSC’s ESG strategies and goals, so that the company’s business activities can evolve around ESG. It also works with the relevant departments to operate the ESG Consultative Body to identify, manage and address ESG issues across different parts of the organization.

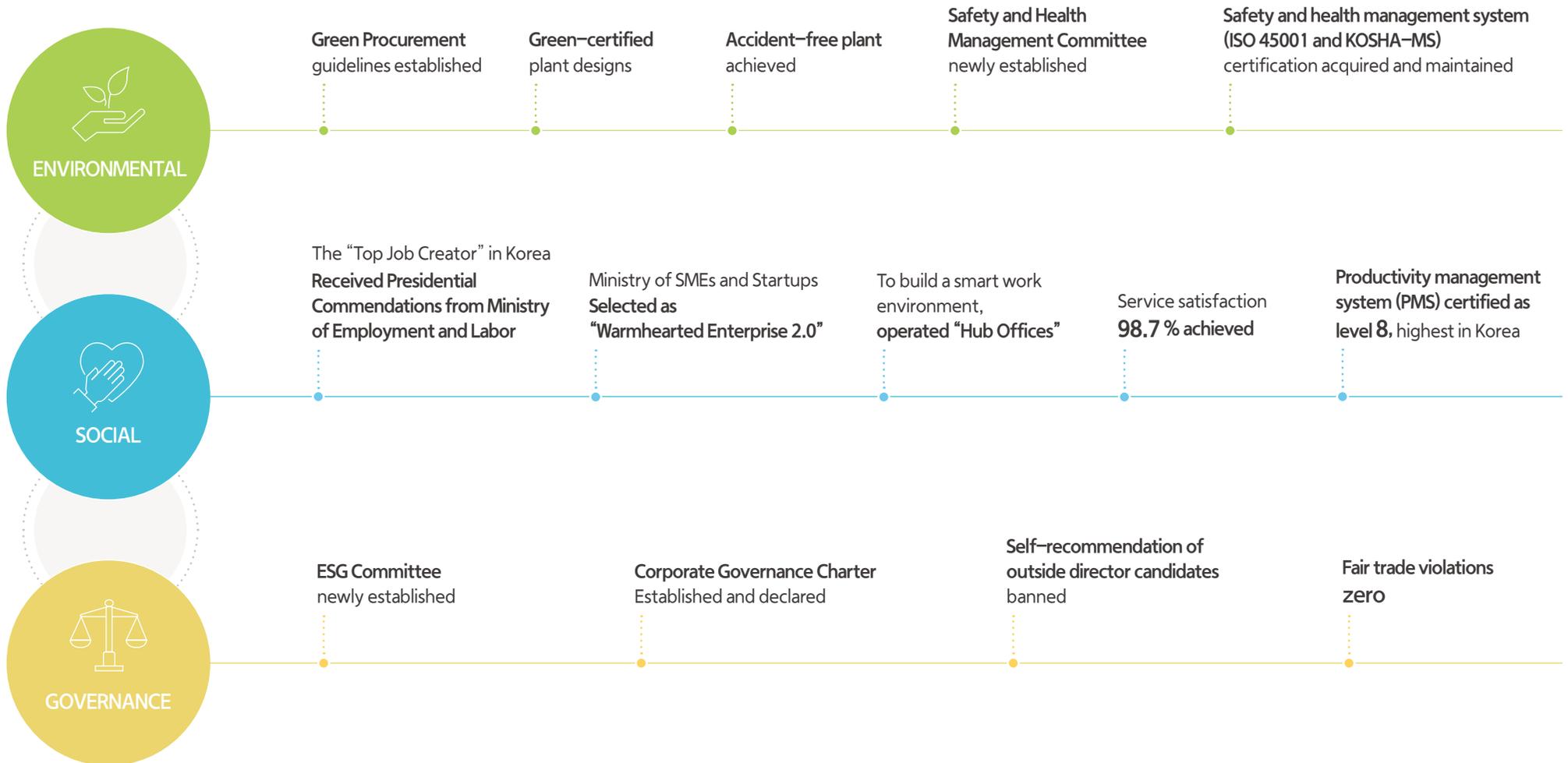
ESG Committee and ESG Consultative Body Organizational Structure



ESG Committee Activities

Date	Description	Attendance
June 22, 2021	Appointed the ESG Committee Chairman	100%
October 13, 2021	Reported on ESG activities and key plans	100%
November 09, 2021	Published the first Sustainable Management Report/reported the ESG rating results	100%
March 24, 2022	Reported on the 2022 ESG Management Plan	100%
June 14, 2022	Published the 2022 Sustainability Report/reviewed the assessment results for the plan to join UNGC	100%

2021–2022 ESG Key Figures

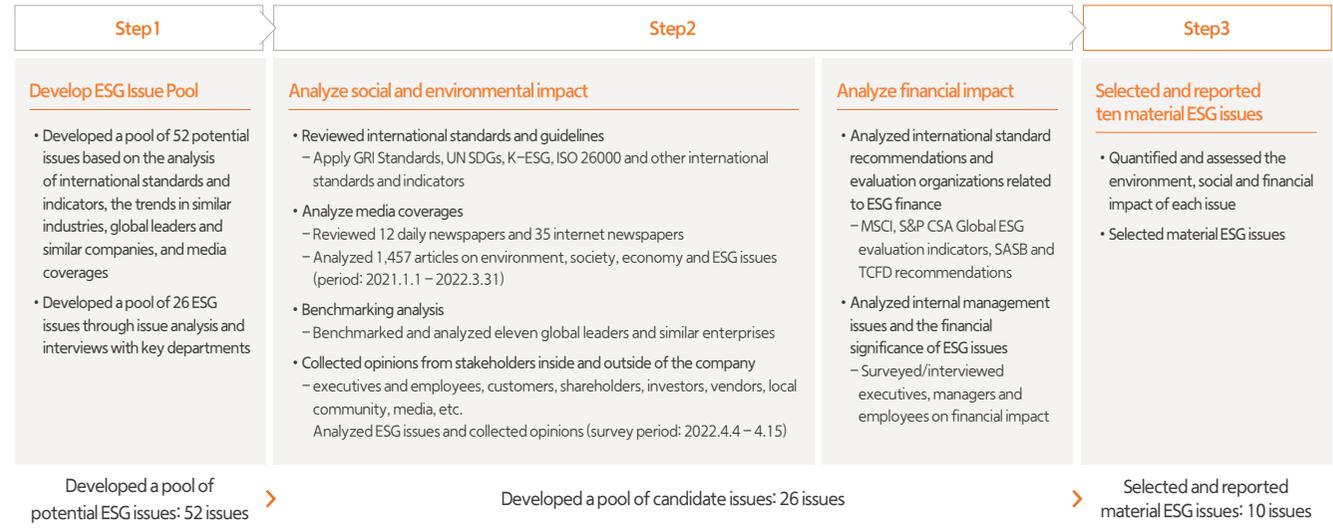


Double Materiality Assessment

In order to select material issues regarding business sustainability based on consideration of not only the environmental and social impact, but also the financial impact on the company, Hanwha Systems adopted double materiality assessment for the first time. The company collected opinions from various stakeholders to identify ESG issues based on financial/non-financial impact. The company plans to manage the identified risks and incorporate the results into its business activities.

Hanwha Systems identified ten material issues expected to have environmental, social and financial impact when implementing major businesses. The company continued to manage the selected issues and reported the ESG issues, the relevant plans, activities and performances.

Double Materiality Assessment Methodology



Double Materiality Assessment Results

Hanwha Systems selected ten material issues that may have environmental and social impact as well as financial impact on the company, and reported the relevant activities, performances and goals in this report.

ESG Issues	Impact		Stakeholders					Page	GRI
	Environment/Society	Finance	Executives/employees	Customers	Shareholders/investors	Partners	Local communities		
Expand future growth business portfolios and enhance new R&D efforts	●	●	●	●	●	●	○	15–26	Non GRI
Enhance ethics and compliance system	●	●	●	○	○	○	○	66–68	2–24, 2–27
Achieve sound governance	○	○	●	○	●	●	○	62–65	2–9–14
Ensure transparent business management by bolstering the fair trade and anti-corruption system	○	○	●	○	○	●	○	67–68	205, 206
Enhance the integrated management system for enterprise-wide financial and non-financial risks	○	○	○	○	○	○	○	69–71	2–25
Expand strategies and investments in green & clean technology development	●	○	○	○	○	○	○	23–24	Non GRI
Improve plant energy efficiency and expand renewable energy usage	○	○	○	○	○	○	○	24, 34	302
Ensure responsible production and manage product safety and quality	○	●	○	●	○	○	○	46–51	416
Hire core talents and build the competency of executives and employees	○	○	●	○	○	○	○	41–44	404
Improve welfare for executives and employees, and build a worker-friendly corporate culture	○	○	●	○	○	●	○	40–41, 44–45	401–2



○ : LOW IMPACT ← IMPACT LEVEL → ● : HIGH IMPACT

Our Approach to Sustainability



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NEXT SUSTAINABLE BUSINESS

Sustainable New Businesses Being Created by Hanwha Systems



Achieve green urban air mobility (UAM)

As the first Korean company to enter the urban air mobility (UAM) market, Hanwha Systems strives to provide value-creating integrated mobility services by offering infrastructure for more convenient user experience. In addition, the company is committed to achieving green UAM for the age of carbon neutrality. To that end, it develops electric vertical take-off and landing (e-VTOL) aircraft powered by electricity and hydrogen fuel cells, as well as various energy-saving aviation technologies.



Achieve hyper-connected space internet

The 'space internet' is attracting attention as the next-generation technology to address digital gaps across the world by offering unlimited access to the internet anywhere on the Earth. By accelerating the arrival of the space internet based on low earth orbit satellites and electronic beam steering antenna technologies, Hanwha Systems intends to build a sustainable future where people in underdeveloped countries can access the internet.

Hanwha Systems has taken the initiative to create sustainable green businesses. By combining cutting-edge defense technologies and ICT, the company will realize green urban air mobility (UAM) and hyper-connected space internet that will change and enrich our daily lives.

Environmental Value Creation

Contribute to addressing carbon emission issues

- Develop green energy-based mobility aircraft including batteries and hydrogen fuel cells
- Apply low-noise, high-efficiency, energy-saving aviation technologies

Social Value Creation

Reduce socioeconomic costs/losses

- Reduce traffic congestion in cities
- Shorten travel times of UAM users

ESG IMPACT of Hanwha Systems's New Businesses

Social Value Creation

Address digital divide issue

- Expand internet access from marginalized countries and regions, and promote digital inclusiveness

Business Value Creation

Secure future profit by expanding space businesses

- Achieve competitive advantage in the future space internet market
- Secure opportunities for an internet network maintenance business

Next Sustainable Technology 1



Achieve sustainable transportation through green urban air mobility (UAM)

In July 2019, Hanwha Systems became the first Korean company to access the urban air mobility (UAM) market. The company continues to strive for a new transportation system that will change our lives. The company is developing UAM business opportunities and expanding partnerships with leading firms in Korea and other countries, with a view to developing green UAM aircrafts and providing a total future mobility solution including operational services and infrastructure. The company is currently designing Butterfly, a green UAM aircraft powered by the “energy-saving aviation technology” patented by Overair, a company invested in by Hanwha Systems. Butterfly is an electric vertical take off and landing (e-VTOL) aircraft fully powered by electricity. The aircraft will use green lightweight composites and high-efficiency air dynamic technologies to achieve high performance, high efficiency, outstanding stability, and low noise.

Together with Hanhwa Aerospace, Hanhwa Systems began the development of a second-generation hydrogen UAM aircraft, with a commercialization target of 2035. Hanwha Systems plans to secure the component technologies for a hydrogen fuel cell-powered UAM aircraft by operating the electric UAM to be introduced in 2025. As a future mode of transport, UAM is expected to change our lives in significant ways. UAM aircrafts do not need a runway, create less noise, and do not produce GHG. The market for this new green mobility is expected to grow at a pace of more than 30% per year. By successfully developing and commercializing green UAM, Hanwha Systems will get ahead in the future mobility market and build a sustainable future with various stakeholders.

Total Solution for Green UAM



[Focus on Media] 2021–2022 New Business Outcomes

Hanwha Systems opens up future Korean UAM with Butterfly

Hanwha Systems and Hanwha Aerospace invests KRW 150 billion in Overair, a company based in the US

Hanwha Systems partners up with Skyports, UK, for a full-fledged urban “Air Taxi” port business

ESG IMPACT

Environmental Value Creation

- Develop green energy-powered mobility technologies such as high-efficiency batteries and hydrogen fuel cells to reduce GHG and air pollutant emission relative to conventional fuels (aviation fuel, gasoline, and diesel)

Social Value Creation

- eVTOL reduces socioeconomic loss and costs by reducing congestion and travel time; it only requires minimal space for vertical takeoff and landing.
- Use low-noise rotors to prevent noise pollution and reduce social loss/costs

Business Value Creation

- Expected to reduce operation and maintenance costs by more than 50%, by combining AI-based autonomous operation and remote-control technologies

Next Sustainable Technology 2



Achieve a hyper-connected space internet to enrich our lives

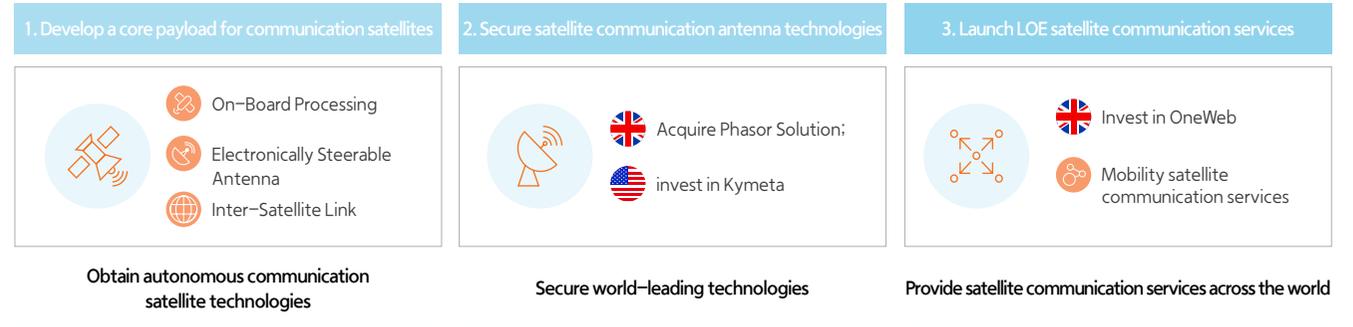
In recent years, the “space internet” technology has emerged as a new growth engine. It offers 5G/LTE internet access anywhere on Earth.

Hanwha Systems is currently developing a low earth orbit (LEO) satellite communication network and electronic beam steering antennae to provide hyper-speed internet and mobile services anywhere in the world.

LOE satellite communication networks and electronic beam steering antennae technologies will allow for stable, hyper-speed communication anywhere in the world, including the ocean and air where the internet access is hard to get, as well as those underdeveloped countries lacking the capabilities to build ground internet networks. LOE satellite communication also offers the benefits of low installation/maintenance/expansion costs, which means higher resource efficiency and preservation that is better than what conventional land-based networks can provide.

The company will continue to develop an integrated platform offering multi-layered hyper-connected networks among all platforms across land, ocean, air, and space, thereby addressing gaps in digital information between countries, regions, and local areas, and building a future society where more people have access to more enriched lives.

Development Plan: Hyper-connected Space Internet



[Focus on Media] 2021-2022 New Business Outcomes

Musk Rival OneWeb Gets Funding for Next Satellites from Hanwha Systems

ESG IMPACT

Social Value Creation

- Use the space internet technologies to address information divide by expanding internet access in countries/regions with insufficient internet infrastructure

Business Value Creation

- Successfully establish space internet to lead the future market and secure profits
- Improve resource efficiency by reducing installation and maintenance costs for internet network infrastructure

OUR SUSTAINABLE BUSINESS



Building on its core capabilities in advanced technologies and key talents, Hanwha Systems has pursued defense and future digital innovation businesses across multiple areas including aerospace, next-generation military technologies, and digital platforms. Going forward, we will implement sustainable business practices by taking account of ESG impacts, thereby fulfilling our social responsibilities as well as developing technologies that can further promote the values of sustainability in our lives.

Land mine detection technologies	<ul style="list-style-type: none"> Prevent death/injury from land mines Secure non-used agricultural lands Reduce soil pollutants
Unmanned maritime systems technologies	<ul style="list-style-type: none"> Minimize loss of life Rescue and disaster relief Study marine ecosystems
Intelligent thermal imaging cameras QUANTUMRED	<ul style="list-style-type: none"> Prevent and monitor crimes and accidents Prevent vehicle accidents (loss of life)
Cybersecurity solution SecuAider	<ul style="list-style-type: none"> Stabilize vessel operation and strengthen coastal security Reduce carbon emission by shortening standby time at ports
Related ESG Business	ESG IMPACT
ESG management system ESG ON	<ul style="list-style-type: none"> Ensure efficient ESG management Secure human resources and reduce expenses
Carbon emission management system Mangrove	<ul style="list-style-type: none"> Reduce carbon emission Manage energy efficiency
Bespoke education and employment support ai-CODI	<ul style="list-style-type: none"> Contribute to job creation Contribute to training self-directed talents
Future VR education universe Metaverse education platform	<ul style="list-style-type: none"> Reduce gaps in education Address loss of education

Sustainable Business 1

Land Mine Detection Technologies for public safety

Korea's Demilitarized Zone (DMZ) tops the world in terms of land mine density. According to the Ministry of National Defense (MND), around 820,000 land mines are buried in the zone. The mines include plastic "ankle mines." Weighing less than 100 grams, these mines may flow down to nearby areas during heavy rains or the monsoon season, threatening the safety of local residents.

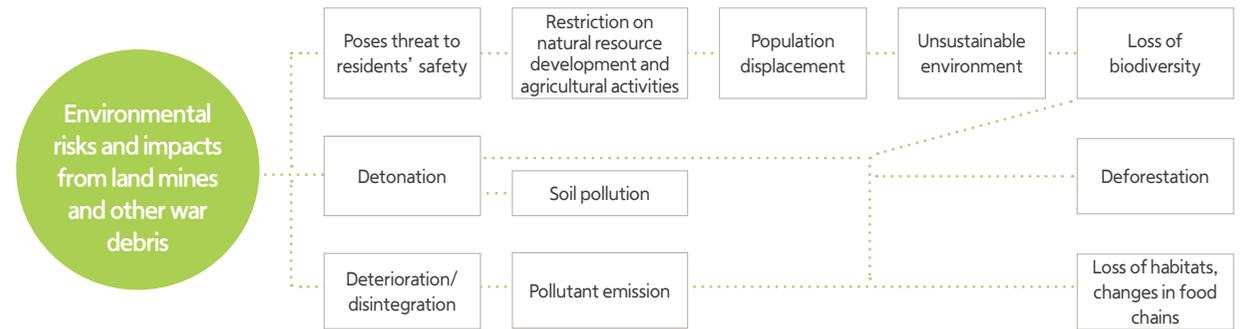
Hanwha Systems continues to develop and advance land mine detection technologies to protect military service personnel and local residents from land mines. The company recently completed the development of a portable land mine detector capable of detecting both metal and non-metal mines including wooden and ankle mines. Starting in 2022, it plans to mass-produce the Land Mine Detector-II model (PRS-20K) and supply them to the military. Hanwha Systems will continue to make development efforts and investment for explosive detection technologies, so as to make a safer and land mine-free DMZ.



Land mine detection

Use of land mine detector in the field

Environmental risks and impact from land mines and other war debris



[Focus on Media] 2021-2022 New Business Outcomes

Hanwha Systems to sign a KRW 58 billion mass-production contract for Land Mine Detector-II (PRS-20K)

ESG IMPACT

Environmental Value Creation

- Remove moored/buried land mines to prevent and reduce soil pollution
- Prevent loss of biodiversity and deforestation/degradation in areas with moored/buried mines

Social Value Creation

- Prevent the explosion of moored/buried land mines for military personnel and residents in the DMZ
- Secure usable lands by removing moored/buried land mines to prevent and reduce soil pollution

Sustainable Business 2

Unmanned Maritime Systems for marine safety

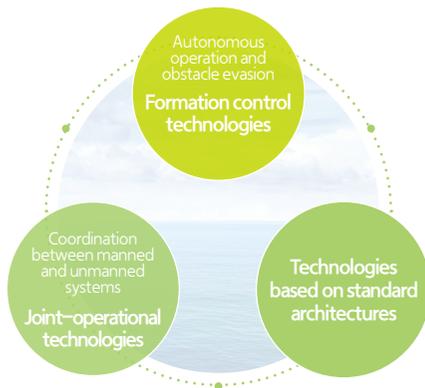
The number and area distribution of maritime accidents and distress situations continue to increase in Korea. Unlike accidents on land, maritime accidents and distress require more workforce due to frequent adverse weather and strong currents. Rapid search and rescue may not be achievable if the search team cannot be deployed early on, or divers' safety is threatened. Hanwha Systems developed and advanced various technologies to address maritime accidents and distress situations, including surface/underwater unmanned maritime systems, autonomous operation technologies for unmanned surface vessels, formation control technologies for unmanned maritime systems, and integrated control technologies for unmanned surface vessels and unmanned underwater vehicles. The company plans to build AI-based maritime unmanned systems capable of immediate deployment under adverse maritime conditions, to ensure rapid and accurate underwater scanning and protect people's lives.



Applications of Unmanned Maritime Systems

Autonomous unmanned underwater vehicle for side scanning	Autonomous unmanned underwater vehicle with synthetic aperture sonar	Unmanned surface vessels	Autonomous unmanned underwater vehicle for underwater scanning
			
Capable of rapid deployment to accident sites to obtain three-dimensional underwater images	With superb target identification, capable of obtaining detailed underwater images	Capable of providing real-time underwater situation awareness under conditions of up to 2.5m wave height	Capable of self-navigation, detection of buried mines, and scanning of opaque bottom areas

Features of Hanwha Systems' Unmanned Maritime Systems



[Focus on Media] 2021–2022 New Business Outcomes

Hanwha Systems is developing autonomous formation search unmanned underwater vehicles for maritime rescue

ESG IMPACT	
Environmental Value Creation	<ul style="list-style-type: none"> Contributes to studying marine ecosystem with high-resolution sensors
Social Value Creation	<ul style="list-style-type: none"> Keeps victims of marine accidents/distress safe through rapid/accurate locating and deployment
Business Value Creation	<ul style="list-style-type: none"> Secures the market for AI-based underwater robots and rescue robots ahead of the others

Sustainable Business 3

Intelligent thermal imaging cameras QUANTUMRED

In February 2021, Hanwha Systems released QUANTUMRED™, an intelligent thermal imaging engine module used in thermal imaging cameras for body heat detection.

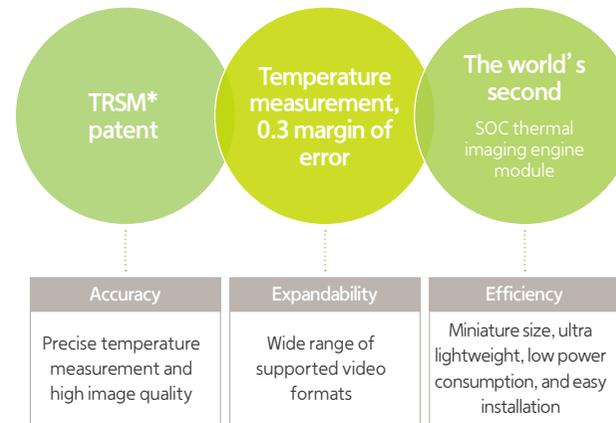
QUANTUMRED™ effectively contributed to COVID-19 response by improving the reliability and driving down the costs of thermal imaging cameras for body heat detection.

QUANTUMRED™ will find its applications across many areas and help us build a more convenient and safer society. Equipped with the infrared video signal processing technology, the module is capable of identifying objects at night, and it is expected to be used in various areas including fire safety, leisure, security, and surveillance.

It will be also used in night vision sensors required for ensuring the safety of future autonomous driving technologies. With QUANTUMRED™, Hanwha Systems will continue to build a safer and more convenient society.



QUANTUMRED™ Features



* TRSM: Temperature Reference Source Module

Applications of QUANTUMRED™



Thermal imaging cameras for detection, tracking, and surveillance



Medical thermal imaging cameras



Industrial temperature measurement thermal imaging camera



Night vision sensor

[Focus on Media] 2021-2022 New Business Outcomes

Hanwha Systems to release QUANTUMRED, an intelligent thermal imaging camera module

Hanwha Systems released the latest in the QUANTUMRED line at SECON 2022

ESG IMPACT

Social Value Creation

- Used in future autonomous vehicle sensors to prevent vehicle accidents
- Used as nighttime surveillance cameras to control and prevent crimes

Business Value Creation

- Secure sensor technologies for future autonomous driving vehicles

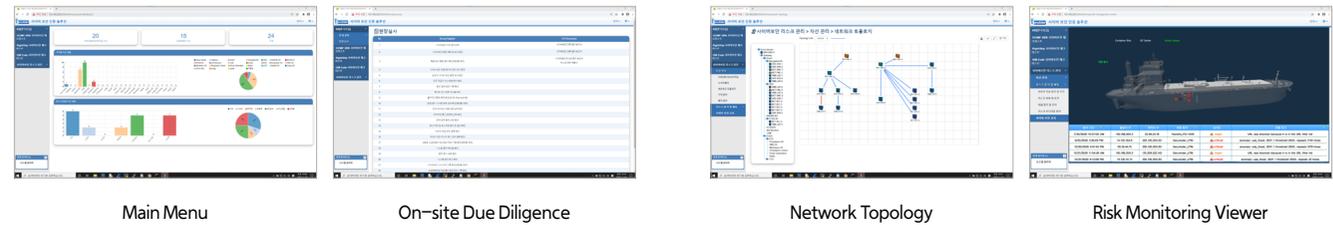
Sustainable Business 4

Cybersecurity solutions for stable vessel operation and enhanced coastal security

SecuAider is Hanwha Systems’s vessel cybersecurity certification solution. It is Korea’s first cybersecurity solution to obtain a cybersecurity certification from the Korean Register of Shipping (KR). SecuAider offers enhanced safety from cyber threats by managing cybersecurity certification documents, due diligence checklists, and cyber asset and risk information.

Cybersecurity is crucial for stable operation of sea vessels and the prevention of coastal security risks. The International Maritime Organization (IMO) recommends businesses and vessels to manage their cyber risks. Hanwha Systems helps businesses and vessels comply with the recommendations by offering cyber threat response and risk management capabilities through SecuAider.

SecuAider Cybersecurity Certification Solution Features



[Focus on Media] 2021–2022 New Business Outcomes

Hanwha Systems develops SecuAider to protect vessels from cyber attacks

Hanwha Systems’ SecuAider enhances vessel cyber risk management

ESG IMPACT

Environmental Value Creation

- Contributes to energy saving and carbon emission reduction through rapid certification by reducing mooring and excessive use of resources for cybersecurity certification

Social Value Creation

- Prevent and manage risks of personal/property damage in response to rapidly increasing cyber threats against vessels

Business Value Creation

- Lead the cybersecurity certification solutions market for future unmanned vessels and systems
- Lead the cybersecurity market for existing industrial products, utilizing advancements in hyper-connectivity and hyper-intelligence technologies

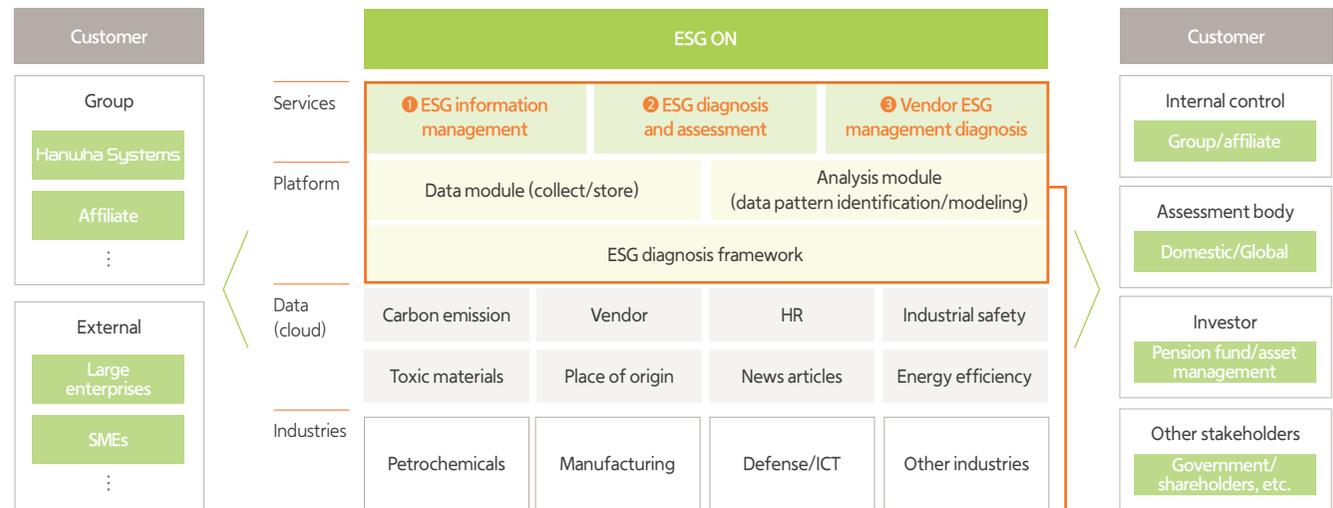
Sustainable Business 5

ESG ON

ESG Management System (ESG ON) for efficient ESG management and capability building

Hanwha Systems developed an ESG management system called ESG ON, which allows for internalization and efficient management of ESG. ESG ON will provide a wide range of services including non-financial customer data management, and the assessment and reporting of ESG performance.

The company also developed an ESG diagnosis framework aligned with the guidelines of key assessment bodies (KCGS, MSCI, and DJSI) and reporting bodies (GRI, SASB, and K-ESG). It also developed and applied supply chain management models capable of domestic and international application based on the indicators used by RBA, EcoVadis, and the Ministry of SMEs and Startups. Hanwha Systems will help businesses advance their ESG management systems and effectively address ESG information requirements from various stakeholders by offering ESG information management systems, system-based ESG performance management, ESG risk analysis, and other ESG analysis and statistics capabilities.



ESG IMPACT
<p>Social Value Creation</p> <ul style="list-style-type: none"> Contribute to the popularization of ESG by serving as a channel to provide ESG information to stakeholders
<p>Business Value Creation</p> <ul style="list-style-type: none"> A SaaS* platform for non-financial data management provides customers with advancement of their ESG management and preemptive risk response for reasonable prices



* SaaS: Software as a Service

Sustainable Business 6



Carbon Emission Management System (Mangrove) for effective climate response

Hanwha Systems developed a carbon emission management system (Mangrove Solution) powered by AWS Cloud, IoT, and AI/ML platforms, and applied the system to 63 Building and its chemical affiliates.

The Mangrove Solution offers intelligent features including data analysis of intensive control areas, calculation of energy usage and carbon emission through cloud-based data collection and real time monitoring, and prediction of carbon credit prices. The solution also uses AI models to determine optimal operating conditions for higher energy efficiency based on operation and weather data, as well as solutions to minimize carbon emission.

Hanwha Systems will improve on the solution to expand its applications to include smart buildings, smart cities, and smart factories, and advance its ICT solutions to help businesses manage their GHG emissions and reduce carbon emissions.

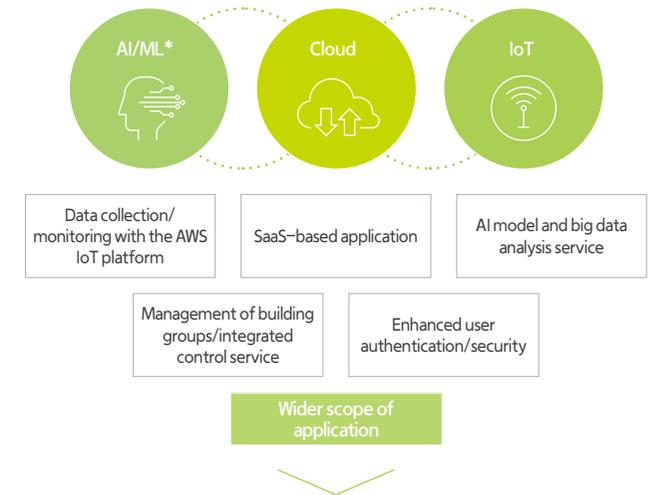


Key Features of Carbon Emission Management System (Mangrove Solution)

Collect and monitor data on IoT platforms	Cloud-based carbon emission control systems	Predict power usage and carbon emission using Sagemaker
<ul style="list-style-type: none"> Use IoT platforms to collect cloud data Develop cloud-based building facility monitoring Link with other data analysis platforms 	<ul style="list-style-type: none"> Build energy/GHG management systems for buildings and smart factories Implement and operate cloud infrastructure 	<ul style="list-style-type: none"> Collect and analyze building and factory data Develop insights by combining external variables such as weather and utility prices Predict and compare energy usage and carbon emissions

Automate GHG management with AI-based solutions

AI models for monitoring energy usage and GHG emissions



Smart buildings	<ul style="list-style-type: none"> Enhance the competitiveness of the cloud-based building energy management business Advance SaaS-based businesses Expand applications to include private sector buildings
Smart cities	<ul style="list-style-type: none"> Link with cloud-based smart city development projects City monitoring system with 3D simulations City energy/carbon management
Smart factories	<ul style="list-style-type: none"> Cloud-based data collection/monitoring from manufacturing factories Develop AI/ML models and factory logistics/process simulation Factory energy/carbon management

* ML: Machine Learning

ESG IMPACT
<p>Environmental Value Creation</p> <ul style="list-style-type: none"> Reduce GHG emission and energy consumption by providing information on expected energy usage, GHG emission, and optimal operating conditions, and supporting facility management decision-making Reduce energy consumption by optimizing operating conditions for higher energy efficiency

Sustainable Business 7

ai-CODI

AI/big data-based bespoke education and employment support ai-CODI Solution

Building on its know-how in education solution development and operation and its own AI/big data platforms and experts, Hanwha Systems developed the ai-CODI Solution for improved academic and labor market outcomes for university/college students. The company developed AI models that compile, analyze, and process various typical/atypical data to create data lakes, learn various curricular and extra-curricular activities, and suggest bespoke services to users. Hanwha Systems will continue to help university students design their own campus life and build their skills.

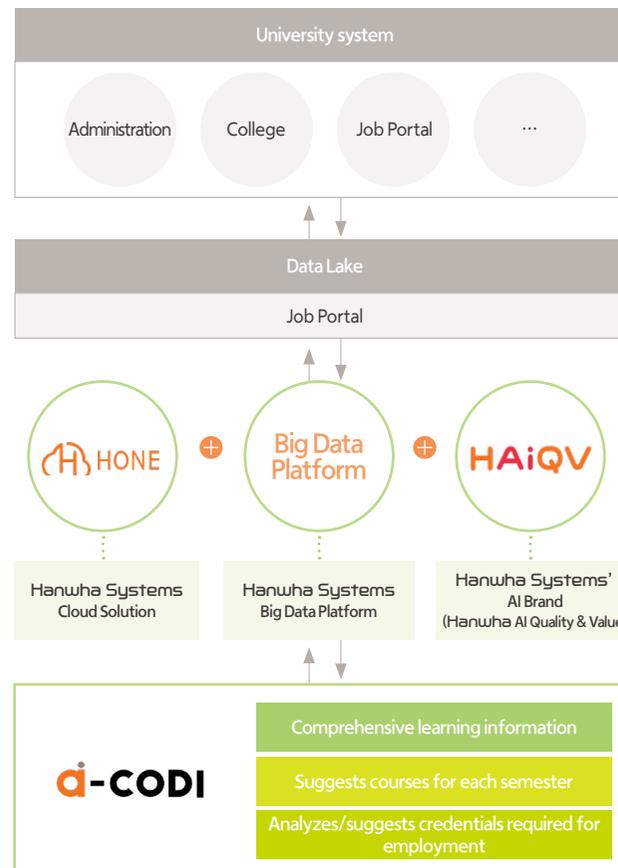
- Identifies and recommends courses and activities based on comparison with similar groups and high performance groups
- Suggest credentials required for employment by analyzing job information and the student's major, expected career, and learning propensity

Hanwha Systems's ai-CODI solution makes extensive use of the company's AI and big data technologies. The solution will help universities achieve digital transition and innovation, and offer learning and job-finding services for university students.

[Focus on Media] 2021-2022 New Business Outcomes

Hanwha Systems launched the university administration, learning, and job-finding solution ai-CODI

ai-CODI Solution Structure



ai-CODI Solution Features

Best Practice & Knowhow	<ul style="list-style-type: none"> • Provide differentiated services by incorporating best practices from other universities and adopting new features • Incorporate Hanwha's know-how in enterprise training system development
AI/Big Data Specialist	<ul style="list-style-type: none"> • Use HAIQV, Hanwha's own AI platform • Utilize inhouse AI/bigdata specialists to develop data collection and analysis algorithms
Packaging & Customizing	<ul style="list-style-type: none"> • Minimize development costs and time by standardizing core features • Apply flexible methodologies capable of each university's unique requirements
Integration & Expansion	<ul style="list-style-type: none"> • Integrate all data from inside and outside the university • Expand service offerings by linking up with external job websites

ESG IMPACT	
Social Value Creation	
<ul style="list-style-type: none"> • Suggest courses based on individual students' diversity and needs for growth • Foster talents through self-directed campus life and competency building • Increase employment rate by providing bespoke job-finding services • Reduce social costs of job-finding activities (credential-building) 	
Business Value Creation	
<ul style="list-style-type: none"> • Helps students learn and find jobs to increase employment rate and enhance university competitiveness • Offers distinguished services to gain advantage over other universities 	

Sustainable Business 8

Developing a Metaverse Education Platform for inclusive future education

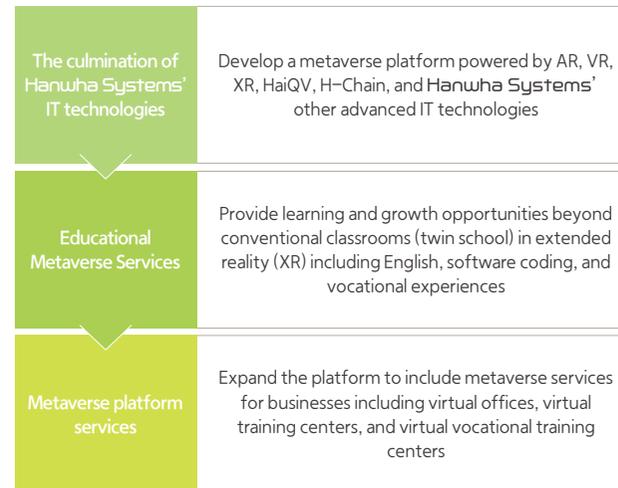
Hanwha Systems plans to develop a metaverse platform that combines VR, AI (HAIQV), and blockchain (H-Chain) technologies, and offer educational metaverse platform services for elementary and middle school students.

In December 2021, the company signed an MOU with EBS for a metaverse-based public education platform (EBS Metacampus). The company plans to launch the service in early 2023. The metaverse platform will offer curricular and hands-on learning services based on ESG contents. After launch, the company will add language learning services for foreigners and students from multicultural families, thereby reducing gaps in private education.

Hanwha Systems will use the metaverse education platform to make up for learning loss during the COVID-19 pandemic, and spare no effort in providing interactive and engaging learning services.



Direction of Metaverse Education Platform Business

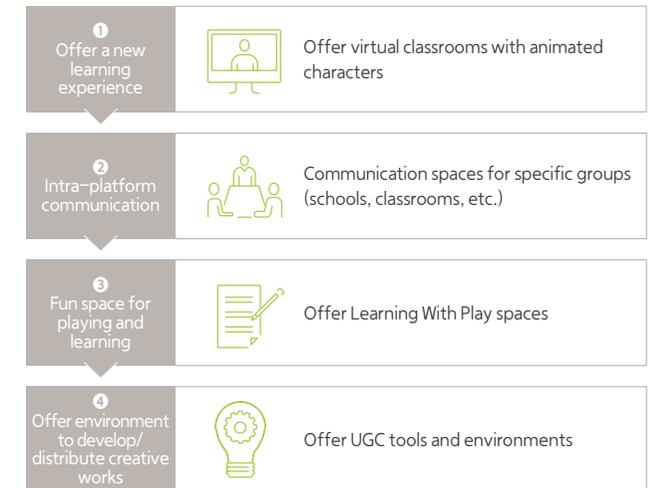


[Focus on Media] 2021-2022 New Business Outcomes

Hanwha Systems to build a public education metaverse platform with EBS

Hanwha Systems to use a 'metaverse' to interview job applicants

Metaverse Education Platform



ESG IMPACT

Social Value Creation

- Contribute to making up for learning loss during the pandemic
- Help reduce gaps in private education by offering inclusive education services for foreigners and multicultural families

Business Value Creation

- Lead the market for new enterprise and vocational training required for the 4th Industrial Revolution businesses

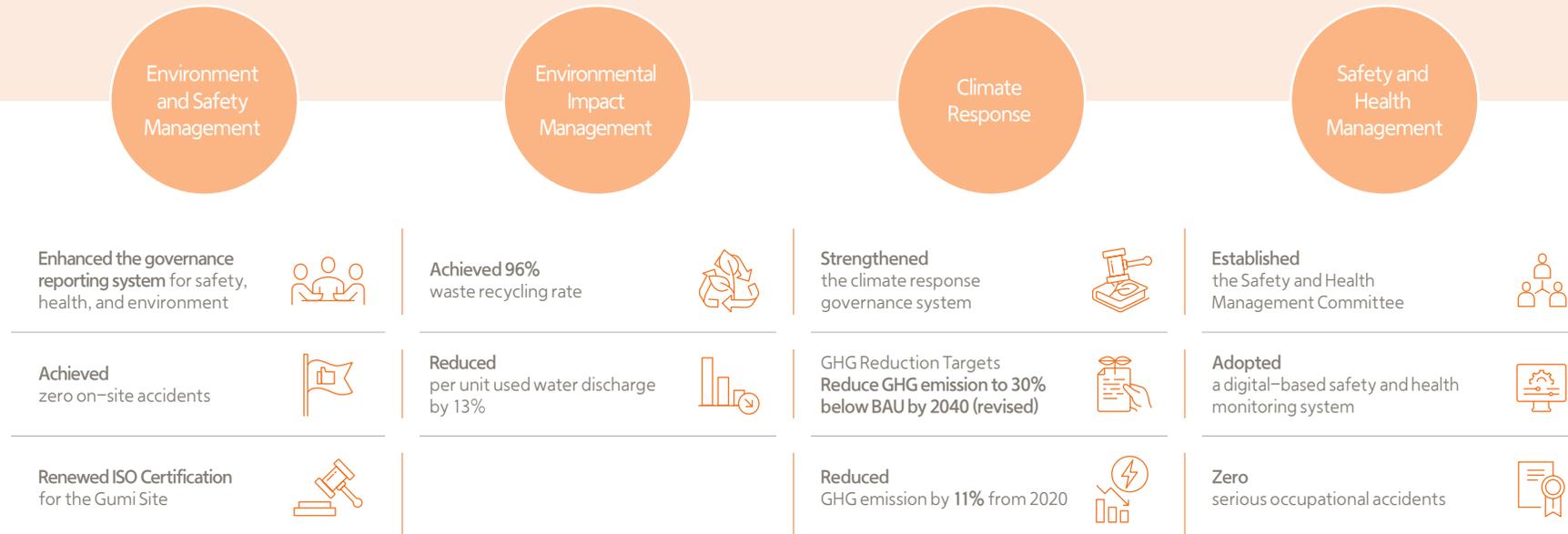
ESG Performance

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ENVIRONMENTAL

To consolidate its standing as a leader in environment and safety, Hanwha Systems built its own low-carbon management system to address the global climate crisis preemptively. In addition, to promote the safety and health of all workers as its highest priority, the company established the Safety and Health Management Committee supervised by CEO enhanced its environment and safety management system and redefined plant-specific environment and safety targets.

KEY PERFORMANCE



Environment and Safety Management

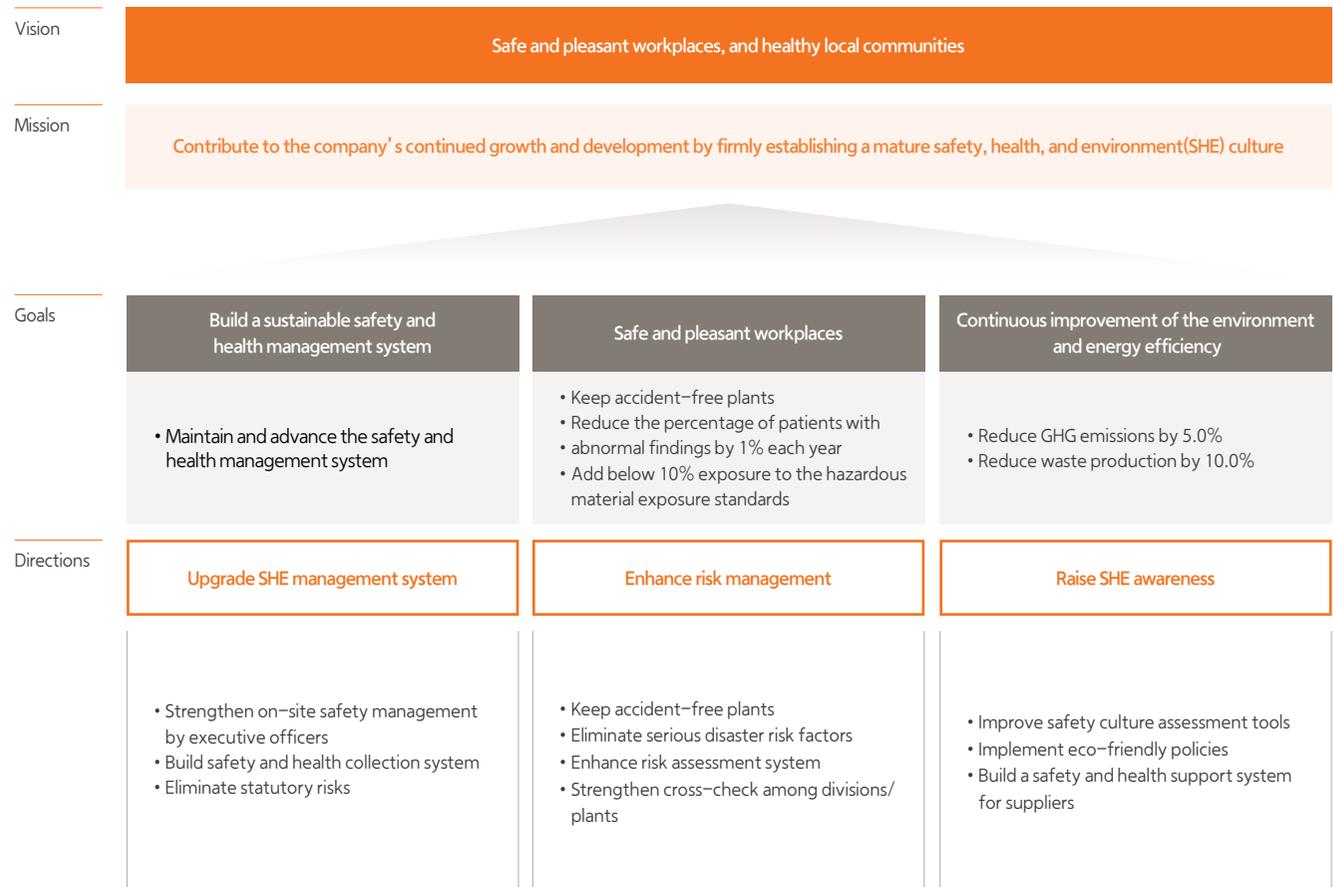
Environment and Safety Management System

Vision and Strategy of Environment and Safety Management

Under the mission of contributing to the company’s continued growth and development by fostering a mature safety, health and environment(SHE) culture, Hanwha Systems works with all executives and employees to achieve management goals.

By defining specific targets for each business site under its environment and safety management system, it fulfills its environment and social responsibilities for safer and pleasant workplaces and healthier local communities.

Hanwha Systems’ s Mid- to Long-Term Environment and Safety Management System



* S.H.E : Safety, Health, Environment

KEY PERFORMANCE

Enhanced the governance reporting system for safety, health, and environment 

Achieved zero on-site accidents 

Renewed ISO Certification for the Gumi Site 

Safety Management

Hanwha Systems establishes its internal safety management policies and guidelines in accordance with Hanwha Group’s ECO-YHES* to foster safe and pleasant work environments and reduce harmful effect on the environment.

* ECO-YHES is Hanwha Group’s environment, safety and health policy, which the group announced in 1991 for the first time in Korea. It combines HES, which stand for health, environment and safety, with the word ‘YES’

Safety Management Policies

Safety Management Policies

Hanwha Systems recognizes green management and safety and health of its executives and employees as the company’s top priority values. Moreover, it fulfills its social and ethical responsibilities as a member of the local community by fostering safe and healthy work environments and building a safety and health management system to prevent serious accidents.

1. Safe and pleasant work environments

The company identifies and eliminates potential risk factors in advance and fosters safe and health work environments by implementing programs to prevent diseases and promote workers’ health.

2. Compliance with safety and environmental laws

The Company identifies safety, environment, and health requirements at home and abroad, and use the information to establish the relevant standards and bylaws, build management systems, and offer through training and ensure compliance.

3. Shared growth and cooperation with stakeholders

The Company fulfills its social and ethical responsibilities as a member of the local community and fosters a healthy and safe shared growth culture by building a system for effective communication and cooperation with stakeholders, disclosing the relevant information at all times, and providing continued support for suppliers.

4. Climate Response

The Company contributes to the reduction of pollutants and greenhouse gas emission by operating clean production facilities powered by new and renewable energy sources and minimizing resource consumption.

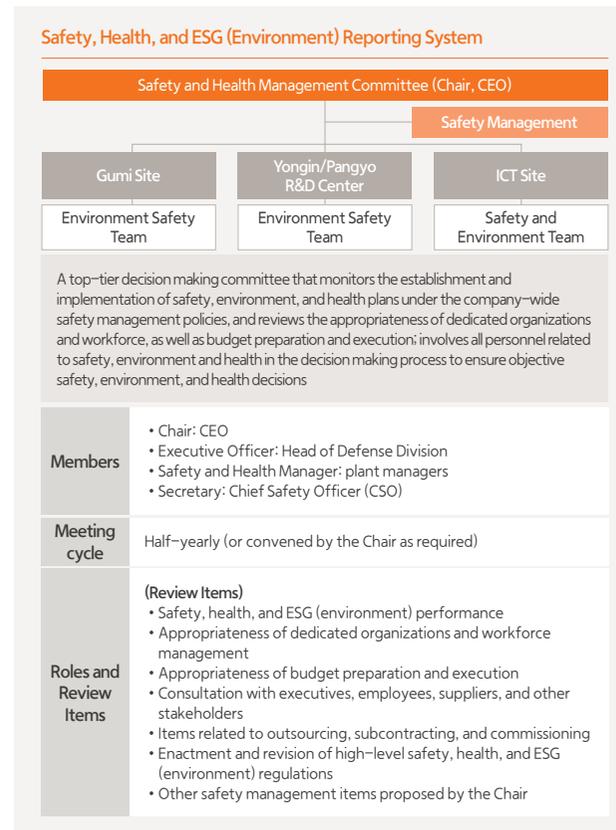
5. Full Product Cycle Responsibilities

The Company fulfill its responsibilities to reduce pollution and protect the environment across all product cycles from development to disposal.

Environment and Safety Management System

Hanwha Systems’ operational organizations and decision making structures are aligned with its environment and safety visions and strategies. The recent enactment of the Serious Accidents Punishment Act emphasized the company’s responsibility for the safety and health of executives and employees. As such, in order to promote their safety and health as top priority values and foster a safety culture at each plant, the CEO coordinates the company’s safety and health issues as the top decision-maker. The company develops and reviews environment/safety/health plans and issues, and convenes half-yearly Safety and Health Management Committee meetings to ensure effective implementation and review/decide on key issues related to accident prevention and safety.

Safety, Health, and ESG (Environment) System and its Roles



Environment and Safety Management System Certification

Environment and Safety Management System Certification

Hanwha Systems operates an advanced and certified environment management system on par with the global standards. The company establishes management plans taking account of the overall environment and energy consumption across its businesses. It also obtains and maintains international certifications including those for environment management system (ISO 14001) and energy management system (ISO 50001) through continuous improvement, monitoring, and annual external reviews.

The company was named a ‘Green Business’ in 2011 in recognition of the environmental efforts to manage environmental pollutants and build a green management system. Since then, Hanwha Systems has been building green workplaces by implementing environment management at each plant, along with various environment management campaigns initiated by executives and employees.

Environment and Safety Management System Certification

Hanwha Systems has obtained and maintains certifications related to safety and health management systems including ISO 45001 and KOSHA-MS. It also revised its safety manuals and procedures to align its safety and health management system with the global standards. Hanwha Systems’ s Yongin R&D Center launched a zero-accident campaign, and fulfilled the zero accident target (1,755,000 hours).

Environment and Safety Management System Certification Status

Plant	Certification	Validity
Yongin R&D Center	KOSHA-MS	2020.06.08. – 2023.06.07.
	KOSHA-MS	2019.11.12. – 2022.11.11.
Gumi Site	Green business	2020.10.07. – 2023.10.06.
	ISO 50001	2021.08.10. – 2024.08.09.
	ISO 14001	2021.08.18. – 2024.08.17.
	ISO 45001	2021.08.18. – 2024.08.17.

Environmental Impact Management

Enhanced Environment Impact Management

Air Quality

Hanwha Systems has established policies to minimize air pollutant emissions from business sites, and systematically manages emission data. The company strives to monitor and minimize air pollutant emissions. For example, its internal standard for emission level is 30% lower than statutory permissible emission level. In the med-to-long term, the company plans to tighten its emission criteria to 5kg or less per year, offer scheduled competency building programs for on-site workers to minimize air pollutants, and engage in other emission control activities.

Pollutant/Dust Emissions and Comparison with Statutory Levels

Year	Dust emission (kg/year)	Statutory permissible emission
2019	3.25	30 mg/m ³
2020	4.58	
2021	2.53	

KEY PERFORMANCE

Achieved 96%
waste recycling rate



Reduced
per unit used water discharge by 13%



Under the vision of becoming an eco-friendly company that shapes people's lives in the future, Hanwha Systems has built and operated a world-class environment management system. The company also strives to minimize the negative impact of its activities on the environment.

Waste Management

Hanwha Systems reports its waste management performance on a regular basis in accordance with the relevant laws, policies, and frameworks. The company discloses and manages its waste discharge status through Allbaro, an IT system offering real-time and transparent management of the overall cycle from discharge, transportation, to processing.

Hanwha Systems Yongin R&D Center has more than 95% of its wastes recycled by awarding waste management contracts to waste services providers with recycling capabilities. Hanwha Systems sell waste paper and scraps from its plants. It sold 11 tons of wastes in 2021 alone. It also conducts inspections at waste transport/processing suppliers and reviews their legal documents on a regular basis, to minimize the legal risks from waste discharge.

The company also improves its production processes to minimize recycling, landfill, and incineration needs, reduce waste generation from product design and production and minimize environmental impact. It also assesses potential environmental impact with a life cycle assessment (LCA) tool (TOTAL) designed for environmental performance indicators, in order to quantify the raw materials, energy and pollutants across the production cycle. It also established clear rules on the types and treatment of wastes produced by executives and employees, and strives for enhanced waste management through regular training and review activities.

Waste discharge and recycling rates
(including Gumi Site, Yongin R&D and IDC Center)

Year	Waste discharge (tons)	Recycling volume (tons)	Recycling rate (%)
2019	210	202	97
2020	243	234	96
2021	266	255	96
2022 (planned)	301	286	95

Water Management

Hanwha Systems continuously monitors and manages water usage data to improve water use efficiency at each business site. In 2021, the company's water usage increased by 11% over the previous year, driven by the revitalization of ICT businesses including AI and DT, revenue increase caused by the success of new businesses (including UAM and satellite internet), and increase in facilities and workforce. Despite the increase in water usage, through efficient water consumption management and efforts at each site, the company's per unit used water discharge declined by 13% from the previous year.

Water usage and per unit usage

Year	Waste usage (tons)
2019	94,745
2020	87,089
2021	96,866
2022 (planned)	104,522

Green Products and Service Management

Green Purchase Guidelines

In order to ensure eco-friendliness across the production cycle and work with suppliers to develop eco-friendly products and solutions, Hanwha Systems established the 2022 Green Purchase Guidelines. Under the guidelines, the company gives preference to green-certified materials and supplies and efficient and environment-improving equipment, in order to consider the eco-friendliness of all suppliers and raw materials affecting the company's production. The company also plans to spread eco-friendly management across its supply chains by helping suppliers obtain environment management certifications starting in 2023, and establish detailed processes to preferentially purchase from environment-certified suppliers. Hanwha Systems will also transparently disclose its green purchase performance to stakeholder, and expand on our green supply chain management efforts.

Green Purchase Guidelines

1. Consider the environment throughout the purchase process
2. Encourage and support the acquisition of environment management certifications by suppliers, to spread green management practices
3. Give preference to suppliers with environment management certification when selecting suppliers
4. Keep a list of green products for green purchase, and exert efforts to identify and secure green products
5. Barring special circumstances, give preference to green and eco-friendly products

Biodiversity Improvement

Ecosystem Conservation

Hanwha Systems works with the stakeholders in all of its business sites to carry out various ecosystem conservation activities and cleaning campaigns. Since 2013, in order to protect native fish species and keep the water ecosystem's health, the company has been removing invasive fish species from the surrounding areas. It also contributes to conserving the local ecosystem by waging campaigns to eradicate bur-cucumbers, one of the key invasive plants in the Nakdonggang River area.

Environment Cleaning Activities

As responsible members of the local community, many executives and employees at Hanwha Systems actively have taken part in local environment cleaning activities. Executives and employees at the Gumi Site clean the areas around the Nakdonggang River each quarter, joins the local community's events to celebrate the World Water Day and the Earth Day.

Invasive Species Eradication Campaign



SPECIAL CASE

Nakdonggang Riverbank Improvement Campaign



Nakdonggang River cleaning activities 1



Nakdonggang River cleaning activities 2

In the Nakdonggang River Bank Improvement Campaign, Hanwha Systems and other twelve companies work with local NGOs to transform the 39km-long riverbank of the Nakdonggang River into a well-made eco-friendly waterfront area.

Climate Response

Climate Response System

Climate Response Vision and Strategy

Under the goal of 'leading climate response through a low-carbon management system,' Hanwha Systems plans to engage in active climate response activities. In 2021, in recognition of the importance of climate response activities, the company improved its reporting to ensure that key statuses and issues are reported to the top management and the EST Committee.

The company also adopted a new medium/long-term GHG emission reduction target (30% below business as usual (BAU) levels by 2040).

KEY PERFORMANCE

Strengthened
the climate response governance system



GHG Reduction Targets
Reduce GHG emission to 30% below BAU by 2040 (revised)



Reduced
GHG emission by **11%** from 2020



Climate Response Governance

Hanwha Systems' Board of Directors and the ESG Committee lead the company's efforts to establish green investment and climate response strategies. The ESG Consultative Body and the Environmental Subcommittee under the ESG Committee analyze the climate change policy and market landscapes in Korea and other countries in accordance with the Board's resolutions. It also identifies the relevant risks and oversees the management of environmental issues. From the strategy-setting top management to action-planning working-level staffs, all executives and employees are dedicated to managing the company's climate response.

Climate Response Strategy Structure



Climate Response Activities and Outcomes

Investment in New and Renewable Energy

In order to join the government's initiative to expand the use of new and renewable energy, Hanwha Systems signed a KRW 7.76 billion contract and another KRW 8.3 billion contract with DASCO and Shinsung E&G, respectively, for the production and supply of photovoltaic structures for the Zone 2-2 in Saemangeum (49.5MW). The power plant project for the Saemangeum Photovoltaic Zone 2 involves the construction of a 99MW photovoltaic power plant on a 1.2km² on a public surface in Saemangeum, Gunsan-si. Gunsan Citizens Power Company and Korea Western Power Co., Ltd has joined the project as power producers. The yearly power generation is expected at 122,709MWh.

Hanwha Systems joins the project as an investor for photovoltaic module supply. The company plans to secure new and renewable energy from the powerplant under a virtual power purchase agreement (VPPA). The company also signed a contract with Willings for a supply of 100MW photovoltaic inverters for the Photovoltaic Zone 2 project.



Green Infrastructure Construction

In order to obtain a green building certification for the new Gumi Site, which will be completed in 2025, Hanwha Systems is currently considering the inclusion of renewable energy facilities from the design phase. The new plant will feature energy facilities (photovoltaic), energy storage system (ESS), water reuse facilities, power efficiency services, and other advanced technologies. In July 2022, Hanwha Systems' Yongin R&D Center set up a photovoltaic power generation system (11.52KWh) inside the premises. The center uses the power generated from the system to reduce energy consumption.

SPECIAL CASE

Participation in the Government's
New and Renewable Energy Project



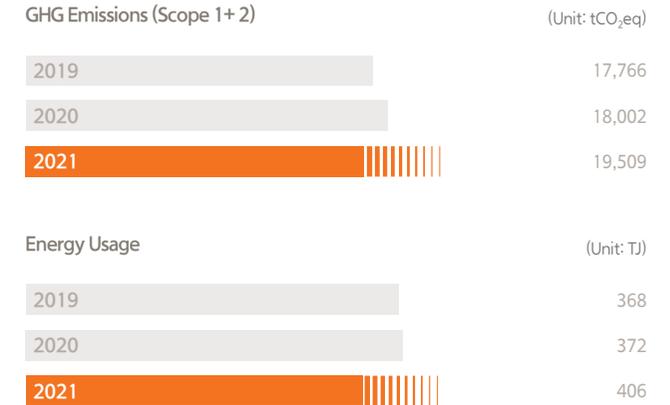
2021 Signing Ceremony of the MOU for Photovoltaic Module Rental

As one of the photovoltaic module suppliers for the government's photovoltaic module rental project (Ministry of Trade, Industry and Energy and Korea Energy Corporation), Hanwha Systems has been installing photovoltaic modules at deteriorated housing units in under-developed areas. In 2021, Hanwha Solutions worked with Hanwha Solutions and Hanwha Qcells to supply photovoltaic modules to 85% of government-designated module rental service providers.

GHG Reduction Activities

In 2021, Hanwha Systems continued to engage in activities to reduce energy usage and GHG emissions. In order to monitor GHG emissions and energy consumption from each plant, the company developed a GHG database system and carried out energy efficiency management activities. In addition, the company continues its efforts to reduce GHG emission by setting up yearly energy rationalization plans, as well as activities to maintain its ISO 50001 energy management system certification.

As a result of these continuous improvement efforts, the company was able to reduce GHG emissions.



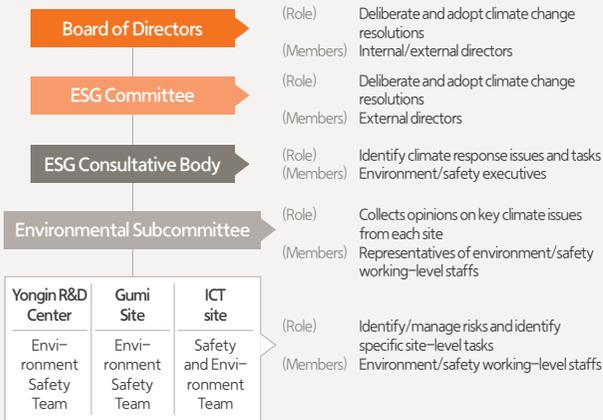
SPECIAL SECTION TCFD Disclosure

① Governance Structure

Disclose the organization’s governance structure regarding climate change risks and opportunities

- ◀ TCFD Recommendations
- ◀ Hanwha Systems Response Status and Activities

Hanwha Systems reviews key climate and environment issues through its ESG Committee. Being comprised of external directors only, the ESG Committee is an independent organization tasked with reviewing the policy goals and activities for establishing the low-carbon management system, investments to build eco-friendly infrastructure, and other items related to climate response. The committee includes the subsidiary ESG Consultative Body and the Environmental Subcommittee that determines the committee’s operational directions in the environment, safety, and health sectors. In addition, for environmental compliance and meaningful GHG reduction, each site has an environment and safety team to carry out climate response tasks. Each environment and safety team looks for climate response issues and tasks tailored to the circumstances of each site, based on the overall direction of the company’s ESG management as determined by the ESG Consultative Body and the Environmental Subcommittee. In 2021, the Environmental Subcommittee and the ESG Consultative Body reviewed climate change agendas, assessed the feasibility of response measures by collecting opinions from working-level staffs at each plant through the Environmental Subcommittee, and reported them to the Board of Directors.



② Strategy

Disclose the actual and potential impact of climate change risks and opportunities on the organization’s businesses, strategies, and financial plans

- ◀ TCFD Recommendations
- ◀ Hanwha Systems Response Status and Activities

Hanwha Systems has classified climate change risks and opportunities into physical risks and transition risks, and developed optimal response plans for each issue based on future climate change scenarios such as the Representative Concentration Pathways (RCPs) 2.6 and 8.5. Through these efforts, the company strives to manage climate change risks and achieve sustainable management outcomes.

Key Risks Related to Climate Change

	Category	Identified risks	Possible financial impact	Response status	Period
Physical risks	Typhoons, floods, and other natural disasters	Facility damage risks from climate change	Personal/property loss caused by building damage and equipment failures caused by typhoon, heavy rain, and abnormally high temperature	<ul style="list-style-type: none"> • Emergency response training under different disaster scenarios • Regular safety inspections 	Short-term
	Temperature and surface level increase	Increase in cooling needs caused by global warming	Cost increase caused by cooling load increase at the data center	<ul style="list-style-type: none"> • Build real-time weather monitoring facilities 	Medium/long-term
Transition risks	Stricter environment policies and regulations	Market risks regarding carbon emission, including carbon border tax	Investment cost increase due to the adoption of carbon reduction facilities	<ul style="list-style-type: none"> • ISO 50001 certification and maintenance • IoT-powered monitoring 	Short/Medium/long-term
		Tighter requirements for renewable energy transition and GHG reduction	Transition costs to be incurred by using more of low carbon energy sources	<ul style="list-style-type: none"> • Consider wider use of medium/long-term renewable energy 	Medium/long-term
	Replace with low-carbon technologies	Depreciation of existing assets caused by increased demand for low-carbon technologies	Higher R&D expenses due to low-carbon technology development efforts	<ul style="list-style-type: none"> • Proactively expand on UAM and other eco-friendly businesses 	Short/Medium/long-term
	Changes in consumer preference	Increased demand for global eco-friendly initiatives	Loss due to limited investment and lost customers	<ul style="list-style-type: none"> • Disclose information based on the TCFD framework 	Short-term

SPECIAL SECTION TCFD Disclosure

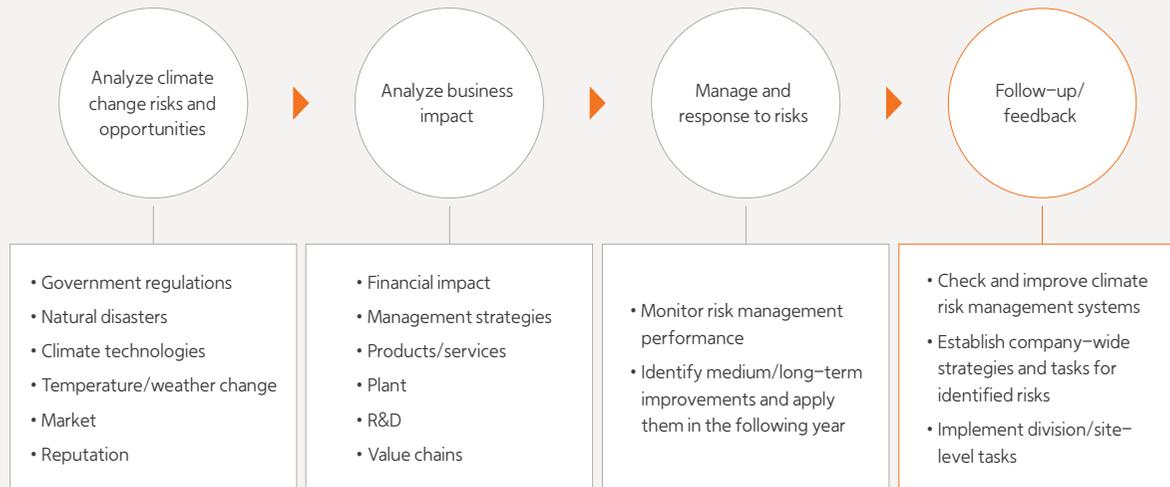
③ Risk Management

Disclose how the organization identifies, assesses, and manages climate change risks

- ◀ TCFD Recommendations
- ◀ Hanwha Systems Response Status and Activities

Hanwha Systems' ESG Committee and Consultative Body led the company's efforts to analyze and respond to risks and opportunities posed by climate change and natural disasters for the company's plants, businesses, executives and employees, and the local communities.

The ESG Committee identifies the effect of climate change risks on the company's finance and identify new business opportunities. The Committee continues to review and analyze climate change risks and use the results of the analysis to develop strategies and measures for effective risk management and addresses the relevant issues through continued feedback.



④ Indicators and Reduction Targets

When the subject information has a financially significant meaning, the company will disclose the reduction targets and indicators used to assess and manage climate change risks and opportunities.

- ◀ TCFD Recommendations
- ◀ Hanwha Systems Response Status and Activities

In 2021, for proactive response to climate change, Hanwha Systems declared "Zero Emission, Zero Waste, Zero Impact" as the guiding principle, and established detailed plans for its implementation. Each year, the company establishes detailed plans to reduce GHG emissions, and strives to reduce energy usage through carbon reduction activities such as the installation of low-power lights and EV charging stations.

Hanwha Systems also introduced a new climate response target of 30% below BAU level by 2040. The company plans to establish detailed action plans to achieve the new goal, and engage in even more ambitious climate response activities.



GHG Reduction Targets

Reduce GHG emissions to **30% below BAU** by 2040

Safety and Health Management

Safety and Health Management System

Safety and Health Management Policies

Hanwha Systems expects its executives and employees to comply with the five principles under its “Safety and Health Management Policies” systematically identifies and manages potential risks, and implements manual-based occupational accident prevention activities.

Safety and Health Management Tasks

In order to enhance its safety and health management practices, Hanwha Systems defines Focus Tasks for each year for safer workplaces and prior risk management. The company has prevented occupational accidents and protected employees from occupational diseases by implementing focus tasks for safety and health management, educating its executives and employees, and enhancing its safety and health culture. For 2022, the company established plans to enhance on-site safety management by executive officers, and strengthen the safety and health support system for its suppliers.

KEY PERFORMANCE

Established

the Safety and Health Management Committee



Adopted

a digital-based safety and health monitoring system



Zero

serious occupational accidents



Focus Tasks in 2021 and Key Plans for 2022 for Enhanced Safety and Health Management

Category	Focus Tasks in 2021	Key Plans for 2022
Upgrade the safety and health management system	<ul style="list-style-type: none"> Advance the safety and health management system Enhance response to legal risks through legal reviews Mitigate risks by improving risk assessment Enhance emergency response capabilities 	<ul style="list-style-type: none"> Strengthen on-site safety management by executive officers Eliminate statutory risks Build an integrated SHE system Adopt a digital-based safety system
Enhance risk management	<ul style="list-style-type: none"> Implement statutory and voluntary safety and health management inspections Build infrastructure to prevent serious accidents Operate health promotion programs 	<ul style="list-style-type: none"> Eliminate accident risk factors Enhance risk assessment system Enhance work environment improvement activities Enhance activities to prevent skeletal muscular diseases
Raise safety and health management awareness	<ul style="list-style-type: none"> Enhance safety and health managers' activities in 2021 Foster an organizational culture centered on safety and health through employee engagement Support suppliers' safety and health efforts Improve the competencies of managers and supervisors Implement the safe driving habit mileage program 	<ul style="list-style-type: none"> Achieve autonomous safety management by fostering a safety culture Build a system to support suppliers' safety and health efforts

Safety and Health Management Activities by Executive Officers

Category	Description
Expression of management's intentions	<ul style="list-style-type: none"> Enacted company-wide safety management policies Sent safety letters Notified management status briefing sessions
Environment and Safety Management System	<ul style="list-style-type: none"> Approved company-wide safety and health management plans Approved plant managers' review results
review	<ul style="list-style-type: none"> Approved risk assessment results Approved safety and health budget and workforce
Reviewed on-site issues and other issues	<ul style="list-style-type: none"> Conducted plant inspections Approved plant safety inspection results

Enhanced Digital-Based Monitoring Activities

In order to strengthen the foundation for safety and health management and improve work efficiency, Hanwha Systems adopted two digital-based monitoring systems: the near-field communication (NFC)-based smart safety management system and the mobile fire alert system. For compliance with the firefighting laws and regulations and the safety of its executives and employees, Hanwha Systems adopted a digital-based system that transmits fire alerts and fire surveillance situations to the personal smart devices of on-site workers in real time. In addition, Hanwha Systems set up weather monitor stations at workplaces in accordance with the Outdoor Work Safety Guide Under Different Weather Conditions enacted by the Ministry of Employment and Labor, to measure weather conditions (apparent temperature, wind velocity, precipitation, etc.) in real time. The measurement data are sent to workers via the mobile system to provide the workers with prompt notification of rapidly changing weather conditions so as for them to remove risk factors in advance and improve work efficiency and safety.

SPECIAL CASE

NFC Safety Management Monitoring System

Hanwha Systems built an NFC-based system that allows on-site safety inspectors to report safety inspection results by tagging the system with their mobile devices. The system prevents safety inspection reporting failures and allows the company to monitor the overall safety inspection status.

Site Work Environment Management

In accordance with the Occupational Safety and Health Act and internal regulations, Hanwha Systems conducts two work environment measurements each year. Work environment measurement is conducted to ensure safe and pleasant work environments for executives and employees, and optimize the work environments as required for their emotional and psychological well-being. The results are disclosed to executives and employees via the inhouse bulletin boards after approval by the Industrial Safety and Health Committee.

Health Management for Executives and Employees

Hanwha Systems provides its executives and employees with health improvement programs for prevention of skeletomuscular and cerebro-cardiovascular diseases, mental health, mobile healthcare, fitness, and smoking cessation. In 2021, 3,463 Hanwha Systems executives and employees and their families participated in the health promotion programs, and the company is currently planning new programs based on their most vulnerable health issues based on the program questionnaire results. Hanwha Systems also provides physical checkup opportunities to all executives and employees. When the number of COVID-19 patients soared within the company, Hanwha Systems provided a self-quarantine and return kit and a paid leave to all executives and employees diagnosed with the disease.

Hanwha Systems' Executive/Employee Health Promotion Programs

Title	Description
Let's Walk	Prevention of skeletomuscular and cerebro-cardiovascular diseases <ul style="list-style-type: none"> Separate spaces prepared for people showing abnormal findings Encourages exercise via a walking app, and offers specialist lectures on the prevention of skeletomuscular diseases, etc.
Maeum Jobda	Mental health promotion and work stress relief <ul style="list-style-type: none"> Job stress surveys, campaigns, and counseling
Mobile healthcare	Improvement on health risk factors <ul style="list-style-type: none"> Enhanced health risk management and health management
Self-help group of diabetes/hypertension patients	Health promotion program for diabetes/hypertension patients <ul style="list-style-type: none"> Prevent cerebro-cardiovascular diseases by improving patients' self-management capabilities
Drinking/smoking cessation campaign	Drinking/smoking cessation campaign <ul style="list-style-type: none"> Explain problems caused by smoking; and throw away cigarettes/lighters in pockets Helps interested participants register at smoking cessation clinics and receive counseling

Dissemination of Safety and Health Culture among Executives and Employees

Each year, Hanwha Systems quantitatively assess the level of safety awareness among its executives and employees to identify and address vulnerabilities. In 2021, a total of 9,730 executives and employees (in Gumi and Yongin) completed their safety and health training, which represents a 9.4% increase in the training participate rate from 2020. The company also carries out various activities to understand the safety management status at each site and achieve zero accident, including stricter safety inspections, more hands-on safety training programs, and the establishment of safety work permit procedures and absolute safety rules.

Safety and Health Management Training Results

Year	Number of participants	Training hours per participant
Gumi Site	5,590	6.3
Yongin and Pangyo R&D Centers	4,140	3

Content of Safety and Health Management Training

Category	Title	Frequency
Statutory requirement	Regular safety and health training	Quarterly
	Safety and Health Training for New Recruits	All year round
	Safety and Health Training for Managers/Supervisors	Yearly
	Special Safety and Health Training (crane/chemicals)	All year round
	Carried out in case of change to work details	All year round
Others	Emergency Response Training for Sites	Quarterly
	Emergency Response Training for Departments	Quarterly
	Joint Training with suppliers	Quarterly
	Safety and Health Lecture for Safety and Health Managers	Quarterly
	Training for Environment and Safety Managers and Workers	Quarterly
	Transport Safety Training for Executives and Employees	Quarterly

Safety and Health Improvement for suppliers

Safety and Health Risk Management for Suppliers

Under its safety management policies, Hanwha Systems works with its suppliers to improve their safety management systems through communication, support, and mutual cooperation. The company assesses the suppliers' safety and health-related regulatory risks by each site, and conducts an annual compliance assessment. In 2021, Yongin R&D Center reviewed its suppliers' safety and health-related regulatory risks for the first time, and worked with the suppliers to identify and implement improvements.

Safety and Health Management Improvement for Suppliers

For the safety of suppliers' employees, Hanwha Systems joined the shared growth program run by the Korea Occupational Safety and Health Agency to identify risk factors in suppliers' workplaces and establish and implement risk management measures. The company holds monthly safety and health meetings, in addition to other meetings on safety, health, and occupational accident issues, joint safety and health inspections at suppliers' business sites, and the provision of safety protection equipment.

In order to raise safety and health awareness among suppliers' employees, Yongin R&D Center sends out quarterly safety letters and holds safety quiz events. The center sends prizes to randomly selected participants, and also selects and rewards departments and employees with outstanding safety management outcomes around the end of each year

SOCIAL

Hanwha Systems recognizes the importance of the corporate impact on society, and is committed to work with various stakeholders to create social values. The company strives to build a sustainable society with fulfilling its corporate social responsibilities pertaining to human rights, competency building for executives and employees, shared growth with partners, and contribution to local communities.

KEY PERFORMANCE

Executives/employees	Quality Management	Shared Growth	Social Contribution
<p>Operates Hub Offices to build a smart-work environment </p>	<p>Achieved 98.7% in service satisfaction </p>	<p>Named Warmhearted Enterprise 2.0 by the Ministry of SMEs and Startups </p>	<p>Raised KRW 780 million for 2021 Social Contribution Fund </p>
<p>Training Programs for retired employees </p>	<p>Achieved PMS level 8 in April 2022 </p>	<p>KRW 54.9 billion on shared growth programs (for 3 years) </p>	<p>1,166 executives/employees participated in 2021 social contribution activities </p>
	<p>Avoidance Rate 100% of counterfeit electronic components </p>	<p>Raised KRW 80 billion for military technology venture fund </p>	<p>5,853 beneficiaries from by 2021 social contribution activities </p>
	<p>845 Employees Completed quality management training </p>	<p>Partners ESG Competency Building </p>	

Executives/employees

Human Rights Culture

Human rights management declaration

Hanwha Systems complies with domestic labor laws, and strives to build corporate culture where the human rights of all stakeholders including executives and employees could be respected without discrimination. Hanwha Systems will pursue human rights management by developing its own human rights declaration, and announcing its support for the ten key principles across the four areas of human rights, labor, environment, and anti-corruption.

Human rights protection for executives and employees

Hanwha Systems has enacted regulations to prevent and respond to human rights violations including workplace abuse and sexual harassments. Upon identifying a violation, the company firmly responds to the situation by instituting a disciplinary action against the violator in accordance with the regulations.

In addition, the company operates in-house and external communication channels to receive grievances from the working environment of executives and employees, and runs a grievance handling process to resolve human rights issues in a timely manner. Upon receiving a case, the company promptly initiates preliminary actions to protect the victim, and holds Punishment Committee to resolve the identified issue following thorough investigation. All processes and results are kept in strict confidentiality so as to prevent secondary damage.

Human rights awareness enhancement for executives and employees

Hanwha Systems initiates annual trainings and campaigns to enhance executives and employees' mutual respect and their awareness and practice of human rights, including the prevention of workplace harassment and physical/verbal abuse, and the improvement of the awareness of the disabled.

As part of the campaigns, the company defined Three Rules for Mature Hanwha Systems Members. The rules are posted around work sites on banners as reminders, as well as online cartoons (webtoons) and in-house bulletin boards, to strengthen the executives and employees' human rights awareness. The company also sends out letters to leading level executives and employees to prevent workplace harassment, and shares messages of respect for human rights each quarter to foster a culture promoting respect for human rights.

KEY PERFORMANCE

Operates Hub Offices
to build a smart-work environment 

Training Programs
for retired employees 

Grievance channel for executives and employees



Three Rules for Mature Hanwha Systems Members

Respect

Respect and **listen to others**.
Any advice is welcome!
No **fault-finding** or **talking behind the back!**

Care

Words can **hurt**. Don't be offensive.
Being older and stronger is no excuse
for being mean.

Happiness

Greet others with a **smile**, and respond in **kind**.
Do not withhold compliments such as **good-jobs**
and **thank-yous**.

Respect diversity and enhance inclusive culture

Hanwha Systems strives to build a corporate culture based on respect for diversity by strictly prohibits illegal discrimination based on gender, ethnicity, nationality, religion, age, disability, or backgrounds across the full employment cycle of recruitment, compensation, promotion and retirement. In addition, in order to protect the human rights of executives and employees in meaningful ways, the company establishes and applies policies company-wide regarding wages, working hours, and prevention of workplace harassment and sexual harassment.

Employing socially disadvantaged groups | In keeping with the nature of its industry, Hanwha Systems employs people of national merit each year. Its contribution to employing people of national merit has been recognized as an Excellent Company in employing people of national merit by the Ministry of Patriots & Veterans Affairs. The company also expands the size of the direct and indirect employment of people with disabilities as health keepers, staff members at in-house convenience facilities, and print/business card makers, so as to help the socially disadvantaged expand their presence and secure stable working environments for them.

Current status of employment of people with disabilities

2019	2020	2021
47 (1.3%)	49 (1.3%)	51 (1.6%)

Build a family-friendly corporate culture | Hanwha Systems has set up and operates various policies to protect and support families so as to build harmonious working environments for all genders. The company encourages the use of maternity leaves, paternal leaves, and other family-friendly programs, and provides flexible work-hour options to prevent career cessation experienced by female employees. In addition, in order to help employees who are experiencing difficulties with pregnancy and childcare, the company supports employees' fertility treatments through fertility leaves and subsidies, along with the new childcare leave program for children with disabilities, providing more diverse forms of family supports.

Welfare programs for family-friendly corporate culture

Support for family events

Hanwha Systems helps its executives and employees with various family events, and provides maternity leaves and paternal leaves for employees with children. Employees can also take leaves for maternal protection and child care support, and are eligible for receiving their children's tuitions from the kindergarten to the university. The company also operates resorts, ater parks, and a welfare point program for employees' families.

Autonomous working environment

Hanwha Systems provides workers with diverse working hour options including selective working hours, flexible working hours (adjust working hours bi-weekly or quarterly), and the remote work option for employees who need to both work and take care of their children at the same time.

Recruiting Outstanding Talents

Contact-free recruitment process

Hanwha Systems operates a fair and transparent recruitment process for hiring both entry-level and experienced workers. The recruitment process takes place via Hanwhain, Hanwha Group's employment portal. To keep applicants safe and healthy, and to improve the efficiency of the process, the company decided to carry out all related tasks without face-to-face contact, including online employment briefings and online interviews.

Efforts to secure outstanding talents

employment-linked programs | Hanwha Systems offers short-term internship programs to university graduates to secure outstanding talents. The company uses the internship program to develop human resources with capabilities suited to the organization, thereby enhancing the company's competitiveness. In 2021, Hanwha Systems recruited 17 employees from the internship program, strengthening the ties between the internship program and employment.

Recruitment of human resources with competencies related to future businesses | In order to improve its competitiveness in the global business environment, Hanwha Systems preferentially recruits people with capabilities related to its new businesses and main businesses.

Hanwha Systems - Kyungsang National University launched an employment-linked scholarship program to nurture new space industry experts.

Competency Building for Executives and Employees

Human Resource Development System

Hanwha Systems supports the competency building of its executives and employees through various human resource development programs. The company develops its own educational content, and operates online/offline training programs.

The company helps them hone their occupational skills by providing ample training opportunities for global talent and leadership development. We are currently offering educational expenses aid per person, exceeding the industry's average.

Training costs per person

(Unit: KRW 1,000)



Yearly no. of trainees

(Unit: persons)



No. of executives/employees who completed online OJT academy courses

(Unit: persons)



Hanwha Systems Enterprise Training and Education System

Implemented by Hanwha Human Resource Development Center
 Implemented by Hanwha Systems

Category	Common	Leadership	Responsibility	Global	Legal
Executive	(Hanwha) experienced executives	Innovation Leaders (senior executive)	Communication skill improvement Advisory Meeting	Common/ specialized enhancement program	Executive language
	Newly appointed executives (Hanwha) Newly appointed executives	Innovative leaders (executives)	SERI CEO Top tier course for executives		
Team manager/ L6-7	Onboarding for experienced recruits	Innovation Leaders (team manager)	Team manager/Part manager Leadership Team leader, high ranking managers Leadership	Academic program	Sexual harassment prevention / Workplace harassment / Disability awareness raising / Personal information protection / Wrong-doing prevention / Compliance / Security / Environment and safety, etc.
	Manbanjabu Buddy Program Skill-Up Mentoring	Leader candidates	Newly appointed team manager		
L4-5	Experienced recruits Entry-level Department heads Shadow Program	Trend insight (business lecture)	H-Class	Competitive presentation Competency building Online OJT academy (pro class) Learning organization (MOIM)	Outsourced training / online outsourced training
	Mandatory online training for new recruits				
L3 or lower	Onboarding for entry-level recruits	Promotion competency	Technical mentoring / Common foundation technology training	Department OJT	1:1 Language (phone/video) Career change support program
	Themed mentoring	Retention of second/third-year employees			
	Skill-Up mentoring				
	Interns onboarding				
	Entry-level recruits onboarding				
(Hanwha) Entry-level recruit onboarding					

Competency Building Programs for Executives and Employees

Onboarding for entry-level recruits | Hanwha Systems launched the Gather Town Program in 2021, as an employment-linked onboarding program for interns. With the COVID-19 pandemic keeping us from holding the traditional group training sessions, the company used a metaverse platform for online classes that conform to the government policies while overcoming the restrictions of online one-way communication. The metaverse platform includes game elements so that recruits can understand the company's corporate cultures without resistance while developing a sense of belonging toward the organization

Onboarding	All new recruits	Learn the organization's values, and the vision of Hanwha Group and Hanwha Systems; Gain an overview of the company bylaws and systems
OJT	Interns and entry-level recruits	Mentoring within the department and research on themes related to the job
	Experienced recruits	Gains the latest knowledge required to perform on site through online OJTs specifically designed for each job group

2021 Onboarding Program Results

Entry-level recruit	Experienced recruits
8	207

Hanwha Systems 'Gather Town' training program



'Frontier Program' for new business development | Hanwha Systems Defense Division launched the Frontier Program in 2021. Under the program, the company receives new business ideas from executives and employees, then organizes a vote to select the best ideas, and grant subsidies, infrastructure, mentoring, and other resources. Selected ideas go through verification on a regular basis. If an idea is deemed feasible, the idea is transferred to the relevant division to support its commercialization or, in some cases, a selected team may split off from the company. The Frontier Program fosters an energetic culture within the company, provides new opportunities to employees being passionate about new businesses, and expands opportunities for finding new businesses.

Frontier Program Outcomes

No. of iterations	Dates	Outcomes
1st	Apr. 2021 to Mar. 2022	3 teams selected; one-year projects completed 1 team split off, 1 team became a business, and 1 team had the project extended for another year.
2nd	Apr. 2022 to Mar. 2023	2 teams selected and projects launched

Training program for technical experts | In order to preemptively respond to the hyper-connected age of the Fourth Industrial Revolution, and to enhance its competitive edge in the digital platform market, Hanwha Systems launched an ICT expert training program. The company also plans to develop and operate various curricula designed to improve the AI literacy of executives and employees, including entry and advanced level training on AI technologies, and AI educational content for different job groups and stages.

SPECIAL CASE

Hanwha Systems-Moduui Research Center sign an MOU to foster and secure AI experts.



On May 4, 2022, Hanwha Systems ICT Division signed an MOU to foster and secure AI experts with the Moduui Research Center, a startup company operating an AI training community.

To address the shortage of AI experts across the IT sector, Hanwha Systems is planning to proactively secure field-oriented AI experts by operating employment-linked programs at the research center.

Program for retirees | Hanwha Systems offers services for the age of 50 or older employees supporting their post-retirement plan and employment after leaving the company. The online program consists of seven modules: transfer management, life design, self-diagnosis, career 101, advanced career lesson, self-development, and career design. Participants can learn different modules in accordance with their situation and personal schedules.

2021 Retiree Training Outcomes

No. of participants	Completion rate
15	90%

Performance Evaluation and Rewards

Fair performance evaluation

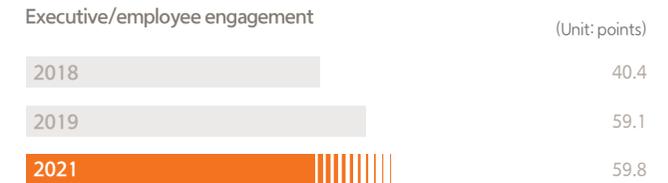
Hanwha Systems applies fair evaluation principles to all executives and employees regardless of their genders and ranks. The company operates a five-level-scale evaluation program (S/A/B+/B/C) for individual performance and competence, and a differential compensation system for executives and employees. In addition, the company ensures the transparency of the evaluation results through a feedback and objection process, and promotes long-term growth of its executives and employees.

Reasonable compensation | Hanwha Systems operates various monetary compensation programs to encourage its executives and employees to make continuous performances and achieve short-term goals. Each individual receives incentives and base pay raises based on his/her performance, to improve performance and provide prompt compensation for short-term outcomes.

Worker-friendly corporate culture

Executive/employee satisfaction with the organizational culture

Hanwha Systems diagnoses its organizational culture each year to assess executive/employee engagement, the company's direction and core values, work atmosphere, and other related systems. In 2021, the company derived key words and orientations regarding the organizational culture based on the company's business strategies, and sensed the demand for a change in the organizational culture. As such, the company developed ways to change the organizational culture in various directions.



※ Engagement survey not conducted in 2020

Key organizational culture activities in 2021



Innovation on how we work in the age of ‘new normal’

For the first time in the Korean defense industry, Hanwha Systems built a smart work system and remote work infrastructure based on digital contactless solutions, thereby fostering a remote, online working environment. The company separated the network dedicated to defense development and the regular work network to protect defense technologies while allowing executives and employees to work anywhere they need. The company also reconfigured office spaces to accommodate various forms of work and change how we work. Hanwha Systems plans to convert various training and communication programs for executives and employees into online events, and advance the relevant systems to maintain the vitality of the organizational life even under remote working environment.

SPECIAL CASE

Hanwha Systems achieves smart work through five ‘hub offices’ in the Seoul Metropolitan Area.



Hanwha Systems ICT Division maintains ‘hub offices’ so that executives and employees can commute to their nearest hub offices instead of their main offices. The hub offices allow employees to reduce the time required for commuting and, while away from their main office, visit one of the offices for faster response instead of going all the way back to the main office. The ICT Division maintains five hub offices across the Seoul Metropolitan Area including the Yeouido office. Each executive and employee may use the offices four times per week regardless of the locations.

Work–life balance for executives and employees

HSC continuously improve its working environment to improve executives and employees’ satisfaction. It operates various welfare programs and amenities including living support, health management, and leisure activities.

Key welfare programs

Happy workplace

Hanwha Systems strives to create workplaces where all employees can work happily. The company compensates hard–working employees with leaves from work and various leisure options. It also offers high–quality meals within each site to raise employees’ satisfaction with their workplaces. The company also helps employees find residential stability through housing loans, etc. for the employees moving to a different site. Employees are also entitled to have sabbaticals and a personal leave for self–development.

Healthy workplace

Hanwha Systems supports the happy lives of its executives and employees. The company provides physical check–ups and medical expense subsidies to help employees and their families maintain physical and mental health.

Executives and Employees Communication

Enhanced communication channels

In order to enhance its communication with executives and employees, Hanwha Systems publishes Kiosk Letter each month to deliver news about executives and employees and introduce new recruits, and communicates with the employees on a regular basis through the in–house bulletin board. The company also appoints ‘Blue Board’ members to enhance work–related as well as personal communication among executives and employees at workplace.

Quality Management

Quality Management System

Quality Management Vision and Strategy

Under its quality vision for ‘quality management to lead all stakeholders,’ Hanwha Systems manages the quality of its offerings by developing/implementing world-leading products, stabilizing its production base, and building a proactive quality management system. Hanwha Systems establishes quality management strategies to achieve the quality level as expected by customers and the market to the full satisfaction of the customers.

Hanwha Systems established a quality management system (ISO 9001) to satisfy customers’ needs and quality specifications in Korea and other countries. The company also achieved Production Management System (PMS) level 8, thereby offering the best value to its customers. Hanwha Systems will continue its efforts to improve the trust and satisfaction of all stakeholders.

KEY PERFORMANCE

Achieved 98.7 %
in service satisfaction



Achieved PMS level 8
in April 2022



Avoidance Rate 100%
of counterfeit electronic components



845 Employees Completed
quality management training



Quality management vision/strategies and quality policies



Quality Management Policies

As a global total solutions company, Hanwha Systems leads the advanced defense and IT sectors in smart technologies. All executives and employees strive to achieve the world’s best quality by following the four principles: customer satisfaction, change and innovation, perfect quality and observance of the basics.

4 Quality Management Principles

Customer Satisfaction	Change and Innovation	Perfect Quality	Observance of the Basics
Always listen to the customers, and move the hearts of the customers with the best quality and fast and accurate services	Never stop learning and boldly challenges on changes to achieve competitive edge and create future markets	Take one’s own as well as the company’s pride in achieving the perfect quality	Put quality first, comply with the regulations and processes, and do things right from the beginning

Quality Management Goals and Plans

Hanwha Systems establishes quality goals for each area under its quality management strategies, and reports key quality issues and strategies to the quality management meeting led by the division head. The company pursues to achieve management goals by proactively addressing various trends, issues, and complaints, and discussing possible improvements.

2021 Quality Results and the 2022 Plan

Division	KPI	Unit	2021 plan	2021 results	2022 plan
Market quality (customer)	Customer complaints (defects)	No.	0	0	0
	Market defect rate	%	0.40 ↓	0.282	0.36 ↓
	Process defect rate at system partners	%	1.09 ↓	0.949	1.00 ↓
Development quality	Control Gate Conformity	Point	91.2 ↑	94.85	92.36 ↑
	Defective rate from customer tests (development)	%	0.09 ↓	0.017	0.086 ↓
	Development process compliance	Point	90.0 ↑	94.69	91.32 ↑
Manufacturing quality	Process defect rate	%	1.00 ↓	0.870	0.95 ↓
	Process defect caused by partners	%	0.41 ↓	0.271	0.37 ↓
Services	In-time service rate	%	95.0 ↑	99.2	95.0 ↑
	Service satisfaction	%	95.0 ↑	98.7	95.0 ↑

Quality Management System

Hanwha Systems establishes a cooperation system of related departments in order to maintain a quality assurance system across the total life cycle of products and services. The company operates an optimized three-stage quality assurance system: R&D, mass-production, and maintenance.

In the R&D stage, the company operates the Control Gate System for the first time in the industry to achieve high reliability and design quality. It organized the Cross Functional Team (CFT) to verify product design quality and consider greenlighting the mass production stage, thereby pursuing both design quality and mass-production.

In the mass-production stage, the company has a real-time statistical process management system between SAP R/3 and the manufacturing execution system (MES) to monitor all processes from components to final products. In addition, in order to stabilize the quality of supplied components, Hanwha Systems uses the Supplier-Quality Information System (S-QIS) for real-time communication with partners and partners quality management. It also performs quality process assessment (QPA) on a regular basis to identify issues of partners and improve quality.

The company operates customer service centers at key locations to promptly address customer complaints after the product release. Hanwha Systems strives to achieve the best quality and provide the best services by preventing the recurrence of quality and defect issues, and providing feedbacks based on failures.

Quality Certification Status | In order to achieve perfect quality and to satisfy customers, Hanwha Systems carries out quality management activities across the full life cycle (R&D, mass-production, and service).

It acquired and maintains ISO 9001 (Global Quality Management System), KDS 0050-0090 (Defense Quality Management System), and AS9100 and AS9110 for aviation and satellite products. In addition, the company obtained Level 8 during the PMS certification renewal review, which assesses the excellence of the company's productivity management system, in the first half of 2022. The company also maintains Capability Maturity Model Integration (CMMI) Level 5, TMM i (Test Maturity Model Integration) Level 3 on R&D maturity, thereby proving that its R&D quality level is on par with the international standards.

Quality-related Certification Status

Year	Quality-related Certification Status
2017	Quality management system (ISO 9001:2015)
2018	Aviation Management Standard (AS9100(Rev.D))Quality Management Systems (QMS) for the Aircraft Industry (AS9110 (Rev.C))
2019	Defense Quality Management System (KDS 0050-9000-4)
2020	Capability Maturity Model Integration (CMMI v 2.0) Level 5 ※ ICT Division, Level 4
2022	Productivity Management System (PMS) Level 8

Failure Management

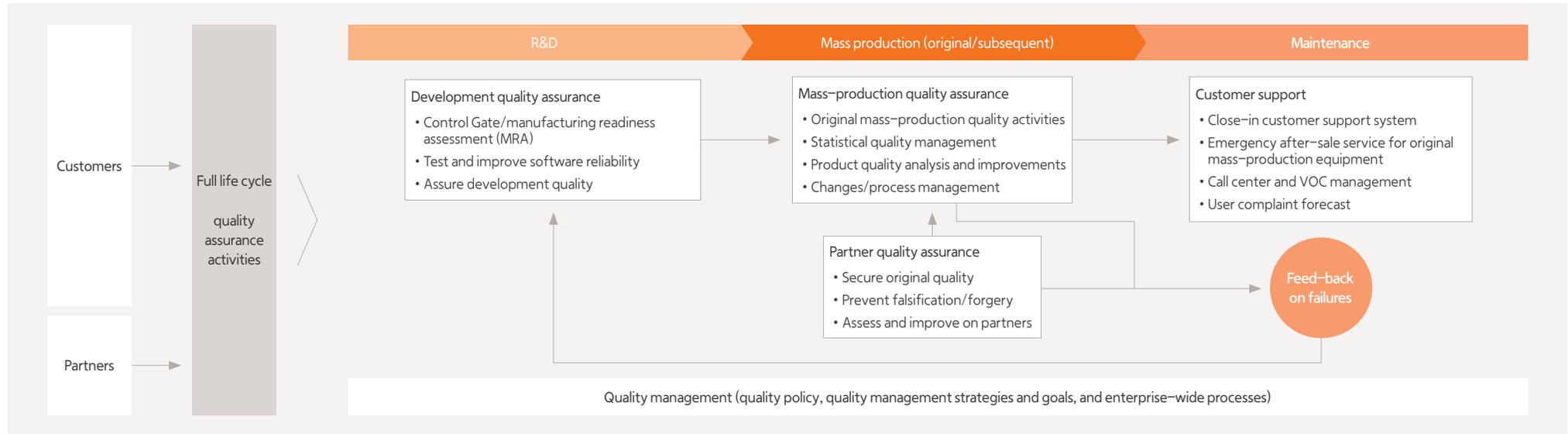
In order to prevent service/system failures and minimize damage suffered by customers and partners, Hanwha Systems continuously monitors its data center infrastructure, and strives to drive down the failure rate for higher satisfaction from customers, partners, and other stakeholders.

2020-21 Failure Rate

(Unit: no., minutes)

Category	Description	2020 results		2021 results	
		no.	Hours	no.	Hours
Performance issues	10 to 30 minutes No. of failures	14	4:33	6	1:59
Service suspension	30 minutes or longer	27	61:29	21	50:42
Customer down time	Considered the number of software and IT licenses affected, and the duration of each failure.	41	66:02	27	52:41

Quality Assurance System



SPECIAL CASE

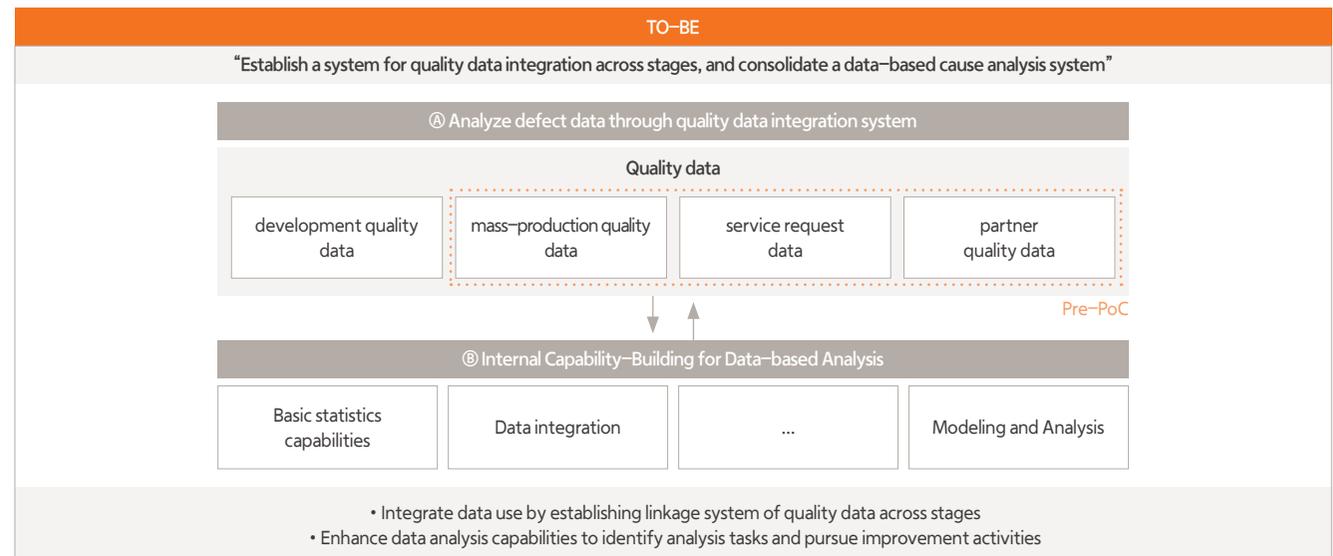
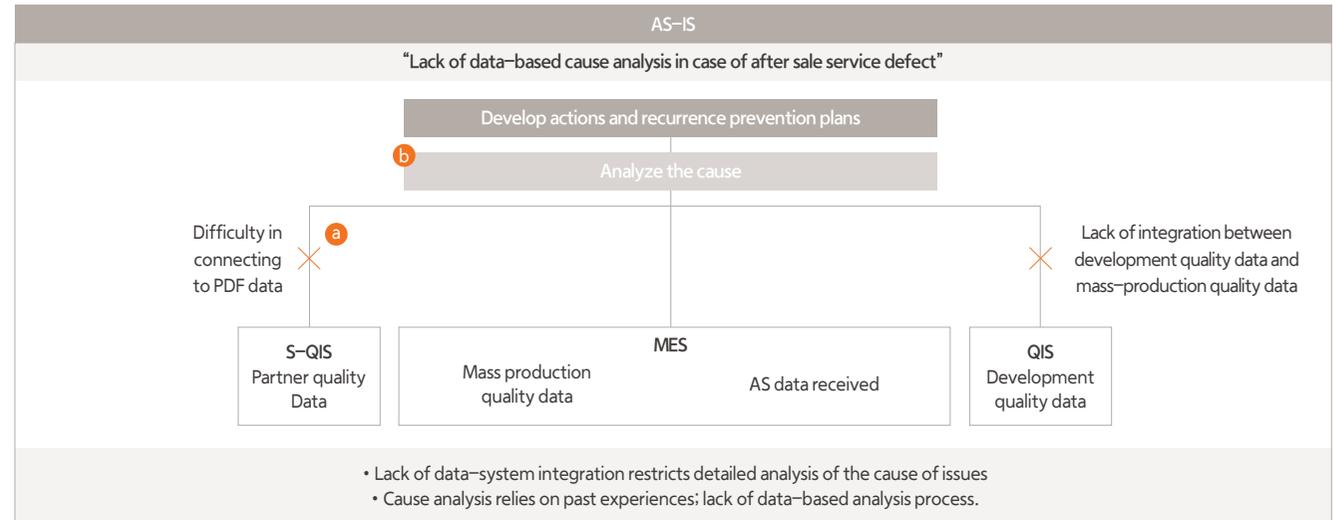
Productivity Management System (PMS) Level 8



Hanwha Systems obtained Level 8 in the productivity management system (PMS) certification review, which is the highest in Korea. PMS Level 8 is reserved for companies with a management system capable of rapid and flexible response to environmental changes. Hanwha Systems achieved level 8 or higher in six items out of total 7: leadership, innovation, customer, measure/analyze and knowledge management, human resources, and processes.

Big-Data-Based Bespoke Quality Management System | Hanwha Systems researched the application of a data-based model for quality issue analysis and prediction model in product and service quality issues. The company integrated quality test data system across different stages, and re-established a data-based defect cause analysis system. In the future, the company will expand the use of data and advance its data analysis system and continuously improve the effectiveness of its quality management system.

Plan for a big data-based quality issue prediction model(draft)



Product management and improvement activities | Hanwha Systems prevents service system failures through constant monitoring, and manages recalled products due to functional defects or for improvement. The company also continuously inspects electronic components from partners to identify possible counterfeits.

Management of Counterfeit Electronic Components | Hanwha Systems requires its partners to comply with the management standard for counterfeit-suspected components (AS5553) and quality assurance methods (IDEA-STD-1010-B, AS6081, etc). The company assists with counterfeit identification and non-destructive tests (x-ray tests) at partners to systematically manage the counterfeit issue.

Quality training for executives and employees | In recognition of the significant roles played by all executives and employees in project completion, Hanwha Systems offers quality competency-building programs every year.

Quality Training for Executives and Employees

Category	Dates	No. of trainees
Practical inspection training	January	4
Electrical/electronic assembly training	Jan., June., Dec.	189
Statistical Quality Management (mini tab, measurement system analysis)	Oct. Dec.	63
Process training	Sep.	70
Quality Management Training	Apr., Oct., Nov.	845
Quality mind-set	Nov.	996
IPC620 training	Dec.	18
P-FMEA training	Nov.	24

Customer Satisfaction

Customer satisfaction management strategies | Hanwha Systems promotes customer satisfaction as the top priority value for sustainable management. Under the recognition that product quality equals to the customer satisfaction, Hanwha Systems operates a 24/7 monitoring system across the customer satisfaction process in order to identify areas that do not meet customer expectations. We closely monitor quality assurance activities regarding components suspected of being counterfeit, and establishes management standards, methods, and networks regarding suspected parts to incorporate them in the in-house system and prevent possible policy issues. In addition, in case of identifying a product quality issue, the company commits additional resources and actively improves on the issue.

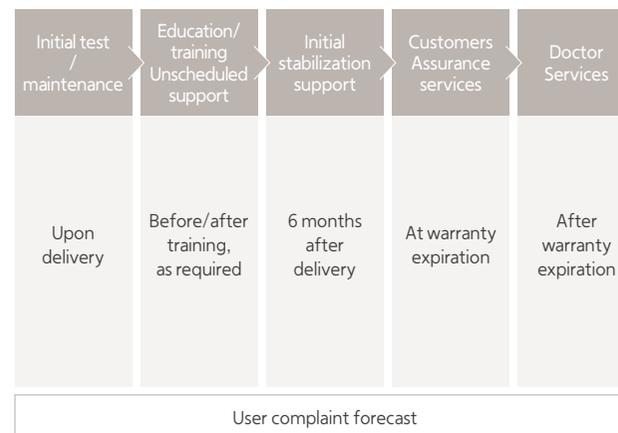
Support for Customers' Service/Product Usage | For six months after service/product delivery, Hanwha Systems provides assistance with initial testing, education/training, and product usage stabilization. After the six-month warranty period, the company operates joint inspections (by the military-customer and the company) and transfer maintenance know-how as part of its assurance services. After the warranty expires, the company frequently visits customers or listens to their opinions through the "Doctor Service."

Hanwha Systems also developed an integrated process support (IPS) system to ensure efficient, economic, and optimal logistics support. The company offers top-tier IPS elements to contribute to system operation and maintenance, including PSA and RAM analysis. In addition, the company provides full support for depot maintenance projects to prolong equipment life and upgrade its performance.

Hanwha Systems has maintained a high level of service satisfaction. The service satisfaction goal for 2022 is 95%, and the company continues its efforts to achieve higher levels of service satisfaction. In addition, in order to minimize customer complaints, the company provides high-quality services in the maintenance stage, and strives for establishing a system to rapidly respond to any complaint received.

Enhanced customer communication | In order to keep its promise with customers, Hanwha Systems expands on its customer communication channels, and actively incorporates customers' comments about the products and services.

Customer Complaint Management Process



Hanwha Systems' s diversification of customer contact points



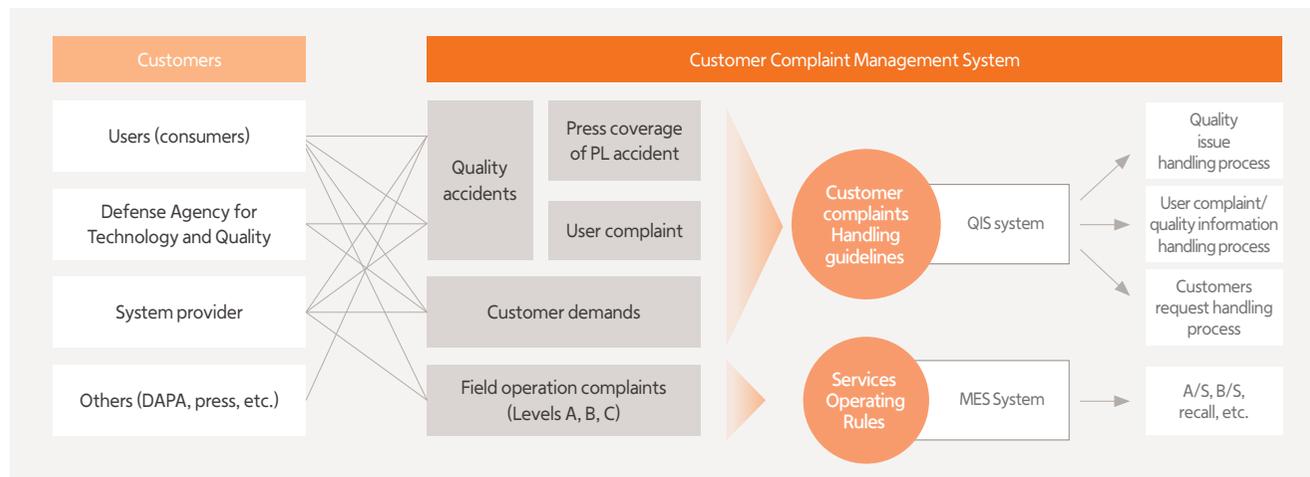
Customer Support Channels

Customer support channels

Hanwha Systems receives customer voices by phone, email, through the customer center at its website, and transparently discloses the contact information for each site.

Division	Email	Contact
Defense	hanwhasystems@hanwha.com	
ICT		

Customer complaint management process



Shared Growth

Shared Growth System

Directions of Shared Growth System

Working with partners, Hanwha Systems defines the direction and key measures for shared growth, and carries out various activities to foster a fair and transparent trade culture.

Shared growth and elevation of the company's values	<ul style="list-style-type: none"> • Foster a fair trade culture through fair trade agreements • Operate shared growth programs • Comply with subcontracting laws and enhance compliance
Build a systemic foundation for ESG management	<ul style="list-style-type: none"> • Provide ESG diagnosis services to partner • Support ESG training and consulting
Identify and support promising SMEs	<ul style="list-style-type: none"> • Enhance technical development cooperation • Establish policies for efficient production • Performance sharing • Provide incentives for shared growth

Shared Growth Organization

In 2020, Hanwha Systems established the Shared Growth Secretariat within the Planning Office to carry out tasks related to fair trade and shared growth. In June 2021, the company widened the scope of the secretariat's works to include ESG issues, and changed the name to the Sustainable Management Team. The Sustainable Management Team promotes shared growth by building a sustainable cooperation system with partners, and supporting partners' business activities and managing supply chain risks.

KEY PERFORMANCE

Named Warmhearted Enterprise 2.0

by the Ministry of SMEs and Startups



KRW 54.9 billion on shared growth programs (for 3 years)



Raised KRW 80 billion for military technology venture fund



Partners

ESG Competency Building



Shared Growth Support Organization Structure



Shared Growth Activities and Outcomes

Shared Growth Programs

Hanwha Systems expanded on programs to support partners' shared growth and signed agreements with various organizations as part of its efforts to enhance future capabilities. In 2021, the company was named 'Warmhearted Enterprise 2.0' by the Ministry of SMEs and Startups. The company operates shared growth programs to identify and incubate promising SMEs holding advanced technologies in new business areas.

Warmhearted Enterprise 2.0 by the Ministry of SMEs and Startups

What is Warmhearted Enterprise 2.0?

This project led by the Ministry of SMEs and Startups aims to share the strengths and know-how of large enterprises with partners and other companies and micro entrepreneurs to foster a sustainable culture of voluntary shared growth.

In May 2021, Hanwha Systems voluntarily joined the K-New Deal part of the project, which is to identify, and provide support for, promising partners and SMEs who have core technologies in materials, parts and equipment areas, along with Large Corporations & SMEs and Agricultural & Fisheries Cooperation Foundation. The K-New Deal part of the project is intended to offer institutional support and thus foster the industry environment and culture to strengthen the competitiveness of partners and SMEs.



Hanwha Systems' Activities as Warmhearted Enterprise 2.0

Supported promising companies in materials, components and equipment sectors

Identifying and funding technology development projects

- Raised a co-investment technology development fund (KRW 10 billion over 3 years)

List of supported technologies

- Developed technologies for the indigenization of module power converter
- Developed HD non-cooling type thermal imaging module (domestic), and dual IP camera with a high magnifier zoom module
- Developed high-performance cooling-type thermal imaging camera using HOT sensors
- Developed a standard for power distribution system for vessels
- Developed integrated model for LTE communication

MOUs with defense SMEs and ventures

MOUs with SMEs and Ventures

- Provide opportunity to take part in government projects

Co-participation in key government projects

- Personal battlefield visualization system
- Performance improvement for Master Control and Report Center (MCRC)

Support Technology Capabilities Building

- Printed circuit board (PCB) design training for aviation

Raised the Shared Growth Fund

Support for identifying promising software SMEs and startups

- Raised a KRW 31.0 billion shared growth fund, and provided low-interest loans to partners.

* Provided loans (KRW 20.1 billion) to 25 SME partners

SPECIAL CASE

Hanwha Systems-Duratek co-invest in technology development to indigenize defense system parts



Hanwha Systems signed an MOU for the indigenization of module power converters with Duratek. The goal of the project is to indigenize the power modules used in the military. To that end, Hanwha Systems provided R&D expenses of KRW 1.1 billion to Duratek so that the SME can purchase the required testing equipment and others. The two parties' research centers maintain exchange activities with each other to improve partners' technology commercialization capabilities.

'Warmhearted Enterprise 2.0' Activity Outcomes

Reduced module power converter development cost by **KRW 1.1 billion**

Expected sales effect upon R&D completion **300% or higher**

New recruitment **increased by 55%** from 2020

In December 2021, Hanwha Systems signed an MOU for innovation-oriented wage gap resolution and identifying technology innovation SMEs with its SME partners and the Shared Growth Committee, under which the company plans to operate a shared growth program worth KRW 54.9 billion over the next three years. Under the goal of resolving wage gaps by enhancing the technical competitiveness of its partners, Hanwha Systems will spread the shared growth culture and achieve sustainable growth, thereby strengthening the industrial ecosystem.

Technical support - a cooperation model for future military technologies startups

Hanwha Systems launched 'Connect: H', an open innovation program aimed at identifying, incubating, and networking with startups innovating defense technologies. Connect: H is a co-investment technology development project where the company partners up with partners, shares innovative technologies and ideas, and develops new technologies with partners, rather than exclusively focusing on its own R&D projects.

In collaboration with N15 Partners, a startup investment and incubation company, Hanwha Systems received applications from 52 military technology firms in Korea, and selected three companies in September 2021.

(December 2022) Companies Selected for 'Connect: H' Open Innovation Program

Category	Name		Technology	Cooperation with Hanwha Systems
Unmanned autonomous flight		Pablo Air	Swarm flight and remote control	Information collection using drones and flight control
	LINKFLOW	Linkflow	Neck band camera/panorama image combination	Neck band wearable camera and panorama image combination
		LetinAR	Developed smart glass	HMD (head mounted display)

SPECIAL CASE

Hanwha Systems' Technology Development Cooperation Project for Future Military Technology Startups



In December 2021, Hanwha Systems signed an MOU for joint R&D and business cooperation with Pablo Air, Link Flow, etc. Hanwha Systems plans to develop neck band-type wearable cameras and the camera-panorama image combining technologies with Pablo Air, which holds swarm flight and remote control technologies, and Link Flow, which holds information collection, drone control technologies and the neck band camera-panorama image combining technologies. Together with these startups in defense field, Hanwha Systems will keep searching for subsequent investment opportunities, and jointly carry out various technology co-development projects and cooperate for future innovative defense technology development programs.

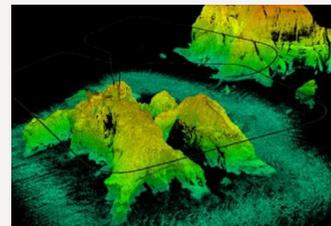
Swarm flight



Neck band-type wearable camera



LiDAR sensor for drone control



Financial Support – Venture Fund

Hanwha Systems and the Military Mutual Aid Association raised a total of KRW 80 billion venture fund for military technology and Fourth Industrial Revolution sectors by investing KRW 40 billion each. As a blind fund, the venture fund will support promising startups in Korea and other countries in areas where global technology sovereignty is urgently needed including AI, aerospace, UAM, quantum computing, and cybersecurity. In 2021, during the COVID-19 pandemic, the company made early payments to partners to help them overcome their crisis, and extended loan repayment dates for two partners.

Early Payment for Partners

Category	Lunar New Year (February)	COVID-19 (December)
Targets	108 partners	125 partners
Early payment	KRW 11.2 billion	KRW 10.3 billion
Early payment (compared to ordinary dates)	7-9 days	10 days

Loan repayment extension 1-year extension, KRW 900 million to 1 billion per company

Shared Growth Fund Contributions

(Unit: KRW million)

Category	2019	2020	2021
Hanwha Systems	9,500	9,500	13,500
Financial institutions	11,500	11,500	17,500
Total	21,000	21,000	31,000



Fund amount **48% up** from 2020

Training Support

Hanwha Systems offers a wide range of training including product quality requirements for product and process specialization, military drawings (AutoCAD) expert program, partner DSQR, and compliance/anti-corruption/technology protection training. In addition, the company offers career planning, basic accounting and financial statements, and problem solving courses to about 1,500 employees of about 100 partners through the Shared Growth Academy, an online training platform for partners' executives and employees.

Partner Training Program Outcomes Over 3 Years

(Unit: no., persons)

Training	2019		2020		2021	
	No. of trainees	No. of partners	No. of trainees	No. of partners	No. of trainees	No. of partners
Quality requirements	1,774	601	197	87	5	5
Defense drawings (AutoCAD) expert course	138	51	221	78	142	41
DSQR training	-	-	-	-	13	6
Compliance (anti-corruption, technology protection, etc.)	-	-	-	-	493	127
Shared growth academy (business skills, mandatory training)	-	-	486	16	811	94
Sub total	1,912	652	904	181	1,464	273

Process Management Support

Hanwha Systems monitors/approves process management status at 145 special process partners (welding, painting, galvanizing, blazing, thermal treatment, non-destructive test, soldering, wiring, PCT) so as to identify and manage undetected risk factors even after their products are delivered to customers.

Welfare for partner's employees/executives

Hanwha Systems built the Shared Growth Mall in collaboration with the SMEs Distribution Center and the Korea Foundation for Cooperation of Large, SMEs, and Rural Affairs, through which the company grants welfare points to 927 executives and employees of its partners. In addition, the company purchased 50,000 face masks produced by a partner to distribute them to other partners, providing disaster relief and expand partners' revenues at the same time.

Welfare benefits for partners

Program	Overview
Support for Naeil Chaeum Loan installments	• Around 20 persons per year; Contributed to a part of funding, which was supposed to be paid by partners
Shared Growth Mall welfare points	• Around 1,000 persons, Shared Growth Points (10,000)
Holiday gifts	• Local produces and traditional market vouchers
Disaster relief	• Purchased 50,000 masks for disaster relief • Provided medical supplies to 20 partners

Supply Chain Sustainability

Fair Trade Guidelines

Hanwha Systems established and currently applies four fair trade principles: transparent contracting, establishment and operation of the Subcontracting Transaction Review Committee, fair selection and operation of partners, and proper document issuance and retention. The company strives to prevent unfair treatment while working with its partners. The company also blocks off any unfair trade practices such as verbal placement of orders, unfair cancellation, etc., by requiring electronic contracting via its purchase system.

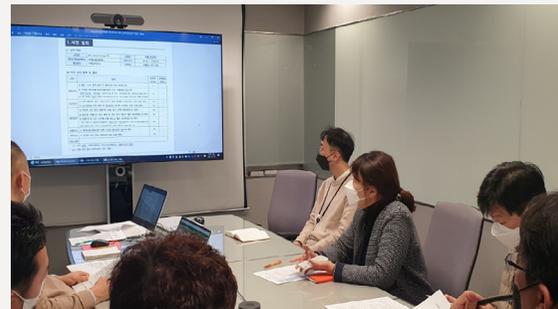
1. Fair partner selection and efficient operation
Regulations aimed at providing fair opportunities, including transparent partner selection criteria and procedures
2. Issue and preserve written forms
Secure and issue standard form for each document, define data preservation rules
3. Compliance requirements for contract execution
Define reliable selection criteria, and clearly specify delivery dates and the relevant matters in the contract
4. Establishment and operation of Subcontracting Transaction Review Committee
Prioritize lawfulness when signing a contract exceeding a certain threshold with a partner

Fair trade agreements with partners

In 2021, Hanwha Systems signed fair subcontracting agreements with all of its 101 partners. The company organized a briefing to explain the agreement's purpose and related issues. To ensure fair transactions with its partners, Hanwha Systems implements scheduled and unscheduled training on the relevant laws (Monopoly Regulation and Fair Trade Act and Fair Transactions in Subcontracting Act, etc.) and their requirements, and the latest trends in the field. The company improves on the programs based on the yearly obtained from its compliance audits.

Fair subcontracting agreements and reviews

- ① Fair subcontracting agreements
 - Signed agreements with 101 primary partners
 - Signed agreements with 50 primary partners and 111 secondary partners
 - Signed agreements with 9 secondary partners and 19 tertiary partners
- ② Internal Subcontract Transaction Review Committee
 - Targets: KRW 8 billion/ICT 3 billion
 - No violation found in 22 preliminary reviews and 3 post-reviews



Internal Subcontract Transaction Review Committee

ESG capability—building for partners

Partner ESG management plans

Hanwha Systems built an ESG support system that provides training, diagnosis, and consulting services for ESG management of partners. The system provides ESG diagnosis, consulting, and training services to partners who want to adopt ESG management practices, so that they can address issues selected for each area (environment, society, and governance), thereby helping partners build and improve on their ESG capabilities. Hanwha Systems will consider ESG evaluation results when determining outstanding partners and providing incentives, and monitor how the participating partners identify and implement ESG improvement tasks tailored to themselves.

Support process for partner ESG management

ESG management partner selection process	
1	Issue call for applications to partners Distribute self-diagnosis forms
2	Submit application Fill out and submit ESG consulting application
3	Preliminary Analysis Analyze self-diagnosis sheets and identify ESG vulnerabilities
4	Select partners for consulting Select partners based on capability analysis results

Partners ESG management training and support consulting process	
5	Online training ESG management/online training
6	Evaluation Fill out fact sheets, conduct on-site visits, and prepare reports
7	Strategy consulting Identify and explain improvements on site
8	Report preparation Prepare the consulting report
9	Monitoring Monitor implementation and measure improvement after a certain period

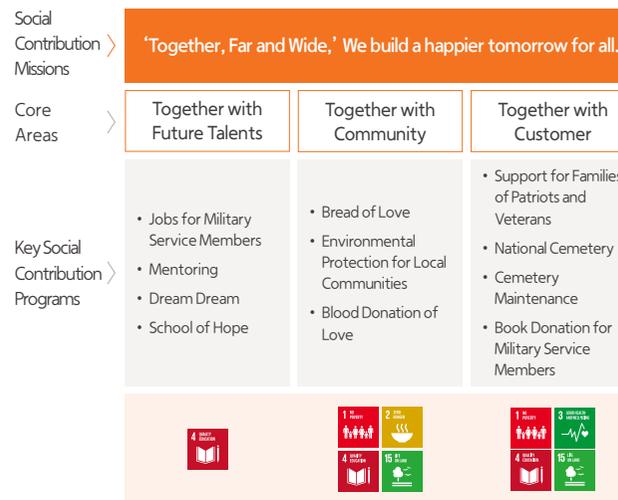
Social Contribution

Social contribution system

Social Contribution Vision and Strategy

Guided by its management philosophy of “Together, far and wide”, Hanwha Systems has developed its social contribution programs in three key areas: “Together with Future Talents”, “Together with Community” and “Together with Customer”. The company will fulfill its responsibilities by returning its profits to the society, promote social values for all stakeholders in connection with its ESG management philosophy, and continuously pursue social contribution activities.

Social contribution system



Social Contribution Fund Status

Category	Unit	2019	2020	2021	2022 target
Total donations	KRW 100 million	5.05	4.96	4.54	7.56
Sponsorship	KRW 100 million	0.27	0.43	0.75	
Project budget	KRW 100 million	3.92	3.02	2.57	
Supplies	KRW 100 million	0.87	1.51	1.11	

Social contribution outcomes and goals

Category	Unit	2019	2020	2021	2022 target
Participants	No.	3,410	1,245	1,166	3,206
Participation hours	Hours	11,528	1,964	2,798	7,694
Cumulative participation hours	Hours	21,619	23,583	26,379	34,073
Total no. of beneficiaries	No.	6,966	4,803	5,853	6,565
Cumulative no. of beneficiaries	No.	12,605	17,408	24,772	31,337
No. of programs	No.	67	15	63	88
Social Contribution Operation Committee	-	Quarterly	Quarterly	Quarterly	Quarterly
Regular consultation channel with local communities	-	As needed	Quarterly/half-yearly	Quarterly/half-yearly	Quarterly/half-yearly

KEY PERFORMANCE

Raised KRW 780 million for
2021 Social Contribution Fund



1,166 executives/employees
participated in 2021 social contribution activities



5,853 beneficiaries
from by 2021 social contribution activities



Social Contribution Committee

Hanwha Systems established a fair and objective decision making system for social contribution activities by setting up the Social Contribution Committee. Through the committee’s activities, the company ensures that social contribution activities remain transparent and effective throughout the financing and execution processes.

Social Contribution Fund

Hanwha Systems’s Social Contribution Fund consists of the Love Fund and Matching Grants driven by voluntary participation from executives and employees. Through the Matching Grant, the company matches the donations provided by its executives and employees. Hanwha Systems’ Social Contribution Fund supports various social contribution activities and donations made at each business site.

Consultation Channel with Local Communities

Guided by the fundamental principle of shared growth with local communities, Hanwha Systems operates regular consultation channels with local communities for continuous communication and collaboration. The company’s Seoul Site signed an MOU with the Ministry of Patriots and Veterans Affairs and the Korean Red Cross for enhanced communication through regular consultation with the local community. Other sites also expand on communication channels through collaboration with the relevant communities to listen to the opinions of diverse stakeholders.

Social contribution by executives and employees

In order to foster a culture of voluntary participation in social contribution activities, Hanwha Systems organizes and plans social contribution programs based on preference surveys on key social contribution programs. The company also celebrates executives and employees who actively participated in volunteer activities each quarter, and encourages families to join the efforts.

Key Social Contribution Programs

Together with Customer

Book Donation for Military Service Members | Since 2016, Hanwha Systems has donated 400 to 500 books each year to the service members of the 28th Division and 6th Division of the Republic of Korea Army through Book Cafes of Love, and establishment of libraries. The program is aimed at helping soldiers serving in remote areas grow their vision for the future and overcome the lack of access to cultural benefits. The company will continue to provide various supports to help service members find rest in their military life and continue to build a vision for their future.

Support for Families of Patriots and Veterans | Hanwha Systems is engaged in various activities to help people of patriots and veterans and their families improve their quality of life, including residential environment improvement, picnics for patriots and veterans, and food delivery. The Gumi Plant signed an MOU with the Daegu Regional Office of the Ministry of Patriots and Veterans Affairs to help people of national merits repair their deteriorated residences twice per year. The plant also donated to the Gyeonggi Dongbu Branch Office of the same ministry to support repair works for Korean War veterans living in Cheoin-gu, Yongin-si.

Love Korea Food Bank | Since 2016, Hanwha Systems has been delivering foods to people of national merit in collaboration with the Seoul Regional Office of the Ministry of Patriots and Veterans Affairs. In 2021, due to COVID-19, the program was implemented as a contact-free event.

National Cemetery Maintenance | Since 2011, Hanwha Systems has been paying respect to the National Cemetery and helping with cemetery maintenance twice per year under its agreement with the Seoul National Cemetery. The company's Chungcheong Area Voluntary Group, which consists of executives and employees from the sites in Daejeon and Chungcheong areas, has been paying respect to, and assisting with cleaning at, the Daejeon National Cemetery.

Book Donation for Military Service Members



Support for Families of National Merit



Food Delivery



Together with Community

Hope Sharing Concert to Overcome COVID-19 | Hanwha Systems invited the bereaved families of service members who passed away due to the sinking of ROKS Cheonan and people of national merit to the Hope Sharing Concert to express its deep appreciation for their sacrifices and contributions.

Bread of Love with Citizens | HSC's executives and employees and their families have participated in the Bread of Love program to make and deliver Bread of Love to the underprivileged not covered by the social welfare net. The company will expand efforts to engage in wider range of local communities and help disadvantaged groups.

Blood Donation of Love | Blood Donation of Love is a semi-annual event based on voluntary participation from HSC's executives and employees. This blood donation campaign also helps the local communities resolve its blood shortage issue.

Hope Sharing Concert to Overcome COVID-19



Together with Future Talents

School of Hope to UAM Coding Class | Hanwha Systems offers online/offline software-based drone-making classes to disadvantaged children all year round, so as to contribute those children develop creativity and open minds required for future talents.

Dream Dream | Hanwha Systems helps children from low-income families learn Excel, PowerPoint, and Hangul Office and obtain the ITQ certificate, so that they can be better prepared for their future and make valuable contributions to the society.

'Shoulders Around Arms Mentor/Mentee | Hanwha Systems run talent-fostering art/sports education programs for children in single parent families, families at risk, and other low-income or disadvantaged groups, so as to raise their self-esteem, motivate them to learn, and foster their growth as healthy members of the society.

Online/Offline School of Hope



Global Social Contribution

Love Korea World Friends | HSC's executives and employees actively participate in the World Friends Program by KOICA, in which they make handmade school supplies for impoverished children across the world.

Contact-free Social Contribution Activities

Employment mentoring for enlisted service members | Hanwha Systems helps enlisted service members overcome their difficulties in finding jobs through talent donation programs involving its executives and employees. The diverse program includes expert lectures, mock job interviews, and a class on how to write cover letters. This online mentoring program was conducted once every month throughout the year 2021 and helped about 500 service members with their career issues.

Employment mentoring for enlisted service members



Ecosystem Conservation

Ecosystem Conservation | Hanwha Systems works with local community stakeholders to carry out various ecosystem conservation activities and cleaning campaigns. Since 2013, in order to protect native fish species and maintain healthy water ecosystem, the company has been removing invasive fish species from the surrounding areas. It also contributes to conserving the local ecosystem by waging campaigns to eradicate bur-cucumbers, one of the key invasive plants in the Nakdonggang River area.

Ecosystem conservation activities



Enhanced Environment Cleaning Campaign

Enhanced Environment Cleaning Campaign | As members of the local communities, HSC's executives and employees have been contributing to keeping the local environment clean. Executives and employees at the Gumi Plant clean the area around the plant every quarter, and celebrate the World Water Day and the Earth Day with various activities including EM Earth Ball throwing and Lights-off campaigns.

Environment cleaning activities



Activities and Outcomes

Awards

2021	<ul style="list-style-type: none"> Minister of Patriots and Veterans Affairs Commendation for contribution to promoting welfare for patriots and veterans families Korean Red Cross Honorary President
2019	<ul style="list-style-type: none"> Korean Red Cross Silver Medal

Chronology

2021	<ul style="list-style-type: none"> Invited patriots and veterans and families to the Hope Sharing Concert to Overcome COVID-19 Organized the job finding mentoring program for military service members as online activities
2020	<ul style="list-style-type: none"> Supported firefighting facilities for local communities Signed MOUs with Gumi Fire Station for social contribution activities Donated to the COVID-19 emergency relief fund in Gumi Donated relocatable negative pressure hospital beds for the Armed Forces Capital Hospital Operate consultation channels with local communities (Seoul Regional Office, MVPA) Operate consultation channels with local communities (Korean Red Cross Eunpyeonggu Center)
2019	<ul style="list-style-type: none"> Bread sharing volunteer program with local citizens Support program for Global Environment School (Korea Environment Corporation, Good Neighbors)

GOVERNANCE

Hanwha Systems continues its journey toward being a global ESG leader by establishing a transparent and sound governance and building a management environment to promote reasonable decision making.

KEY PERFORMANCE



Governance

Governance Policies

Corporate Governance Charter

In March 2022, Hanwha Systems announced its Corporate Governance Charter, thereby declaring the company’s commitment to ESG management, protection of shareholders’ rights, and fair and transparent business activities. The charter sets out the responsibilities and rules regarding corporate governance including shareholder rights, the roles and operation of the board and auditors, protection of stakeholders’ rights, and management monitoring process by the market. Under the charter, Hanwha Systems will put all the efforts to create unique values for all stakeholders based on a fair and transparent governance.

KEY PERFORMANCE

Enacted
the Corporate Governance Charter



Appointed the first
female outside directors



Separated
CEO and Chair of the Board



Banned “self-recommendation”
of outside directors



Board Members and Status

Board Members and Status

Hanwha Systems’ Board of Directors consists of directors appointed at shareholders’ meetings in accordance with the law and the articles of incorporation. As of the end of May 2022, the board consists of nine board members including the company’s first female outside directors, three executive directors (including two newly appointed directors), and five outside directors. The following table lists the board members as of the end of May 2022.

Board Members

(May 2022)

Category	Name	Title	Gender	Date of birth	Expertise	Experience	Date of appointment	Term of office
Executive director	Seong-cheol Eoh	CEO	Male	May. 1964	Business management and external relations	Economics, Korea University Currently CEO, Hanwha Systems	Mar. 24, 2022 (second term)	2 years
	Youn-chul Kim	President/Chairperson	Male	Dec. 1961	Management coordination	Mechanical Engineering, Yonsei University Currently President, Hanwha Systems	May 23, 2021	2 years
	An-sik Yoon	Vice President	Male	Jul. 1964	Finance	Economics, Korea University Currently Head of Finance, Hanwha Systems	Mar. 24, 2022 (newly appointed)	2 years
	Yong-wuk Lee	Vice President	Male	Jan. 1965	Head of Defense Division	Electronic Engineering, Kyungpook National University Master, Communications Engineering, Kyungpook National University Currently Head of Defense Division, Hanwha Systems	Mar. 24, 2022 (newly appointed)	2 years
Outside directors	Hyo-bok Bang	Chair, Outside Directors Candidate Recommendation Committee	Male	Mar. 1950	Defense Industry	Korea Military Academy Master, Political Science, Yonsei University Currently Chair, DMA Future, Korea Retired Generals and Admirals Association	Mar. 23, 2021	2 years
	Ju-jae Lim	Chair, Audit Committee/ESG Committee	Male	Jul. 1953	Finance and audit	Business, Yonsei University Currently Advisor, Kim and Chang LLC	Mar. 23, 2021	2 years
	Seong-soo Hong	Chair, Compensation Committee	Male	Oct. 1963	ICT/management	Master, Computer Engineering, Seoul National University Ph.D. Computer Engineering, Maryland University Currently, Professor, Department of Electrical and Computer Engineering, College of Engineering, Seoul National University	Mar. 23, 2021	2 years
	Sung-chill Hong	Chair, Insider Trading Committee	Male	Jan. 1958	Legal	Master, Law, Sungkyunkwan University Ph. D., Law, Sungkyunkwan University Currently, Partner, Law Firm Class	Mar. 23, 2021	2 years
	Hyung-joo Hwang	Member, Compensation Committee/Outside Directors Candidate Recommendation Committee/ESG Committee	Female	Feb. 1972	ICT	Master, Mathematics, Postech Ph. D., Mathematics, Duke University Currently Professor, Department of Mathematics and Graduate School of AI and Intelligence, Postech Currently CEO, AM Squared	Mar. 24, 2022 (newly appointed)	2 years

Board Activities

Hanwha Systems holds scheduled and non-scheduled meetings of the Board of Directors each quarter. A meeting is convened by the Chair of the Board. The Board of Directors Regulations states that a notice should be sent to the directors and auditors to be present at the meeting three days prior to the meeting to encourage them to participate accordingly. The Board of Directors adopts resolutions on agendas delegated by the General Meeting of Shareholders and other matters related to the company's business.

In 2021, the Board of Directors held a total of 14 meetings, where the directors decided on various agendas including: the 21st Period Financial Statements and Business Report; appointment of the current CEO for the second term; satellite communications business; establishment of a US incorporation; revision of the executive remunerations regulations; establishment of the ESG Committee; and appointment of the committee members.

Board Activities and Attendance

* As of the end of December 2021



Board of Directors Rules

Independence and Transparency

Hanwha Systems fills the majority of board positions with outside directors to ensure that the board makes decisions and performs oversight functions as an independent entity and base our operations on the perspectives of more diverse stakeholders' perspectives. We appoint outside directors with extensive experience and knowledge in business, economy, law and key business areas so that the board does not represent the interest of a certain group or sector. In accordance with the company's articles of incorporation, we exclude directors from decisions on matters where they may have conflict of interest, thereby laying the foundation for independent decision making by the board. On the meeting on March 24, 2022, the Board of Directors appointed Director Kim Youn-chul as the Chair of the Board, thereby separating the CEO position from the Chair position, which enhanced the independence of the board.

Expertise and Diversity of the Board of Directors

Hanwha Systems fills the majority of board with outside directors, to promote free and objective exchange of opinions and decision making based on independent judgment. At the General Meeting of Shareholders in March 2022, the shareholders appointed the first female outside director (Hwang Hyung-joo, Professor of Mathematics, Postech), and three executive directors (including two newly appointed members) (Percentage of outside directors in BOD: 55.56%)



Director Appointment Process and Criteria

At Hanwha Systems, directors are appointed by the General Meeting of Shareholders in accordance with the Commercial Act and the articles of incorporation. outside directors are appointed among candidates across various areas, based on their sense of responsibility and the ability to meaningfully contribute to the company's business with their expertise. Candidates are recommended by the outside director Candidate Recommendation Committee, and evaluated based on the criteria of independence, expertise, and diversity. Before a General Meeting of Shareholders, we publish each candidate's expertise, bio and other information in Korean and English so that shareholders can determine each candidate's suitability as outside director.

Hanwha Systems is the first listed large company in Korea to ban "self-recommendation" of outside director candidates, leading the efforts to ensure fair outside director appointment.

Outside Director Candidates



The Outside Director Candidate Recommendation Committee receives candidate recommendations from professional organizations outside the company, and appoint outside directors based on a review of their qualities and capabilities. In addition, in order to enhance the expertise and diversity of the board members, outside director candidates are grouped into three areas: business, economy, and law/regulation.

Outside Director Candidate Evaluation



During the evaluation phase, the board shortlists the candidates based on evaluation results and the area requiring new directors, and runs a reference check on the shortlisted candidates.

Outside Director Candidate Recommendation



The board recommends the candidates to the General Meeting of Shareholders after reviewing the eligibility of new and incumbent outside directors(outside directors are not allowed to participate in the resolutions of the Outside Director Candidate Recommendation Committee).

Board Committees

Operation of the Board and Committees

For efficient operation and professional decision making by the Board of Directors, Hanwha Systems set up five committees (Audit Committee, Outside Director Candidate Recommendation Committee, Insider Trading Committee, Compensation Committee, and ESG Committee). Each committee is chaired by an outside director and, except for the Outside Director Candidate Recommendation Committee, all committee members consist of outside directors, in order to ensure independent operation and decision making.

Hanwha Systems discloses the regulation specifying the purpose, authorities, and responsibilities of each committee at the company's website. Established in June 2021, the ESG Committee is at the center of the company's governance for ESG management and practices. It reviews, deliberates on, and adopts resolutions regarding medium/long-term ESG strategies and key activities, ESG investment decisions, and measures to address ESG issues.

Board Committee Meetings in 2021

(as of the end of December 2021)

Committee	No. of meetings	No. of agendas	Attendance
Audit Committee	8	10 (2 resolutions, 8 reports)	100%
External Director Candidate Recommendation Committee	2	6 (Resolutions)	100%
Insider Trading Committee	4	11 (Resolutions)	100%
Compensation Committee	2	3 (Resolutions)	100%
ESG Committee	3	4 (1 resolution, 3 reports)	100%

※ Outside directors may not vote on proposals recommending them as outside director candidates

※ As of the end of December 2021, the ESG Committee has one executive director and two outside directors.

Improvement of Outside Directors' Expertise

Hanwha Systems provides various training programs to outside directors to enhance their ability to efficiently carry out their roles as board and committee members. In 2021, the company arranged three training programs to enhance outside director roles and responsibilities, and improvement of their ESG management oversight capabilities.

Members of the Audit Committee learn about the latest revisions in the relevant laws and the internal accounting management system on a regular basis, so as to prevent compliance risks and strengthen their expertise.

Director Evaluation and Remunerations

Outside Director Evaluation | Under the articles of incorporation, each outside director holds the office for two years. When the term ends, they are internally evaluated for their expertise and engagement in the relevant field. The results of the evaluation are considered during the reappointment process, so that the Board of Directors actively engage themselves in the company's businesses and carry out their duties in a responsible manner.

Board Committee Members and Roles

Category	Committee	Purpose and Roles	
Audit Committee	3 outside directors Lim Joo-jae , Hong Sung-chill, Hong Seong-soo	Purpose	Transparency and independence: internal audits and monitoring
		Roles	Investigate business and asset status; monitor management status; approve financial statements, etc.
Outside Director Candidate Recommendation Committee	4 outside directors 3 executive directors Bang Hyo-bok , Lim Joo-jae, Hong Seong-soo, Hwang Hyung-joo, Eoh Seong-cheol, Yoon An-sik, Lee Yong-wuk	Purpose	Recommendation of outside director candidates
		Roles	Evaluate and recommend outside director candidates, and improve appointment processes
Chair, Insider Trading Committee	3 outside directors Hong Sung-chill , Lim Ju-jae, Bang Hyo-bok	Purpose	Enhanced control of insider trading; supervision of unfair support
		Roles	Evaluates and approves large-scale insider trading as specified in the Monopoly Regulation and Fair Trade Act
Compensation Committee	3 outside directors Hong Seong-soo , Bang Hyo-bok, Hwang Hyung-joo	Purpose	Review of registered directors' remunerations cap and compensation system
		Roles	Conduct preliminary reviews on registered director remunerations cap to ensure objective and transparent decisions on director remunerations
ESG Committee	3 outside directors Lim Joo-jae , Hong Sung-chill, Hwang Hyung-joo	Purpose	Review ESG policies and activities
		Roles	Review ESG policies and activities, and report results to the Board of Directors

※ Names in bold represent the chair of each committee.

Remunerations for Directors | Registered directors receive remunerations in accordance with the Executive Remunerations Regulations, including the base salary and role salary. Performance incentives are differentially provided based on a comprehensive consideration of the company's performance and each director's goal attainment. The company also provides the directors with support for tuitions, medical expenses, and other welfare. In accordance with the Executive Severance Pay Regulations, each director receives a severance pay based on the average salary, years of employment, and the prescribed severance pay rate. Outside directors and auditors do not receive performance incentives other than the remunerations approved by the General Meeting of Shareholders, in consideration of their transparency and fairness requirements (2021 director remunerations cap: KRW 300 million).

Director Remunerations Status

(Unit: KRW 100 million)

Category	Total amount	Average amount per person	No. of
Registered directors	1,277	426	3
Outside directors	87	87	1
Audit Committee members	251	84	3
Total	1,615	231	7

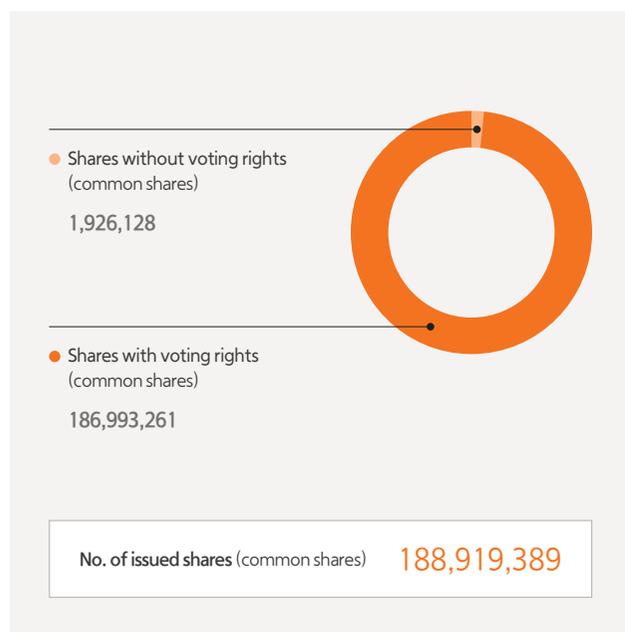
※ The total amount as of the end of December 2021 represents the sum of yearly salaries received by those who served as directors as of December 31, 2021 (excluding restricted stock units and interim settlement of severance pay).

Shareholder-Friendly Management

Shares and Capital Structure

On March 24, 2022, the General Meeting of Shareholders revised the articles of incorporation to change the number of issuable shares to 500,000,000. The price per share is KRW 5,000, and the total number of issued shares was 188,919,389 as of December 31, 2021.

Voting Rights Status



Enhanced Protection of Shareholders' Rights

Voting Rights Protection | For the 2021 General Meeting of Shareholders, to help shareholders exercise their voting rights, Hanwha Systems adopted an electronic voting and electronic power of attorney system for all shareholders. In addition, through the "General Meeting of Shareholders Autonomous Scheduling Program," the company makes sure that meetings take place at sufficient intervals.

Enhanced Shareholder Returns | In January 2021, in order to stabilize its share price and increase its value, Hanwha Systems acquired 1,817,584 of its own shares (worth KRW 33.3 billion) through on-exchange trading. In addition, as part of its shareholder return policy, the company adopted board and general meeting resolutions for dividend payout and disclosed its ratios over the last two years to transparently share the status of shareholder return and increase its predictability.

Dividend Status

Category	2021	2020	2019
(separate) Net profits (KRW 100 million)	131,286	103,955	72,922
Dividend type	Cash	Cash	Cash
(consolidated) Net profit per share (KRW)	642	850	706
Total dividends (KRW 100 million)	29,919	25,328	34,171
(consolidated) Dividend payout ratio (%)	30.57	27.07	46.88
Dividend per share (KRW)	common shares 160	230	310
Market price dividend ratio (%)	common shares 1.02	1.48	3.02

Enhanced Shareholder Communication | For more shareholder-friendly management, Hanwha Systems operates various shareholder communication channels. In 2021, the company increased the number of seminars for shareholders and institutional investors to actively share the company's activities with shareholders. The company discloses its performance data in advance and publishes the data at the company website so that anyone can easily access information about the company's activities.

2021
No. of investor relations meeting disclosures **11**

Ethics and Compliance

Ethics and Compliance System

Ethical Management Principles

Hanwha Systems implements its Code of Ethics across its business activities. The Code sets out the roles and social responsibilities of the company. In January 2022, Hanwha Systems announced a revision of the Code of Ethics that expands the scope of its ethics framework to include the respect for partners and the protection of whistleblowers' rights. To encourage executives and employees to comply with the Code, the company issued separate guidelines to guide their value judgment and behaviors.

Hanwha Systems leads sound corporate ethics and fosters a fair organizational culture to become a trusted and respected business. The company shares its values of ethics and fairness in all its endeavors, and shares its best practices with stakeholders for responsible business management.

Ethics and Compliance Governance

Hanwha Systems appointed a Chief Compliance Officer under the Commercial Act through a board resolution, and appointed the head of the legal team as an autonomous compliance management tasked with coordinating the company's compliance programs (CPs). The company also operates a compliance management organization under the Legal Affairs Office, which leads a compliance consultation meetings comprised of compliance managers of each department, and the consultation meeting results are reported to the Board of Directors. The compliance team and the legal team manage various legal and compliance risks at the company, and carry out various activities to prevent corruption and ethical risks.

Compliance Management List

1. Fair transaction	6. Personal information
2. Subcontracting	7. Military secrets
3. Anti-corruption	8. SHE
4. Confidential Information	9. Organizational culture
5. Intellectual property	

KEY PERFORMANCE

Management System Certification
ISO 37301 and ISO 37001



Revised
Code of Ethics for Executives and Employees



Operates
Compliance Programs (CPs)



Ethics and Compliance Organization



Executives and Employees Ethics and Compliance Pledge

Every year, all executives and employees of Hanwha Systems sign the Ethics and Compliance Pledge, thereby reaffirming their commitment to familiarizing themselves with, and complying with, ethics and compliance regulations. The pledge form lists their duties to comply with the relevant laws, the Code of Ethics, and guidelines, thereby propagating ethics management principles pertinent to the company's operations, and boosting the compliance competencies of executives and employees.

2021
Pledge submission rate (all executives and employees)

95%

Ethics/Compliance Management System Certification

In June 2022, in order to make its ethics/compliance management practices on par with the global standard, Hanwha Systems plans to acquire two certifications: ISO 37301 (Compliance Management System) and ISO 37001 (Anti-Corruption Management System). Hanwha Systems will use the two certifications as a foundation for continuously ensuring that its compliance and anti-corruption policies and systems, and risk control activities and management are effective and consistent with the global standards.

Ethics and Compliance Enhancement

Ethics Monitoring and Whistleblower Program

Hanwha Systems helps stakeholders in and outside of the company to report ethical violations and wrongdoings by creating reporting channels including the website, telephone, fax, and mail. The company also operates 'Cyber Sinmungo' within the company intranet where executives and employees can anonymously report ethical and compliance violations.

Reportable issues include violations of the fair trade and subcontracting laws, embezzlement, unfair practices, demand for money or entertainment, and other violations of the law and Hanwha Systems' codes. In order to protect those reporting violations, the company keeps their identity and reports in secret, allows for anonymous reporting, and prohibits disadvantageous treatment of reporters/whistleblowers. In 2022, the company inserted a provision on whistleblower protection in the Code of Ethics, along with the protection of anonymity and confidentiality of reporters/whistleblowers and their reports.

Compliance Control Activities

Hanwha Systems uses checklists for relevant laws including the anti-corruption laws to conduct voluntary compliance audits across all departments on a regular basis. The Chief Compliance Officer files annual compliance control reports to the Board of Directors, and the compliance manager at each department assesses the department's violation risks through semiannual audits. The audit results are analyzed to preemptively prevent compliance risks and ensure the transparency and compliance of work processes.

The company also evaluates its compliance activities every year, and grants awards to employees who contributed to boost employees' commitment to compliance activities.

CP

Hanwha Systems operates CPs as ethics/compliance management programs to ensure that all executives and employees comply with laws and regulations at all times, and minimize compliance risks posing threats to its business activities. In keeping with the nationwide and global trends of requiring more stringent corporate compliance and ESG management, the company has revamped its CP framework to make it more systemic and efficient. Building on its CP outcomes in 2022, The company plans to request a CP rating evaluation by the Korea Fair Trade Commission (KFTC) in 2023.

By revamping, implementing, and consolidating its CPs, Hanwha Systems will boost the fair trade and compliance competency of the company and its executives and employees, thereby practicing its fair trade principles to "promote fair and free competitions for more creative business activities, protect consumers, and contribute to a balanced growth of the national economy."

Compliance Audits

In 2021, Hanwha Systems conducted a total of 15 compliance audits, including 12 subcontracting audits, 2 autonomous audits, and 1 themed audit. The company uses the audit results to identify improvements and encourage executives and employees to enhance their compliance management practices.

Fair Trade Compliance Manual

As part of its CP activities, Hanwha Systems published the Fair Trade Compliance Manual. The manual encompasses all matters required for fair trade compliance by executives and employees including the fair trade practice guide, information about CPs, summaries/FAQs/cases regarding fair trade laws, compliance checklist, and the company’s fair trade regulations. The manual consists of the General Manual regarding all matters of fair trade compliance, and the Working Manual that outlines the key points of the General Manual for efficient compliance activities by working-level components. These manuals are utilized as Fair Trade Compliance Guidelines for executives and employees designed to practice fair trade principles and encourage them to comply with fair trade practices.



Strengthening Compliance Awareness for Executives and Employees

Ethics and Compliance Competency Building

Hanwha Systems requires all executives and employees to receive ethics and compliance training on a regular basis. In addition to the mandatory training for all executives and employees, the company offers specific programs tailored to the requirements of different ranks, positions, and responsibilities for a more effective training. It also helps executives and employees build their ethics and compliance competency. The 2021 1H/2H training was provided for two to three weeks as online programs using Hanwha Systems’ internal system (Channel H).

Compliance Newsletter

In order to foster a corporate culture based on compliance with all relevant laws and promotion of corporate ethics as a top priority value, Hanwha Systems sends the CEO Compliance Letter to all executives and employees in every beginning of the year. Through the letter, the CEO declares the company’s genuine commitment to ethics and compliance management. Hanwha Systems also issues weekly newsletters to share the latest trends in compliance, the enactment/revision of the relevant laws, and legal information, to raise the compliance awareness of executives and employees and remind them of its significance.

Enhancing Partners’ Ethics and Compliance Capabilities

Ethical Management Support for Partners

Hanwha Systems operates various support programs to spread the company’s ethics and compliance management culture, and helps partners boost their compliance capabilities and join the efforts to enhance ethics and compliance management.

In 2021, the company provided its 109 partners with trainings on anti-corruption, technical protection, and other aspects of compliance directly related to their daily tasks.

Ethics and Compliance Training in 2021

Targets	Category	Date	Title	Description	Completion
Compliance body managers	Training	2021/ 4.	1H Compliance Body Manager Training	Compliance in general	100% (82 trainees)
All executives and employees	Training	2021/ 4. – 6.	1H Compliance Training	14 areas including anti-corruption, fair trade, and subcontracting	99%
Requested departments training	Training	2021/ 4. – 11.	On-site Compliance Training	Are as requested by each department	35 departments
Entry level/experienced employees	Training	2021/ 4. – 12.	Compliance training	Trade secrets, and technical data under subcontracting laws	100%
Compliance body managers	Training	2021/ 9.	2H Compliance Body Manager Training	Subcontracting and shared growth laws	100% (82 trainees)
All executives and employees	Training	2021/ 11.	2H Compliance Training	Fair trade, anti-corruption, and technical protection	97%

Risk Management

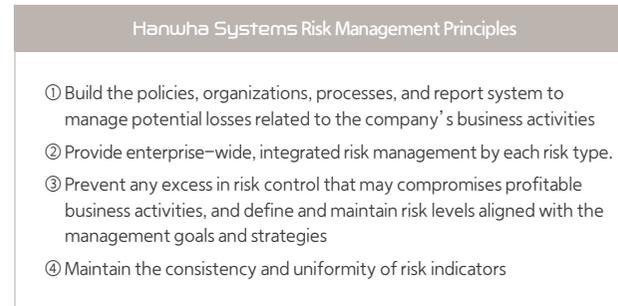
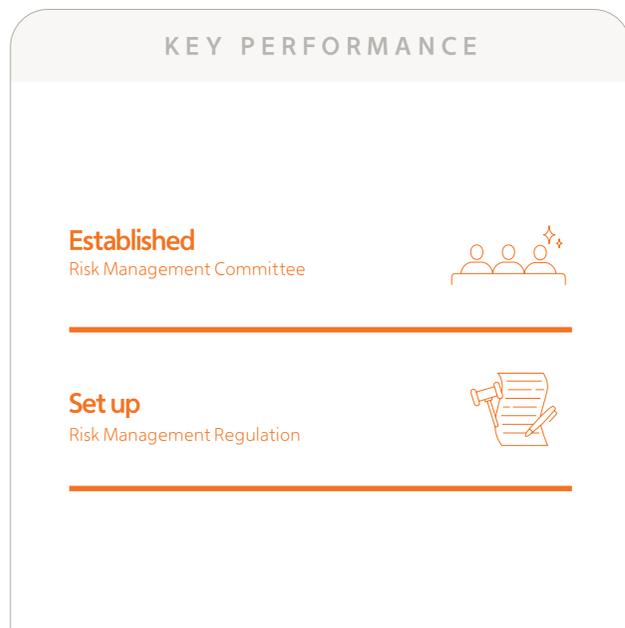
Risk Management System

Advancement of Integrated Risk Management System

Hanwha Systems is engaged in enterprise-wide risk management to effectively address changes in the business environment. The company promotes sustainable growth by defining and maintaining risk levels aligned with the company's management goals and strategies.

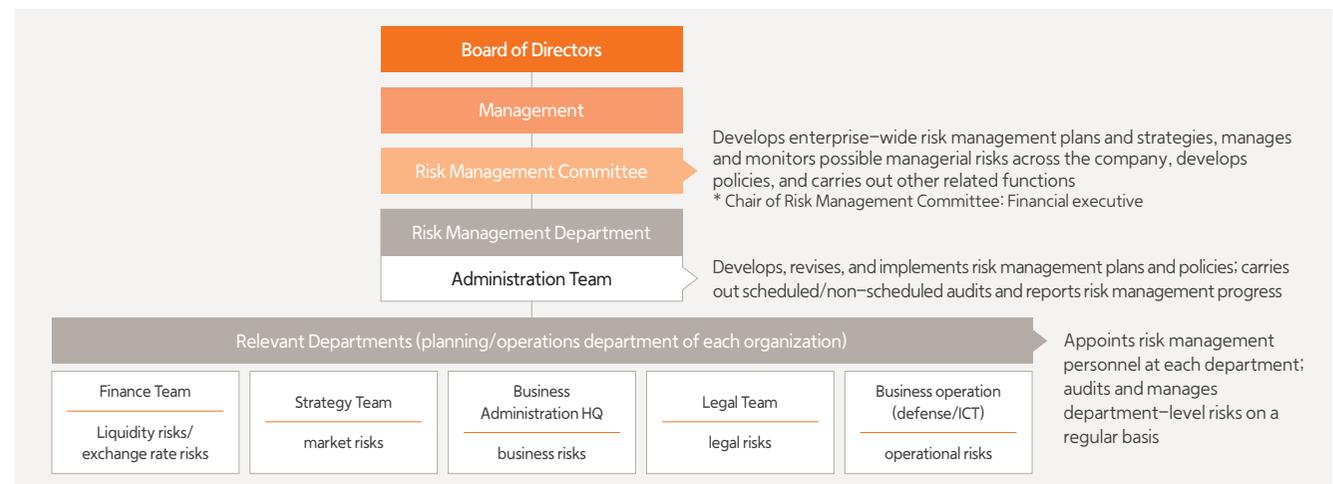
In January 2022, the company made public its the Risk Management Regulation to advance corporate risk management practices. The regulation encompasses the overall matters for risk management including the management organization, principles, processes, and methodologies to stabilize and protect its assets through systemic and efficient management of possible managerial risks.

Hanwha Systems works toward minimizing possible risks and fostering the environment for stable corporate management by consolidating its risk management systems and organizations.



Risk Management Governance

In January 2022, Hanwha Systems organized the Risk Management Committee for enterprise-wide risk management governance. The committee oversees risk management, oversight, policymaking, and other matters that may have a significant impact on the company's business activities. The committee consists of three or more members including financial, legal, and business management executives, and holds quarterly meetings. The company also appointed a risk management personnel for risk management focusing on issues in the relevant areas. The risk management department identifies key risks in accordance with the company's risk management policies and plans, and audits its risk management progress. The risk management department submits monthly reports detailing the activities of the risk management body and their outcomes to the Risk Management Committee, which reviews the reports and selects agendas to report to the Board of Directors.



Risk Management Process

The Risk Management Department establishes annual risk management plans in accordance with the company’s management goals and strategies, develops processes and methodologies, and audits and reports the enterprise-wide compliance on a regular basis. The risk management process is divided into four stages: identify, analyze, respond, and monitor/report. The identified risks are prioritized to plan effective measures tailored to the characteristics of each risk.

Identify	<ul style="list-style-type: none"> Identify key issues and risks related to business activities in and outside of the company Notify identified risks to the Management Risk Department 	Identify risks in accordance with the internal classification system
Analyze	<ul style="list-style-type: none"> Quantify and rate risks to determine priority 	Priority ↑ : report to committee; Priority ↓ : report to each relevant department
Respond	<ul style="list-style-type: none"> Take measures to mitigate the likelihood and impact of high priority risks 	Establish single or multiple response strategies
Monitor/ Report	<ul style="list-style-type: none"> Monitor risk-related changes at all times Improve response strategies through scheduled evaluation 	Carry out risk review, oversight, and reevaluation activities; report key risks to the board

Risk Assessment Criteria

Each department of Hanwha Systems analyzes risks in accordance with the risk assessment criteria, using qualitative methods that consider the probability and impact (strategic significance, impact on business, and impact on ESG) of the risks. The risks are rated and prioritized based on the analysis results.

In addition, the Risk Management Department determines the extent of response to different risk levels, and files scheduled/non-scheduled reports regarding high priority risks to the committee. Low priority risks are reported and addressed on the headquarter/team level.

Risk probability

Category	Description				
	Level 5	Level 4	Level 3	Level 2	Level 1
Description	80% or higher: near certainty	Less than 80%-60%: highly likely	Less than 60%-40%: highly likely	Less than 40%-20%: unlikely	Less than 20%: highly unlikely

Risk Impact

Category	Description				
	Level 5	Level 4	Level 3	Level 2	Level 1
Impact on ESG	Serious impact on ESG	Impact on ESG	Partial impact	Possible impact in the future	Little to no impact
Strategic significance	Serious impact on visions and strategies	Impact on visions and strategies	Partial impact	Possible impact in the future	Little to no impact
Impact on business	5 billion or higher cost/loss or impact on corporate image	1 billion or higher cost	Likely to incur costs and impact business	Possible costs in the future	No cost incurred
Urgency	Immediate action required (enterprise level)	Immediate action required (HQ level)	Action required (HQ level)	Action required (team level)	Further review required (team level)

Risk Management by Type

Financial Risk Management

Hanwha Systems identifies and manages key financial risks, which include liquidity/exchange/market risks associated with the unpredictability of the capital market.

Category	Elements	Risk definition	Hanwha Systems’ response
Liquidity Risk	Macroeconomy (inflation and interest rate) and cash flow, etc.	Mismatch between fund management and financing periods; insolvency caused by unexpected fund outflow and spending; possible losses caused by high-interest financing (in case of financial distress) and disposal of the company’s assets at disadvantageous prices	<ul style="list-style-type: none"> Maintain liquidity and financial health by predicting and adjusting funds balance on a regular basis
Exchange rate Risk	Exchange rate volatility and exchange loss	Possible loss from foreign currency transactions and foreign currency items in the financial statements caused by unexpected exchange rate changes	<ul style="list-style-type: none"> Identify measures to hedge against volatility risk Assess, manage, and report exchange exposure loss of foreign currency claims/obligations on a regular basis (quarterly Exchange Management Committee meetings, etc.)
Market Risk	Changes in markets and policies, social unrest, etc.	Possible loss, including devaluation of businesses and assets, caused by failure to properly address changes in government policies, market environments, political environment, and company reputation	<ul style="list-style-type: none"> Regularly monitor changes in defense/private markets, policies, and technologies

Non-financial Risk Management

In response to changes in the ESG environment, and in recognition of the possible impact of global compliance and social changes, Hanwha Systems manages three categories of non-financial risks: project, operations and compliance.

Category	Elements	Risk Definition	Hanwha Systems' response
Project Risks	Price payment, delinquent payment, technical changes, unmet development requirements	Delinquent payment, failure to meet development requirements, and other risks possibly caused in relation to all projects for which the company signed contracts or agreements	<ul style="list-style-type: none"> Advance product and service quality control across all cycles Enhance customer voice and satisfaction policies
Operation Risks	Personnel, productivity, quality, environment and safety, team capability, etc.	Security, personnel, and environment safety issues that may be caused by inappropriate or erroneous internal procedures, negligence, or deliberate wrongdoings	<ul style="list-style-type: none"> Managerial, Technical, and Physical Security Enhance management systems for key business operation issues such as raw materials, logistics, human rights, and other business operation risks
Compliance Risk	Workforce, testbed, materials, technical issues, intellectual property, etc.	Possible loss related to the company's operations caused by violation of the relevant laws or obligations, lawsuits, institutional changes, etc.	<ul style="list-style-type: none"> Enhance the compliance management system with focus on on-site and practical issues Enhance risk prevention through CPs

Potential Risk Management

Hanwha Systems identifies and addresses potential risks that may have a serious impact on the company's businesses in the medium/long term, caused by changes in the global business environment.

Category	Elements	Potential impact	Hanwha Systems' response
Climate change	<ul style="list-style-type: none"> Acute or chronic physical risks caused by rapid global warming Transition risks caused by low carbon transition 	<ul style="list-style-type: none"> Disruption of logistics and raw materials supply chains, productivity loss, and product quality loss caused by extreme climate events Competitiveness loss and reputation risks caused by failure to secure technologies and products for climate response 	<ul style="list-style-type: none"> Reduce GHG emission in the medium/long term Develop Eco-friendly strategies for production processes Diversify supply channels for production
Information security	<ul style="list-style-type: none"> Increased risk of unwanted disclosure of confidential information and personal information, driven by remote work and changes in how people work Possible risks caused by the collection, disclosure, and utilization of customers' and employees' personal information 	<ul style="list-style-type: none"> Possible reputation risks and legal sanctions on account of customer information leakage Need to build a stable security system to address hacking attempts and other contingencies Need to protect the company's information assets and operation against cyber attacks, system failures, etc. 	<ul style="list-style-type: none"> Conduct regularly scheduled information protection training and audits for executives and employees Expand and build competency of security personnel Acquire ISO 27001, ISO 27017, ISMS, and other certifications and improve cybersecurity management systems
Changes in technologies and industrial structure	<ul style="list-style-type: none"> Possible risks caused by failure to preemptively address changes in the industrial structure driven by digital transformation 	<ul style="list-style-type: none"> Lacking technical expertise and systems required to access new markets (building the relevant capabilities will broaden business opportunities) Need to secure R&D experts to address future defense and ICT needs 	<ul style="list-style-type: none"> Expand business capabilities powered by new digital technologies such as AI and cloud Identify new business opportunities and diversify business areas using ICT capabilities and defense/ICT expertise

Enhanced Internal Control System

Internal Accounting Control System

Hanwha Systems implements an internal accounting control system to prevent errors and wrongdoings that may compromise its financial statements, and ensure the preparation and disclosure of reliable financial statements. The company adopted the system in accordance with the 2018 revision to the Act on External Audit of Stock Companies. It also organized the Internal Accounting Team for a more efficient assessment, design and operation, and independent assessment by the management.

In addition, the company defined performance evaluation criteria for internal accounting control, so as to ensure the accountability of the control system by incorporating internal accounting control performance into the goals of executives and employees. The CEO and the Internal Accounting Manager audits the design and operational effectiveness of the system in each business year, and the CEO reports the operation of the internal accounting control system to the Board of Directors and during the General Meeting of Shareholders. The operation of the system is certified by an independent external auditor.

To preemptively prepare the company for the application of consolidated internal accounting control scheduled in 2023, Hanwha Systems partnered up with a professional organization to improve its system for improved transparency and reliability of its internal accounting control system.

Tax Management

Legal and Tax Compliance

Hanwha Systems fulfills its responsibilities as a member of society by complying with the tax laws and its tax obligations. The company has an in-house tax law department that assesses various tax risks in accordance with tax policies in Korea and other countries, to align all transactions arising from its operations with the tax laws of the relevant countries. In order to prevent tax risks caused by changes in tax policies, the company continuously monitors the latest tax law and administration trends in each country, and uses the information to develop its tax policies and comply with regulations against tax evasion and avoidance.

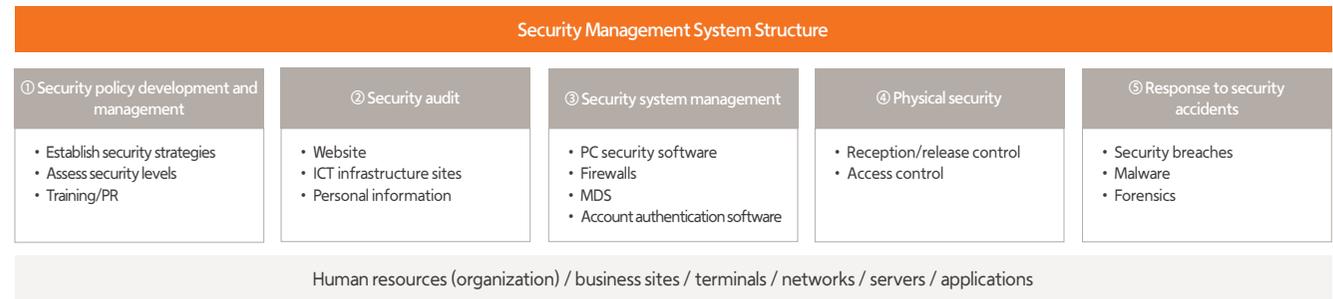
Information Protection

Information Protection Management System

Information Protection Policies and Certifications

In compliance with the Personal Information Protection Act, the Act on the Promotion of Information and Communications Network Utilization and Information Protection, and other laws on information protection, Hanwha Systems controls and manages the relevant human resources, business sites, terminals, IT services and infrastructure (servers and networks) across five areas: (security policies, security audit, security system management, physical security, and response to security accidents). The company also operates an internal security management that utilizes the information protection management process based on the Plan-Do-Check-Act (PDCA) model. In particular, for its defense businesses, the company set up 35 security management measures across different areas under the Internal Technology Protection Regulation to protect national industrial secrets.

Security Management System Structure



Information Security Management System (PDCA model)



KEY PERFORMANCE

2,342 employees
participated in information protection training



Rated outstanding (98.6%)
in security measurement



Scored 91.56
in technology protection survey



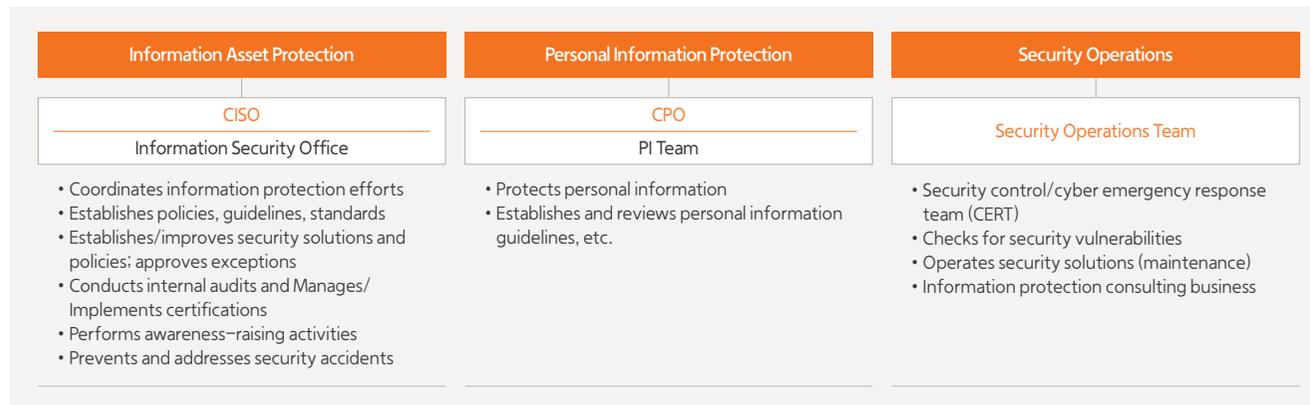
Security Management Measures

Technology	Human resources	Facilities	Documents	ICT
<ul style="list-style-type: none"> • Encrypt electronic documents • Encrypt externally shared documents • Detect wiretapping • V3 vaccine • PC security • Block wireless breaches 	<ul style="list-style-type: none"> • Run ID check on executives/ employees/ visitors • Security clearance • Security management for retirees/ transferred employees • Security management for foreigners • Manage security history • Security training (five programs including security-defense technology protection) 	<ul style="list-style-type: none"> • Designate protection areas • Keep key documents in a separate storage • Integrated security system • Access control • Security check on entrants • Visitor management • Security system for equipment transportation 	<ul style="list-style-type: none"> • Security for printed documents • Distribute technical documents electronically • Discard unnecessary documents • Manage security document releases • Security review for externally shared documents • Manage technical documents as confidential information 	<ul style="list-style-type: none"> • Separate internal/external networks • Control NW access • Electronic fax • Integrated control system • Control personal communication devices • Log in with email address

Information Protection Governance

Hanwha Systems built its information protection governance structure along three axes: protection of information assets, protection of personal information, and system security operation. The company appoints the Chief Information Security Officer (CSIO) tasked with overseeing information protection governance. The Information Security Office coordinates the company’s information protection policies, along with audit and awareness-raising activities. The company also appointed Chief Personal Information Protection Officers (CPOs) in the defense and ICT divisions, and the Personal Information Team (PI Team) develops personal information guidelines and conducts scheduled audits. The Security Operation Team builds, operates, and maintains security systems. The Information Security Body consists of the CSIO, CPOs, and other information security officers in the company, and discusses the company’s information protection activities.

Information Protection Organization Structure



Information Protection Certifications

Hanwha Systems has obtained numerous global information protection certifications to assure customers and stakeholders of the outstanding quality of its information protection system. After acquiring the Information Security Management System Certification (ISO 27001) in 2005, the company received the Information Security Management System (ISMS) Certification in 2013. Following the ICT infrastructure facility designation in 2015, the company acquired a Cloud Service Information Security Certification (ISO 27017) in 2016, which it has maintained to date.

Information Security Certifications Status

Information Security Certifications	
IT Service Management	ISO 20000
Information Security Management System	ISO 27001
Information Security Management System	ISMS
Cloud Service Information Security	ISO 27017
Firewalls and IPS	EAL Level 4
Vaccine (V3)	EAL Level 3
Integrated Data Loss Prevention System (DLP)	EAL Level 2

Information Protection Disclosure

In June 2022, the information protection disclosure requirement went into effect. As per the requirements, Hanwha Systems plan to disclose information on its information protection practices including investments, human resources, and certifications. The Defense Division plans to disclose information on investments, costs, human resources for information protection, global certifications, and the activities of the CSIO and CPOs. The ICT Division, as a cloud computing service provider operating Jukjeon IDC (an integrated information and communication facility), also plans to disclose information on information protection management so that customers can use its cloud services without concerns about their security. Hanwha Systems will continue to share key information about its information protection status, improve the company’s accountability in information protection, and win customers’ trust.

Information Protection System and Security Enhancement

Protection of National Secrets

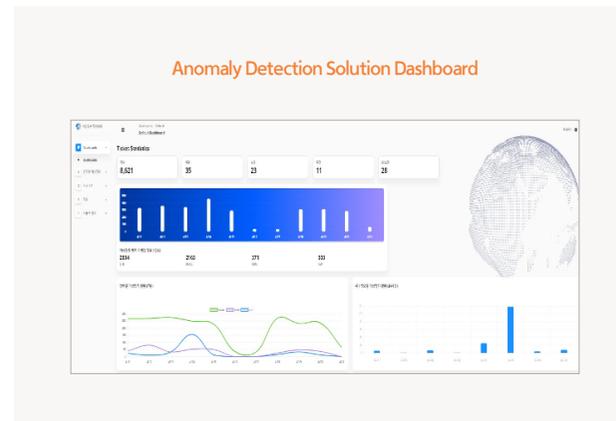
As a leader in the national defense industry, Hanwha Systems handles customer information and core defense technologies as it provides the related products and services. In this capacity, Hanwha Systems is committed to complying with the laws regulating customer information and core defense technologies, and reporting its technology protection practices to build a safer future for Korea. The company operates its security control system all year round to maintain its preparedness against cyber attacks and protect secret information.

Security Measurement Results



Anomaly Detection Solution

Hanwha Systems ICT Division developed the Anomaly Detection Solution, an innovative system to prevent security accidents such as ransomware attack, breach of personal information, and information leakage by insiders. The solution detects abnormal activities at the end point (terminals and users) and within the company's systems, and ensures rapid and effective protection against security accidents. The system instantly detects anomalies based on pre-defined scenarios including data leakage, malware infection, and system takeover. The identified anomaly event is registered at the portal to assist with prompt actions against malicious activities by insiders and attackers.



Prevention of Internal Information Leakage

Hanwha Systems prevents the leakage of internal information by applying PC security settings, encrypting documents, separating internal/external networks, and building an intelligent threat response system. The company also strictly restricts server/database access by unauthorized personnel and terminals. It also controls the reception/release of portable storages and electronic devices at data centers storing customer information by installing X-ray checkpoints and metal detectors, in addition to monitoring systems at the relevant facilities. PCs and other information assets are required to be formatted before release to prevent information leakage and security accidents. In addition, in order to prevent information leakage through user devices including employee PCs, the company plans to revamp its PC security solutions in the second half of 2022. The company also protects itself against cyber attacks from outside by monitoring its ICT infrastructure at all times, and identifying common vulnerabilities and exposures (CVEs) for prompt response to possible breaches.

SPECIAL CASE

Hanwha Systems-Gitsn sign an MoU for a defense cybersecurity project.

On July 19, 2021, Hanwha Systems and Gitsn signed a memorandum of understanding for cooperation in the defense cybersecurity business. Hanwha Systems plans to develop countermeasures against new threats including wireless hacking by spychips, and build a new cybersecurity system against wireless wiretapping powered by radio wave analysis technologies.

Enhanced Personal Information Protection

Hanwha Systems reviews and improves on its personal information storage and management practices. The company restricts personal information collection to the minimum required by law, and revised its security regulations to require the encryption of credit card numbers and account numbers in addition to identification information, passwords, and biometric information. All expired personal information are discarded without delay, and the company takes preventive measures to protect personal information from any leakage, alteration, theft, loss, and damage.

Personal Information Protection Management Process

0. Select targets	Select items to inspect
1. Develop annual audit plan	Develop audit plans and notify departments handling personal information
2. Audit	Audit personal information protection practices through document review and on-site inspection
3. Report	Report the audit results
4. Monitor identified issues	Monitor issues identified during the audit and measures taken

- The company conducts annual audits to assess compliance with personal information regulations and assess the effectiveness of personal information protection activities.
- The CPO reviews the audit reports to develop action plans and manage measures taken.



<ul style="list-style-type: none"> Develop audit plan 	<ul style="list-style-type: none"> Review related documents Interview information handlers Conduct on-site inspection Assess compliance Prepare audit report 	<ul style="list-style-type: none"> Notify audit results Establish action plan Report action plan
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Enhanced Technology and Information Protection Capabilities

Technology and Information Protection Training

To upgrade the level of personal information protection practices of its executives and employees, Hanwha Systems requires new recruits and the relevant personnel to complete online/offline training programs. In 2021, the company included personal information protection in its compliance and subcontracting training programs. In addition to information protection training, the company is engaged in awareness-raising activities such as security pledges, information protection exercises, and quiz events.

2021 Online/Offline Technology/Information Protection Results

Title	Target Sites and Trainees	
Defense Industry Technology Protection	Seoul/Yongin/Pangyo	1,128
	Gumi	1,380 (including 55 external personnel)
Technology Protection Officer Training	Seoul/Yongin	1,232
Information Security Training	Enterprise-wide	1,292

Technology and Information Protection Training and Management for Vendors

In order to prevent security accidents by external and vendor employees, Hanwha Systems conducts training, management, and supervision activities in addition to regular security compliance audits. The Defense Division implemented security and personal information training for its more than 60 vendors, and assessed and audited their information protection practices. In addition, in accordance with the December 2020 revision to its Defense Industry Technology Protection Guidelines, the division organized the Defense Industry Technology Protection Review Committee to assess security/protection activities of vendors and provide consultation.

SPECIAL CASE

Hanwha Systems Pays a Supervisory Visit to DS Electronics to Assess Defense Technology and Data Protection Practices



In March 2021, Hanwha Systems visited DS Electronics, a company based in Yuseong-gu, Daejeon, to assess the company's practices related to technology protection and military secrets, in addition to competency-building activities. Hanwha Systems provided a set of training materials including the Defense Industry Technology Protection Guidelines, Defense Acquisition Program Administration documents, and other materials related to technology protection, to raise the Daegu company's awareness on the protection of defense industry technologies.

ESG Factbook

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Economic

Consolidated Financial Statements

(Unit: KRW 100 millions)

Category	2019	2020	2021
Assets			
Current asset	1,524,614	1,683,884	2,676,109
Cash and cash equivalents	564,017	539,873	1,636,831
Accounts receivable and other receivables	174,453	157,733	181,115
Other financial assets	52,057	12,825	27,567
Other current assets	452,687	609,566	424,551
Inventory assets	281,400	363,888	406,045
Non-current assets	884,630	1,011,186	1,218,193
Accounts receivables and others	11,744	4,653	742
Financial assets measured at fair value through profit or loss	14,662	22,162	105,867
Financial assets measured at fair value through other comprehensive income	198	–	61,517
Other financial assets	12,670	16,022	17,073
Affiliate investment	–	24,133	28,550
Tangible assets	216,595	217,505	256,906
Right-of-use assets	39,711	86,546	101,069
Intangible assets	531,677	550,426	562,163
Other non-current assets	2,349	2,527	2,586
Deferred tax assets	55,024	87,212	81,720
Total assets	2,409,245	2,695,070	3,894,303

Category	2019	2020	2021
Liabilities			
Current liabilities	1,170,277	1,359,778	1,363,163
Accounts payable and other payables	163,950	110,389	125,173
Borrowings and bonds	70,000	39,998	29,986
Other financial liabilities	48,500	54,758	70,856
Other current liabilities	873,229	1,127,236	1,111,361
Provisions	–	13,008	10,475
Current tax liabilities	14,597	14,389	15,312
Non-current liabilities	270,527	302,610	291,378
Accounts payable and other payables	–	–	469
Borrowings and bonds	69,854	59,903	29,959
Other financial liabilities	16,851	66,158	80,086
Net defined benefit liabilities	158,790	159,188	160,419
Provisions	25,030	17,361	20,445
Deferred tax liabilities	2	–	–
Total liabilities	1,440,804	1,662,388	1,654,541
Capital			
Controlling interest	968,441	1,032,682	2,222,498
Paid-in capital	551,152	551,152	944,597
Capital surplus	327,003	328,047	1,084,939
Capital adjustment	–	–739	–34,121
Accumulated other comprehensive income	–1,618	–2,794	2,354
Earning surplus (loss)	91,903	157,018	224,730
Non-controlling interest	–	–	17,263
Total capital	968,441	1,032,682	2,239,761
Liabilities and total capital	2,409,245	2,695,070	3,894,303

Financial/business performance

Shares and dividends

Category	Unit	2019	2020	2021
Total cash dividends	KRW 100 millions	34,171	25,328	29,919
Type of dividend	–	Cash dividend	Cash dividend	Cash dividend
Cash dividend ratio	%	46.88	27.07	30.57
Cash dividend per share (common shares)	KRW	310	230	160
Market price dividend ratio (%)	%	3.02	1.48	1.02
Adopted? (yes/no)	Voting in writing	–	Yes	Yes
	Electronic voting	–	No	Yes
Shareholder communication	Enterprise briefing sessions	No.	0	8
	Meetings		0	8

Distribution of economic values

Category	Unit	2019	2020	2021
Shareholders/ investors	Dividends	34,171	25,328	29,919
	Interest cost	4,960	6,231	4,196
Executives and employees	Wages and salaries	288,922	313,788	349,232
	Welfare	31,812	40,501	68,773
Vendors	Purchase costs	534,824	783,915	1,711,288
Local community	donations	190	199	142
Government	Corporate tax	9,275	-14,505	30,176

Shares owned

Category	Unit	2019	2020	2021
CEO's total share		0.01	0.01	0.01
Shareholders with 5% or higher share	Hanwha Aerospace Co., Ltd	48.99	48.99	46.73
	Hanwha Energy Co., Ltd	13.41	13.41	12.80
	National Pension	5.10	5.97	5.88
Shares	Shares issued	110,230,389	110,230,389	188,919,389
	Outstanding shares	110,230,389	110,121,845	186,993,261

R&D investment

Category	Unit	2019	2020	2021
R&D investment costs	KRW 100 millions	253,908	280,373	347,777
R&D investment to sales ratio	%	16.7	17.2	16.6
Registered patents and trademarks (cumulative)	No.	1,050	1,307	1,653

Government support

Category	Unit	2019	2020	2021
Government subsidies	KRW 100 millions	1,146	2,015	2,163

Environmental

Environmental management

GHG

Category	Unit	2019	2020	2021
Total GHG emission (Scope 1 + Scope 2)	tCO ₂ -eq	17,766	18,002	19,509
Scope 1	tCO ₂ -eq	640	576	486
Scope 2		17,126	17,426	19,023

* Data of 2019 & 2020 corrected by applying the same criteria to plants

Energy

Category	Unit	2019	2020	2021
Total energy consumption	GJ	368,058	372,278	405,547
Direct energy consumption		10,733	9,200	9,238
Indirect energy consumption		357,325	363,079	396,309
Renewable energy consumption	MWh	9	9	11
Consumption of renewable energy procured	Self-produced (photovoltaic) MWh	9	9	11

* Data of 2019 & 2020 corrected by applying the same criteria to plants

Water and waste water

Category	Unit	2019	2020	2021
Water usage	Tons	94,745	87,089	96,866
Drinking water usage		94,745	87,089	96,866

Air pollutant emission

Category	Unit	2019	2020	2021
Dust emission	kg/yr	3.25	4.58	2.53

Waste

Category	Unit	2019	2020	2021	
Total waste production	Tons	210	243	266	
Regular wastes		Subtotal	205	239	258
		Recyclable	202	233	249
		Incinerated	3.5	6.0	8.5
Specified waste		Subtotal	5.2	3.4	8.1
		Recyclable	1.4	0.1	5.8
		Buried	0.5	0.7	—
		Incinerated	3.3	2.6	2.3
Waste recycling rate (regular + specified)		%	97	96	96
Waste processing costs		KRW 100 millions	56	60	76

Environment management system

Category	Unit	2019	2020	2021
Rate of certification by ISO 14001 environment management system	%	100	100	100
Certified plants	No.	1	1	1
Plants eligible for certification		1	1	1
Green business certification		1	1	1

Environmental laws and regulations

Category	Unit	2019	2020	2021	
Environmental violations	Legal violations	No.	0	0	0
	Total fines	KRW 100 millions	0	0	0
	Lawsuits filed	No.	0	0	0
	Non-monetary sanctions	No.	0	0	0
	Environmental liabilities	KRW 100 millions	0	0	0
Total fines	KRW	0	0	0	

Safety and health management

Safety and health management system

Category	Unit	2019	2020	2021
Rate of certification by ISO 45001 safety and health management system	%	100	100	100
Certified plants	No.	1	1	1
Plants eligible for certification		1	1	1
Plants with OHSAS 18001 (or KOSHA 18001)		2	2	2

Industrial safety trainings

Category	Unit	2019	2020	2021
Industrial safety training hours	Total	52,398	52,202	47,786
Industrial safety training participants	Total	6,170	6,126	9,694

Health management

Category	Unit	2019	2020	2021
Physical Check-ups	Total	4,509	4,642	4,936
	Executives and employees	3,388	3,699	3,514
	Spouses and family members	1,121	943	1,422

Industrial accidents

Category	Unit	2019	2020	2021
Total working hours	Executives and employees	6,837,313	7,437,765	7,800,056
	Vendors	14,912	8,944	16,948
Accident victims	Executives and employees	1	0	0
	Vendors	0	0	0
Casualties (deaths + serious injuries + minor injuries)	Executives and employees	0	0	0
	Vendors	0	0	0
Deaths	Executives and employees	0	0	0
	Vendors	0	0	0
Serious injuries	Executives and employees	0	0	0
	Vendors	0	0	0
Minor injuries	Executives and employees	0	0	0
	Vendors	0	0	0
Serious accidents	Executives and employees	0	0	0
	Vendors	0	0	0
Industrial accident rate (no. of victims/ no. of employees)* 100	Executives and employees	0.03	0.00	0.00
	Vendors	0.00	0.00	0.00
Lost time incident rate (LTIR) = amount of lost time / total working hours * 1,000,000	Executives and employees	0.15	0.00	0.00
	Vendors	0.00	0.00	0.00
Occupational illness frequency rate (OIFR) = no. of occupational disease patients / total working hours * 1,000,000	Executives and employees	0.00	0.00	0.00
	Vendors	0.00	0.00	0.00
Total recordable incident rate (TRIR) = No. of occupational injuries / total working hours * 1,000,000	Executives and employees	0.15	0.00	0.00
	Vendors	0.00	0.00	0.00

* No accident in 2020

Social

Executives and Employees

Status of executives and employees

Category		Unit	2019	2020	2021
Total employment					
Total no. of employees*		No.	3,611	3,692	3,931
By employment type	Regular employees	No.	3,515	3,586	3,742
	Non-regular employees	%	97.3%	97.1%	95.2%
	Non-regular employees	No.	96	106	189
	Percentage of non-regular employees	%	2.7	2.9	4.8
Gender	Subtotal	No.	3,611	3,692	3,931
	Male		3,104	3,170	3,386
	Female		507	522	545
By age	Subtotal	No.	3,611	3,692	3,931
	Under 30		734	755	578
	in 30s		1,384	1,418	1,544
	in 40s		1,162	1,166	1,269
	in 50s		319	339	514
	Over 60		12	14	26
By level	Subtotal	No.	3,611	3,692	3,931
	Executive		53	55	66
	Manager (department head or higher)		2,063	2,186	2,329
	Assistant manager		772	819	862
	Associate		723	632	674
By region	Subtotal	No.	3,611	3,692	3,931
	HQ		1,392	1,215	2,476
	Regional office		2,219	2,477	1,455

Category		Unit	2019	2020	2021
Years of employment					
Average years of employment	Average years of employment: regular employees	years	10.6	11.1	10.9
	Average years of employment: non-regular employees		5.0	6.4	3.6
Diversity of executives and employees					
Female managers	No. of female managers (department head or higher)	No.	119	140	160
	Percentage of female managers**	%	5.6	6.2	6.7
Disadvantaged employment (regular + non-regular)	Employees with disabilities	No.	47	49	51
	Percentage of employees with disabilities	%	1.3	1.3	1.7
	Employees of national merits	No.	62	60	75
	Employees of national merits	%	1.7	1.6	1.9
	International employees	No.	2	2	3
	Percentage of international employees	%	0.1	0.1	0.1
New Recruitment					
Total no. of new recruits (in Korea)		No.	411	247	490
By employment type	Subtotal	No.	411	247	490
	Regular		357	199	396
	Non-regular (other than dispatched)		54	48	94

* Excluded employees locally recruited in Russia (some discrepancy in the business reports)

** 2019-2020 Percentage of female managers data changed due to a change in the calculation method
 Percentage of female managers = Number of female managers / Total Managers and Executives

Childcare Leave

Category		Unit	2019	2020	2021
Executives/employees who used childbirth leave	No.	No.	23	16	156
	Executives/employees who returned to work		23	16	142
	Return ratio		100%	100%	91%
Executives/employees who used childcare leave	Male	No.	11	16	16
	Female		30	26	31
Executives/employees returning after childcare leave	Male	No.	11	16	15
	Female		30	26	24
Executives/employees who returned to work after childcare leave	Male	No.	11	13	13
	Female		30	26	23
Executives/employees who returned to work after childcare leave	Male	%	100%	81%	87%
	Female		100%	100%	96%

Turnover and retirement of executives/employees

Category		Unit	2019	2020	2021
Total turnovers and retirements (excluding dispatched workers)		No.	192	186	250
Reason for turnover/retirement	Non-voluntary turnover/retirement	No.	-	-	9
	Retirement age		-	-	8
	Disciplinary dismissal		-	-	1
	Recommendation of resignation		-	-	-
	Voluntary turnover (retirement)		192	186	241
	Early retirement		-	27	22
	Voluntary retirement		192	159	219
Turnover ratio	Subtotal	%	5.3%	5.0%	6.4%
	Voluntary turnover ratio		5.3%	5.0%	6.1%
	Non-voluntary turnover ratio		0.0%	0.0%	0.2%

* Voluntary turnover includes leaving the company to pursue academic endeavors or early retirement, and other non-voluntary retirements and turnovers. Non-voluntary turnover includes age retirement, disciplinary dismissal and recommendation of resignation.

Training outcomes for executives and employees

Category		Unit	2019	2020	2021
Total training expenses	Subtotal	KRW 100 millions	4,760	578	1,178
	Defense Division		2,775	350	966
	ICT Division		1,985	228	212
Total training hours	Subtotal	Hours	167,923	67,472	144,628
	Defense Division		102,249	42,886	65,169
	ICT Division		65,674	24,586	79,459
Total number of trainees (executives/employees)	Subtotal	No.	3,628	3,706	3,779
	Defense Division		2,250	2,348	2,559
	ICT Division		1,378	1,358	1,220
Training cost per person	Subtotal	KRW 1,000/person	2,633	317	551
	Defense Division		1,233	149	377
	ICT Division		1,440	168	174
Training hours/person	Subtotal	hours/person	93	36	90
	Defense Division		45	18	25
	ICT Division		48	18	65
Online job training academy courses	No.	36	46	89	
Executives/employees who completed online job training academy courses	No.	-	1,927	3,447	
Executives/employees on academic training (cumulative/students + graduates)	No.	125	132	141	

Human rights awareness

Category		Unit	2019	2020	2021
Human rights training	Total	Hours	10,365	12,276	10,938
	Sexual harassment prevention training		3,455	4,970	3,603
	Disability awareness training		3,455	3,653	3,732
	Workplace harassment prevention training		3,455	3,653	3,603

Welfare

Category		Unit	2019	2020	2021
Retirement pension support	Enrollees (DC)	No.	183	214	245
	Fund managed – separate (DC)	KRW 100 millions	11,368	14,606	28,855
	Enrollees (DB)	No.	1,835	2,038	1,991
	Fund managed – consolidated (DB)	KRW 100 millions	31,812	40,501	59,357

Salaries and wages

Category		Unit	2019	2020	2021
Average base pay by gender	Average base pay of female employees	KRW	51,684,925	53,483,982	58,739,196
	Average base pay of male employees		64,600,928	65,952,215	72,557,578
	Percentage of member remunerations	%	78.0	79.0	81.0
Average base pay by level					
Executives	Male	KRW 1,000	141,120	145,029	164,842
	Female		120,000	120,000	120,000
Manager (department head or higher)	Male		74,654	74,811	79,613
	Female		71,760	71,371	74,923
Non-managers (assistant manager or lower)	Male		48,269	49,124	54,437
	Female		45,680	47,346	51,354
Average compensation (base pay + incentive) by level					
Executives	Male	KRW 1,000	237,599	180,900	204,744
	Female		152,641	151,688	135,540
Manager (department head or higher)	Male		82,138	87,172	86,196
	Female		77,205	81,240	75,361
Non-managers (assistant manager or lower)	Male		48,414	53,716	50,916
	Female		43,031	49,911	47,440

* Percentage of member remunerations = average base pay of female employees / average base pay of male employees

Performance Evaluation

Category		Unit	2019	2020	2021
Employees/executives subject to performance evaluation		No.	3,421	3,544	3,078
Executives/employees receiving regular performance evaluations		No.	3,421	3,544	3,078
Percentage of executives/employees receiving regular performance evaluations		%	100	100	100

Customer Satisfaction

Customer satisfaction

Category		Unit	2019	2020	2021
Service satisfaction indicators		%	98.1	98.4	98.7

Labor-Management Relations

Labor-management communication

Category		Unit	2019	2020	2021
Complaints processed yearly		No.	97	104	170

Shared Growth

Vendor status

Category		Unit	2019	2020	2021
Total no. of vendors		No.	1,098	1,147	1,247
Total purchase from vendors		KRW 100 millions	11,852	17,179	17,113

Vendor support

Category		Unit	2019	2020	2021
Financial support (shared growth fund)	Total amount raised	KRW 100 millions	21,000	21,000	31,000
	Amount raised by financial institutions		14,000	14,000	17,500
	Amount raised by Hanwha Systems		7,000	7,000	13,500
	Amount executed		10,290	11,995	22,737
Early payment for holiday seasons	Amount executed	KRW 100 millions	20,574	13,601	21,500
Quality requirement training	Trainees	No.	1,774	197	195
	Target vendors	No.	601	87	54
Defense drawings (AutoCAD) expert course	Trainees	No.	138	221	142
	Target vendors	No.	51	78	41
Designated Supplier Quality Representative (DSQR) training	Trainees	No.	–	–	13
	Target vendors	No.	–	–	6
Compliance (anti-corruption and technology protection)	Trainees	No.	–	–	227
	Target vendors	No.	–	–	50
Shared growth academy (business skills and mandatory training)	Trainees	No.	–	486	50
	Target vendors	No.	–	16	227

Vendor monitoring/evaluation

Category		Unit	2019	2020	2021
General vendor evaluation	Vendors with excellent rating	No.	29	51	21

Social Contribution

Social contribution activities

Category		Unit	2019	2020	2021
Social contribution donations by donors	Subtotal	KRW 100 millions	610	551	730
	Company		301	249	300
	Executives/ employees		309	302	430
Social contribution donation by donation type	Subtotal	KRW 100 millions	505	496	443
	Cash		27	43	75
	Business budget		392	302	257
	In kind		87	151	111
Social contribution activities	Programs	KRW 100 millions	67	15	63
	Total no. of participants		3,410	1,245	1,166
	Total no. of beneficiaries		6,966	4,803	5,853
	Cumulative no. of beneficiaries		6,966	11,769	17,622
Social contribution outcomes	Total participation hours	Hours	11,528	1,964	2,798
	Voluntary activity hours per person	hours/ person	3.7	2.3	2.4
	Voluntary activity participation ratio	%	94	34	37

Operation of social contribution fund

Category	Unit	2019	2020	2021
Total donations	KRW 100 millions	5.05	4.96	4.54
Sponsorship	KRW 100 millions	0.27	0.43	0.75
Business budget	KRW 100 millions	3.92	3.02	2.57
In-kind support	KRW 100 millions	0.87	1.51	1.11

Social contribution outcomes and goals

Category	Unit	2019	2020	2021
Executive/employee participation	No.	3,410	1,245	1,166
Participation hours	Hours	11,528	1,964	2,798
Cumulative participation hours	Hours	21,619	23,583	26,379
Total no. of beneficiaries	No.	6,966	4,803	5,853
Cumulative no. of beneficiaries	No.	12,605	17,408	24,772
Program operation	No.	67	15	63
Social Contribution Operation Committee	–	Quarterly	Quarterly	Quarterly
Regular consultation channel with local communities	–	As needed	Quarterly/ half-yearly	Quarterly/ half-yearly

Quality Management

Product stability

Category	Unit	2019	2020	2021
Counterfeit parts discovered	No.		0	0
Evasion ratio of discovered counterfeits	%		100	100

Governance

Board of Directors

Board of Directors operation status

Category		Unit	2019	2020	2021
Members	Internal directors	No.	2	3	3
	External directors	No.	4	4	4
	Percentage of external directors	%	66.7	57.1	57.1
	Percentage of female directors	%	0.00	0.00	0.00
Board meetings	Meetings	No.	14	11	14
Board meeting attendance	Average attendance		99	100	100
	External director attendance	%	100	100	100
	Internal director attendance		99	100	100
Board of Directors' agendas		No.	48	38	38
Agendas opposed by external directors			-	1	1

Board of Directors remunerations

Category		Unit	2019	2020	2021
CEO remunerations	CEO's total remunerations	KRW 100 millions	981	545	515
	Persons	No.		3	3
Registered directors	Total remunerations	KRW 100 millions		1,156	1,277
	Average remunerations per person	KRW 100 millions		385	426
External directors	Persons	No.		1	1
	Total remunerations	KRW 100 millions		67	87
	Average remunerations per person	KRW 100 millions		67	87
Audit Committee members	Persons	No.		3	3
	Total remunerations	KRW 100 millions		200	251
	Average remunerations per person	KRW 100 millions		67	84

* External directors and Audit Committee members are excluded from registered directors, and Audit Committee members are excluded from external directors.

Board committee status

Category		Unit	2019	2020	2021
Audit Committee	Percentage of external directors	%	100	100	100
	No.	No.	3	9	8
	Attendance	%	100	100	100
Insider Trading Committee	Percentage of external directors	%	100	100	100
	No.	No.	3	4	4
	Attendance	%	100	100	100
External Director Candidate Recommendation Committee	Percentage of external directors	%	60	60	60
	No.	No.	-	-	2
	Attendance	%	-	-	100
Compensation Committee	Percentage of external directors	%	-	-	100
	No.	No.	-	-	2
	Attendance	%	-	-	100
ESG Committee	Percentage of external directors	%	-	-	67
	No.	No.	-	-	3
	Attendance	%	-	-	100

Ethics and Compliance

Internal ethical management audits

Category	Unit	2019	2020	2021
Internal ethics/compliance audits	No.	–	15	16

Status of compliance violations

Category	Unit	2019	2020	2021
Legal measures regarding compliance	Total fines	0	0	0
	Lawsuits filed	5	2	1
	Non-monetary sanctions	1	0	0
Fair trade violations	Fair trade violations	1	0	1
	Total fines	KRW 100 millions	0	0

Ethics and compliance training

Category	Unit	2019	2020	2021
Ethics and compliance training	Programs	–	2	4
	Participants	–	3,774	8,153

Information Security

Information security breaches

Category	Unit	2019	2020	2021	
Security breaches/accidents related to customers' personal information	No.	0	0	0	
Customers suffered damage from data leakage	No.	0	0	0	
Total amount of financial losses caused by information security breaches or cybersecurity accidents (fines, administrative fines, etc.)	KRW	0	0	0	
Information security personnel	No.	51	52	68	
Information security training	Information security training hours per person	hours/person	1	1	1
	Participants (executives/employees)	No.	1,371	1,335	2,342
	Training hours	Hours	1,371	1,335	2,342

Appendix

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UN SDGs Commitment

UN SDGs	Goal targets	Main Activities
 <p>Ensure healthy lives and promote well-being for all at all ages</p>	<p>3.3 By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis water-borne diseases and other communicable diseases</p> <p>3.4 By 2030, reduce by one third premature mortality from non-communicable diseases through prevention and treatment and promote mental health and well-being</p> <p>3.9 By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination</p>	<ul style="list-style-type: none"> Implemented health promotion programs for executives and employees on a regular basis Provided self-quarantine/return kits and paid leaves to all executives and employees diagnosed with COVID-19 Signed an MOU with the Korean Red Cross for the "Blood Donation of Love" campaign Supported voluntary blood donation by executives and employees Reinforced environment impact management and conducted regular monitoring
 <p>Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all</p>	<p>4.4 By 2030, substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment decent jobs and entrepreneurship</p> <p>4.5 By 2030, eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations</p>	<ul style="list-style-type: none"> Developed "ai-CODI", an AI/big data-powered bespoke employment support service Developed a metaverse education platform Created jobs for people with disabilities and people of national merits Supported art/sports education for children living in single-parent or at-risk families (Arms Around Shoulders Mentor/Mentee Program) Worked with KOICA to deliver school supplies to impoverished children across the world Provided career/employment mentoring for enlisted service members, supported library construction and donated books Provided a software-based drone making program to children from marginalized families Provided IT education to children from low-income families (Dream Dream)
 <p>Achieve gender equality and empower all women and girls</p>	<p>5.4 Recognize and value unpaid care and domestic work through the provision of public services, infrastructure and social protection policies and the promotion of shared responsibility within the household and the family as nationally appropriate</p> <p>5.5 Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision-making in political, economic and public life</p>	<ul style="list-style-type: none"> Encouraged employees to make use of family-friendly benefits such as maternal leaves and parent leaves Provided a new childcare leave program for employees who have children with disabilities, as well as various family support programs Appointed a female external director
 <p>Ensure access to affordable, reliable, sustainable and modern energy for all</p>	<p>7.2 By 2030, increase substantially the share of renewable energy in the global energy mix</p> <p>7.a By 2030, enhance international cooperation to facilitate access to clean energy research and technology, including renewable energy, energy efficiency and advanced and cleaner fossil-fuel technology, and promote investment in energy infrastructure and clean energy technology</p>	<ul style="list-style-type: none"> Invested in new and renewable energy (Saemangeum Onshore Photovoltaic Power Plant Area 2) Constructed photovoltaic facilities at Yongin Research Center Prepared for a green building certification for the new Gumi Plant to be completed in 2025 Built and operated two EV charging stations at Yongin Research Center
 <p>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</p>	<p>8.2 Achieve higher levels of economic productivity through diversification, technological upgrading and innovation, including through a focus on high-value added and labour-intensive sectors</p> <p>8.3 Promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage the formalization and growth of micro-, small- and medium-sized enterprises, including through access to financial services</p> <p>8.6 By 2020, substantially reduce the proportion of youth not in employment, education or training</p>	<ul style="list-style-type: none"> Developed technologies to achieve green urban air mobility Developed multi-layer communication network/low earth orbit satellite communications Developed technologies to achieve hyper-connection space internet Developed and advanced land mine detection technologies Planned shared growth programs with vendors and organized the Shared Growth Committee Participated in the "Warmhearted Enterprise 2.0" of the Ministry of SMEs and Startups Expanded the shared growth fund, and implemented competency-building training programs for vendors Developed a cooperation model for startups for future military technologies
 <p>Take urgent action to combat climate change and its impacts</p>	<p>13.2 Integrate climate change measures into national policies, strategies and planning</p> <p>13.3 Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning</p>	<ul style="list-style-type: none"> Set a medium/long-term goal of reducing emission to 30% below BAU by 2040 Developed and applied a carbon emission management system (Mangrove Solution) Developed the ESG management system ESG ON Participated in the Government's new and Renewable Energy Project

Stakeholder Communication

Stakeholders	Key interests	Key communication channels	
 <p>Customer</p>	<p>Hanwha Systems provides the best products, services and solutions, improves customer satisfaction through follow-up management, and continuously communicates with customers to protect customer information.</p>	<ul style="list-style-type: none"> - Customer Center and Call Center - Sustainable Management Report - Service Satisfaction Survey - Hanwha Systems Newsletter 	<ul style="list-style-type: none"> - Hanwha Systems Website - Doctor Service (home visit/call center) - Provide tech support for new equipment, and support the training of assistant operators
 <p>Executives and employees</p>	<p>Based on the principles of diversity, inclusiveness and equal opportunities, Hanwha Systems operates communication channels to foster a culture of respect for human rights and continuous development of executives and employees' skills.</p>	<ul style="list-style-type: none"> - Regular management meetings - Management status briefing sessions - Mentoring and onboarding for new employees - Workers' committees (Labor-Management Committee/ Industrial Safety and Health Committee) - Tech blog within the inhouse bulletin - IT Academy - ICT learning organizations for executives and employees (18 organizations established as of 2021) - Leadership letters - Leadership coaching competency building and job competency building programs 	<ul style="list-style-type: none"> - Academic training programs - Global Talent program - Learning organizations - Post-retirement career support tailored to retirees' needs - Online/offline reporting channels - Contactless communication (mail delivery between employees and company news sharing) - Company-wide/division-specific regular management meetings - Organizational culture activities, including horticulture activities - Appointment of counsellors at each plant
 <p>Local community</p>	<p>Hanwha Systems contributes to revitalizing local economies and environmental protection, and actively engages in social contribution activities for military service members, people of national merits and other marginalized groups.</p>	<ul style="list-style-type: none"> - Channels for supporting local community growth - Consultative meeting with the Korean Red Cross - Employment mentoring for enlisted service members - "School of Hope" and "Shoulders Around Arms Mentor/Mentee" - Consultation channels with local communities (Seoul VA Regional Office and Korean Red Cross Eunpyeonggu Center) 	<ul style="list-style-type: none"> - Education support for global environment schools (Korea Environment Corporation and Good Neighbors) - Happy food donation program for people of national merits - MOUs signed with social welfare centers in rural areas - Residential environment improvement project for elderlies of national merits (Daegu VA Regional Office) - MOUs signed with Gumi Fire Station for social contribution activities - Supported firefighting facilities for local communities
 <p>Shareholders and investors</p>	<p>Hanwha Systems improves values for shareholders and investors by sharing economic fruit, ESG issues, risk management and management information.</p>	<ul style="list-style-type: none"> - Business Report - Governance Report - Sustainable Management Report - General Meeting of Shareholders 	<ul style="list-style-type: none"> - Scheduled/Unscheduled Business Disclosure - Investment Briefing - IR Meetings - Hanwha Systems Website
 <p>Vendors</p>	<p>Hanwha Systems closely communicates with vendors to build an ecosystem for shared growth based on fair trade.</p>	<ul style="list-style-type: none"> - Shared Growth Academy - Purchase/Quality/Technology Exchange - Vendor Day - Vendor Consultative Body Meetings (twice) 	<ul style="list-style-type: none"> - Defense Industry Cost Conference (twice) - Vendor voice of customers (VOC) - Fair trade agreements signed with vendors (Warmhearted Enterprise 2.0)
 <p>Government</p>	<p>Hanwha Systems complies with fair trade principles, and generates values on the basis of tax compliance and transparent disclosure of business information.</p>	<ul style="list-style-type: none"> - Engages in academic conferences/associations - Policy conference 	<ul style="list-style-type: none"> - Electronic disclosure - Engagement in government projects/agreements

GRI Standards

GRI Standards	Category	Disclosure No.	Disclosure Name	Page	Note
Universal Standards					
GRI 2: General Disclosures 2021	The organization and its reporting practices	2-1	Organizational details	6	
		2-2	Entities included in the organization's sustainability reporting	2, 8	
		2-3	Reporting period, frequency and contact point	2	
		2-4	Restatements of information	-	N/A (not applicable)
		2-5	External assurance	97-98	
	Activities and workers	2-6	Activities, value chain and other business relationships	6-8	
		2-7	Employees	81	
		2-8	Workers who are not employees	81	
	Governance	2-9	Governance structure and composition	62, 86	
		2-10	Nomination and selection of the highest governance body	62-64	
		2-11	Chair of the highest governance body	62	
		2-12	Role of the highest governance body in overseeing the management of impacts	62-64	
		2-13	Delegation of responsibility for managing impacts	11, 69	
		2-14	Role of the highest governance body in sustainability reporting	11, 64	
		2-15	Conflicts of interest	63	
		2-16	Communication of critical concerns	63, 69-70	
		2-17	Collective knowledge of the highest governance body	63-64	
		2-18	Evaluation of the performance of the highest governance body	64	For more information, please refer to the Corporate Governance Report.
		2-19	Remuneration policies	64	For more information, please refer to the Corporate Governance Report.
	Strategy, policies and practices	2-20	Process to determine remuneration	64	For more information, please refer to the Business Report.
		2-21	Annual total compensation ratio	64	For more information, please refer to the Business Report.
		2-22	Statement on sustainable development strategy	5, 10	
		2-23	Policy commitments	40	
		2-24	Embedding policy commitments	11, 40-41, 82	
	Stakeholder engagement	2-25	Processes to remediate negative impacts	69-71	
		2-26	Mechanisms for seeking advice and raising concerns	40, 67	
		2-27	Compliance with laws and regulations	66-68	
		2-29	Approach to stakeholder engagement	90	

GRI Standards	Category	Disclosure No.	Disclosure Name	Page	Note
Material Topics					
GRI 3: Material Topics 2021	Material Topics	3-1	Process to determine material topics	13	
		3-2	List of material topics	13	
		3-3	Management of material topics	13	
Economic					
GRI 201: Economic Performance 2016	Economic Performance	201-1	Direct economic value generated and distributed	77-78	
		201-2	Financial implications and other risks and opportunities due to climate change	35	
		201-3	Defined benefit plan obligations and other retirement plans	83	
GRI 202: Market Presence 2016	Market Presence	202-1	Ratios of standard entry level wage by gender compared to local minimum wage	41	Hanwha Systems strictly prohibits illegal discrimination across the full employment cycle of recruitment, compensation, promotion and retirement.
		202-2	Proportion of senior management hired from the local community	81	
GRI 203: Indirect Economic Impacts 2016	Indirect Economic Impacts	203-1	Infrastructure investments and services supported	15-26, 57-60	
		203-2	Significant indirect economic impacts	53-55, 84	
GRI 204: Procurement Practices 2016	Procurement Practices	204-1	Proportion of spending on local suppliers	83	
GRI 205: Anti-corruption 2016	Anti-corruption	205-1	Operations assessed for risks related to corruption	66-68, 87	
		205-2	Communication and training about anti-corruption policies and procedures	66-68	
		205-3	Confirmed incidents of corruption and actions taken	66-68, 87	
GRI 206: Anti-competitive Behavior 2016	Anti-competitive Behavior	206-1	Legal actions for anti-competitive behavior, anti-trust, and monopoly practices	67, 87	
GRI 207: Tax 2019	Tax	207-1	Approach to tax	71	
		207-4	Country-by-country reporting	-	For more information, please refer to the Business Report.
Environmental					
GRI 302: Energy 2016	Energy	302-1	Energy consumption within the organization	79	
		302-2	Energy consumption outside of the organization	79	
		302-4	Reduction of energy consumption	34	
		302-5	Reductions in energy requirements of products and services	24, 34	
GRI 303: Water and Effluents 2018	Water and Effluents	303-1	Interactions with water as a shared resource	31	
		303-2	Management of water discharge-related impacts	31	
		303-3	Water withdrawal	31, 79	
		303-4	Water discharge	31, 79	
		303-5	Water consumption	31, 79	

GRI Standards	Category	Disclosure No.	Disclosure Name	Page	Note
GRI 304: Biodiversity 2016	Biodiversity	304-1	Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	32	
		304-3	Habitats protected or restored	32	
		304-4	IUCN Red List species and national conservation list species with habitats in areas affected by operations	–	N/A (not applicable)
GRI 305: Emissions 2016	Emissions	305-1	Direct (Scope 1) GHG emissions	34, 79	
		305-2	Energy indirect (Scope 2) GHG emissions	34, 79	
		305-5	Reduction of GHG emissions	33–36	
		305-7	Nitrogen oxides (NOx), sulfur oxides (SOx), and other significant air emissions	79	
GRI 306: Waste 2020	Waste	306-1	Waste generation and significant waste-related impacts	31	
		306-2	Management of significant waste-related impacts	31	
		306-3	Waste generated	31, 79	
		306-4	Waste diverted from disposal	31, 79	
		306-5	Waste directed to disposal	31, 79	
GRI 308: Supplier Environmental Assessment 2016	Supplier Environmental Assessment	308-2	Negative environmental impacts in the supply chain and actions taken	56	
Social					
GRI 401: Employment 2016	Employment	401-1	New employee hires and employee turnover	41, 81–82	
		401-2	Benefits provided to full-time employees that are not provided to temporary or part-time employees	41, 45	
		401-3	Parental leave	41, 82	
GRI 403: Occupational Health and Safety 2018	Occupational Health and Safety	403-1	Occupational health and safety management system	29–30, 37	
		403-2	Hazard identification, risk assessment, and incident investigation	37–38	
		403-3	Occupational health services	37–38	
		403-4	Worker participation, consultation, and communication on occupational health and safety	38	
		403-5	Worker training on occupational health and safety	38	
		403-6	Promotion of worker health	38, 80	
		403-7	Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	37–38	
		403-8	Workers covered by an occupational health and safety management system	29–30	
		403-9	Work-related injuries	80	
		403-10	Work-related ill health	38, 80	
GRI 404: Training and Education 2016	Training and Education	404-1	Average hours of training per year per employee	42, 82	
		404-2	Programs for upgrading employee skills and transition assistance programs	42–44	
		404-3	Percentage of employees receiving regular performance and career development reviews	83	

GRI Standards	Category	Disclosure No.	Disclosure Name	Page	Note
GRI 405: Diversity and Equal Opportunity 2016	Diversity and Equal Opportunity	405-1	Diversity of governance bodies and employees	41, 62-63, 81	
		405-2	Ratio of basic salary and remuneration of women to men	83	
GRI 406: Non-discrimination 2016	Non-discrimination	406-1	Incidents of discrimination and corrective actions taken	40	
GRI 407: Freedom of Association and Collective Bargaining 2016	Freedom of Association and Collective Bargaining	407-1	Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	-	The business site and supplier do not exist.
GRI 408: Child Labor 2016	Child Labor	408-1	Operations and suppliers at significant risk for incidents of child labor	40	
GRI 409: Forced or Compulsory Labor 2016	Forced or Compulsory Labor	409-1	Operations and suppliers at significant risk for incidents of forced or compulsory labor	40	
GRI 411: Rights of Indigenous Peoples 2016	Rights of Indigenous Peoples	411-1	Incidents of violations involving rights of indigenous peoples	-	N/A (not applicable)
GRI 413: Local Communities 2016	Local Communities	413-1	Operations with local community engagement, impact assessments, and development programs	57-60	
		413-2	Operations with significant actual and potential negative impacts on local communities	-	N/A (not applicable)
GRI 414: Supplier Social Assessment 2016	Supplier Social Assessment	414-2	Negative social impacts in the supply chain and actions taken	56	
GRI 416: Customer Health and Safety 2016	Customer Health and Safety	416-1	Assessment of the health and safety impacts of product and service categories	46-50	
		416-2	Incidents of non-compliance concerning the health and safety impacts of products and services	47	
GRI 417: Marketing and Labeling 2016	Marketing and Labeling	417-2	Incidents of non-compliance concerning product and service information and labeling	47, 85	
		417-3	Incidents of non-compliance concerning marketing communications	47	
GRI 418: Customer Privacy 2016	Customer Privacy	418-1	Substantiated complaints concerning breaches of customer privacy and losses of customer data	87	

SASB Index

Sector : Aerospace & Defense

Topic	Code	Accounting Metric	Page/Data
Energy Management	RT-AE-130a.1	(1) Total energy consumed, (2) percentage grid electricity, (3) percentage renewable	(1) 406,349 GJ (2) – (3) 0.01%
Hazardous Waste Management	RT-AE-150a.1	Amount of hazardous waste generated, percentage recycled	266 Ton, 96%
	RT-AE-150a.2	Number and aggregate quantity of reportable spills, quantity recovered	–
Data Security	RT-AE-230a.1	(1) Number of data breaches, (2) percentage involving confidential information	0 case, –
	RT-AE-230a.2	Description of approach to identifying and addressing data security risks in (1) company operations and (2) products	Page 72–75
Product Safety	RT-AE-250a.1	Number of recalls issued, total units recalled	N/A
	RT-AE-250a.2	Number of counterfeit parts detected, percentage avoided	0 case, 100%
	RT-AE-250a.3	Number of Airworthiness Directives received, total units affected	N/A
	RT-AE-250a.4	Total amount of monetary losses as a result of legal proceedings associated with product safety	N/A
Fuel Economy & Emissions in Use-phase	RT-AE-410a.1	Revenue from alternative energy-related products	N/A (not applicable)
	RT-AE-410a.2	Description of approach and discussion of strategy to address fuel economy and greenhouse gas (GHG) emissions of products	Page 33–34
Materials Sourcing	RT-AE-440a.1	Description of the management of risks associated with the use of critical materials	N/A
Business Ethics	RT-AE-510a.1	Total amount of monetary losses as a result of legal proceedings associated with incidents of corruption, bribery, and/or illicit international trade	KRW 0
	RT-AE-510a.2	Revenue from countries ranked in the “E” or “F” Band of Transparency International’s Government Defense Anti-Corruption Index	–
	RT-AE-510a.3	Discussion of processes to manage business ethics risks throughout the value chain	Page 69–71

* Due to the nature of defense business, active metrics are not publicly available as they are national secrets.

TCFD Index

Topic	Recommended Disclosures	Page
Governance	a. Describe the board's oversight of climate-related risks and opportunities.	10–11, 35–36
	b. Describe management's role in assessing and managing climate-related risks and opportunities.	10–11, 33, 35–36, 64
Strategy	a. Describe the climate-related risks and opportunities the organization has identified over the short, medium, and long term.	35
	b. Describe the impact of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning.	35
	c. Describe the resilience of the organization's strategy, taking into consideration different climate-related scenarios, including a 2° C or lower scenario.	35
Risk Management	a. Describe the organization's processes for identifying and assessing climate-related risks.	36
	b. Describe the organization's processes for managing climate-related risks.	36
	c. Describe how processes for identifying, assessing, and managing climate-related risks are integrated into the organization's overall risk management.	36
Metrics & Targets	a. Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process.	35–36
	b. Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks.	36
	c. Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets.	36

Third-party Assurance Statement

To readers of Hanwha Systems Sustainability Report 2022

Introduction

Korea Management Registrar (KMR) was commissioned by Hanwha Systems to conduct an independent assurance of its Sustainability Report 2022 (the “Report”). The data and its presentation in the Report is the sole responsibility of the management of Hanwha Systems. KMR’s responsibility is to perform an assurance engagement as agreed upon in our agreement with Hanwha Systems and issue an assurance statement.

Scope and Standards

Hanwha Systems described its sustainability performance and activities in the Report. Our Assurance Team carried out an assurance engagement in accordance with the AA1000AS v3 and KMR’s assurance standard SRV1000. We are providing a Type 2, moderate level assurance. We evaluated the adherence to the AA1000AP (2018) principles of inclusivity, materiality, responsiveness and impact, and the reliability of the information and data provided using the Global Reporting Initiative (GRI) Index provided below. The opinion expressed in the Assurance Statement has been formed at the materiality of the professional judgment of our Assurance Team.

Confirmation that the Report was prepared in accordance with the Core Options of the GRI standards was included in the scope of the assurance. We have reviewed the topic-specific disclosures of standards which were identified in the materiality assessment process. We also confirmed that the report was prepared in accordance with the TCFD recommendations and SASB.

- GRI Sustainability Reporting Standards
- Universal standards
- Topic specific standards
 - Management approach of Topic Specific Standards
 - GRI 205: Anti-Corruption
 - GRI 404: Training and Education
 - GRI 412: Human Rights Assessment
- SASB Sustainability Disclosure Topics & Accounting Metrics
- TCFD recommendations

As for the reporting boundary, the engagement excludes the data and information of Hanwha Systems’ partners, suppliers and any third parties.

KMR’s Approach

To perform an assurance engagement within an agreed scope of assessment using the standards outlined above, our Assurance Team undertook the following activities as part of the engagement:

- reviewed the overall Report;
- reviewed materiality assessment methodology and the assessment report
- evaluated sustainability strategies, performance data management system, and processes;
- interviewed people in charge of preparing the Report;
- reviewed the reliability of the Report’s performance data and conducted data sampling;
- assessed the reliability of information using independent external sources such as Financial Supervisory Service’s DART and public databases.

Limitations and Recommendations

KMR’s assurance engagement is based on the assumption that the data and information provided by Hanwha Systems to us as part of our review are provided in good faith. Limited depth of evidence gathering including inquiry and analytical procedures and limited sampling at lower levels in the organization were applied. To address this, we referred to independent external sources such as DART and National Greenhouse Gas Management System (NGMS) and public databases to challenge the quality and reliability of the information provided.

Third-party Assurance Statement

Conclusion and Opinion

Based on the document reviews and interviews, we had several discussions with Hanwha Systems on the revision of the Report. We reviewed the Report's final version in order to make sure that our recommendations for improvement and revision have been reflected. Based on the work performed, it is our opinion that the Report applied the Core Option of the GRI Standards. Nothing comes to our attention to suggest that the Report was not prepared in accordance with the AA1000AP (2018) principles.

Inclusivity

Hanwha Systems has developed and maintained different stakeholder communication channels at all levels to announce and fulfill its responsibilities to the stakeholders. Nothing comes to our attention to suggest that there is a key stakeholder group left out in the process. The organization makes efforts to properly reflect opinions and expectations into its strategies.

Materiality

Hanwha Systems has a unique materiality assessment process to decide the impact of issues identified on its sustainability performance. We have not found any material topics left out in the process.

Responsiveness

Hanwha Systems prioritized material issues to provide a comprehensive, balanced report of performance, responses, and future plans regarding them. We did not find anything to suggest that data and information disclosed in the Report do not give a fair representation of Hanwha Systems' actions.

Impact

Hanwha Systems identifies and monitors the direct and indirect impacts of material topics found through the materiality assessment, and quantifies such impacts as much as possible.

Reliability of Specific Sustainability Performance Information

In addition to the adherence to AA1000AP (2018) principles, we have assessed the reliability of economic, environmental, and social performance data related to sustainability performance. We interviewed the in-charge persons and reviewed information on a sampling basis and supporting documents as well as external sources and public databases to confirm that the disclosed data is reliable. Any intentional error or misstatement is not noted from the data and information disclosed in the Report.

Competence and Independence

KMR maintains a comprehensive system of quality control including documented policies and procedures in accordance with ISO/IEC 17021:2015 – Requirements for bodies providing audit and certification of management systems. This engagement was carried out by an independent team of sustainability assurance professionals. KMR has no other contract with Hanwha Systems and did not provide any services to Hanwha Systems that could compromise the independence of our work.

June 2022 Seoul, Korea

CEO Eunju Hwang

E. J. Hwang



Membership Status

Associations and Organizations

Korea Institute of Military Science and Technology (KIMST)	Korea Industrial Technology Association (KOITA)	Korea Engineering & Consulting Association (KENCA)
Korea Agency for Infrastructure Technology Advancement (KAIA)	Korea Automobile Diagnosis Integrated System (KADIS)	Korean Institute of Defense Technology (KIDET)
Korea Council on Systems Engineering (KOSE)	Vertical Flight Society (VFS)	Korean Institute of Electromagnetic Engineering and Science (KIEES)
Korean Society for Aeronautical & Space Sciences (KSAS)	Korea Association for Space Technology Promotion (KASP)	Korean Space Association for National Defense
Optical Society of Korea (OSK)	Korea Society of Satellite Technology (KOSST)	Korea Military Robotics Society (KMRS)
Korea Institute of Information Security and Cryptology (KIISC)	Association of Old Crows (AOC)	Satellite Communication Forum
Acoustical Society of Korea	FiRa Consortium	Korean Society of Automotive Engineers (KSAE)
Korea Defense Industry Association (KDIA)	Construction Guarantee	Construction Association of Korea
Korea Construction Engineers Association	Korea Specialty Contractor Financial Cooperative	Korea Mechanical Construction Contractors Association (KMCCA)

