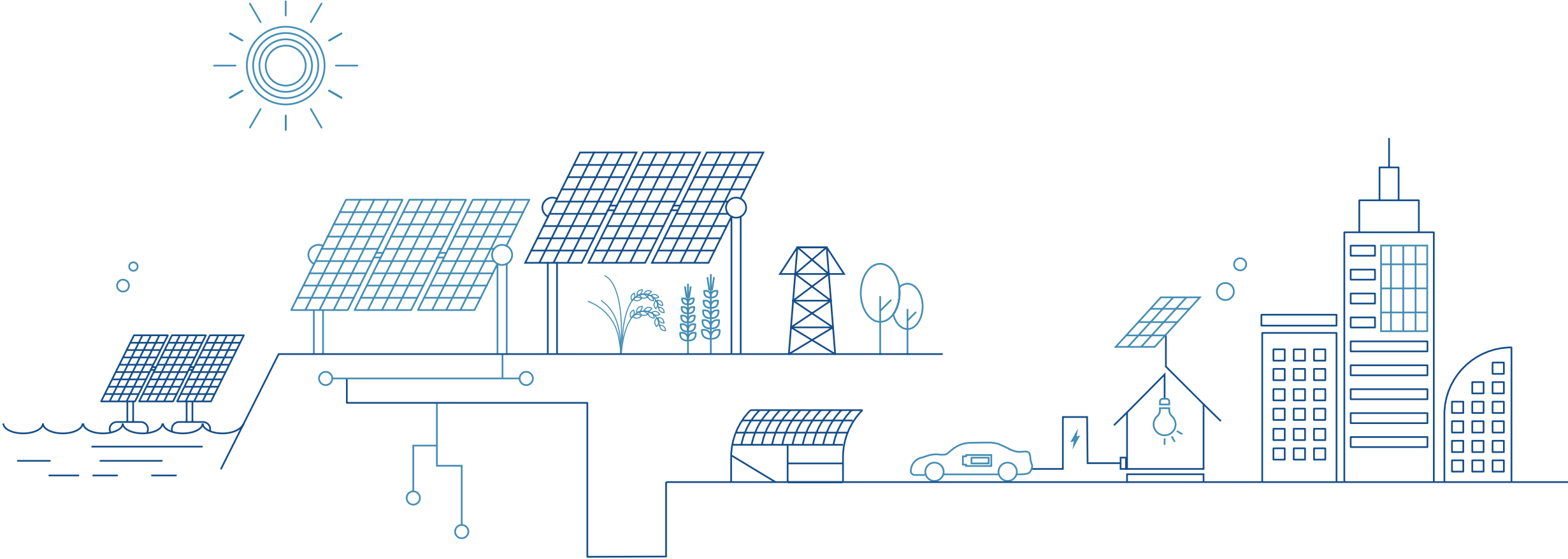


HYUNDAI ENERGY SOLUTIONS

2021

INTEGRATED REPORT



About This Report

INTRO

About This Report

Contents

BUSINESS OVERVIEW

CEO Message

Company Profile

Main Products

Value Chain

Global Network

ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental

Social

Governance

APPENDIX

Summary of Consolidated Financial Statements

Stakeholder Engagement

Double Materiality Assessment

GRI Content Index

TCFD

SASB

UN SDGs

Third-Party Assurance Statement

Membership Status &

Public Information

Report Overview

HYUNDAI Energy Solutions Integrated Report provides an honest account of our financial performance, key efforts and progress for ESG (Environmental, Social and Governance) management. And this report contains our competitiveness, future plans and directions, which we will follow through the section named, 'Sustainable Value Story' (page 15~24). Going forward, we will disclose our business data in a transparent manner through the continuous publication to actively communicate with various stakeholders.

Reporting Standards and Frameworks

This report aligns with the Core Option of GRI (Global Reporting Initiative) Standards. In order to address the issues that relate to the solar business, we comply with SASB (Sustainability Accounting Standards Board). And we follow the integrated reporting framework of IIRC (International Integrated Reporting Council).

Reporting Period

This report details our sustainability performance from January 2021 through December 2021. For some of data, it contains data from the past three years from 2019 to June 2022.

Reporting Scope

This report covers HYUNDAI Energy Solutions and its subsidiaries. We comply with Korean International Financial Reporting Standards (K-IFRS) for financial performance.

Reporting Assurance

With the aim of improving the reliability and quality of this report, the data in this report has been subject to third party's independent assurance (sustainable management, GHG emissions and energy consumption verified separately). The results are available on page 69.

Organizations Helping the Production of Report

R&D Division, HSE Team, Financial Analysis Team, Administration Team

HQ Address

55, Bundang-ro, Bundang-gu, Seongnam-si, Gyeonggi-do

Inquiries about the Report

Please contact our Financial Analysis Team for any questions or comments regarding this report.

Financial Analysis Team

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Interactive Guide

HYUNDAI Energy Solutions Integrated Report 2021 is available on our website (<https://www.hyundai-es.co.kr>) as an interactive PDF for more convenient user experience.

Contents

INTRO

About This Report

Contents

BUSINESS OVERVIEW

CEO Message

Company Profile

Main Products

Value Chain

Global Network

ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental

Social

Governance

APPENDIX

Summary of Consolidated Financial Statements

Stakeholder Engagement

Double Materiality Assessment

GRI Content Index

TCFD

SASB

UN SDGs

Third-Party Assurance Statement

Membership Status & Public Information

INTRO

About This Report 02

Contents 03

BUSINESS OVERVIEW

CEO Message 04

Company Profile 05

Main Products 08

Value Chain 11

Global Network 12

ESG Management System 13

SUSTAINABLE VALUE STORY

#01. Reading the Future of Energy with Good Foresight ... 16

#02. Ushering in a New Future with PVs 18

#03. Answer to Future Competitiveness lies in Eco-Friendly R&D 20

#04. Going beyond 'Manufacturer' to 'PV Total Solution Provider' 23

ESG FACT BOOK

Environmental 26

Social 33

Governance 49

APPENDIX

Summary of Consolidated Financial Statements 57

Stakeholder Engagement 58

Double Materiality Assessment 59

GRI Content Index 61

TCFD 64

SASB 66

UN SDGs 67

Third-Party Assurance Statement 69

Membership Status & Public Information 71

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

CEO Message

Putting ESG management at our heart, HYUNDAI Energy Solutions will usher in a sustainable future.

CEO of HYUNDAI Energy Solutions
Jong-hwan Park



Dear esteemed stakeholders,
We deeply appreciate all the interest and support that you have shown to HYUNDAI Energy Solutions.

No industry escaped from the unprecedented changes arising from the prolonged COVID-19 pandemic across the globe. Global economy also took a big hit, suffering from supply chain disruption, soaring ocean freight charge and fluctuating exchange rate. Amid the uncertainty, in 2021, HYUNDAI Energy Solutions witnessed our sales increase by 50% year-over-year, surpassing the annual estimate in operating profit. This remarkable achievement was attributed to our painstaking efforts to reduce costs and improve the supply process.

The challenging global business environment lies ahead this year as well. However, we plan to make 2022 the inaugural year to lay the foundation for profitability-oriented and sustainable management, operating in the black after we turned to the surplus last year through the utmost efforts. And we will be committed to creating a virtuous cycle where the value of sustainable management permeates every sector including the environment, society and governance. To this end, we will focus on the followings.

First, we will improve profitability through substantial management.

In seamless preparation against internal and external risks, our robust management will be solidified through multifaceted efforts, such as cost reduction even for trivial things and sales strategies for generating profits.

Second, we will position ourselves as a low-carbon, eco-friendly leading company.

We will step up our capabilities to respond to the fast-evolving energy market, living up to our stature, an eco-friendly company that drives the solar industry. To this end, our focus will be on the development of green and high-efficiency products with constant investment in R&D in line with the '2050 Roadmap for Energy Technology for Carbon Neutrality.' Furthermore, we will be committed to supplying solar energy to communities through our new business, VPP, so that distributed energy resources can be utilized in a more efficient manner.

Third, we will reinforce ESG management.

The creation of a culture of ESG management will be one of our primary focuses. To this end, all our employees will join hands through the newly launched ESG Committee under the board of directors (BoD), thereby delivering social value. Our emphasis will also be on human rights management to ensure employee diversity and reach out to the neighbors in need. Through this performance, we will have a good impact on our society, fulfilling our social responsibilities. In addition, we will regard suppliers as the partners on this journey toward ESG management and work closely with them to forge a sustainable management system. Based on the BoD-driven decision making structure, we will ensure anti-corruption, fair trade, mutual trust and other ethical norms so that we can earn trust from stakeholders and raise our corporate reputation.

HYUNDAI Energy Solutions will put ESG management into action with sincerity that connects the environment, people and society through the solar solution business. We look forward to your interest and support in our efforts on this journey.
Thank you.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Company Profile

HYUNDAI Energy Solutions is a representative solar solution provider with the longest experience in Korea. We manufacture and provide the top-notch solar cells and modules for all countries across the globe. On the strength of outstanding product competitiveness, we have expanded our presence into diverse sectors such as inverters(PCS), PV solutions and O&M¹, providing the solutions and services optimized for a wide range of solar businesses. Going forward, HYUNDAI Energy Solutions will create sustainable value and vault into 'PV Total Solution Provider,' paving the way in the solar industry.

1. O&M: Operation & Maintenance for solar power station

Company Profile As of December, 2021 on a consolidated basis

Company Name	HYUNDAI Energy Solutions
HQ Address	55, Bundang-ro, Bundang-gu, Seongnam-si, Gyeonggi-do
Date of Establishment	December 21, 2016 (spun off from HYUNDAI Heavy Industries)
CEO	Jong-hwan Park
No. of employees	213
Revenue	KRW 593.2 billion
Operating Profit	KRW 9.5 billion

Mission

Hyundai Spirit

The founder Chung Ju-yung believed that there is nothing impossible when we take on the challenge with indomitable spirit and unwavering driving force, underpinned by infinite potential. This is the philosophy of the founder that drives us, the very spirit in which HHI Group has its root.



Creative Wisdom

Wisdom in pursuit of novelty to meet the needs of customers and our society



Strong Determination

Attitude to take bold adventures with a strong sense of ownership



Unwavering Drive

Power to achieve goals with a strong mind and iron will

Management Vision



Satisfy Customers

with Advanced Technologies and High-quality Products



Build a Rewarding Work Environment

by Supporting Personal Growth



Raise Corporate Value

by Refining Core Businesses

Commitment

Living up to our reputation as the 'PV Total Solution Provider,' HYUNDAI Energy Solutions promises to provide solutions tailored to customers, thereby going hand in hand with our customers to achieve growth.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile**
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance






APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Company Profile

Business Overview

HYUNDAI Energy Solutions provides optimal solar solutions and services by expanding business to PV inverters(PCS), PV solutions and O&M as well as solar cells and modules.

 <p>Solar Cell & Module</p>	<p>We manufacture top-tier high-power solar cells and modules. In 2022, we installed a state-of-the-art production facility, which has enabled us to produce large-area (M6, M10) solar cells with the efficiency of more than 23% and high-power / low-carbon floating and ground-mounted solar modules with a capacity between 485W (M6) ~ 590W (M10). Going forward, HYUNDAI Energy Solutions will put spur to the development of next generation PV cells and modules by continuously enhancing our technology, thereby shaping and leading the global solar industry.</p>
 <p>PV Inverter</p>	<p>We provide high-efficiency and high-reliability string inverters that are KS-certified as well as central inverters developed based on our own technology. In addition, user-friendly monitoring services are also offered with the aim of raising the level of customer convenience. HYUNDAI Energy Solutions will spare no effort to constantly develop technologies to provide distinguished products with outstanding quality and contribute to maximizing customers' profit.</p>
 <p>O&M (Operation & Maintenance)</p>	<p>Hi-Smart 3.0, a wireless monitoring system, is one of our representative solutions that allows users to remotely monitor the operation of solar systems installed across the nation in real time. This solution boasts a higher level of convenience. In addition, we operate our own control tower for on-site control and the provision of relevant information. The after-sales service response system to handle breakdown issues has been also established to deliver more satisfying services to customers.</p>
 <p>PV Solutions</p>	<p>HYUNDAI Energy Solutions boasts outstanding technology earned through a wealth of experience in this field, based on which we provide solutions optimized for each industry field. Depending on the conditions and characteristics of business sites, we furnish Ground PV solutions, Roof-top PV solutions and AquaPower. In particular, AquaPower, internationally recognized for its excellence, is the world's first floating solar module 'AquaMax™' with high-durability developed based on the combination of the top-notch shipbuilding and offshore engineering technologies. In addition, the scope of our solutions spans BIPV (Building-Integrated Photovoltaics), Agro PV and Soundproofing PV which fall under the Smart City solutions, based on which we are leading the solar application business.</p>
 <p>VPP Business</p>	<p>We are gearing up to embark on VPP business that is about the forecast of the amount of generated power, bidding and calculation by establishing VPP (Virtual Power Plant) based on Hi-Smart, the power generation data management system. This VPP business is driven by the Korea Power Exchange, aiming to improve efficiency in small-scale energy resource management and stabilizing power grid operation. If power brokers predict the amount of power generated within a specific margin of error one day before, additional gains are granted in addition to the income from electric power generation. Based on our accurate forecasting techniques HYUNDAI Energy Solutions will maximize customer profits and offer the estimates regarding the amount of electricity generated to the Korea Power Exchange, thereby contributing to power system stabilization.</p>

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Company Profile

2021 Performance

AquaPower

We unveiled 'AquaPower,' a floating solar system, at the '2021 International Green Energy Expo' in April 2021. This solution is combined with the offshore engineering and corrosion-proof technologies of HYUNDAI Heavy Industries, which adds the maximized stability from flowage and corrosion. In particular, the best advantage is its capability to protect installations in extreme conditions such as high waves and rollers and salt water.

Bifacial Solar Module Selected among Top 100 Best Achievements of National R&D

Our 'Bifacial Solar Module' is recognized as an excellent achievement of National R&D. This module is capable of reducing the costs of installing solar power systems by maximizing module output. We expect this module to facilitate the spread of solar power systems.

Total Sales Increased by 50.4% Year on Year

Our total sales in 2021 were KRW 593.2 billion (consolidated basis), up to 50.4% compared to 2020 at KRW 394.4 billion. The increase in sales came from the expansion of new and renewable energy due to the stricter application of the Paris Agreement in Europe and the termination of MIP¹, which led to the growing overseas market, such as Europe and Australia. Besides, domestic sales also rose due to the growing demand for grade 1 (low carbon) modules in line with the government's eco-friendly policy and the adoption of the Carbon Certification System in Korea. In 2021, there was a growing demand for inverters in Korea as more solar power plants applied Korean FIT², which serves as one of the factors for an overall massive increase in gross sales.

1. Minimum Import Price 2. Feed in Tariff

2022 Outlook

Our sales target for 2022 is KRW 682.9 billion, a 15% increase from KRW 593.2 billion in 2021. Aiming to achieve this target, we will focus on securing a stable supply of the items, including modules and inverters. Taking advantage of this challenging time in the supply chain of Chinese products, we will be committed to making domestic products gain the dominant position in the global market. On top of that, we will provide an estimated amount from the power generation for our customers through our new business, VPP so that we can raise the profit for customers and give an estimated amount of power to Korea Power Exchange to contribute to stabilizing power system.

Operating Profit (Unit: KRW 100 million)

Category	2019	2020	2021
Total revenue	4,461	3,944	5,932
Operating profit	221	88	95
Net profit	235	62	-67

Value Distribution to Stakeholders (Unit: KRW 100 million)

Category	2019	2020	2021
Raw material procurement	3,529	2,722	5,463
Salary and benefits	148	137	150
Interest expense	3	8	16
Corporate tax (profit)	-73	-181	3
Donations	0.2	0.6	19

Growth Strategy for 2022

Under the goal of enhancing our brand value as a global solar solution company with the world's most competitive edge, we established detailed action plans to achieve the goal.

Reinforcing Market Competitiveness

- Strengthening our market position by leveraging our brand power as an industry leader
- Expanding market share through high-power / grade 1 product development

Enhancing Cost Competitiveness

- Securing competitive cost through complementary investment in manufacturing facilities
- Raising productivity by making strategic cooperation with manufacturers in and outside Korea

Sharpening Technological Competitiveness

- Reinforcing high-power cell / module product development capabilities
- Actively developing various solar solutions

Promotion of New Business

- Helping customers increase their revenues through VPP business and contributing to power system stabilization

INTRO

About This Report
Contents

BUSINESS OVERVIEW

CEO Message
Company Profile
Main Products
Value Chain
Global Network
ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental
Social
Governance

APPENDIX

Summary of Consolidated Financial Statements
Stakeholder Engagement
Double Materiality Assessment
GRI Content Index
TCFD
SASB
UN SDGs
Third-Party Assurance Statement
Membership Status & Public Information

Main Products

PV Solutions

HYUNDAI Energy Solutions provides optimized PV solutions for each business site encompassing land, sea, farms and buildings

Ground PV

We provide an optimal Ground-mounted PV tailored to each environmental characteristic of a business site based on our accumulated experience in EPC (Engineering, Procurement and Construction).



Rooftop PV

Our differentiated rooftop PV solution offers optimal design considering the environment to be installed as well as non-perforating type installations that give no concern for customers.



Floating PV, 'AquaPower'

Our floating PV solution called 'AquaPower' applies both HYUNDAI Energy Solutions' eco-friendly solar modules and HYUNDAI Heavy Industries' world's best offshore technology, providing an optimized solution for floating and offshore environments.



Agro PV

We provide solutions that can generate income through PV power generation while cultivating crops by harnessing solar power that exceeds the light saturation point of plants.



PV Solution for Soundproof Wall & Tunnel

Our PV solution for soundproof walls and tunnels is an all-in-one solar power solution with a soundproofing function suitable for places where soundproofing is essential such as highways.



Building Integrated Photovoltaic (BIPV) Solution

Our building-integrated photovoltaic (BIPV) solution is an integrated system with building materials and photovoltaic (PV) modules, providing BIPV¹ solution that enables energy production and consumption in the same building.



1. Building Integrated Photovoltaics

Smart Solar City

We provide solar city solutions, a smart microgrid system by combining PV facilities, inverters, energy storage systems and energy management systems throughout the city.



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products**
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Main Products

PV Modules

Our PV modules are designed as a bifacial structure to absorb light even on the back of the module, aiming to have highly efficient power generation and allow additional power generation in various installation environments. Also, our products boast outstanding durability in harsh environments, such as heavy snow, strong winds and large amounts of ammonia and salt, on the basis of our unique and specialized module design.

	Ground Power Generation Module (G2B)			Highly Durable Eco-friendly Module (Floating)		Shingle Module	
	YI Model (Bifacial)	YJ Model (Bifacial)	OJ Model (Bifacial)	ZJ Model (Bifacial)	UJ Model (Bifacial)	BI Model (Bifacial)	DI Model (Bifacial)
Cell	H/C Bifacial, M6, 144 Cell	H/C Bifacial, M6, 156 Cell	H/C Bifacial, M10, 156 Cell	H/C Bifacial, M6, 156 Cell	H/C Bifacial, M10, 156 Cell	6-Cut Bifacial, 408 Cell	6-Cut Bifacial, M12
Maximum power output	450W	500W	595W	475W	595W	475W	645W
Maximum efficiency	20.7%	21.6%	21.5%	20.3%	21.5%	20.3%	21.0%
Carbon certification	Grade 1 & 2			Grade 1 & 2		No grade	
Size	2,094 X 1,038 X 40	2,228 X 1,038 X 35	2,438 X 1,133 X 40	2,228 X 1,038 X 40	2,438 X 1,133 X 40	2,056 X 1,140 X 35	2,355 X 1,303 X 35

Product



INTRO

About This Report
Contents

BUSINESS OVERVIEW

CEO Message
Company Profile
Main Products
Value Chain
Global Network
ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental
Social
Governance

APPENDIX

Summary of Consolidated Financial Statements
Stakeholder Engagement
Double Materiality Assessment
GRI Content Index
TCFD
SASB
UN SDGs
Third-Party Assurance Statement
Membership Status & Public Information

Main Products

PV Inverters (PCS)

The PV inverters of HYUNDAI Energy Solutions prevent reduction in power production by applying the maximum power point tracking technique, and allow to conveniently check a generation state anytime and anywhere through our independent web monitoring system.

Multi String Inverter

- Rated output capacity: 50kW, 100kW → 60kW, 110kW, 250kW Line up
- Built-in real-time local & remote monitoring function, tracking the module's maximum output in string
- 5-year product warranty, easy to install

Model name	HPC-060HL-V1-OU	HPC-110HL-V1-OU
Output	60kW	110kW
MPP range	480~850Vdc	480~850Vdc
Nominal AC voltage	3Ø, 380V, 60Hz	3Ø, 380V, 60Hz
Installation type	Mount-type	Mount-type
No. of MPPTs	3	9

Product



Central Inverter

- Rated output capacity: 500kW, 1MW → 2MW, 3MW Line up
- Capable to handle large power plants
- 5-year product warranty

Model name	HPG-500HL-K3,4	HPG-1000HL-K2
Output	500kW	1MW
MPP range	580~820Vdc	550~820Vdc
Nominal AC voltage	3Ø, 380V, 60Hz	3Ø, 350V, 60Hz
Installation type	Self-supporting-type	Self-supporting-type
No. of MPPTs	2	4

Product



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

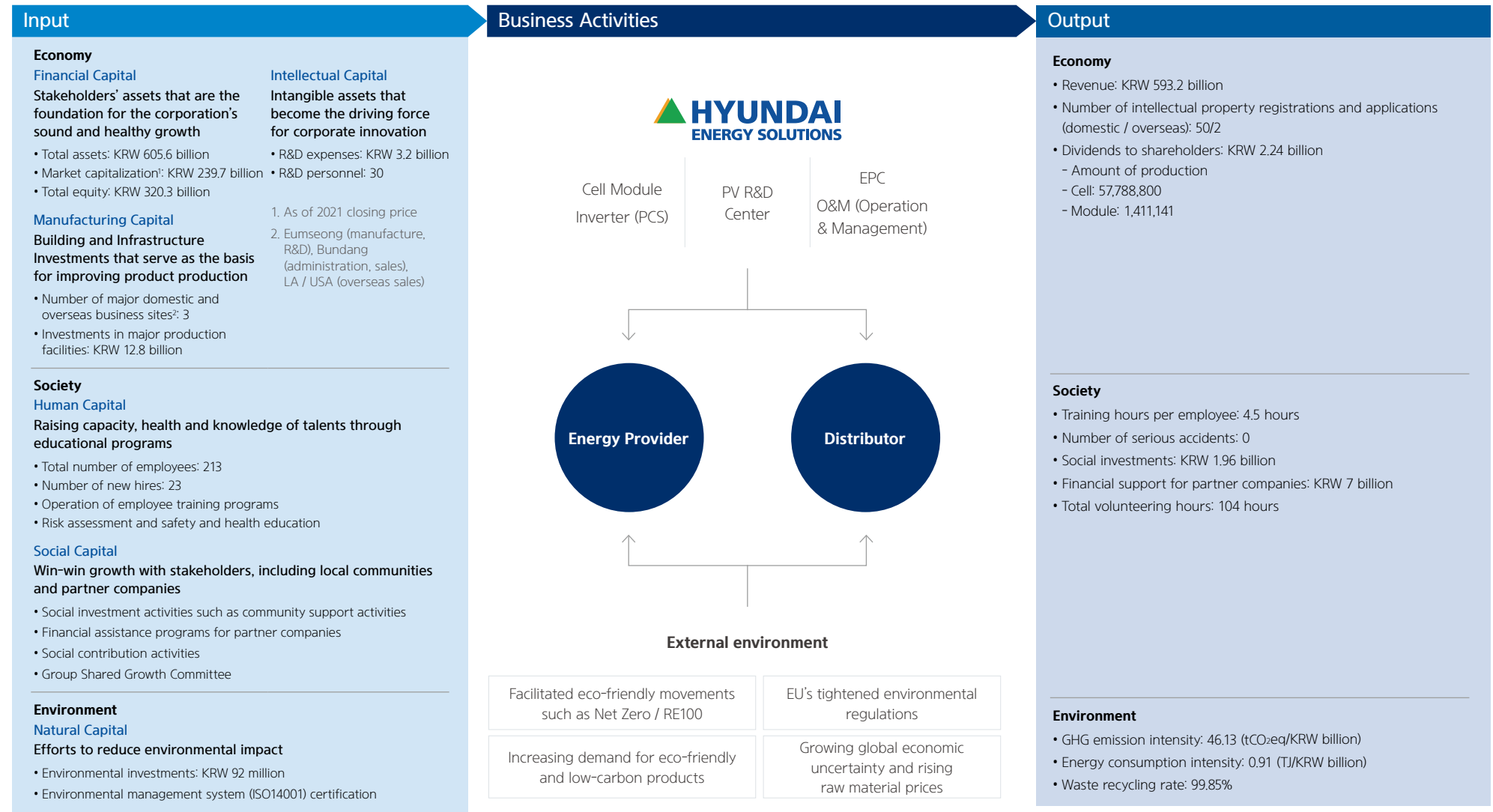
- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Value Chain

HYUNDAI Energy Solutions generates values using its outstanding resources and expertise. Each of the six categories of capital invested in our business activities plays a crucial role in creating economic, social and environmental outputs, which we distribute to stakeholders via each business model built on our management philosophy and visions.



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

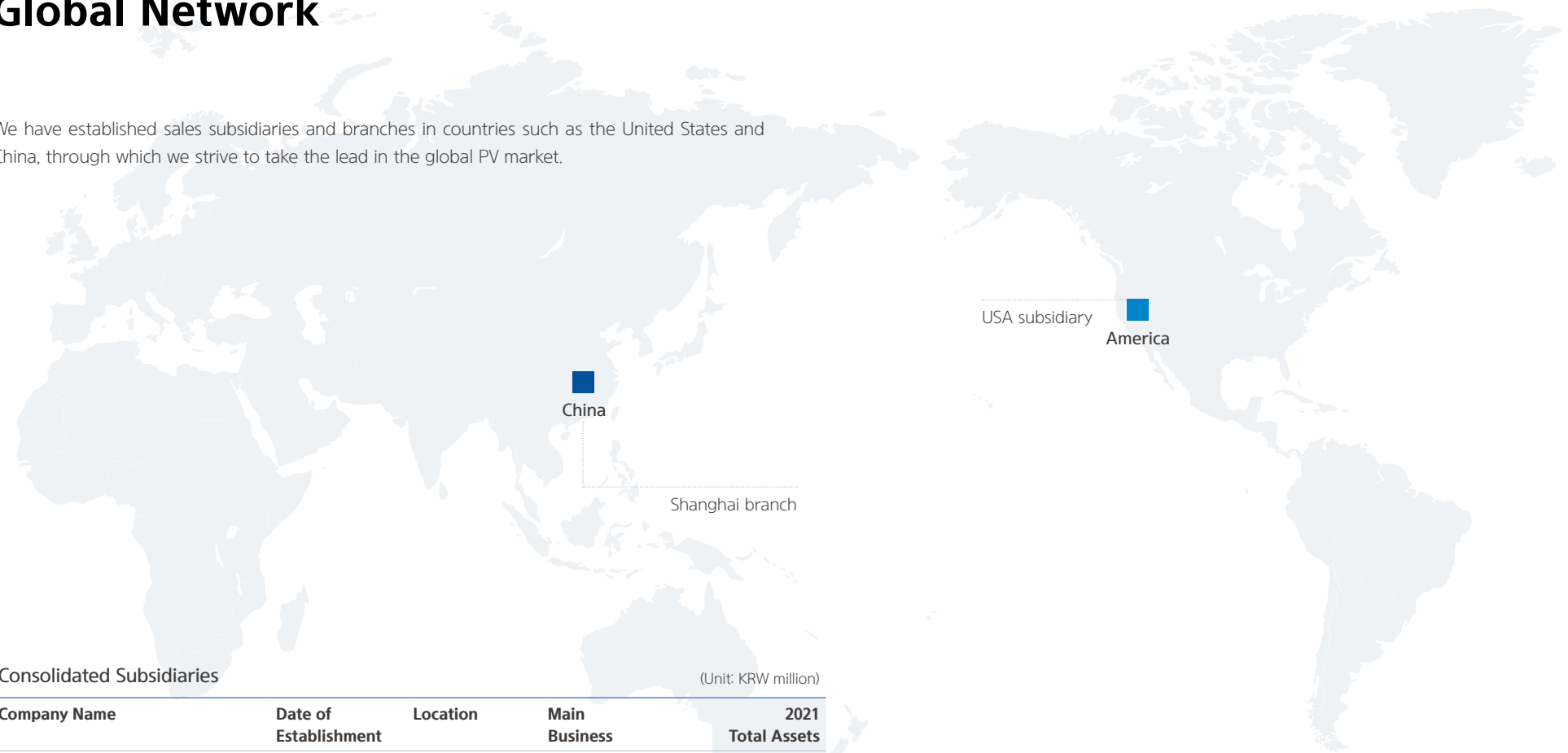
- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Global Network

We have established sales subsidiaries and branches in countries such as the United States and China, through which we strive to take the lead in the global PV market.



Consolidated Subsidiaries

(Unit: KRW million)

Company Name	Date of Establishment	Location	Main Business	2021 Total Assets
HYUNDAI ENERGY SOLUTIONS AMERICA INC.	Apr 19, 2019	California, USA	Sales of PV modules	2,987

Overseas Branches and Subsidiaries

Branch & Office	Date of Establishment	Location	Main Functions
America Inc. (U.S.A)	Apr 19, 2019	California, USA	Sales of PV modules
China Representative Office (China)	Nov 13, 2019	Shanghai, China	Global sales of PV modules & raw material procurement

Overseas Branch	Overseas Subsidiary
1	1

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

ESG Management System

HYUNDAI Energy Solutions strives to create shared values in all areas of the economy, society and the environment through our systematic sustainable activities. Aiming to develop shared values in all areas of ESG, we established three key operation policies: Transparent Disclosure, Systematic Performance Management and Continuous Improvement. On the foundation of these policies, we plan and carry out activities in each field while actively communicating with our stakeholders through various channels on the results of implementations.

Mission

We create and share economic, environmental and social values through the systematic management of sustainability.

Operation Policy



Transparent Disclosure

- Disclosing sustainable management activities and achievements
- Operating communication channels customized to different groups of stakeholders



Systematic Performance Management

- Following up on each area of sustainable management activities and performances under the five management philosophies



Continuous Improvement

- Conducting a multidimensional analysis of sustainable management activities and performance
- Addressing shortcomings and enhancing strengths

Management Philosophy	Direction	Stakeholders
<ul style="list-style-type: none"> • Upgrading Corporate Value through a Continuous Growth 	<ul style="list-style-type: none"> • Securing core capability to drive future growth • Implementing flexible business management and global business system 	<ul style="list-style-type: none"> • Customers • Employees • Partner companies • Shareholders, investors
<ul style="list-style-type: none"> • Upholding Fair and Transparent Business Practices 	<ul style="list-style-type: none"> • Supporting open and fair competition in accordance with free market economy • Promoting sound and transparent corporate governance structure 	<ul style="list-style-type: none"> • Customers • Employees • Partner companies • Industrial circles
<ul style="list-style-type: none"> • Pursuing Safe and Environmentally Friendly Business Practices 	<ul style="list-style-type: none"> • Creating a pleasant and safe work environment • Environmentally friendly production activities and technology development 	<ul style="list-style-type: none"> • Employees • Local community
<ul style="list-style-type: none"> • Promoting Strong Labor-Management Relations Built on Mutual Respect and Trust 	<ul style="list-style-type: none"> • Fostering a vibrant organizational culture based on trust and participation • Performing all duties and responsibilities to enhance corporate competitiveness 	<ul style="list-style-type: none"> • Employees • Partner companies
<ul style="list-style-type: none"> • Demonstrating Our Commitment to Global Corporate Citizenship 	<ul style="list-style-type: none"> • Contributing to mankind prosperity by creating social values • Promoting the culture and welfare of local communities 	<ul style="list-style-type: none"> • Partner companies • Employees • Local community

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

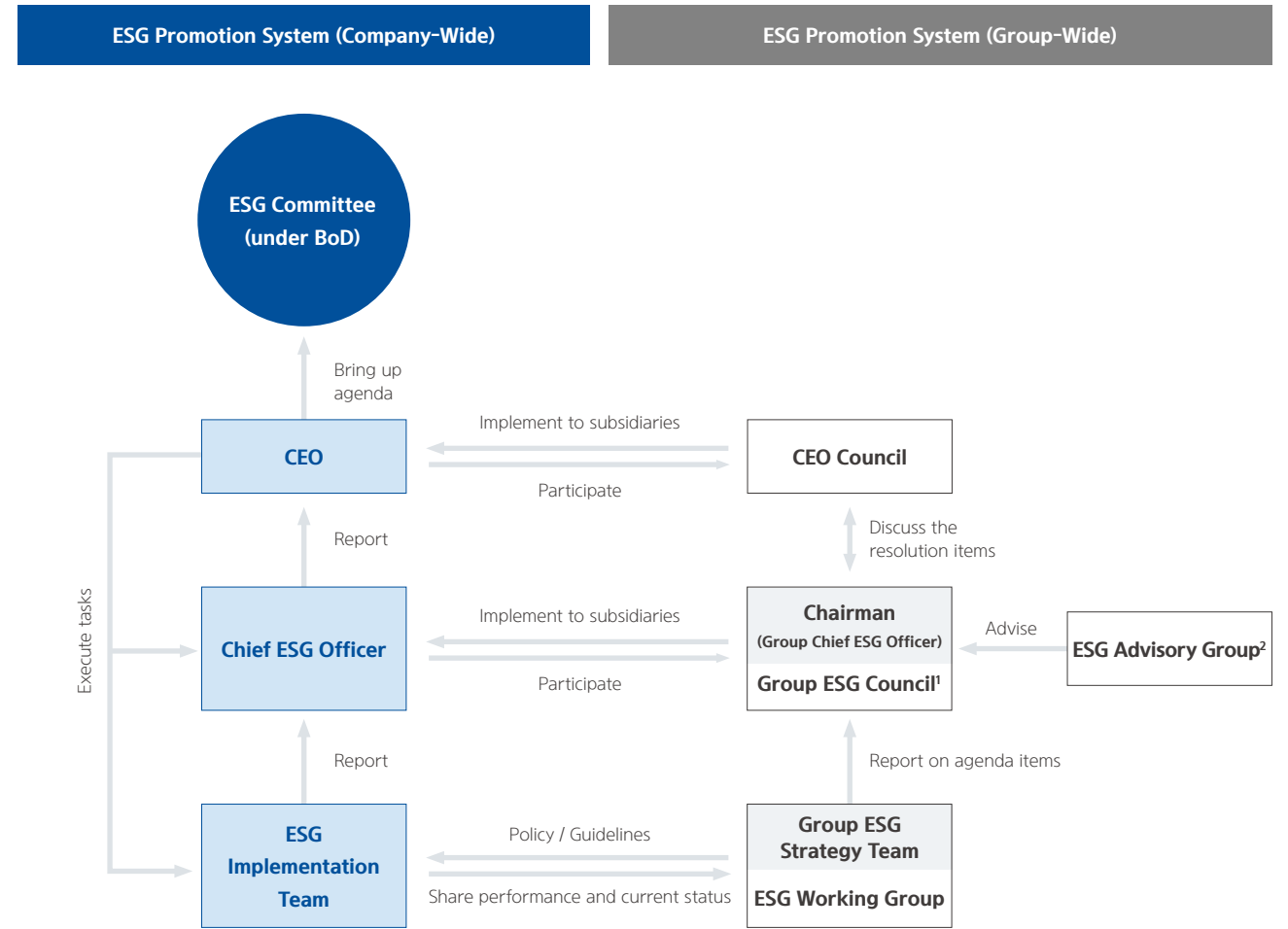
ESG Management System

As a member of the ESG Council of the HYUNDAI Heavy Industries Group, HYUNDAI Energy Solutions shares the basic framework of ESG policies and strategies with other subsidiaries. Our ESG issues are swiftly identified, and appropriate policies and countermeasures are derived through the decision-making system of the ESG Committee under the BoD.

ESG Issue Sharing and Decision-making System

Report on Agenda	Report ESG agenda items and key issues for the Group
Deliberate on Agenda	Discuss ESG agenda and counterplans for the issues
Seek Consultation	Seek advice from outside experts on the ESG agenda items and other matters
CEO Council	Discuss policy decisions and review the implementation plan for subsidiaries
Execute Tasks	Manage implementation of tasks for ESG teams in the subsidiaries and achievements of ESG departments for subsidiaries

ESG Governance



1. Consisting of Chief ESG Officers of each subsidiary
 2. Consisting of outside experts of each ESG section

SUSTAINABLE VALUE STORY

#01. Reading the Future of Energy with Good Foresight	16
#02. Ushering in a New Future with PVs	18
#03. Answer to Future Competitiveness lies in Eco-Friendly R&D	20
#04. Going beyond 'Manufacturer' to 'PV Total Solution Provider'	23

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#01. Reading the Future of Energy with Good Foresight

Climate crisis has become a reality sooner than we had expected. Climate change has brought about unprecedented abnormal weather conditions, such as increasing average temperature, sea level rise, heavy rainfall and floods. Being cognizant of the severity of this climate crisis worsening faster than anyone else, HYUNDAI Energy Solutions has geared up to expand the supply of new and renewable energy. Based on 20 years of business experience and our outstanding technological prowess that has led the global market of PV, HYUNDAI Energy Solutions will take the lead in achieving carbon neutrality and supplying sustainable future energy.



Energy Solution Provider

As the first Korean firm to enter the solar power business in 2004, HYUNDAI Energy Solutions has never relented in challenging ourselves and contemplating the direction in which this industry should move forward. In the face of the real threats posed by climate change to our planet and humanity, we added more importance to serve as a leading role in reaching carbon neutrality and supplying sustainable future energy through solar energy. HYUNDAI Energy Solutions

first displayed our will by sharpening the competitiveness of technology. As a result of making intensive investment in R&D, we were able to secure high-efficiency PV power generation, which enabled us to set foot in the global solar energy market. With the credibility and competitiveness recognized worldwide, HYUNDAI Energy Solutions will make a leap forward to becoming a green energy company that revives the environment and creates social value.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#01. Reading the Future of Energy with Good Foresight

Energy Paradigm Shift Arising from Climate Crisis

The threats posed by climate change to the entire world give rise to a growing demand for eco-friendly new and renewable energy. Major countries are taking preemptive measures to strengthen their policies regarding green renewable energy, and promoting plans to meet the growing demand. According to the International Energy Agency (IEA), the ratio of renewable energy to the total energy produced in 2013 stood at only about 10%, but IEA forecasts that the share will increase to 27% in 2040. For the last several years, Europe concentrated on the transition to renewable energy, and as a result, renewable energy generation (38%) outpaced its fossil fuel generation (37%) for the first time in 2020. The renewable energy generation in the U.S. is also foreseen to rapidly increase to 42% in 2050, and the share of PV power generation is expected to be the largest at 47%.

HYUNDAI Energy Solutions, Already an Eco-friendly Company

HYUNDAI Energy Solutions has long prepared to build a sustainable energy ecosystem. Only two years after establishment, we exported PV facilities for the first time in Korea to Spain, and received recognition for our competencies from the world market. This paved the way to the expansion of the eco-friendly renewable energy market. HYUNDAI Energy Solutions continued to invest in R&D and retained state-of-the-art production facilities in order to distribute eco-friendly solar energy to the world. Through these efforts, we were able to supply 142MW modules to a PV power plant in the U.S. in 2014, and successfully constructed Korea's largest ground PV with a maximum capacity of 65MW in Seosan, South Chungcheong Province. On top of that, we obtained the highest grade (grade A) in the PV solution sector of the '2021 ESG evaluation of listed companies' by the Korea Corporate Governance Service, and we also received the highest grade (grade AA) from Sustainvest, a Korea's leading firm for ESG evaluation and analysis, in the 'ESG evaluation in the second half of 2021.' All these achievements have positioned us as a leading company that unleashes sustainable management.

Korea's largest ground PV in Seosan, South Chungcheong Province



Worldwide Share of Energy Demand by Generated Energy (Unit: %)

Source: International Energy Agency (IEA)

	Gas	Fossil fuel	Renewable	Water power	Oil	Nuclear power
2013	26	31	10	19	7	7
2040 (Predicted)	24	23	27	17	3	6

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#02. Ushering in a New Future with PVs

HYUNDAI Energy Solutions has made remarkable progress in the PV market as a provider of the highest quality of bifacial and large-area modules, floating and building modules, and shingle modules in 1GW. And we became the first Korean company to introduce the M6 bifacial module. However, we were not complacent about these achievements, and has put spur to technical advancement. As a result, we were able to develop various products for the next generation, such as a solar cell technology 'HJT' that maximizes solar efficiency, 'AquaPower' that goes beyond the limitations of ground-based PV systems, 'Smart Solar Solutions' to expand solar power supply, and the 'Solar Roof' which serves as an auxiliary charger for EVs.



Next Generation's Most Efficient PV, HJT

HJT¹ (Hetero-Junction Tech) is a solar cell technology, with a structure where amorphous silicon is coated on the front and back of the surfaces of a crystalline silicon wafer, which minimizes surface energy loss and maximizes efficiency when converting light power into electricity. This is also evaluated to be highly likely to have excellent compatibility with 'Tandem,' a super-high-efficient solar technology in the future. In light of this, to enhance competency in the future market, HYUNDAI Energy Solutions sets our first goal to develop commercial HJT cell / module products. To achieve this goal, we concluded an MOU with Jusung Engineering, a company with exceptional HJT cell processing equipment technology, and plan to develop a module based on high-efficient HJT using Tandem solar cell with efficiency of over 30% by 2025.

1. Hetero-Junction Tech, Technology that combines two different technologies into one cell: a crystalline silicon cell sandwiched between two layers of thin amorphous silicon

MOU signed for HJT cell and module product development



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#02. Ushering in a New Future with PVs

AquaPower

Floating PV system is a hybrid technology that combines existing PV technologies and technologies used at sea such as buoyancy and mooring. Thanks to its advantage of being able to increase power generation without damaging farmlands or forests, floating PV systems are booming worldwide. In line with this global trend, we created AquaPower, after two years' dedication to research and development from 2019. Using HYUNDAI Heavy Industries' technology for offshore engineering and corrosion resistance, AquaPower is a high durable floating system that can ensure reliability for a long period of time.

AquaPower installed in Owl Reservoir



Smart Solar Solutions

Smart Solar Solutions is a product that applies solar modules to increase solar power supply. Building PVs apply a PV system on the rooftops, external walls or balconies of houses, and agro PVs enable us to achieve both productivity of agriculture and solar power generation at the same time, so it can generate additional profit by electric energy sales along with harvest. Implementing PVs to soundproof facilities at roads and railroads, the PV solutions for soundproof walls and tunnels consolidate the PV power facilities with the energy storage systems and energy management systems in the city to enable safe and steady use of clean solar power.

Smart Solar Solutions installed at Seoul Asan Medical Center



Solar Roof

Solar Roof is a solar panel attached to the roof of an electric vehicle that supplements electric energy. As electric cars become more common as an eco-friendly means of transportation, the amount of secured mileage by electric energy has become the competitive standard. Solar Roof has caught the attention of many electric car users because it can extend the mileage of the vehicle. By applying high-efficiency cells and high-power module technology to the Solar Roof of HYUNDAI Energy Solutions, we present an economical mobility energy solution of 250W performance which is 25% more power output than the existing products.

Solar Roof installed to an electric vehicle



INTRO

About This Report

Contents

BUSINESS OVERVIEW

CEO Message

Company Profile

Main Products

Value Chain

Global Network

ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental

Social

Governance

APPENDIX

Summary of Consolidated Financial Statements

Stakeholder Engagement

Double Materiality Assessment

GRI Content Index

TCFD

SASB

UN SDGs

Third-Party Assurance Statement

Membership Status &

Public Information

#03. Answer to Future Competitiveness lies in Eco-Friendly R&D

HYUNDAI Energy Solutions was able to secure a competitive edge for technology in the global PV market through the opening of Korea's largest PV R&D Center and establishment of a comprehensive R&D organization. Above all, putting developing technology first, we strongly believe that the core competitiveness for sustainable energy supply lies in eco-friendly R&D. Therefore, we will continue to support and invest in eco-friendly R&D based on the meaningful research results generated by independent technology, and take the lead in supplying sustainable solar energy.



Our Core Competitiveness

To overcome some aspects where domestic companies are insufficiently competitive such as the cost of raw materials and labor, HYUNDAI Energy Solutions believed it was most important to secure the technology. With this in mind, the company focused on obtaining the technical skills for efficiency enhancement of PV modules, and as a result, we were able to retain the uppermost level of R&D capacity in the world. Technology creates new technology. HYUNDAI Energy Solutions is dedicated to developing next generation renewable energy technologies as the next step in technological innovation, and invested a total of KRW 3.23 billion in R&D in 2021.

Our determination to acquire technology brought about the nation's first mono PERC module and all other types of PV modules, such as large-area cells, high-efficiency bifacial modules and floating PV. Along with developing agro PV, PV soundproof walls and tunnels, we established a demonstration complex on which we conduct monitoring. We plan to promote the development of Tandem high-efficiency next-generation cells / modules with more than 30% organic/inorganic Si solar cells after securing more than 24% of the n-Type under PV technology after 2024.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#03. Answer to Future Competitiveness lies in Eco-Friendly R&D

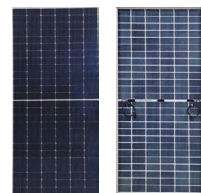
R&D Achievements

Technical Development and Product Improvement

➔ Producing M6 PERC cells with an area of 274.2cm² and thickness 160μm, and improved cell efficiency (22.9%)

➔ Developing high-efficiency next-generation n-Type cell technology (HJT, TOPCon)

➔ Developing and commercializing modules by applying high-power/high-efficiency M6 156 cell and M10 (330.1cm²) cell



Front and back surface of bifacial module, M6 with 156 cell

➔ Developing a new high-efficiency small gap Multi BusBar module

➔ Establishing a new floating PV system in response to the Saemangeum floating PV project

Module Application to Secure Certification and Reliability

➔ Establishing solutions by applying a high-power agro PV module, building a BIPV module demonstrating complex, and carrying out the groundwork for commercializing PV soundproof facilities (won a national project on urban road demonstration)

➔ Developing a high-power trial product (250W or more) of a solar roof, securing reliability, and reviewing and establishing a solar roof mass-production system

➔ Reducing carbon emissions of our PV module products in response to the tightened grading criteria of the domestic carbon certification system

➔ Increasing bidding competitiveness for domestic floating PV projects by developing an economical type of freshwater floating PV system

➔ Standardizing technical development by establishing the floating PV system development standards

➔ Improving the competitiveness of cell / module mass production and developing applications and solutions for new markets (floating, soundproof walls and tunnels, for cars, etc.)

➔ Promoting technology partnership and co-development with leading technology groups outside the company to launch a super-high-efficiency next-generation PV cell / module product (TOPCon, HJT, etc.)

➔ Conducting development based on the government funded projects and national R&D center

Initiative

HYUNDAI Energy Solutions has established plans to expand the supply of eco-friendly energy in the future based on the spirit of challenge that has enabled our technological innovation up to now. We plan to develop solutions that can respond to new markets by combining the mass production of cells and modules, which already have high competitiveness with areas of floating, soundproof walls and tunnels and vehicles. In addition, we will actively engage in collaboration for partnership with organizations with advanced technologies at home and abroad to launch super-high-efficiency next-generation solar cell and module products, such as HJT and TOPCon. At the same time, by promoting development based on the government funded research projects and national R&D center, we will develop various energy solutions targeting global markets beyond the domestic market.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

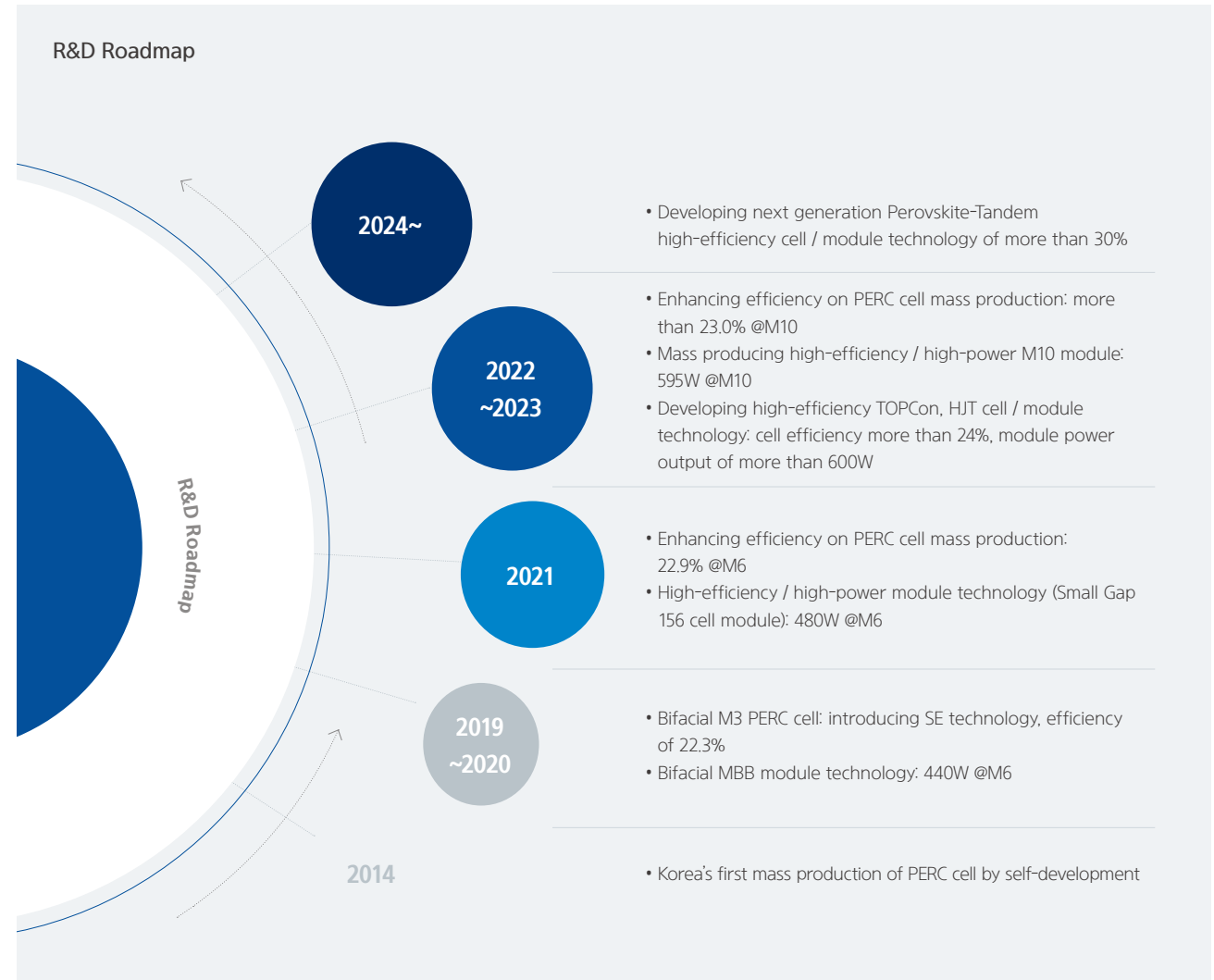
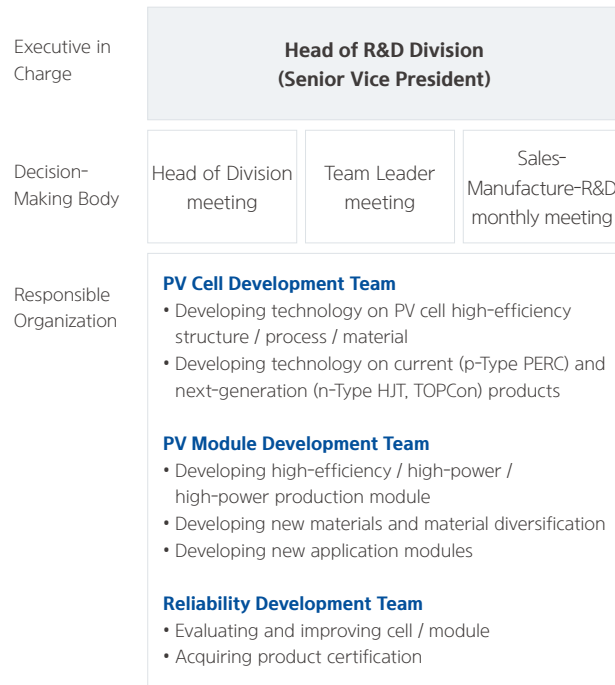
APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#03. Answer to Future Competitiveness lies in Eco-Friendly R&D

R&D Governance and Roadmap

HYUNDAI Energy Solutions established 'R&D Governance' to raise the quality of solar energy research. Each section in charge of cells, modules, and reliability will make decisions on main issues and develop a mid to long-term R&D roadmap through the head of division meetings, team leader meetings and monthly meetings among sales-production-R&D. Through this, we are strengthening our performance ability.



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

#04. Going beyond ‘Manufacturer’ to ‘PV Total Solution Provider’

HYUNDAI Energy Solutions will go beyond the production and supply of products such as PV cells / modules and inverters (PCS) and open a new path in the PV energy industry. We plan to expand the domestic PV market by overcoming the limits of manufacturing companies through a new business in VPP. By ensuring clients’ satisfaction through maximizing development profits, and advancing our customized PV facility construction, operation & maintenance service system, we will move forward as a true ‘PV Total Solution Provider.’



VPP Business

HYUNDAI Energy Solutions manages power generation data of 1.2GW equipment capacity and 6,200 PV plants via Hi-Smart PV monitoring system. Based on Hi-Smart, which can effectively manage power generation data, we are preparing to enter the VPP business by organizing a virtual power plant which performs duties of power generation predictions, bidding and settlement. Through the VPP business, HYUNDAI Energy Solutions could offer clients with revenue associated with power generation and thus increase customer profit, and at the same time contribute to the system stability by providing power generation forecast information to the Korea Power Exchange.

VPP Business Process

- STEP 1** Collecting data on power generation from PV plants
- STEP 2** Registering the next day’s power generation forecast information in the KPX system at 10:00AM and 15:00PM everyday
- STEP 3** Preemptively responding when there is a difference between the predicted value and the actual power generation through the regular monitoring system of HYUNDAI Energy Solutions
- STEP 4** Streamlining settlement affairs with the system other than the power generation forecasting system

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

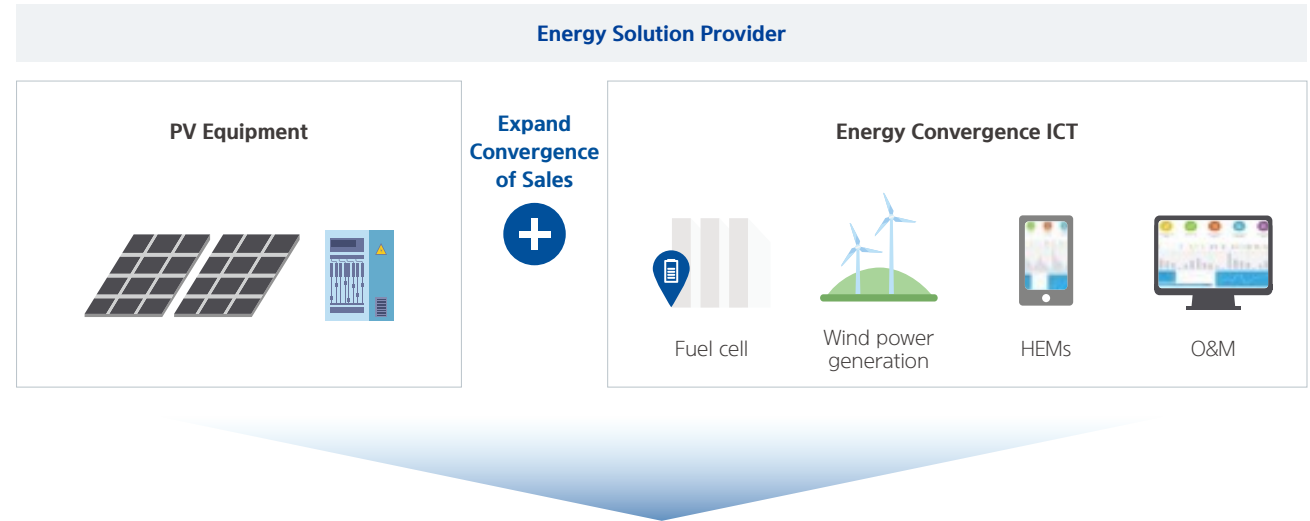
APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

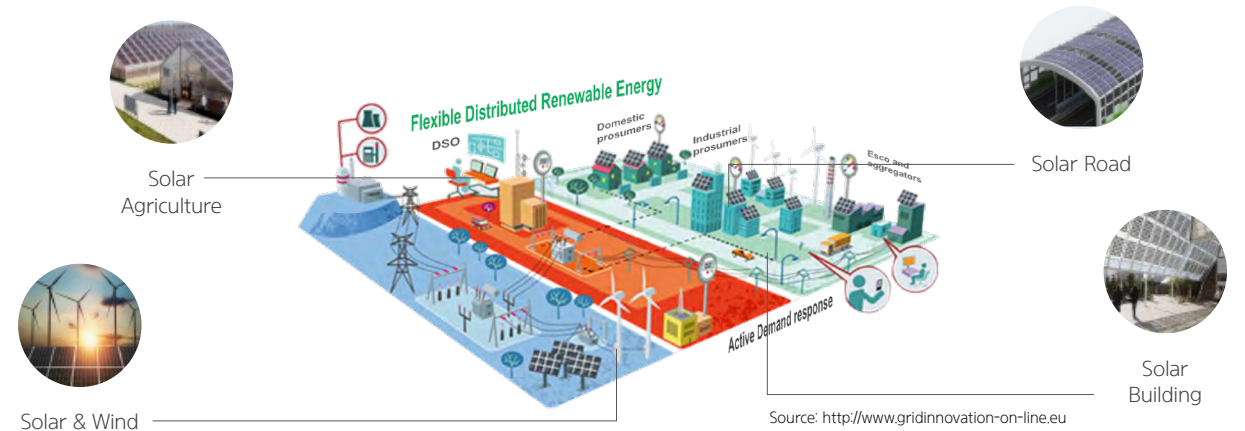
#04. Going beyond 'Manufacturer' to 'PV Total Solution Provider'

Taking the Leap as the PV Total Solution Provider

HYUNDAI Energy Solutions will not settle for its solid position in the solar energy market, but will move forward to become the 'Energy Solution Provider.' We plan to provide customized power plant solutions based on our long experience and high technology in the PV industry. Moreover, we will reinforce our competitiveness in areas of PV cells, modules, and inverters and implement upgrades to construction of plants, operation & maintenance services to take the leap as the PV Total Solution Provider.



Smart World Developer: City with Distributed Renewable Energy



ESG FACT BOOK

26	Environmental
33	Social
49	Governance

INTRO

About This Report
Contents

BUSINESS OVERVIEW

CEO Message
Company Profile
Main Products
Value Chain
Global Network
ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental
Social
Governance

APPENDIX

Summary of Consolidated Financial Statements
Stakeholder Engagement
Double Materiality Assessment
GRI Content Index
TCFD
SASB
UN SDGs
Third-Party Assurance Statement
Membership Status & Public Information

Action on Climate Change

Strategy

HYUNDAI Energy Solutions is establishing an eco-friendly process under the philosophy of 'securing eco-friendly management culture.' Also, in line with the government's Renewable Energy 3020 Plan, we are pursuing low-carbon emissions through GHG emissions control and are developing products and solutions such as PV plant operation to contribute to building an eco-friendly future infrastructure. In addition, we are reducing power usage and GHG emissions based on intensity, as well as making efforts to develop new and renewable energy through investment in high-productivity facilities.

HYUNDAI Energy Solutions has newly established the ESG Committee in May 2021, composed of one executive director and three outside directors, in order to make professional decisions on ESG strategic directions, plans and other related matters. Based on the results of the 2021 ESG evaluation, we discussed ESG matters for 2022. In the future, HYUNDAI Energy Solutions plans to actively respond to climate change by strengthening the target system and expanding the eco-friendly business.

Target

HYUNDAI Energy Solutions aims to mitigate GHG emissions and reach zero-environmental accidents. As a result of efforts to achieve low-carbon emission targets as a company subject to the Emission Trading Scheme, we were able to accomplish lower levels of GHG emissions than the allowance for both 2020 and 2021. After the second half of 2022, we plan to set up our own mid-to long-term GHG emissions targets and establish a systematic management process. Moreover, we include the sales of low-carbon and eco-friendly (grade 1) products in one of KPIs in 2022, and recorded KRW 31.8 billion in sales in 2021. We will continue to broaden the scope of business to strengthen ESG.

Assessment

HYUNDAI Energy Solutions established an environmental management system to respond to various stakeholders' needs and comply with the global standards, and has received the international certification for environmental management systems (ISO14001) which is being continuously renewed and retained.

International Certification

	Unit	2019	2020	2021
ISO14001	Certification	V	V	V

2021 Performance

HYUNDAI Energy Solutions actively applies scrubbers to remove N₂O (nitrous oxide) for our production line to reduce GHG emissions caused by N₂O gas used in the process. And to cut down on indirect GHG emissions (Scope2) generated during the production of PV modules, which is our main product, we introduced new facilities with high-productivity. In addition, LPG and energy consumption was minimized by setting the factory indoor temperature to around 20°C in the winter time.

GHG emissions

	Unit	2019	2020	2021	
GHG	Total emissions	tCO ₂ eq	39,075	26,397	27,366
	Direct emissions (Scope1) ¹	tCO ₂ eq	4,239	1,737	2,143
	Indirect emissions (Scope2) ²	tCO ₂ eq	34,836	24,661	25,223
	Emission intensity ³	tCO ₂ eq/KRW billion	87.59	66.93	46.13
	Rate of improvement in emission intensity (compared to the previous year)	%	17.99	23.59	31.07

1. Calculation range for direct emissions (Scope1) data is Eumseong Plant
 2. Calculation range for indirect emissions (Scope2) data is Eumseong Plant, HQ and Bundang Office
 3. Revenue is based on consolidated financial statements of the annual report

INTRO

About This Report
Contents

BUSINESS OVERVIEW

CEO Message
Company Profile
Main Products
Value Chain
Global Network
ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental
Social
Governance

APPENDIX

Summary of Consolidated Financial Statements
Stakeholder Engagement
Double Materiality Assessment
GRI Content Index
TCFD
SASB
UN SDGs
Third-Party Assurance Statement
Membership Status & Public Information

Action on Climate Change

Energy Consumption

		Unit	2019	2020	2021
Non-renewable Energy	Total consumption	TJ	763	530	539
	Direct energy consumption ¹	TJ	46	22	12
	Indirect energy consumption ²	TJ	717	508	527
	Consumption intensity ³	TJ/KRW billion	1.71	1.34	0.91
	Rate of improvement in consumption intensity (compared to the previous year)	%	18.16	21.43	32.38

Energy Production Sales⁴

	Unit	2019	2020	2021
Total production (PV)	MWh	3,120.5	3,836.6	4,324.1
Total sales (PV)	MWh	3,120.5	3,836.6	4,324.1

1. Calculation range for direct consumption data is Eumseong Plant
 2. Calculation range for indirect consumption data is Eumseong Plant, HQ and Bundang Office
 3. Revenue is based on consolidated financial statements of the annual report
 4. Status of production and sales is of 6 plants operated by HYUNDAI Energy Solutions

Next Plans

Setting Up Environmental Goals

HYUNDAI Energy Solutions plans to strengthen our MBO(management by objectives) by establishing a step-by-step roadmap and a mid- to long-term reduction goal for not only GHG emissions but also non-CO₂ greenhouse gases (air pollutant, water, waste).

Expanding Eco-friendly Business

As a PV total solutions company, HYUNDAI Energy Solutions contributes to establishing an eco-friendly infrastructure of future society through increasing investment in equipment, sales of eco-friendly products and services related to sustainability. Also, we will actively address the environment initiative such as the CDP (Carbon Disclosure Project) and forge green procurement plans and evaluation processes for supply chain.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Water

Strategy

HYUNDAI Energy Solutions monitors daily data on water consumption used in production sites under the supervision of the HSE team (facility part). The effluent generated from production processes is sent to a wastewater treatment plant within the business site, and treated according to legal standards. In order to scale down manufacturing costs and minimize environmental impact, we continue to make all-out efforts to lessen water consumption used in the process especially by the production sites.

2021 Performance

HYUNDAI Energy Solutions constantly measures and monitors daily water consumption, and manages water consumption intensity. As a result, we are witnessing a decreasing trend in water consumption intensity for the last 3 years, and in particular, in 2021, it decreased by 274ton/ KRW billion compared to the previous year.

	Unit	2019	2020	2021
Total water consumption ¹	ton	559,345	362,607	382,650
Total wastewater treatment	ton	486,910	327,738	304,124
Water consumption intensity ²	ton/KRW billion	1,254	919	645

1. Calculation range for water consumption data is Eumseong Plant
 2. Revenue is based on consolidated financial statements of the annual report

Resource Use and Pollution Reduction

Strategy

When it comes to business activities process, HYUNDAI Energy Solutions established a management system for pollutants that can have a negative impact on the environment and carries out regular monitoring. In order to minimize the environmental impact of waste and pollutants generated, we strictly manage them through companies specialized in waste and pollution management.

Environmental Compliance

HYUNDAI Energy Solutions is doing our utmost to use resources in compliance with environmental laws and regulations and mitigate pollution. We have set up standards for air pollutant management that are more stringent than legal standards. In the case of water contaminants, to meet the criteria of the revised Water Environment Conservation Act, we organized a new 2021 TMS which measures and manages data in real-time. In terms of waste management, the waste charges and waste disposal charges are calculated lawfully and paid every year in accordance with the Framework Act on Resource Circulation and the Act on the Promotion of Saving and Recycling of Resources.

Assessment

HYUNDAI Energy Solutions has selected the top 5 management items for water pollutants, and manages and evaluates them through the water TMS. In addition, we carry out thorough management for discharge by measuring water pollutants four times a year, and we also make quarterly requests from an authorized analysis institution for analysis of general water pollutants and specific hazardous substances to enhance management expertise. We conduct self-measurements for items that can be analyzed independently, and then carry out comprehensive analysis with water TMS and data from the authorized analysis institution for effective management.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Resource Use and Pollution Reduction

2021 Performance

Air Pollutants

HYUNDAI Energy Solutions minimizes the generation of air pollutants by establishing in-house environmental standards that are 50% more stringent than the legal permissible standards to protect the air quality. Especially when newly investing in cell plants, we eliminated the HNO₃ (nitric acid) process, one of the main culprits of NOx gas generation, therefore fundamentally blocking most of the NOx generated during the processing. In addition, we have replaced boiler facilities with low-NOx equipment, and are raising the capacity utilization of air pollution prevention facilities in preparation for the characteristics of the production process that uses acidic substances and new investments.

Air Pollutant Emissions¹

		Unit	2019	2020	2021
Nitrogen oxides (NOx)	Emissions	ton	6.4	3.72	1.71
	Emission intensity	ton/KRW billion	0.0143	0.0094	0.0029
	Emission concentration	ppm	4.72	17.76	13.36
Sulfur oxides (SOx)	Emissions	ton	0.53	0.59	0.75
	Emission intensity	ton/KRW billion	0.0012	0.0015	0.0013
	Emission concentration	ppm	0.28	0.31	5.54
Dust	Emissions	ton	3.42	2.42	3.06
	Emission intensity	ton/KRW billion	0.0077	0.0061	0.0052
	Emission concentration	mg/Sm ³	3.22	2.24	2.85

1. Calculation range for air pollutant data is Eumseong Plant
Emissions per revenue are based on consolidated financial statements of the annual report

Water Pollutants

HYUNDAI Energy Solutions sets and manages the in-house environmental standards on water discharge of wastewater treatment plants that are 40% stricter than the legal permissible standards. We also control the wastewater pollutant concentration on a real-time basis by monitoring the final discharged water and conducting TMS inspections to ensure that pollutant concentration does not leak above the standard level. In addition, we handle the wastewater generated from production processes and work sites through efficient management of wastewater treatment plant (capacity of 1,800ton/day) operation. Furthermore, in order to reduce the concentration of nitrogen concentration in wastewater treatment discharge, we are trying to optimize the biological treatment process by introducing hydrogen peroxide remover and Ammonia Oxidation bacteria.

Water Pollutant Emissions²

		Unit	2019	2020	2021
COD	Emissions	kg	3.9	4	2.4
	Emission intensity	kg/KRW billion	0.0087	0.0101	0.0040
BOD	Emissions	kg	3	4	0.8
	Emission intensity	kg/KRW billion	0.0067	0.0101	0.0013
SS	Emissions	kg	2.4	0.5	1.6
	Emission intensity	kg/KRW billion	0.0054	0.0013	0.0028
T-N	Emissions	kg	5.08	2.3	17
	Emission intensity	kg/KRW billion	0.0114	0.0058	0.0287

2. Calculation range for water pollutant data is Eumseong Plant
Emission intensity is based on consolidated financial statements of the annual report

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Resource Use and Pollution Reduction

Waste

Various wastes (waste synthetic resin, waste paint, wastewater sludge, waste wood, waste glass, etc.) generated during the product development process are separated by type and discharged to waste collection sites, and are legally consigned through a registered waste disposal company. Since 2021, we have taken out the general waste from the business sites that were previously incinerated to a recycling company, which led to an increase in waste recycling rate and a significant decrease in waste disposal charges.

Waste Generation¹

	Unit	2019	2020	2021
Waste generation	ton	6,519.7	4,101.7	4,762.6
General waste	ton	3,343.1	2,793.3	3,599.7
Designated waste	ton	3,176.6	1,308.4	1,162.9
Emission intensity ²	ton/KRW billion	14.6	10.4	8.0
Rate of improvement in emission intensity (compared to previous year)	%	17.6	28.8	22.8
Waste disposal	ton	6,519.7	4,101.7	4,762.6
Recycling	ton	6,221.7	3,871.7	4,755.6
Incineration	ton	298	230	7
Landfill	ton	0	0	0
Recycling rate ³	%	95.4	94.4	99.9

1. Calculation range for waste data is Eumseong Plant
 2. Revenue is based on consolidated financial statements of the annual report
 3. Data changes from 2019 and 2020 compared to previous reports (data missing on previous reports)

Hazardous Substances

In order to respond to the tightened laws and regulations on chemical substances, HYUNDAI Energy Solutions identifies the risks of chemicals purchased, stocked, and used in advance to determine whether or not it is admissible. To prevent environmental accidents caused by chemicals, we operate chemical leakage detectors and safety valves, and conduct real-time monitoring in the situation room. We have informed local residents in the vicinity of our business sites of our chemical use and plans for chemical accident prevention while establishing an emergency contact system, thereby striving to make local communities safer. In addition, HYUNDAI Energy Solutions also investigates the amount of discharged chemicals in an effort to reduce such discharge as well as scale down unnecessary losses.

Next Plans

HYUNDAI Energy Solutions minimizes pollutants emitted to the air by continuous maintenance of the air scrubber. We installed a facility that can decompose more than 90% of the greenhouse gas N₂O (nitrous oxide) which is directly emitted during processing at the primary air pollution prevention facilities (air scrubber) in the plant. It is planned to make it necessary to install air scrubbers when establishing additional cell production facilities in 2022, and we plan to improve air pollutant treatment efficiency by expanding the capacity of the secondary air pollution prevention facilities (outdoor scrubbers). In accordance with the Act on Resource Circulation, HYUNDAI Energy Solutions plans to receive annual resource circulation goals from the government, and will submit implementation plans and performance data. Regarding waste, we will manage to minimize the remaining amount in the container when discharging it after using designated waste (paste), and also separately discharge foams synthetic resins by 2022 which used to be mixed with other wastes. HYUNDAI Energy Solutions will continue to manage waste so that they can be recycled for more environmentally appropriate purposes.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Environmental Engagement

Environmental Programs

Eco-friendly Corporate Culture

All employees of HYUNDAI Energy Solutions are striving to curtail our energy consumption and participate in energy saving activities. We try to maintain our office environment at 27°C in the summer, and 21°C in the winter when electricity usage reaches its peak and compliance is checked frequently. Also, by operating commuting buses to minimize the use of vehicles by employees, we are paying attention to the small details that could help in mitigating harmful gas emissions including GHGs.

Efforts to Offset Carbon

HYUNDAI Energy Solutions operates six PV plants and provides REC (Renewable Energy Certificate) to each plant to make indirect efforts to offset carbon. We plan to review methods to directly utilize the produced electricity in the future.

Partnership with the Korea Institute of Energy Research for PV R&D

HYUNDAI Energy Solutions concluded an agreement with the Korea Institute of Energy Research to cooperate on PV R&D and idle PV assets donations. In detail, HYUNDAI Energy Solutions donated KRW 1.9 billion worth of equipment of idle PV assets (cell, module research equipment, dry etcher, etc.) to the Korea Institute of Energy Research. The donated idle assets will be used for research and development of PV cells and module technologies, and for facility efficiency improvement.

Environmental Investment

HYUNDAI Energy Solutions actively invests in improving and installing facilities to save the environment. Especially, we also made an investment in replacing the entire water TMS (tele-monitoring system) facilities in compliance with the revised communication standards of the Water Contamination Process Test Method to improve the quality of discharged water from our wastewater treatment plants. We are also actively responding to the revision of the Water Environment Conservation Act by preemptively investing in TOC analysis equipment which is to be installed in 2023.

In 2022, we are reviewing investments in installing additional water treatment tanks to reinforce chemical substance processing, and in addition to it, the investment is also planned in enhancing the performance of chemicals used for wastewater treatment. We also plan to replace existing chemicals with more expensive specialized ones which will increase the biological processing efficiency by more than 4 times. And as an investment with the aim of cutting down on power consumption, we reviewed the introduction of high-productivity equipment and optimization of power use compared to the status quo, and expect to see the power consumption intensity to be reduced by about 20% in 2022.

Environmental Investment

	Unit	2019	2020	2021
Environmental Investment	KRW 100 million	2.8	2.8	0.92

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Environmental Engagement

Low-carbon Products and Services

HYUNDAI Energy Solutions continues to develop and practice renewable energy business and eco-friendly technology. While producing eco-friendly renewable energy sources such as PV cells and modules, we also carry out technology development for high-power and high-efficiency products. To reduce carbon emissions, we use low-carbon materials such as thin wafers for some products, and as of the end of April 2022, we have acquired 320 carbon certifications including 86 grade 1 carbon certifications. We also obtained an eco-friendly KS certification in August 2020 by minimizing Pb (lead) content for floating PV module products. From 2022, we started labeling eco-friendly and high-durability on the back of Floating PV modules.

High-power PV Modules

Most of all, the maximum power of M6 PV module increased by 50W compared to last year to 500W. In addition, we developed and produced high-power modules with maximum power point of 595W, and plan to continue our R&D to curtail carbon emissions.

Reduce Carbon Emissions of PV Modules

HYUNDAI Energy Solutions reduces carbon emissions by using thin wafers and fluorine-free backsheets. Among the thin wafers, M6 products are planned to be supplied with wafers that are even thinner from 160um to 150um, and in the case of M10 wafers, from 165um to 160um. We hope to be able to reduce this up to 150um by the second half of 2022 to minimize carbon emissions. Since backsheets with fluorine-based coating on the outermost layer generate large carbon emissions, we use fluorine-free backsheets which are made only with the main backsheet material, PET. In this case, carbon emission is reduced by 4kgCO₂/kW or more than before.

Low-carbon and Eco-friendly Product Revenue¹

	Unit	2019	2020	2021
Low-carbon and eco-friendly product revenue	KRW 100 million	-	-	318

1. Products of grade 1 among national carbon verified products grades 1-3 (started to acquire certification from September 2020) and Pb free products (lead content of 0.005% or less based on KS standards)

Environmental Education

HYUNDAI Energy Solutions strictly manages the pollutant discharge by providing education sessions for employees handling hazardous substances. In addition, we carry out emergency drills for employees to prevent environmental accidents and also to promptly react in case of such events.

Environment Education and Training

	Unit	2019	2020	2021
Education hour per person	Hours	2	2	2
Training on environmental accident response	Implemented	V	V	V

Violation of Environmental Laws and Regulations

HYUNDAI Energy Solutions abides by the environmental laws and regulations and minimizes the environmental impact in business sites by monitoring compliance. In 2021, there was a single law violation case, and we took active follow-up measures and prepared measures to prevent recurrence and future violations.

Violation of Environmental Laws and Regulations / Environmental Liability Insurance

	Unit	2019	2020	2021
Environmental laws and regulations	No. of law and regulations violation ²	0	0	1
	Fines and administrative fines	KRW million	0	0
Environmental liability insurance	Applied	V	V	V

2. 2021 Violation Case: Order of Improvement due to water quality emissions exceeding standards (2021.12.03)

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Labor

Strategy

HYUNDAI Energy Solutions has in place an overall HR management process from the recruitment stage to placement, education, performance evaluation and retirement, on the basis of principles of prohibition of discrimination on the grounds of gender, age, race, nation, religion, education background and enhancement of diversity. Personnel and employment regulations have been established in accordance with Acts of Republic of Korea, and the details are being frequently revised.

HYUNDAI Energy Solutions is committed to creating a corporate culture that grows and coexists with the employees and guarantees freedom of collective bargaining based on laws and regulations. In addition, in line with the growing number of MZ generation employees and the importance of work and life balance, we continue to develop and operate programs for our employees so that they can achieve balance between their work and family and work and life.

Target

Since its separation from HYUNDAI Heavy Industries in December 2016, the goal is to maintain and increase the average tenure of existing employees and new recruits. To support the work and life balance of our employees, the selective working hour system was first introduced in 2021, and efforts are being made to increase the participation rate.

2021 Performance

1. Labor Relations

HYUNDAI Energy Solutions holds labor-management council meetings at least once a quarter to improve employees' working conditions and welfare benefits. The council consists of three employers and three employees and holds regular consultations in an egalitarian and liberal atmosphere to enhance working conditions and welfare benefits.

2021 Status

No. of Meetings	Once a quarter, total 4 times
Main achievements	Providing 4 free meals a day considering shift workers, Increasing the per diem rates and streamlining the related procedures

Labor-Management Communication Program

Not only holding regular labor-management council meetings, HYUNDAI Energy Solutions has provided various channels for smooth communications. We hold regular management briefing sessions for employees to form an internal consensus in overcoming business crisis and enhancing competitiveness. Also, We keep our ears open to ideas and complaints regarding improvement for facilities provided to the employees such as business sites, cafeterias and staff accommodations. We also operate a praise point system for employees who suggest various ideas, and in 2021, we gave KRW 7.2 million worth of rewards to a total of 95 employees. After being listed on the stock exchange in 2019, we have introduced the employee stock ownership policy to share our business performance and results with the employees.

INTRO

About This Report
Contents

BUSINESS OVERVIEW

CEO Message
Company Profile
Main Products
Value Chain
Global Network
ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental
Social
Governance

APPENDIX

Summary of Consolidated Financial Statements
Stakeholder Engagement
Double Materiality Assessment
GRI Content Index
TCFD
SASB
UN SDGs
Third-Party Assurance Statement
Membership Status & Public Information

Labor

2. Employees Status

No. of Employees

		Unit	2019	2020	2021
Total employees		Persons	204	188	213
Age group	Age below 30	Persons (%)	42(20)	43(23)	46(22)
	30 - 49	Persons (%)	134(66)	119(63)	134(63)
	Age 50 or above	Persons (%)	28(14)	26(14)	33(15)
Contract type	Regular worker	Persons (%)	157(77)	143(76)	164(77)
	Non-regular worker	Persons (%)	47(23)	45(24)	49(23)

Workforce Diversity

		Unit	2019	2020	2021
Gender balance	Total no. of females	Persons (%)	24(11.8)	28(14.9)	40(18.8)
	Female in management positions	Persons (%)	0(0)	0(0)	0(0)
	Female in executive positions	Persons (%)	0(0)	0(0)	0(0)
	Female in revenue-generating departments	Persons (%)	20(10)	19(10)	30(30)
	Newly recruited female	Persons (%)	13(32.5)	15(50)	30(36.6)
Employment of foreigners	Total no. of foreigners	Persons (%)	0(0)	4(2.1)	6(2.8)
	U.S.	Persons (%)	0(0)	4(2.1)	5(2.3)
	Canada	Persons (%)	0(0)	0(0)	0(0)
	Japan	Persons (%)	0(0)	0(0)	0(0)
	China	Persons (%)	0(0)	0(0)	1(0.05)
	Other	Persons (%)	0(0)	0(0)	0(0)

Recruitment and Years of Service

		Unit	2019	2020	2021
Recruitment	Total no. of recruitment	Persons	2	6	23
	New employee	Persons	0	1	1
	Experienced employee	Persons	2	0	18
	Local employee	Persons	0	5	4
Turnover	No. of turnovers	Persons	27	52	69
	Turnover ratio	%	13.2	27.7	32.4
	Voluntary turnover ratio	%	9.3	12.8	20.7
Years of service	Average years of service	Years	8.3	9.7	8.9
	Male	Years	9.3	11	10.4
	Female	Years	2.4	2.2	2.4

Wage¹

		Unit	2019	2020	2021
Average wage	Employee	KRW 1,000	73,622	66,884	68,713
	Male	KRW 1,000	76,611	71,189	76,569
	Female	KRW 1,000	51,209	42,284	34,739
Equal pay	Employee	%	66.8	59.4	45.4
	Management position ²	%	-	-	-
	Non-management position	%	72.5	73.3	67.6

1. Wage is based on annual report

2. There are no female in management positions (a management position is a senior manager or higher)

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Labor

3. Growth and Education

HYUNDAI Energy Solutions established a competent education policy and learning infrastructure to cultivate future talents who will lead the change in the world. We provide educational programs suitable for each position and role, and all employees regardless of whether they are regular or non-regular employees are eligible for the programs. We support various opportunities for our employees, such as fostering leaders of the next generation, talents of convergence, and job experts and global talents. In particular, with the change in the digital office environment in 2021, company-wide education was furnished in divisions of culture diffusion and human resource development to change employees' perception of DT (Digital Transformation).

Detailed Curriculum for Technicians Working in the Office									
Job Title	Nurturing Leaders		Nurturing Hybrid Talents	Education by Rank	DT Training	Job Training	Global Training	Others	
Executive	Leader course	Leadership coaching		Education for new executives	DT leadership special lecture				
Senior Manager	HLC IV	Leadership improvement course	Hybrid course	Capacity building training	DT planner, agent course	DT development expert course	DT mindset training	Collaborative job self-training	
	HLC III								New head of the department
	HLC II								New head of the job
Manager	HLC I								
Associate Manager				Training for employees at the second year of work	DT beginner				
New Hire			Hybrid course for new employees	Orientation for new / experienced employees					

Detailed Curriculum for Technicians										
Job Title	Leadership Training		Technology Transfer Training		Common Training		Job Training		Corporate Culture Training	Legally Mandatory Training
Executives										
Production Head		New department head	Core skill transfer program	General skill transfer program	Basic capacity and job capacity building	Technical capability nurturing system	Certification training	Safety management training	Collective professional training	Field autonomous job training
Production Deputy Head										
Production Manager	HTLC II (officer)	New officer								
Production Asst. Manager	HTLC I (head of production team)	New production team leader								
4th Class Engineer										
5th Class Engineer	HHI Meister University									
New Hires						Mentoring for new hires	Orientation for new hires			

Nurturing Leaders

The role of the leader is very important in order to take the lead in future change and flexibly respond to rapidly changing business environments. With the purse of nurturing next generation leaders, HYUNDAI Energy Solutions provides group training titled HLC (HHI Group Leader Course) and HTLC (HHI Group Technical Leader Course) for future leaders. We pursue practical training through Action Learning focusing on problem solving by choosing a theme from each business task, and endeavor to foster excellent leaders.

Nurturing Convergence Talents

To nurture outstanding talents with integration capabilities and business insight, we introduced a convergence talent development process. We focus on fostering convergence talents such as by letting talents of humanities and commerce learn the basics of engineering and each talent study the basics of management.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Labor

Nurturing Job Experts

We assist employees in honing their job skills through on-site job training system, which examines the content of education necessary for the job, develops customized teaching plans, and also nurtures the instructors.

Nurturing DT Talents

Following the acceleration of the industrial structure's digital transformation, we operate an education system for nurturing DT talents to raise employee's awareness about DT and to foster DT talents with expertise. We are stepping up our efforts to cultivate an efficient and agile organizational culture through a two-tracked strategy to spread the DT culture and nurture professional manpower.

Employee Education and Training¹

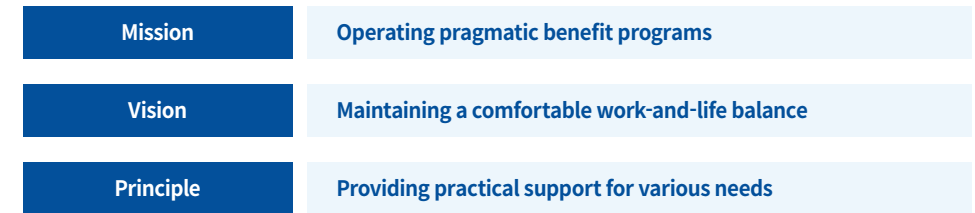
	Unit	2019	2020	2021
Training time per person	Hours	10	10	4.5
Training cost per person	KRW 1,000	207.4	195.9	161.5
Rate of employees who completed training	%	25.5	69.7	100

1. Retirees of the year excluded

4. Work and Life Balance

We established an effective system for work and life balance of employees and we also actively listen to the employees and gather feedback on relevant issues. We operate suitable programs according to the policy's direction to provide practical support for the various needs of employees.

Key Programs



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Labor

Strengthening Maternal Protection

We operate policies that actively comply with relevant laws to protect motherhood. We are building a culture that encourages female employees (as well as male employees) to feel free to take childbirth, maternity and parental leave. When returning back to the office from leave, we support them by such as reassigning them to their previous duties.

Parental Leave¹

		Unit	2019	2020	2021
Taking parental leave	Male	Persons	5	5	2
	Female	Persons	1	2	1
Returning to work after parental leave ended	Male	Persons	1	4	4
	Female	Persons	2	0	1
Serving more than 12 months after return to work	Male	%	100	100	100
	Female	%	-	100	-

1. Data changes from 2019 and 2020 compared to previous reports (data missing on previous reports)

Retirement Pension Program

We have a retirement pension system for which all employees become eligible after one year of service, and by this we strive to provide support for their lives after retirement. To promote active participation of employees in their retirement planning, we plan to introduce the Defined Contribution (DC) plan where benefits are annually accumulated for those aged 56 and older who are subject to the salary peak system.

Training to Support Retirement Planning

We also provide a retirement planning support program for employees so that they can maintain a healthy and stable life after retirement. We provide assistance and information in areas related to asset and health management, re-employment, and starting a business for employees to prepare their next chapter. This program was conducted for two employees who were scheduled to retire in 2021. We will reflect the requests of our employees as much as possible and refine the program to be centered to activities such as experiencing what a successful retirement plan is, couples programs with spouses, and also try to reflect the latest trends in the economy and IT fields.

Flexible Working Hours

From September 2021, we introduced and implemented the flexible working hours system that allows employees to freely decide their own working hours on a monthly basis, thereby achieving efficiency in both their personal lives and work.

The working from home system introduced due to COVID-19 is still recommended for use to about 30% of employees and is planned to be officially implemented regardless of the COVID-19 spread in the future. HYUNDAI Energy Solutions will actively utilize flexible working systems such as selective working hours and working from home, considering the nature of performed duties, to build an efficient organization environment.

Welfare Benefit

	Unit	2019	2020	2021
Welfare benefit cost	KRW 100 million	32	33	29
Welfare benefit cost to revenue ²	%	0.72	0.84	0.49

2. Revenue is based on consolidated financial statements of the annual report

Flexible Working Hours Participation Rate

	Unit	2019	2020	2021
Flexible working hours participation rate	%	-	-	31.5

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Labor

5. Evaluation and Compensation

After the company spin-off (December 2016), HYUNDAI Energy Solutions has continued to strengthen the compensation (wage) system and welfare benefits so that employees can enjoy a better quality of life. To this end, we established specific performance goals in a top-down method according to KPIs (Key Performance Indicators), and provide reasonable compensation to our employees through various systems such as wage increase, year-end bonuses, promotion, etc., according to performance.

Performance Evaluation Management System

Since HYUNDAI Energy Solutions conducts compensation, promotion, fostering and low-performer management based on personnel evaluation, we have established a system to ensure fairness and transparency in evaluation. We determine evaluation ratings based on the goals and achievements of the employees themselves through MBO (management by objectives) and KPIs and operate the ratings as the base of multiple personnel systems. To enhance transparency and fairness of the personnel evaluation process, the results of the first and second evaluations and adjusted evaluations are disclosed and we included a procedure where employees can file objections against the results. All employees are evaluated twice a year.

Performance Evaluation

	Unit	2019	2020	2021
Eligible for competency development evaluation ¹	%	16.2	14.9	13.6

1. Employees subject to MBO evaluation are executives such as department heads and team leaders

Next Plans

HYUNDAI Energy Solutions will make efforts to achieve balance between the lives and work of our employees. With the aim of obtaining the Family Friendly Certificate from the Ministry of Gender Equality and Family, we will apply within the first half of 2022, and take the initiative in creating a family-friendly corporate culture.

Safety and Health

Strategy

HYUNDAI Energy Solutions regards the prevention of accidents and health management of our employees as one of the core values of ESG, and thus established a safety and health management policy for systematic management. Along with certification in occupational health and safety management systems (ISO45001), we strictly comply with the relevant laws and regulations and also conduct safety and health-related evaluations. In case of an accident, we thoroughly prepare measures to prevent recurrence and identify the cause of the accident, and through this, continue to develop our safety and health management system.

Safety and Health Management System

HYUNDAI Energy Solutions builds a safe and pleasant working environment based on the trust between labor and management. Selecting the representatives from labor and management respectively, the Industrial Occupational Safety and Health Committee is held once a quarter to seek main improvement tasks and share the results of improvements. We are fully committed to safety management of all work activities by appointing and training management supervisors. Risk assessment is conducted regularly and frequently, and in accordance with laws and regulations, we designate industrial safety managers, hazardous chemicals managers, dangerous products safety managers, fire safety managers and health managers to respond to safety and health-related laws and regulations.

Assessment

To comply with the occupational health and safety management systems (ISO45001) and maintain certification, we conduct an internal assessment once a year and a follow-up assessment through certified authorities. We also carry out Process Safety Management (PSM) self-audit once a year to prevent any accidents that can be caused by the system process.

International Certification

	Unit	2019	2020	2021
ISO45001	Certification	V	V	V

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Safety and Health

2021 Performance

1. Safety and Health Activities

Process and Risk Management

Pursuant to Article 44 of the Occupational Safety and Health Act, HYUNDAI Energy Solutions implements the Process Safety Management (PSM) to prevent serious industrial accidents as we are a workplace with hazardous and dangerous facilities. In May 2022, a process safety report was prepared according to the new investment in the cell plant, and after conducting a risk assessment, improvement activities are being carried out. PSM is a system to prevent serious industrial accidents by requiring companies to prepare a report on accident preventive activities that include data on process safety, process risk evaluation, plans for safe operation and emergency action plan, and submit it to the government so that they can continue its preventive efforts through the examination and confirmation from the government. In addition, we operate a cooperation program hosted by the Korea Occupational Safety and Health Agency, and obtained the highest grade (A) in 2021 through reporting after conducting a risk evaluation and making improvements.

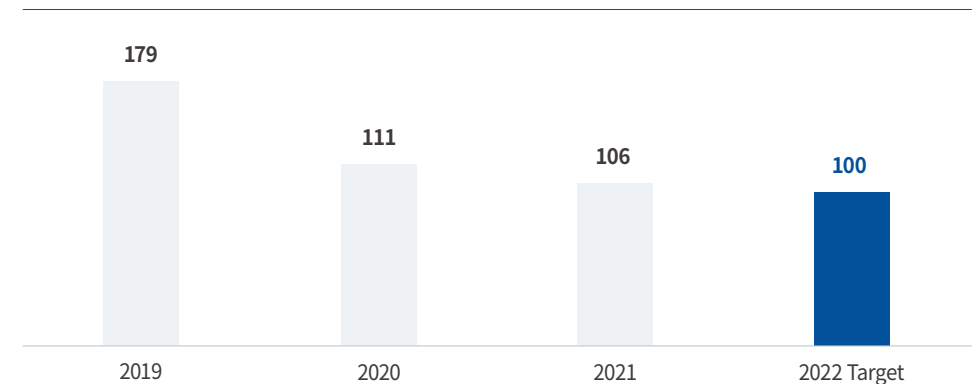
Risk Factor Management

HYUNDAI Energy Solutions conducts on-site inspections to identify risk factors at least once a month. At cell manufacturing sites, we examine the materials and safety protection gears as well as the manufacturing equipment that handles hazardous substances. At module manufacturing sites, we carry out inspections for power units, including conveyor belts and forklift trucks. When it comes to utility sites, CCSS, CGSS, TMA labs are inspected, and in offices, the capacity of monitors and chairs is also examined and a test to prevent things from falling is also conducted. And in addition, we establish hazardous risk prevention plans and constantly conduct safety-related inspections on pressure vessels, gas facilities, elevators, chemical supply tanks, conveyors and robots, and fire detection facilities to prevent industrial accidents.

Accident Prevention Activities

HYUNDAI Energy Solutions creates a safe working environment by finding hidden risk factors by unit division and carrying out improvement activities. We share our risk findings with our employees to raise awareness about the safety of on-site workers. Also, we regularly check external safety accident cases on a monthly basis and conduct self-risk evaluations for each case in order to devise preventive measures and apply them to our company.

No. of Hidden Risk Findings by Division



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Safety and Health

Industrial Accidents

		Unit	2019	2020	2021
Employees	Fatalities	Persons	0	0	0
	Lost Time Injury (LTI)	Cases	0	1	0
	Lost Time Injury Frequency Rate (LTIFR)	Occurrence per 1 million hours	0	2.70	0
	Industrial accident rate	%	0	0	0
	Severity rate	Days lost per 1,000 hours	0	1.84	0
	Occupational Illness (OI)	Cases	0	0	0
	Occupational Illness Frequency Rate (OIFR)	Occurrence per 1 million hours	0	0	0
Partner company employees	Absentee rate	%	0	0	0
	Near miss occurrence rate of full-time employees	%	0	0	0
	Near miss occurrence rate of contract workers	%	0	0	0
	Fatalities	Persons	0	0	0
Partner company employees	Lost Time Injury (LTI)	Cases	0	1	2
	Lost Time Injury Frequency Rate (LTIFR)	Occurrence per 1 million hours	0	3.68	7.35

Industrial Safety Management

		Unit	2019	2020	2021
Risk Assessment	Times per year		1	1	1
Partner company safety prevention management	Implemented		V	V	V

2. Employee Health

Health Risk Monitoring for Clean Room Workers

HYUNDAI Energy Solutions monitors our employees' exposure to harmful environments by regularly measuring the working environment, and takes actions accordingly. With three types of periodic check-ups including general, special and comprehensive check-up, we prepare for the workers' change of health caused by the work environment of the clean rooms. We also place the Material Safety Data Sheet (MSDS) on manufacturing sites, putting every effort into helping workers frequently check and be cautious to chemical hazard risk. In order to reduce our employees' work stress, we plan to provide air-permeable dustproof two-piece clothing and comfortable dustproof shoes that do not cause any problems to the process. In the mid- to long-term, HYUNDAI Energy Solutions will listen to the difficulties by conducting interviews with the employees and identify possible health risk factors to take necessary measures.

Health Care Program

HYUNDAI Energy Solutions carries out various activities to prevent diseases and promote the health of our employees. We conduct regular health check-ups (general and special) every year for employees and their families, and also support full medical examinations for long-serving employees and their families, to promote a healthy life for not only the employees but also the whole family.

Prevention Activities for Infectious Diseases

In order to prevent the spread of COVID-19, we established and announced in-house quarantine guidelines and strengthened measures such as company access procedures and disinfection. To prevent infectious diseases, we continuously distribute official notices and campaigns via mobile phones and electric display board. And we also support the vaccination against infectious diseases such as the flu, yellow fever, malaria and COVID-19.

Health Support

		Unit	2019	2020	2021
Support for physical health care	Implemented		V	V	V

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Safety and Health

3. Education

Safety and Health Education

HYUNDAI Energy Solutions minimizes safety risks by holding meetings on safety and health, regular safety trainings, and also short-term trainings for construction safety. Through the regular safety and health meetings and safety educations, we raise the awareness of employees on safety and provide compulsory safety education courses to supervisors, employees whose job changed and new hires. In order to protect our employees from various harmful chemicals, we also distribute the Material Safety Data Sheet (MSDS) which contains detailed information on substances involved in each process, hazards, emergency response actions in case of contact or exposure so that the employees can frequently check the contents. Also, when working with external personnel, the HSE team supervises safety education and workplace management to prevent safety accidents.

Disaster and Emergency Responses

HYUNDAI Energy Solutions established a company-wide emergency response manual in order to protect the employees and company assets from natural disasters such as typhoons and earthquakes. We also conduct regular fire drills in cooperation with the fire station to be able to promptly respond to accidents and to minimize human injuries and property loss.

Safety and Health Education

		Unit	2019	2020	2021
Employees	Participants	Persons	120	125	120
	Education hours	Hours	2,880	3,000	2,880
	Education hours per person	Hours	14.1	16	13.5
	Participation rate	%	58.8	66.5	56.3

4. Violation of Laws and Regulations

Violation of Safety and Health-related Laws and Regulations

		Unit	2019	2020	2021
Occupational accidents	No. of serious accidents	Cases	0	0	0
	Violation of laws and regulations	Cases	0	0	0
		Administrative fine	KRW 1,000	0	0
		Fine	KRW 1,000	0	0

Next Plans

In accordance with the Serious Accidents Punishment Act, we plan to strengthen compliance evaluation, education and training and risk assessment, and reflect the executives' instructions to reinforce safety rules and awareness. We plan to conduct a legal compliance evaluation once a quarter, and in-house training programs for supervisors once a year. And to raise safety awareness and prevent safety accidents, we will carry out a regular risk assessment once a year and also frequently once a month.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Human Rights

Strategy

HYUNDAI Energy Solutions implements human rights management based on the mission to 'Realize a society that embraces diversity and respects all stakeholders.' Through employment rules, collective agreements and code of conduct for partner companies, we share our human rights management guidelines with various stakeholders and have laid a foundation for a culture of respect for human rights to be firmly established throughout the company.

The collective agreement stipulates the prohibition of sexual harassment and violence in the workplace, and also the appointment of an honorary equal employment inspector. In addition, Chapter 8 of the Code of Ethics for employees deals with 'Respect and protection of human rights' and does not tolerate any kind of human rights violation.

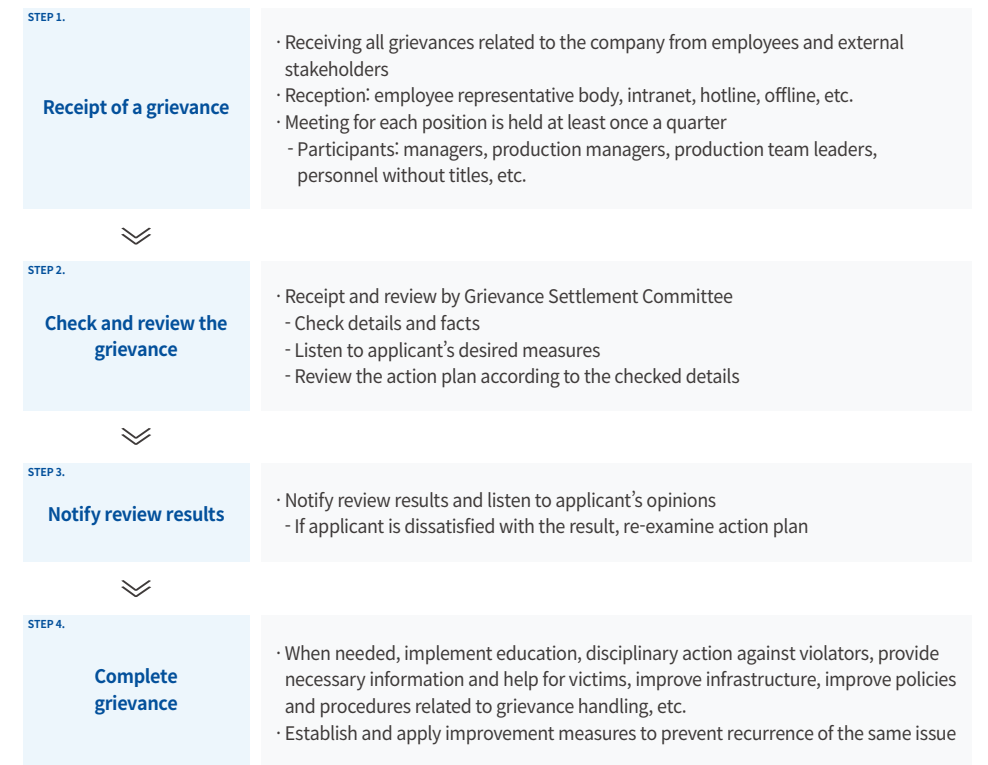
Code of Ethics Article 8. Respect and Protection of Human Rights

Respect for Human Rights	<ul style="list-style-type: none"> We and the employees shall respect the dignity and human rights of its members as well as our partner companies, business partners, all the stakeholders in the local community, and shall practice human rights management based on this principle.
Duties to Protect and Respect the Human Rights	<ul style="list-style-type: none"> We shall establish strategies and policies of human rights management to respect the human rights of all stakeholders and to prevent infringement of human rights, and share this with all the relevant parties, and in particular, endeavor to protect the general principles of human rights including the following cases. <ul style="list-style-type: none"> - Support and comply with the basic principles for the protection and respect of human rights set forth in relevant labor laws of each country, the United Nations Universal Human Rights Declaration and its substantive guidelines, and the International Labor Organization Declarations on Fundamental Principles and Rights at Work. - Prohibit any form of child labor and forced labor in any form based on the support for the United Nations Universal Declaration of Human Rights. - Do not discriminate on the grounds of race, nationality, gender, educational background, religion, age, disability status, birthplace, marital status, gender identity, etc. and provide fair and equal opportunities. - Protect motherhood and children and provide healthy and safe working conditions. - Observe all labor-related laws and regulations, respect the autonomy in the management of our partner companies and business partners, and try to spread human rights management to them.

2021 Performance

Grievance Settlement Procedure

HYUNDAI Energy Solutions makes it mandatory to operate a grievance settlement procedure and has at least two responsible members. The grievance settlement procedure is to check the details and facts of all areas related to the company, and take disciplinary action against violators, provide the necessary information and help victims according to the review results.



INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Human Rights

Human Rights Education

	Unit	2019	2020	2021
Human Rights Education time per person	Hours	2	2	2
Sexual harassment prevention education	Hours	1	1	1
Disability awareness education	Hours	1	1	1

Reporting on Human Rights and Violation of Laws and Regulations

	Unit	2019	2020	2021	
Human rights reporting	No. of reports on human rights	Cases	0	0	0
	No. of reports handled	Cases	0	0	0
Violations of laws and regulations	No. of violations	Cases	0	0	0
	Administrative fines	KRW 1,000	0	0	0
	Fines	KRW 1,000	0	0	0

Next Plans

In order to prevent human rights violations, HYUNDAI Energy Solutions will raise human rights awareness by expanding human rights education beyond statutory compulsory education.

Supply Chain Management

Strategy

HYUNDAI Energy Solutions promotes the growth and development of partner companies under the core value of 'Just, Fair and Legitimate Performance.' We will create a healthy corporate ecosystem where everyone can grow hand-in-hand by establishing fair trade practices and supporting partners in enhancing their competitiveness.

Main Decision-making Body	· Business Partners Council (once a year)
Dedicated organization (executive in charge)	· Procurement Team (head of production division) - Supervising meetings, collecting and implementing key decisions on support for partner companies
Regular communication channels with partner companies	· Business Partners Council New Year's meeting (once a year), listening to the VOC of partners (ad hoc basis) · Providing information on the business status, outlook and policies for each sector, awarding prizes to the best performing partner companies

In order to ensure the sustainability of the supply chain, we operate a comprehensive supply chain management that includes risk management of non-financial status. In addition, when a partner company is determined to have issues regarding ethical management, we exclude their registration for a partner company. In cases of events such as quality problems, violation of code of ethics, collusion, or conducting acts impeding shared growth, HYUNDAI Energy Solutions raises awareness by imposing sanctions such as restricting them from participating in a tender, in accordance with our sanction management regulations for suppliers.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Supply Chain Management

2021 Performance

Facilitating Communication Channels with Partner Companies

HYUNDAI Energy Solutions devises improvement measures together with our partner companies by actively listening to their difficulties in operating business. Also, we regularly provide a venue for communication to share business targets and help our key partner companies improve quality management and meet delivery date.

Financial Support Program for Partner Companies

To facilitate the cash flow of small and medium-sized partner companies, HYUNDAI Energy Solutions makes bi-monthly payments for products or services in cash within 15 days of issuance of a transaction statement or within 40 days for a secured loan of credit sales.

Financial Support for Partner Companies

	Unit	2019	2020	2021
Secured loan of credit sales	KRW 100 million	100	100	70

Deciding Material Costs in Line with International Indexes

HYUNDAI Energy Solutions decides the unit cost of critical materials required to manufacture PV cells and modules on a monthly or quarterly basis in line with the international indexes of copper, silver, aluminum, resin and exchange rates. This can alleviate the partner companies' burden of rising production costs, and enable us to determine material supplies and pricing more actively.

Responsible Procurement

In addition to supporting programs for partner companies, we are strengthening our responsible procurement system in order to spread the social value of win-win purchasing. Moving away from the past purchasing method based solely on price competitiveness, we plan to gradually expand our purchases for social enterprises. In 2021, we purchased KRW 30 billion worth of eco-friendly certified products and services.

Responsible Procurement

	Unit	2019	2020	2021
Total purchase	KRW 100 million	4,640	2,951	5,400
Win-win purchase	Purchase of eco-friendly products and services ¹ KRW 100 million	-	0.7	300.8

1. Amount purchased for domestic carbon-certified wafers (three companies: Woongjin Energy, AUO, NorSun)

Next Plans

To strengthen the sustainable supply chain management, we plan to conduct an integrated evaluation by introducing ESG assessment and level test when registering a new partner company in 2022. Also, to expand the responsibility and management of conflict minerals within the value chain of the supply chain, we will establish a non-use of conflict minerals policy. We will set up guidelines for green procurement and manage the purchase performance to build a social procurement system.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Local Community Relations

Strategy

In accordance with our business philosophy of fulfilling our social responsibilities and contributing to the development of the community and country, HYUNDAI Energy Solutions strives to become a company that is loved by everyone. Face-to-face activities were limited due to COVID-19 in 2020 and in 2021, so we sought contact-less activities and continued to carry out social contribution activities centered in Eumseong, a place where our manufacturing factory is located. Also, in connection with HYUNDAI Heavy Industries Group 1% Nanum Foundation, we took part in various social contribution programs to resolve problems of the local community as well as help neighbors in need.

All employees of HYUNDAI Energy Solutions will participate in sharing activities to realize 'A Better World, A Brighter Future,' and carry out social contribution activities based on the 3 key business areas of 'Caring for the Underprivileged,' 'Co-prosperity with Local Communities,' and 'Self-reliant Future Generation' in line with SDGs.

Management System



2021 Performance

1. Caring for the Underprivileged

Support Activities of HYUNDAI Heavy Industries Group (HHI Group) 1% Nanum Foundation

From January 2020, the HHI Group 1% Nanum Foundation has been renewed and expanded to be operated in all affiliates. HYUNDAI Energy Solutions employees are voluntarily participating in sharing their salaries every month by donating 1% to the foundation. A total of 94 employees donated about KRW 27.794 million in 2021. HHI Group 1% Nanum Foundation is categorized into sharing warmth (Heating Fuel of Love, 1% Soup Kitchen, Support for Disabled), sharing co-prosperity (Contributor's Proposal, Designated Donation, SOS Fund), and sharing hope (Hope Sketch, Together). In 2021, the funds raised by HYUNDAI Energy Solutions' employees were used in public projects related to 'contributor's proposal' 5 times. To raise transparency of the activities and budget accounts of the HHI Group 1% Nanum Foundation, we report monthly to sponsor companies and post promotion materials.

Group Blood Donation Event

Since 2020, HYUNDAI Energy Solutions has been carrying out voluntary group blood donations in the Seoul metropolitan area, such as in Bundang and Yongin, to help medical institutions with difficulties in blood supply due to the spread of the COVID-19 pandemic. To continue our blood donation activities more systematically, we concluded a regular blood donation partnership with the Korean Red Cross (Seoul Nambu Red Cross Blood Center) located in our headquarter office, carried out the event four times, and a total of 226 employees in the Seoul metropolitan area donated their blood. The collected blood was delivered to medical institutions in need via the Seoul Nambu Red Cross Blood Center. The blood donation event is a precious sharing activity that can save the lives of neighbors who need a blood transfusion. HYUNDAI Energy Solutions plans to actively take part in future group blood donation events.

Local Community Relations

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Support Installation of PV Modules for the Underprivileged

With the partnership with Chungbuk Province in May 2022, HYUNDAI Energy Solutions supported the equipment and installation of PV facilities with a scale of KRW 27 million to 10 households of the underprivileged living in the Chungbuk region. Through this, we were able to contribute by providing eco-friendly energy as well as reducing the cost of energy for the underprivileged families.

Donation of Computer Equipment

HYUNDAI Energy Solutions takes the lead in resource recirculation by donating some computer equipment that are deteriorated or exceeded the standard years, to relevant organizations. In November 2021, we participated in the 'Love PC Donation Campaign' of the Korea IT Welfare Agency and donated KRW 2.117 million worth of worn out equipment such as PCs and monitors. The donated PCs and parts were distributed to social welfare facilities and educational institutes.

2. Co-prosperity with Local Communities

Donating Sweet Potato to Hyang-ae orphanage (Cultivated in Weekend Farms)

HYUNDAI Energy Solutions carried out a project to donate sweet potato sacks to Hyang-ae orphanage, located in Eumseong, Chungbuk, in the vicinity of our business site in 2021. Our employee volunteering group visited in person Hyang-ae orphanage, a children's shelter, to deliver 18 sweet potato sacks they cultivated by themselves in their weekend farms.

Holiday Gifts for Local Senior Citizens Center

HYUNDAI Energy Solutions continues our support projects for local senior centers and underprivileged households in the Chungbuk Province, where our manufacturing factory is located. In 2021, we delivered 40 bags of 20kg white rice and 12 sets of dried fish, summing up to a total of KRW 5.36 million a year, to 13 senior citizens centers and 40 households designated by the Soi-myeon community service center. The donations were used to provide free meals for those in need in the local community. We also donated to 13 senior citizens centers and 20 underprivileged households for Lunar New Year's in January 2022, and plan to continue our support for the upcoming Chuseok holidays.

Holiday gifts delivered to local senior citizens centers



Local Community Relations

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

3. Self-reliant Future Generation

Support Children Breadwinners

For the independence of the future generation and children of families at risk, HYUNDAI Energy Solutions carries out welfare support projects and provides a portion of living expenses for children breadwinner households living in Eumseong. In 2021, we delivered a total of KRW 4.8 million of living expenses to 4 households (including one-parent families, and children in foster care) that were selected by the Eumseong-eup Office. HYUNDAI Energy Solutions will continuously carry out support projects for children of families in need to contribute to the self-reliance of our future generation.

Global Talent Scholarship Project (Yonsei University)

As part of an industry-university collaboration with Yonsei University, HYUNDAI Energy Solutions sponsored a scholarship of KRW 5 million to the Global Leaders College (GLC) of Yonsei University in the second half of 2021. The recipients of this project are excellent talents recommended by the college, and we have supported KRW 2.5 million per semester to 2 students. Through this we are contributing to fostering the incredible talents of the future generation. We also sponsored KRW 5 million in the first half of 2022, and plan to contribute KRW 5 million in the second half so that students can devote themselves to a broader field of studies.

Scholarship for Academic Excellence from Low-income Families

In 2021, HYUNDAI Energy Solutions supported a total of KRW 4.4 million to Eumseong High School and Maegae High School, located in Eumseong region, as part of nurturing future generation from low-income families. A total of 8 students of academic excellence were chosen by their school's principal, and we supported each of them with KRW 0.55 million so that they can carry out their studies despite their difficult circumstances. Continuing our efforts to support the self-reliance of future generations, we plan to increase the number of scholarships in 2022 to be able to help more students to realize their dreams.

Social Investment

	Unit	2019	2020	2021
Social investment amount	KRW 100 million	0.19	0.37	19.6

Total Volunteer Hours of Employees

	Unit	2019	2020	2021
Volunteer hours	Hours	-	80	104

Next Plans

In 2022, we plan to select a representative donation project to support a wider range of public projects, according to the HHI Group's 1% Nanum Foundation's initiative for social contribution. For the co-prosperity with local communities, we will conduct social contribution activities that are in real need through cooperation with the Chungbuk Province projects. And until now, we carried out our social projects mainly based on the area of Eumseong, where our factory is located, but we expect to expand our area scope to the Chungcheong region. We plan to establish a systematic performance management system in the future that includes the financial value created through social contribution projects and the satisfaction of beneficiaries.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Information Security and Personal Data Leakage

Strategy

HYUNDAI Energy Solutions protects the in-house data from external threats through security control operated 24 hours a day, 365 days a year, using HHI's security system. We aim to achieve the International Standard for Information Security Certification (ISO27001) in 2023, and with this as a basis, we will establish an information security management system. We discuss issues related to security with the appointed Chief Information Security Officer (CISO) and the Chief Privacy Officer (CPO), and reflect the results on our policies.

Assessment

The information protection policy is revised and approved by the CISO once a year. Security checks conducted by Korea Shipbuilding & Offshore Engineering are carried out once every two years, and the results are reported to the CISO and executives to be reflected in next years' security plan. In addition, audits for security operation are conducted twice a year.

International Certification

	Unit	2019	2020	2021
ISO27001	Certification	V	V	V

2021 Performance

Currently, we continuously maintain zero case of information leakage regarding the company and clients. Also, we conducted 6 sessions of information protection online education in the second half of 2021 (participation rate at 97.7%), and carried out training for in-house security management guidelines and personal information protection management. In addition, to raise the security awareness of our employees, we conducted simulation training against malicious e-mails at least once a quarter.

Information Leakage

	Unit	2019	2020	2021
Total no. of information leakage	Cases	0	0	0
No. of information leakage regarding client data	Cases	0	0	0
Fines for violation of information leakage related laws and regulations	KRW 1,000	0	0	0

Education

	Unit	2019	2020	2021
Personal information protection education	Implemented	V	V	V
Information security education	Implemented	V	V	V

Next Plans

It is highly likely to lead to secondary and tertiary damages when an information protection issue occurs. Through a precise protection system, we will prevent massive economic loss and enhance our credibility. We will strive to strengthen our information protection system by maintaining our ISO27001 and obtaining ISO27701 in 2023.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Board of Directors (BoD)

Strategy

Based on the recommendations of the Corporate Governance Code, HYUNDAI Energy Solutions raises the independence, expertise and diversity of the BoD. To strengthen the independence of the BoD, the majority (60%) of the board members is appointed out of outside directors to create an environment in which they can express their opinions free from the interests with the company, the management, and controlling shareholders. In addition, to strengthen our ESG management, an ESG Committee was established within the BoD in May 2021 to make decisions on the direction, plan and implementation of ESG strategies.

Composition of BoD¹

Category	Name	Position	Career Background	Subcommittee	Specialized Area
Internal Director	Jong-Hwan Park	Chair	Current) CEO of HYUNDAI Energy Solutions	Outside Director Recommendation Committee, ESG Committee	Business management, law
	Seok-Joo Kang	Director	Current) Managing Director, HHI Group	-	Business management
Outside Director	Jeong Ku Oh	Director	Former) Advisor at HYUNDAI Accounting Corporation	Outside Director Recommendation Committee, Audit Committee, ESG Committee	Financing, accounting
	Dong-Seok Oh	Director	Current) Lawyer at Kim and Chang Law Firm	Outside Director Recommendation Committee, Audit Committee, ESG Committee	Laws and regulations
	Seongmoon Kim	Director	Current) Professor at Yonsei University Business School	Outside Director Recommendation Committee, Audit Committee, ESG Committee	Business management

1. As of the general shareholders' meeting in March 2022

2021 Performance

1. Operation of BoD

Operation of BoD

		Unit	2019	2020	2021
Independence	Ratio of outside directors	Persons (%)	3(60)	3(60)	3(60)
	Expertise	Persons (%)	1(20)	1(20)	1(20)
Efficiency	Expert in finance	Persons (%)	1(20)	1(20)	1(20)
	Average term	Years	2.6	2.6	2.6
Meetings	Attendance rate	%	96.88	90	88
	No. of meetings held	Cases	8	8	10
Reports and Resolutions	No. of reports	Cases	2	6	8
	No. of resolutions	Cases	17	13	21
Opinions by Agenda	Agree	%	100	100	100
	Disagree (Objections)	%	0	0	0
	Amendments	%	0	0	0

Responsibilities of BoD

	Unit	2019	2020	2021
Executive liability insurance	Applied	V	V	V

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Board of Directors (BoD)

Outside Director Appointment Process

We comply with the Commercial Act's requirements for outside director appointment, and our outside directors are not a related party to the major shareholders, executives, or affiliated companies. All BoD members comply with the Commercial Act, the Monopoly Regulation and Fair Trade Act, etc., to prevent conflicts of interest among companies. With the aim to ensure diversity and professionalism in the appointment of directors, the BoD members consist of professionals with expertise in finance, law and management, and when appointing or evaluating BoD members, they are not discriminated against or restricted based on age, gender, educational or regional backgrounds.

Outside Director Education Program

HYUNDAI Energy Solutions carries out education for outside directors for them to perform their duties faithfully. During the first half of 2021, we conducted training for the Audit Committee members to enhance their expertise on the role of the Audit Committee and the overall connected internal accounting management system through Ernst & Young Han Young. In the second half of the year, hosted by the support organization of the Audit Committee, we made efforts to improve their understanding of the industry and company by providing training on the current status and outlook of the PV market and the management status of HYUNDAI Energy Solutions. We plan to continue to carry out education and training through specialized external institutions and internal teams of HYUNDAI Energy Solutions in 2022.

2. Committees

Outside Director Recommendation Committee

The Outside Director Recommendation Committee of HYUNDAI Energy Solutions reviews the outside director candidates. They can enhance the BoD's independence, expertise, and diversity and recommend outside director candidates to the general shareholders' meeting. The establishment of the Outside Director Recommendation Committee was decided in March 2020, during the 4th BoD meeting, and as the terms of the outside directors expired in March 2022, the meeting was held for the first time in February 2022.

Committees

		Unit	2019	2020	2021
Outside Director Recommendation Committee	No. of members	Persons	-	4	4
	Ratio of outside directors	%	-	75	75
	CEO Attendance	Participated	-	V	V
Audit Committee	No. of members	Persons	3	3	3
	Ratio of outside directors	%	100	100	100
	Financial expertise of chair	Owned	V	V	V
	No. of experts in finance	Persons	1	1	1
	No. of meetings held	Cases	1	3	3
	Attendance rate	%	100	100	100
	No. of resolutions	Cases	2	3	3
ESG Committee	No. of reports	Cases	0	4	4
	No. of objections or proposal for amendments	Cases	0	0	0
	No. of members	Persons	-	-	4
	Ratio of outside directors	%	-	-	75
ESG Committee	No. of ESG experts	Persons	-	-	0
	No. of meetings held	Cases	-	-	2
	Attendance rate	%	-	-	100
	No. of resolutions	Cases	-	-	1
	No. of reports	Cases	-	-	2

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Board of Directors (BoD)

Audit Committee

Although the total assets of HYUNDAI Energy Solutions are less than KRW 2 trillion, we preemptively established an Audit Committee in May 2019, consisting of all outside directors to enhance the transparency of our management, and the Committee audits our accounting and financial affairs. All members are outside directors, and to maintain credibility in professionalism, we appointed the director with financial expertise as chair. As our total assets exceeded KRW 500 billion at the end of 2021, we will hold regular committee meetings once a quarter in accordance with the Enforcement Decree of the Financial Investment Services and Capital Markets Act, and will also make further efforts to strengthen our transparency.

ESG Committee

To reinforce ESG management, HYUNDAI Energy Solutions established the ESG Committee in May 2021, to make decisions on the direction, plan and implementation of ESG strategies. We will endeavor to further strengthen ESG management under the supervision of the ESG Committee.

3. BoD Remuneration

The ceiling of the remuneration of BoD members is decided after the approval from the general shareholders' meeting to ensure transparency and justification. The 2021 general shareholders' meeting approved KRW 1.9 billion for the annual remuneration ceiling for directors. The remuneration payment details for the directors are disclosed in the annual report in terms of the number of directors and the total amount paid.

Remuneration

	Unit	2019	2020	2021
Pay gap between CEO and other employees	Times	8.31	7	4.93
Remuneration system for non-executive director	Operated	V	V	V

4. Shareholders and Dividend Status

As a listed corporation in the securities market, the number of HYUNDAI Energy Solutions' outstanding shares as of the end of 2021 is 11,200,000 of which 53.57% is held by the largest shareholder, Korea Shipbuilding & Offshore Engineering. To increase the convenience of shareholders in exercising their votes, we implemented an electronic voting system from the 2021 general meeting of shareholders so that the shareholders can exercise their voting rights without time or place restrictions. In 2022, we expanded the rights of the shareholders by introducing a policy that allows exercising of voting rights by proxy.

In the case of dividends, the status and amount are determined in overall consideration of business conditions. When there is a need to pay dividends, we will determine the status and amount according to the internal policy for dividends. And when the decision is made, the dividend resolution will be announced and notified to shareholders by sending a notice to them.

Shares Status and Shareholder Rights

		Unit	2019	2020	2021
Shares	Ratio of shares owned by CEO and Directors	%	0.03	0.13	0
Protection of shareholder rights	Electronic voting system	Executed			V
	Dividend policy	Disclosed	V	V	V
	Notice of agenda items before general shareholders' meeting	Executed	V	V	V

Next Plans

HYUNDAI Energy Solutions plans to establish a corporate governance charter through the approval of the BoD. Also, in order to increase transparency in internal transactions, we are reviewing the matters related to the establishment of an Internal Transaction Committee. If this is introduced, it will perform functions such as setting the basic principles for internal transactions, preparing standards for selecting counterparties and checking operational status. Based on this, we will build trust with various stakeholders and become a company that grows together with them.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Ethical Management

Strategy

The HHI Group has been committed to embedding a corporate culture of ethics into every corner of the organization by putting transparent management into action and pursuing persistent innovation. With a firm belief that ethical management underpins a trusted and esteemed company, the Group has established the sets of ethical standards including the Charter of Ethics, the Code of Conduct, Special Code of Conduct and Business Ethics Action Program. In addition, the Code of Conduct for Business Partners has been formulated with the purpose of sharing the requirements they have to meet when trading with the Group, based on which, a variety of action educational and promotional programs have been mapped out. Through these efforts, the Group has operated a feasible and practical ethical management system.

Charter of Ethics of HHI Group

We pursue to be a respected and trusted company that positively contributes to its customers, shareholders and society with the Hyundai Spirit. To achieve this goal, we hereby establish this Charter of Ethics, which defines our standards of conduct to follow in accomplishing faithfully our original role and social responsibilities as a corporate entity and we declare that we shall comply with this Charter of Ethics.

1. We shall be an ethical company that abides by all domestic and international laws and regulations through fair and transparent management practices.
2. We shall achieve customer satisfaction by meeting their needs and expectations.
3. We shall pursue maximizing the shareholder's value through fair and efficient management.
4. We shall work to fulfill our social responsibilities and duties as a member of our community, and contribute to the development of our nation and society.
5. We shall work to create a transparent and clean corporate culture through fair competition and trading practices.
6. We shall pursue to be a company with the highest quality human resources that offers equal opportunities to our employees in a safe and comfortable working environment.

2021 Performance

Business Ethics Pledge

HYUNDAI Energy Solutions makes it regular for our employees (in case of technician, officer and senior technician or above subject to the submission of pledge) and partner companies to submit their pledge to fully understand and comply with the Code of Ethics and guidelines on ethical management. The pledge makes it mandatory to abide by the Code of Ethics and anti-corruption laws, and not to conduct any form of illicit act, corruption, improper solicitation, and prohibited money offer banned by laws.

Ethical Education and Promotion

With the aim to give a better understanding of the ethical management system and share the vision, we have provided group training along with cyber educational programs. In addition to regular training, we have filmed promotional videos that feature our ethical management to disseminate the content, thereby raising our employees' perception on business ethics. The content of education encompasses unethical cases that we may encounter in the workplace, such as corruption or discrimination. Q&A sessions were also prepared to create an opportunity for all our employees to raise their ethical awareness and put ethical behaviors into practice just beyond understanding the concept.

Ethical Education

	Unit	2019	2020	2021
Education hour per person	Hours	0.40	0.26	0.32
Ratio of employees educated on ethics	%	5.4	43.6	64.8

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance**

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Ethical Management

Reporting System and Whistleblower Protection

We have operated an online reporting channel that receives reports around the clock in regard of the violations of the Code of Ethics and other laws such as taking bribe or entertainment, or pursuing illegitimate gains abusing their position or authority. The reports can be submitted by phone, fax, e-mail and/or mail. The whistleblower protection system has also been put in place to guarantee whistleblower confidentiality and reward them in accordance with our reward guidelines. If there was a suspected case of the breach of the Code of Ethics, an investigation was carried out and action was taken pursuant to the relevant regulations. On top of that, cases not regarded as breach were transferred to the relevant departments so that proper action was taken, and we confirmed the results.

Reporting and Violations

In 2019, a total of two reports were received, and we investigated those two cases. One of them was found to be violating the ethical management, followed by taking measures on the regarding person under the related regulations. In 2020, we received a total of two reports, and investigated two cases. One of them was found to have an improper area in following the process, and it was improved. In 2021, four cases were reported, and we investigated one of them. However, it was not relevant to the violation of ethical management. The other three reports were transferred to related departments, and we checked the follow-up results.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Compliance

Strategy

HYUNDAI Energy Solutions conducts regular inspections and training to raise the compliance awareness of our employees and manage the risk of law violations. We also carry out diverse support activities to establish a compliance management culture and achieve sustainable growth.

Key Decision-making Body	<ul style="list-style-type: none"> · CEO and the BoD - Annually declaring the determination to conduct compliance management - Confirming compliance plans and setting the directions
Dedicated organization	<ul style="list-style-type: none"> · Compliance Officer - Operating a compliance system that oversees the group - Conducting an internal inspection of compliance controls - Running educational programs on compliance systems and the related laws and regulations

2021 Performance

Compliance Training

We provide compliance training on a regular basis for new executives, department heads, team leaders, related job managers and new employees. We also conduct online and offline training following the identification of business areas requiring training for each significant compliance issue, based on the risk assessment results, disseminating the awareness of compliance management for our employees.

Monitoring and Review of Anti-Corruption and Economic Sanctions

With an aim to internalize clean and fair management culture and manage legal violation risks, we conduct thorough pre-inspection and review on anti-corruption matters in accordance with the compliance guidance on laws in connection to anti-corruption. As part of efforts to prevent economic sanction risks in and outside Korea, we also carry out review activities in line with the compliance guidance on laws regarding economic sanctions at the same time. In 2014, we completed the introduction of guidelines complying with anti-corruption laws, and in 2018, we also adopted and implemented guidelines following economic sanctions laws.

Monitoring Voluntary Compliance of Employees

We distribute a compliance checklist to departments with high compliance risks and monitor their status. The checklist consists of items that allow employees to check if there are potential risks related to unfair trade practices or violations of economic sanctions-related laws under Acts of Republic of Korea.

Efforts to Practice Fair Trade

	Unit	2019	2020	2021
No. of fair trade and anti-corruption training	Cases	3	2	4
No. of employees participating in fair trade and anti-corruption training	Persons	60	2	209

Next Plans

As the total assets of HYUNDAI Energy Solutions exceed KRW 500 billion as of the end of 2021, following the Commercial Act, we plan to appoint a compliance officer and prepare compliance control standards through the approval of the BoD in 2022.

We will continue to set up a voluntary compliance system by expanding compliance training for departments in the field. We plan to improve the process by overhauling the work processes in regard to fair trade, illegal dispatch and economic sanctions. In addition, the scope of ESG information disclosure will be gradually expanded. In 2021, we started to disclose our ESG management information on our homepage and will gradually raise the scope of the disclosure.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Risk Management System

Strategy

HYUNDAI Energy Solutions identifies financial and non-financial risks and analyzes their impacts, followed by establishing preemptive countermeasures to secure the foundation for sustainable growth.

Financial Risk Management

We identify financial risks into foreign exchange, credit and liquidity risks to manage them by the characteristics of each risk. Appropriate financial management policies are established and operated in the financial sector while the Audit Committee supervises the management. Besides, we established and operated the internal accounting management regulations in accordance with the Act on External Audit of Stock Companies and related enforcement decree aiming at transparent internal accounting management, thereby raising the reliability of the financial statements through a reasonable and effective operation.

Non-financial Risk Management

The ESG committee mainly leads the discussion on the key ESG policies and issues, and we support the implementation of tasks. Capitalizing on the ESG governance, we manage ESG risks, such as environment, safety and health, ethics and compliance, supply chain, and information security.

APPENDIX

57	Summary of Consolidated Financial Statements
58	Stakeholder Engagement
59	Double Materiality Assessment
61	GRI Content Index
64	TCFD
66	SASB
67	UN SDGs
69	Third-Party Assurance Statement
71	Membership Status & Public Information

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Summary of Consolidated Financial Statements

Summary of Consolidated Financial Statements

Title of Account	Unit	6th Reporting Period (As of late Dec. 2021)	5th Reporting Period (As of late Dec. 2020)	4th Reporting Period (As of late Dec. 2019)
Total assets	KRW million	605,559	458,242	481,151
Current assets	KRW million	445,279	311,596	358,737
Non-current assets		160,280	146,646	122,414
Total liabilities	KRW million	285,239	129,498	163,297
Current liabilities	KRW million	255,777	108,258	157,518
Non-current liabilities		29,462	21,240	5,779
Total equity	KRW million	320,320	328,744	317,854
Capital stock	KRW million	56,000	56,000	56,000
Capital surplus		105,855	105,855	105,855
Accumulated other comprehensive income		4,591	4,503	(20)
Retained earnings		153,874	162,386	156,019

Summary of Consolidated Statements of Comprehensive Income

Title of Account	Unit	6th Reporting Period (As of late Dec. 2021)	5th Reporting Period (As of late Dec. 2020)	4th Reporting Period (As of late Dec. 2019)
Revenue	KRW million	593,163	394,397	446,103
Cost of goods sold		517,265	341,476	380,974
Gross profit		75,898	52,921	65,129
Selling, general and administrative expenses		66,403	44,140	43,069
Operating profit (loss)		9,495	8,781	22,060
Income before taxes (loss)		(6,398)	(11,907)	16,251
Net profit (loss)		(6,656)	6,224	23,547
Earnings per share (loss)	KRW	(594)	556	2,788
Cash flow from operating activities	KRW million	36,486	(9,669)	16,266

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK


- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Stakeholder Engagement

HYUNDAI Energy Solutions makes every effort to create sustainable value and happiness for our key stakeholders, including customers, shareholders, investors, employees, partner companies, distributors and the government. We identify major issues and concerns of stakeholders while forming a consensus on sustainable management through a variety of communication channels. Our Governance Charter specifies the items safeguarded for the rights of stakeholders so that we do not infringe the rights of stakeholders. We also ensure that all our employees understand our responsibility toward stakeholders, such as consumer protection, fair trade and management monitored by stakeholders. Going forward, we will keep sharing values with stakeholders in our business to bring sustainable growth and development.

Stakeholder	Key Issues and Interests	Main Communication Channel	Our Major Activities
 CLIENT Customers	<ul style="list-style-type: none"> Sharpening product and technological competitiveness Developing eco-friendly and high value-added products Improving product stability Raising communication satisfaction 	<ul style="list-style-type: none"> Customer satisfaction survey Customer Service Center 	<ul style="list-style-type: none"> Providing quality training for employees Acquiring eco-friendly (low-carbon) product certification (Korea Energy Agency's Carbon Verification System) Continuous R&D for improved products
 Shareholders & Investors	<ul style="list-style-type: none"> Elevating shareholders' value Creating stable business performance Managing business opportunities and risks Checking sustainability management Transparent governance 	<ul style="list-style-type: none"> Investment briefing General shareholders' meeting Annual report Homepage 	<ul style="list-style-type: none"> Disclosing decisions made by the BoD Establishing and operating the ESG Committee Introducing electronic voting system Introducing a system of recommending proxy voting Disclosing the dividend policy Noticing agenda items before the shareholders' meeting
 Employees	<ul style="list-style-type: none"> Fair evaluation and compensation Enhancing welfare benefits and capacity building Facilitating labor-management relations and communication Sharing with the business situation of the company Operating safe workplace 	<ul style="list-style-type: none"> Labor-Management Council Reporting system (ethics, human rights) Intranet and corporate newsletter Meeting with the management Management briefing sessions 	<ul style="list-style-type: none"> Operating various education systems Providing retired life design education Various welfare benefits including family support system Establishing PC-OFF system
 Partner Companies	<ul style="list-style-type: none"> Promoting shared growth activities Reinforcing fair trade Supporting the capacity building of partner companies Safety and health of partner companies 	<ul style="list-style-type: none"> Meetings with partner companies Consulting on unfair trade for partner companies Business Partners Council 	<ul style="list-style-type: none"> Financial support for partner companies Operating the fair trade system Evaluating safety management activities of partner companies Programs for education and technical assistance Holding meetings or inviting to PV exhibitions for outstanding distributors
 Government	<ul style="list-style-type: none"> Participating in government policies Joining and supporting government events Sharing information on the Industry and company Vitalizing the local economy Safety and labor related issues 	<ul style="list-style-type: none"> Policy advisory body Policy meetings Visiting the National Assembly and government agencies 	<ul style="list-style-type: none"> Establishing a shared growth ecosystem Operating a voluntary compliance program Adopting and implementing the guidelines for complying with economic sanctions laws Organizing business portfolio in line with the government regulations R&D investments transitioning to eco-friendly energy
 Local Community	<ul style="list-style-type: none"> Boosting the local community Increasing industrial attraction and recruitment in the local region Protecting and improving the environment in local communities Social contribution activities centered on local communities Communication with local communities 	<ul style="list-style-type: none"> Discussion meetings with local governments Local community civic groups Local community service group 	<ul style="list-style-type: none"> Operating local talent development programs Support policy for the socially vulnerable Investments in local community development A campaign to share partial wages joined by employees Social contribution including volunteer activities participated by employees
 Press & Media	<ul style="list-style-type: none"> Business performance and industry issues Overall significant issues of the company Key business direction of the company 	<ul style="list-style-type: none"> Press release material Homepage media center Meetings with the press 	<ul style="list-style-type: none"> Timely providing press release materials Uploading news on the homepage Supporting reporters
Common	<ul style="list-style-type: none"> ESG strategy and direction ESG promotion status and performance ESG evaluation ratings 	<ul style="list-style-type: none"> Integrated Report ESG homepage ESG meeting, conference call 	<ul style="list-style-type: none"> Publishing integrated reports Disclosing information on the ESG homepage Holding ESG meetings with investors and stakeholders

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

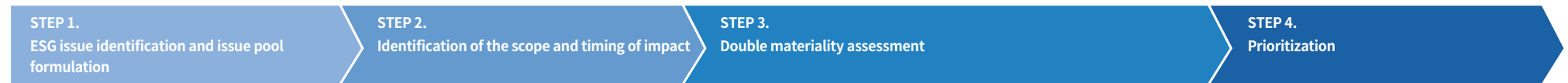
- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Double Materiality Assessment

HYUNDAI Energy Solutions annually conducts a materiality assessment to listen to the voices of major stakeholders in and outside Korea and to derive critical topics to be addressed for us to promote ESG management. In the 2021 materiality assessment, we have formed a pool of 10 issues in total based on the analysis of sustainability management standards (GRI Standards, TCFD, MSCI), media, industry, investment group perception and many more. In particular, this year, we adopted the double materiality assessment that combines the concept of double materiality and

the GRI Standards' materiality guidelines. The concept of double materiality acknowledges that a company should report simultaneously on sustainability matters that are financially material in influencing corporate value as well as material to the environment and society. Through this, we identified the interests of stakeholders and areas for improvement more accurately and reflected them in the establishment of ESG strategy.

Double Materiality Assessment Process



For the comprehensive response to internal and external sustainable management issues, we have formed our own issue pool to set the future direction and risk response as well as the analysis of requirements for information disclosure and assessment criteria.

We analyzed domestic and foreign sustainable management standards, mainly based on Global Reporting Initiative (GRI), followed by removing overlapped issues. As a result, we selected the final 10 topics.

Analysis of sustainable management standards

GRI Standards, ISO26000, MSCI, DJSI, CDP, TCFD, KCGS, KRX, UN SDGs, SASB, etc.

HYUNDAI Energy Solutions' issue pool analysis

Data analysis (internal materials, annual report, management strategy system, investment report, etc.), interview with ESG TF (key ESG issues and status, ESG-related risks)

We classified the scope of impact and the timing of it on the 10 topics selected in step.

Identification of impact scope

- Direct: Business operations having a direct impact
- Inducing: Business operations inducing other organizations (suppliers, customers, etc.) to conduct related activities
- Linked: Impact made by business relationship, not by business activities

Identification of impact timing

- Timing indicated when business activities have an overarching impact on each topic

To conduct the double materiality assessment, we took two-pronged perspectives; financial influence (Outside-In) and impact influence (Inside-Out). When it comes to financial influence review, we surveyed external investor groups and internal experts while surveying ESG experts and internal Working Group to examine impact influence.

Financial Materiality (Outside-In) Analysis (X-axis)

In order to analyze the impact of external factors on corporate value and finance, we reviewed financial impact, regulations and policies, the status of the same industry, reputation, economic opportunities and many more.

- Survey period: March 29, 2022 - March 31, 2022
- Subject: Internal and external financial groups (financial and investment institutions related to the company, internal employees in charge of finance)
- Questionnaire: The financial impact on each topic (financial impact, regulations and policies, the status of the same industry, reputation, economic opportunities)

Impact materiality (Inside-Out) Analysis (Y-axis)

With an aim to analyze the impact of the company's business activities on the environment and society, we reviewed the possibility of the occurrence of the impact, the magnitude of impact and the resilience.

- Survey period: March 29, 2022 ~ March 31, 2022
- Subject: ESG W/G of HYUNDAI Energy Solutions, ESG expert groups
- Questionnaire: Impact materiality for each topic (probability, the magnitude of impact, resilience, etc.)

We finalized the priority by putting together the environmental and social materiality of the business of HYUNDAI Energy Solutions and the opinions of internal and external stakeholders. In addition, a third-party organization completed the credible verification.

Prioritization

We have set the priority with 10 issues in accordance with the results of the comprehensive evaluation of impact and financial materiality.

Third-party verification

The reporting content was verified by a third-party organization (KMR) to secure reliability and transparency.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

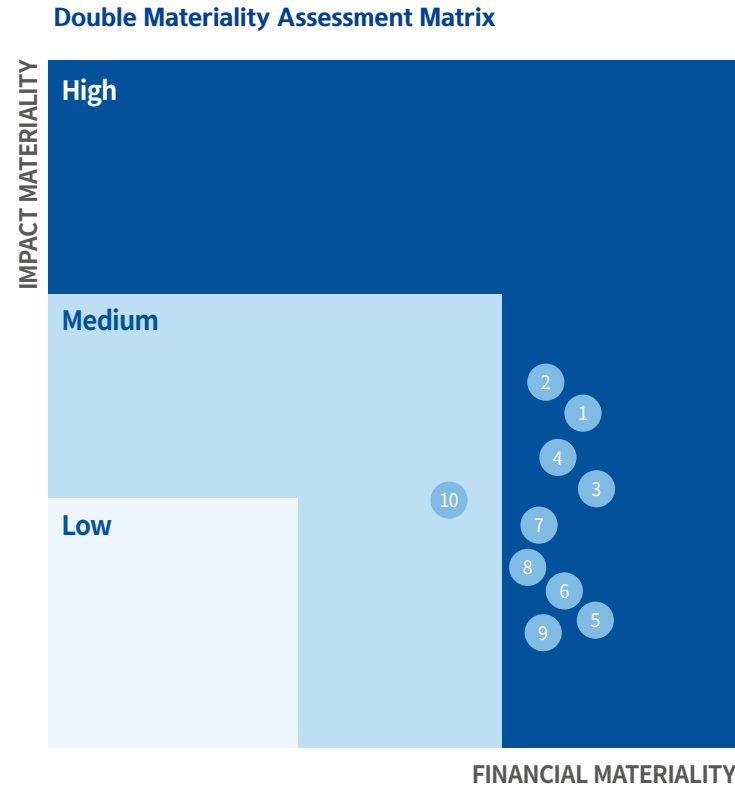
ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

Double Materiality Assessment



Application of the Result

As a result of the double materiality test, 'Sustainable product and technology development,' 'Response to the climate crisis,' and 'Integrated risk management' were evaluated as core topics related to HYUNDAI Energy Solutions' sustainable management in 2021. At the same time, 'Waste management' and 'Ethics and integrity' were ranked among the top topics. Through this assessment, we could confirm that there are expectations and social responsibility demands from stakeholders for environmental waste and governance integrity on top of sustainable business and climate action. The top issues derived from the assessment were reflected in our ESG management strategies along with the ESG risk and opportunity factor analysis results. In addition, our corporate activities in relation to these 10 sustainable management topics are reported in 'Sustainable Value Story' and 'ESG Fact Book.'

Results of Double Materiality Assessment

Rank	Topic	Impact Identification			Timing of Impact		Financial Materiality	Impact Materiality	Report Page
		Direct	Inducing	Linked	Current	Potential			
1	Sustainable product and technology development	●	●		●	●	4.5	3.48	21-22
2	Response to climate crisis	●	●	●	●	●	4.35	3.63	26-27, 64-65
3	Integrated risk management	●			●		4.6	3.23	55
4	Waste management	●			●	●	4.45	3.34	30
5	Ethics and integrity	●			●		4.7	2.73	52-54
6	Occupational safety and health	●	●		●		4.55	2.86	38-41
7	Sustainable supply chain management		●		●		4.45	3	43-44
8	Transparent governance	●			●		4.45	2.96	49-51
9	Health and safety of customers	●			●		4.55	2.68	38-41
10	Water management	●			●		4.05	3.16	28

* Results of financial materiality and impact materiality: 5-point scale

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index**
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

GRI Content Index

GRI Universal Standards

GRI Standard	Disclosure	Page	
GRI 102: General Disclosures 2016 Organizational	102-1	Name of the organization	5
	102-2	Activities, brands, products and services	6-10
	102-3	Location of headquarters	5
	102-4	Location of operations	12
	102-5	Ownership and legal form	12, 51
	102-6	Markets served	12
	102-7	Scale of the organization	5
	102-8	Information on employees and other workers	33-34
	102-9	Supply chain	43-44
	102-10	Significant changes to the organization and its supply chain	43-44
	102-11	Precautionary Principle or approach	64-65
	102-12	External initiatives	67-68
	102-13	Membership of associations	71
Strategy	102-14	Statement from senior decision-maker	4
	102-15	Key impacts, risks and opportunities	4, 64-65
Ethics And Integrity	102-16	Values, principles, standards and norms of behavior	42, 52
	102-17	Mechanisms for advice and concerns about ethics	42, 53
Governance	102-18	Governance structure	49-51
	102-20	Executive-level responsibility for economic, environmental and social topics	49-51
	102-23	Chair of the highest governance body	49
	102-24	Nominating and selecting the highest governance body	50
	102-25	Conflicts of interest	50
	102-26	Role of highest governance body in setting purpose, values and strategy	14, 64-65
	102-27	Collective knowledge of highest governance body	49
	102-31	Review of economic, environmental and social topics	14, 64-65
	102-33	Communicating critical concerns	14, 55

GRI Standard	Disclosure	Page	
Stakeholder Engagement	102-40	List of stakeholder groups	58
	102-42	Identifying and selecting stakeholders	58
	102-43	Approach to stakeholder engagement	58
	102-44	Key topics and concerns raised	58
Reporting Practice	102-45	Entities included in the consolidated financial statements	12
	102-46	Defining report content and topic Boundaries	59
	102-47	List of material topics	60
	102-48	Restatements of information	30, 37
	102-49	Changes in reporting	2
	102-50	Reporting period	2
	102-51	Date of most recent report	2
	102-52	Reporting cycle	2
	102-53	Contact point for questions regarding the report	2
	102-54	Claims of reporting in accordance with the GRI Standards	2
	102-55	GRI content index	61-63
	102-56	External assurance	69-70

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

GRI Content Index

GRI Topic Specific Standards

Economic Performances (GRI 200)

GRI Standard	Disclosure	Page
GRI 201: Economic Performance 2016	103: Management Approach 2016	7, 57
	201-1 Direct economic value generated and distributed	7, 57
	201-2 Financial implications and other risks and opportunities due to climate change	64-65
	201-3 Defined benefit plan obligations and other retirement plans	37
GRI 203: Indirect Economic Impacts 2016	103: Management Approach 2016	16-24
	203-1 Infrastructure investments and services supported	16-24
	203-2 Significant indirect economic impacts	16-24
GRI 205: Anti Corruption 2016	103: Management Approach 2016	54
	205-1 Operations assessed for risks related to corruption	54
	205-2 Communication and training about anti-corruption policies and procedures	54
GRI 206: Anti Competitive Behavior 2016	103: Management Approach 2016	54
	206-1 Legal actions for anti-competitive behavior, anti-trust and monopoly practices	54

Environmental Performances (GRI 300)

GRI Standard	Disclosure	Page
GRI 302: Energy 2016	103: Management Approach 2016	26-27
	302-1 Energy consumption within the organization	26-27
	302-3 Energy intensity	27
	302-4 Reduction of energy consumption	26-27
	302-5 Reductions in energy requirements of products and services	26-27
GRI 303: Water and Effluents 2018	103: Management Approach 2016	28
	303-1 Interactions with water as a shared resource	28
	303-2 Management of water discharge-related impacts	28
	303-3 Water withdrawal	28
	303-5 Water consumption	28
GRI 305: Emissions 2016	103: Management Approach 2016	26
	305-1 Direct (Scope 1) GHG emissions	26
	305-2 Energy indirect (Scope 2) GHG emissions	26
	305-4 GHG emissions intensity	26
	305-5 Reduction of GHG emissions	26
	305-7 Nitrogen oxides (NOx), sulfur oxides (SOx) and other significant air emissions	29
	305-3	
GRI 306: Waste 2020	103: Management Approach 2016	30
	306-1 Waste generation and significant waste-related impacts	30
	306-2 Management of significant waste-related impacts	30
	306-3 Waste generated	30
	306-4 Waste diverted from disposal	30
	306-5 Waste directed to disposal	30

GRI Content Index

Social Performances (GRI 400)

GRI Standard	Disclosure	Page
GRI 401: Employment 2016	103: Management Approach 2016	34
	401-1 New employee hires and employee turnover	34
	401-2 Benefits provided to full-time employees that are not provided to temporary or part-time employees	36-37
	401-3 Parental leave	37
GRI 402: Labor Management Relations 2016	103: Management Approach 2016	33
	402-1 Minimum notice periods regarding operational changes	33
GRI 403: Occupational Health And Safety 2018	103: Management Approach 2016	38
	403-1 Occupational health and safety management system	38
	403-2 Hazard identification, risk assessment and incident investigation	39
	403-3 Occupational health services	39-41
	403-5 Worker training on occupational health and safety	41
	403-6 Promotion of worker health	40
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	38
	403-8 Workers covered by an occupational health and safety management system	38
GRI 404: Training And Education 2016	103: Management Approach 2016	36
	404-1 Average hours of training per year per employee	36
	404-2 Programs for upgrading employee skills and transition assistance programs	35-36
	404-3 Percentage of employees receiving regular performance and career development reviews	38

GRI Standard	Disclosure	Page
GRI 405: Diversity And Equal Opportunity 2016	103: Management Approach 2016	34
	405-1 Diversity of governance bodies and employees	34
	405-2 Ratio of basic salary and remuneration of women to men	34
GRI 406: Non Discrimination 2016	103: Management Approach 2016	42
	406-1 Incidents of discrimination and corrective actions taken	42
GRI 413: Local Communities 2016	103: Management Approach 2016	45-47
	413-1 Operations with local community engagement, impact assessments and development programs	45-47
GRI 414: Supplier Social Assessment 2016	103: Management Approach 2016	43-44
	414-1 New suppliers that were screened using social criteria	43-44
GRI 416: Customer Health And Safety 2016	103: Management Approach 2016	Not Violated
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	Not Violated
GRI 418: Customer Privacy 2016	103: Management Approach 2016	48
	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	48

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index**
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

TCFD

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Governance

Recommendations	Our Action
a Describe the board’s oversight of climate-related risks and opportunities	Our BoD is well aware of the gravity of the response to climate change. The ESG Committee, launched in 2021, is in charge of ESG affairs including climate-related one. In 2021, the committee was convened twice to review the establishment of a company-wide goal management system for GHG emissions mitigation. Furthermore, a detailed roadmap to strengthen non-CO ₂ greenhouse gas management and achieve our climate target will be mapped out. And the committee will make discussions on agenda items that will have overarching impacts on our business and financial strategies such as action on climate change and performance indicator establishment.
b Describe management’s role in assessing and managing climate-related risks and opportunities	In an effort to swiftly grasp opportunities and risks posed by climate change and manage them, we have built a climate change response system between the management, working groups and experts. In detail, we put in place the organizations responsible for climate change affairs, such as Chief ESG Officer and the HSE Team while operating the ESG Advisory Group comprised of professionals by sectors. The departments in charge of environmental affairs make discussions on related agenda items and key issues on a regular basis, and then report on the results to the CEO. The CEO brings up the agenda items at the ESG Committee meetings, and the final decisions are made by the committee. The resolved issues are handled by the department in charge, and the management keeps track of the implementation and manages the goal and performance.

Strategy

Recommendations	Our Action
a Describe the climate-related risks and opportunities the organization has identified over the short, medium and long term	We categorized risks and opportunities that climate change may entail by the time of occurrence. In detail, we classified them into short-term (within 5 years), mid-term (between 5 to 10 years) and long-term (after 10 years). The impact that they may have on our business and finance will be analyzed later. We regard the government’s regulations on GHG emissions and tightened obligation of disclosure as short-term risks while decrease in investment stemming from insufficient response to climate change and negative reputation as mid- to long-term risks. Physical risks are natural disasters caused by abnormal weather events such as floods, typhoons, or forest fires. On the other hand, we recognize growing global demand for solar system arising from the expanded use of renewable energy, and the development of technologies for super high-efficiency cells and modules as business opportunities.
b Describe the impact of climate-related risks and opportunities on the organization’s businesses, strategy and financial planning	Rising demand for carbon neutrality at home and abroad, which is evidenced by the raised NDCs(Nationally Determined Contributions) for 2030, gives growing demand for new and renewable energy. Against this backdrop, HYUNDAI Energy Solutions takes financial and strategic perspectives to unpack risks and opportunities stemming from climate change, and then came up with countermeasures in consideration of their financial influence. We have met the growing demand for renewable energy by extending our manufacturing facilities and persistently investing in R&D. As of now, we have obtained 86 grade 1 carbon certifications for 18 solar modules launched while expanding the scope of low-carbon product line. The increasing profits from this can lead to investment in R&D to develop green products. We are making intensive investments in eco-friendly technology development, such as the initiation of PERC module mass production. Going forward, we plan to invent high-efficiency next generation cells and modules.
c Describe the resilience of the organization’s strategy considering the climate change scenario	With the purpose of identifying the impact that climate change may have on our business operations, we analyze physical and transition risks based on 1.5°C and NDCs scenarios. We are not subject to the government’s Greenhouse Gas and Energy Target Management System since our business sites’ GHG emissions do not exceed the standard. However, Eumseong Plant is categorized as the business site emitting more than 25,000tCO ₂ per year, so it falls under the Carbon Emissions Trading Scheme. And we are inspecting regulation-related risks including Carbon Tax, Carbon Border Adjustment Tax, and Carbon Trading Scheme to keep up with and reflect the changes in the Korea Renewable Energy 3020 Plan and climate change policy.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information

TCFD

TASK FORCE ON CLIMATE-RELATED FINANCIAL DISCLOSURES

Risk Management

Recommendations	Our Action
a Describe the organization's processes for identifying and assessing climate-related risks	The department responsible for risk management and the department in charge of climate change affairs identify and assess risks. They work together to respond to the identified ones, and come up with improvement tasks to prevent possible risks from occurring.
b Describe the organization's processes for managing climate-related risks	We always monitor manufacturing sites to manage climate-related risks, and the amount of effluent discharged is managed as daily data. In the event of a risk occurrence, it is immediately reported to the CEO, and if it is of importance, the CEO brings up this issue at the ESG Committee for decision making. By doing so, HYUNDAI Energy Solutions is making all-out efforts to control the risks possibly posed by climate change.
c Describe how processes for identifying, assessing and managing climate-related risks are integrated into the organization's overall risk management	Climate-related risk is incorporated into the company-wide risk management process. The identified risks and opportunities are reported to the ESG Committee. The committee takes charge of comprehensively managing and responding to those risks. In addition, we will forge the ESG management organizational structure and streamline the management into the integrated one in order to advance our comprehensive risk management.

Metrics and Targets

Recommendations	Our Action
a Disclose the metrics used by the organization to assess climate-related risks and opportunities in line with its strategy and risk management process	As part of the effort to evaluate risks and opportunities stemming from climate change, HYUNDAI Energy Solutions manages our GHG emissions, GHG emission intensity, energy consumption, renewable energy generation, waste generation and recycling and water use as metrics. These data are disclosed through our annual integrated reports. In 2021, our emissions amounted to 2,143 tCO ₂ eq (Scope 1) and 25,223 tCO ₂ eq (Scope 2). We saw our GHG emission intensity on the decrease over the past three years. We continue to track and manage the data to mitigate emissions down the road. Going forward, our focus will be also on the formulation of the mid- to long-term target and step-by-step roadmap for non greenhouse gases.
b Disclose Scope 1, Scope 2 and, if appropriate, Scope 3 greenhouse gas (GHG) emissions and the related risks	
c Describe the targets used by the organization to manage climate-related risks and opportunities and performance against targets	

INTRO

About This Report

Contents

BUSINESS OVERVIEW

CEO Message

Company Profile

Main Products

Value Chain

Global Network

ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

Environmental

Social

Governance

APPENDIX

Summary of Consolidated Financial Statements

Stakeholder Engagement

Double Materiality Assessment

GRI Content Index

TCFD

SASB

UN SDGs

Third-Party Assurance Statement

Membership Status &

Public Information

SASB

SUSTAINABILITY ACCOUNTING STANDARDS BOARD

Topic	Code	Accounting Metric	Unit	2021
Greenhouse Gas Emissions	TC-SC-110a.1	Percentage of subject to emission restrictions (eg. K-ETS) of Scope1 emissions	tCO ₂ eq	2,143
	TC-SC-110a.2	Discussion of long-term and short-term strategy or plan to manage Scope 1 emissions, emissions reduction targets, and an analysis of performance against those targets	-	p.64-65
Energy Management in Manufacturing	TC-SC-130a.1	Percentage grid electricity	%	97.8
Water Management	TC-SC-140a.1	Total water consumed, percentage of each in regions with High or Extremely High Baseline Water Stress	ton	382,650
Waste Management	TC-SC-150a.1	Amount of hazardous waste from manufacturing	ton	1,162.9
		Percentage recycled	%	99.85
Employee Health & Safety	TC-SC-320a.1	Description of efforts to assess, monitor and reduce exposure of employees to human health hazards	-	p.38-41
	TC-SC-320a.2	Total amount of monetary losses as a result of legal proceedings associated with employee health and safety violations	KRW	None
Recruiting & Managing a Global & Skilled Workforce	TC-SC-330a.1	(1) Percentage of employees that are foreign nationals (2) Percentage of employees that are located offshore	%	(1) 0 (2) 1.9 (4 locally hired in the U.S. / 213)
Product Lifecycle Management	TC-SC-410a.1	Percentage of products by revenue that contain IEC 62474 declarable substances	%	Not Applicable
	TC-SC-410a.2	Processor energy efficiency at a system-level for: (1) servers, (2) desktops and (3) laptops	-	Not Applicable
Materials Sourcing	TC-SC-440a.1	Description of the management of risks associated with the use of critical materials	-	p.43-44
Intellectual Property Protection & Competitive Behavior	TC-SC-520a.1	Total amount of monetary losses as a result of legal proceedings associated with anti-competitive behavior regulations	-	None
Activity Metrics	RT-EE-000.A	Total production	-	Cells: 57,788,800 Modules: 1,411,141
	RT-EE-000.B	Percentage of production from owned facilities	-	Eumseong Plant 100%

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance






APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information





UN SDGs

UN SDGs (UN Sustainable Development Goals) are global targets adopted by the UN that the international community should achieve between 2016 and 2030. To accomplish these goals requires global efforts and collaboration. And companies should play their part by creating future growth engine and attaining innovation for economic development and job creation. By aligning their business directions with the SDGs, companies can create new business models and

reinvent themselves as sustainable firms. HYUNDAI Energy Solutions is committed to developing strategies required to grow further in the mid- to long-term by grasping global trends through the SDGs. Especially, we are carrying out a variety of activities with a focus on 23 targets of 9 goals, which are Goal 3, 4, 6, 7, 8, 9, 10, 12 and 16.

Key SDGs	Target	Our Contribution
 3 GOOD HEALTH AND WELL-BEING Ensure healthy lives and promote well-being for all ages	3.4 Prevent and treat non-communicable diseases and promote mental health and well-being	<ul style="list-style-type: none"> Supporting medical expenses and check-ups for the healthy lives of personnel including support for heart surgery expenses of employees and their family and financial assistance for cancer treatment Putting in place an in-house oriental clinic to prevent musculoskeletal disorders, operating health promotion centers on work sites, appointing health managers and operating rehabilitation exercise programs
	3.8 Achieve universal health coverage, access to quality essential healthcare services and access to safe, effective, quality and affordable essential medicines and vaccines for all	
	3.9 Reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination	
 4 QUALITY EDUCATION Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.4 Increase the number of youth and adults who have relevant skills including technical and vocational skills for employment, decent jobs and entrepreneurship	<ul style="list-style-type: none"> Operating the Hi-e Campus program (learning management system) and running customized programs to nurture global talents Providing DT programs (education on digital transformation) to respond to the transformation arising from the 4th industrial revolution
	4.5 Eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, indigenous peoples and children in vulnerable situations	
 6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all	6.3 Reduce untreated wastewater and improve water quality by reducing pollution, minimizing the release of hazardous chemicals and increasing water recycling	<ul style="list-style-type: none"> Managing effluent discharge in compliance with internal environmental regulations more stringent than legal standards, minimizing effluent discharge through the preemptive management of effluent sources, and regularly checking water quality
 7 AFFORDABLE AND CLEAN ENERGY Ensure access to affordable, reliable, sustainable and modern energy for all	7.2 Increase the share of renewable energy in the global energy mix	<ul style="list-style-type: none"> Developing high-efficiency, eco-friendly PV modules Selling low-carbon-certified modules, inventing BIPV, agro PV and a floating PV system
	7.3 Double the global rate of improvement in energy efficiency	
 8 DECENT WORK AND ECONOMIC GROWTH Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	8.2 Achieve higher levels of economic productivity through the diversification of industries including high-value-added ones, technological upgrading and innovation	<ul style="list-style-type: none"> Operating a global integrated information system, giving vitality to productivity and job creation through the expansion into high-value-added business including VPP business service Creating quality jobs by hiring new and experienced employees Delivering a fair and objective personnel evaluation and compensation system for all employees Providing financial service and education for suppliers in pursuit of shared growth Declaring the Group's human rights management and establishing the mid- to long-term roadmap
	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/mid-sized enterprises including through access to financial services	
	8.5 Achieve full and productive employment and decent work for all women and men including the disabled and youth, and equal pay for the work of equal value	
	8.6 Reduce the proportion of youth not in employment, education or training	
	8.7 Prohibit forced and child labor	

UN SDGs

Key SDGs	Target	Our Contribution
 9 Industry, Innovation and Infrastructure Build a resilient infrastructure, promote sustainable industrialization and foster innovation	9.4 Increase resource-use efficiency and adopt clean and environmentally sound technologies	<ul style="list-style-type: none"> · Obtaining KS certification for an eco-friendly floating module with high resistance for the first time in the industry · Developing high-efficiency cell and bifacial module technology
 10 Reduced Inequalities Reduce inequality within and among countries	10.4 Adopt policies, especially fiscal, wage and social protection policies and progressively achieve greater equality	<ul style="list-style-type: none"> · Caring for the underprivileged, pursuing co-prosperity with local communities and donating scholarships for global talents
 12 Responsible Consumption and Production Ensure sustainable consumption and production patterns	12.2 Achieve sustainable management and the efficient use of natural resources	<ul style="list-style-type: none"> · Acquiring international certification for environmental management system · Installing prevention facilities, training employees in charge of environmental affairs, minimizing pollutant emissions through regular checks on emission concentrations · Making bins to collect waste for recycling to mitigate waste · Replacing hazardous chemicals and regularly inspecting facilities
	12.4 Achieve the environmentally sound management of chemicals and all wastes throughout their life cycle and significantly reduce their release to air, water and soil	
	12.5 Reduce waste generation through prevention, reduction, recycling and reuse	
	12.6 Encourage companies to adopt sustainable practices and to integrate sustainability information into their reporting cycle	
 16 Peace, Justice and Strong Institutions Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	16.3 Promote the rule of law at the national and international levels and ensure equal access to justice for all	<ul style="list-style-type: none"> · Putting into action transparent and responsible management by ensuring our compliance with laws and business ethics · Creating a rational governance structure where checks and balances are on track · Having the ESG Committee up and running to unleash sustainable management · Pursuing inclusive management activities by engaging various stakeholders in management, including active communication with the labor-management council
	16.5 Reduce corruption and bribery in all their forms	
	16.6 Develop effective, accountable and transparent institutions at all levels	
	16.7 Ensure responsive, inclusive participatory and representative decision-making at all levels	

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs**
- Third-Party Assurance Statement
- Membership Status & Public Information

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement**
- Membership Status & Public Information

Third-Party Assurance Statement

To readers of HYUNDAI Energy Solutions Integrated Report 2021

Introduction

Korea Management Registrar (KMR) was commissioned by HYUNDAI Energy Solutions to conduct an independent assurance of its Integrated Report 2021 (the "Report"). The data and its presentation in the Report is the sole responsibility of the management of HYUNDAI Energy Solutions. KMR's responsibility is to perform an assurance engagement as agreed upon in our agreement with HYUNDAI Energy Solutions and issue an assurance statement.

Scope and Standards

HYUNDAI Energy Solutions 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

- GRI Sustainability Reporting Standards
- Universal standards
- Topic specific standards
 - Management approach of Topic Specific Standards
 - GRI 205: Anti-Corruption
 - GRI 303: Water
 - GRI 305: Emissions
 - GRI 306: Effluents and Waste

- GRI 403: Occupational Health and Safety
- GRI 414: Supplier Social Assessment

As for the reporting boundary, the engagement excludes the data and information of HYUNDAI Energy Solutions' 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 HYUNDAI Energy Solutions 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.

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement**
- Membership Status & Public Information

Third-Party Assurance Statement

Conclusion and Opinion

Based on the document reviews and interviews, we had several discussions with HYUNDAI Energy Solutions 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

HYUNDAI Energy Solutions 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

HYUNDAI Energy Solutions 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

HYUNDAI Energy Solutions 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 HYUNDAI Energy Solutions' actions.

Impact

HYUNDAI Energy Solutions 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 HYUNDAI Energy Solutions and did not provide any services to HYUNDAI Energy Solutions that could compromise the independence of our work.

June 2022 Seoul, Korea



CEO *E. J. Hwang*

INTRO

- About This Report
- Contents

BUSINESS OVERVIEW

- CEO Message
- Company Profile
- Main Products
- Value Chain
- Global Network
- ESG Management System

SUSTAINABLE VALUE STORY

ESG FACT BOOK

- Environmental
- Social
- Governance

APPENDIX

- Summary of Consolidated Financial Statements
- Stakeholder Engagement
- Double Materiality Assessment
- GRI Content Index
- TCFD
- SASB
- UN SDGs
- Third-Party Assurance Statement
- Membership Status & Public Information**

Membership Status & Public Information

Membership Status

- Korea Photovoltaic Industry Association
- Korea New Renewable Energy Association
- Korea Environmental Engineers Association in Chungbuk
- Korea Electrical Contractors Association

Public Information

Disclosure Channels		Main Contents
HYUNDAI Energy Solutions website	https://www.hyundai-es.co.kr/index.do	Introduction of the company, IR, products & dealerships, online customer service
HYUNDAI Energy Solutions blog	https://blog.naver.com/hyundai-es-blog	HYUNDAI Energy Solutions' products and news
HHI Group Business Ethics website	https://ethics.hhigroup.kr/html/main.html	Group ethics management direction, Code of Ethics, online report / counseling
HHI Group Webzine 'Magazine H'	http://www.hdhyundai.co.kr/magazine-h	Chanel for HHI Group's general management status (monthly)
Financial Supervisory Service DART	http://dart.fss.or.kr	Various data disclosures made either mandatorily as a listed company or voluntarily
Investor Relations	https://www.hyundai-es.co.kr/invest/ir.do	Regular announcement on business performance and outlook

