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KOWEPO Sustainability Report 2021



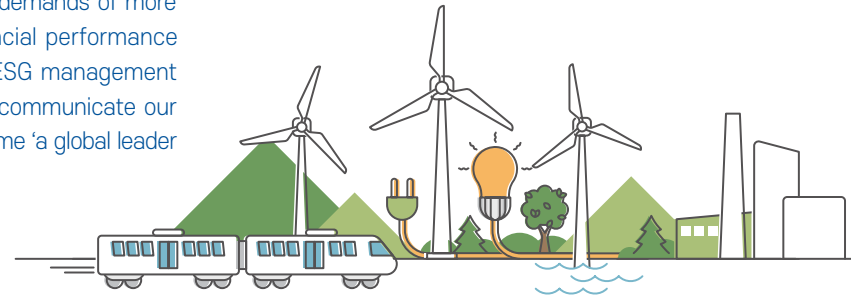
# A global leader in green energy At the forefront of a new era

KOWEPO Sustainability Report 2021



# About this report

Since Korea Western Power Co., Ltd. (KOWEPO) released its first Sustainability Report in 2006, we have published the biennial Sustainability Report to disclose our sustainability internally and externally, while taking heed of the expectations and demands of more stakeholders. This year's report combines financial and non-financial performance including ESG management to transparently disclose KOWEPO's ESG management activities and performance. In this way, KOWEPO seeks to clearly communicate our management status and corporate value as we make strides to become 'a global leader in green energy at the forefront of a new era.'



## Duration and scope of the report

The reporting period is between Jan 1, 2020 and Dec 31, 2021. As for information that is essential to stakeholders, the report also covers the performance of our activities until the first half of 2022. For quantitative performance, quarterly data is included to indicate the latest trend. We applied the fiscal year ended Dec. 31 as the reference date for data that changes on an annual basis, and we also specified the data collection period as needed. This report highlights the environmental, social, and governance performance of the head office and our business sites. A part of the disclosed data includes some performance results from our overseas businesses/ affiliates and our supply chain.

## Reporting principles

This report complies with the core options of the Global Reporting Initiative (GRI) standards, an international guideline for sustainability reporting, and the content is designed by reflecting the UN Global Compact Principles, K-ESG key agenda, ESG ISO 26000, Sustainability Accounting Standards Board (SASB), and the Task Force on Climate-Related Financial Disclosures (TCFD). The financial results are reported according to Korean International Financial Reporting Standards (K-IFRS). An independent (third-party) audit agency approved this report by verifying its reliability and fairness. The result of the verification is included in the report assurance opinion statement.

## Additional information

The full text of the KOWEPO Sustainability Report can be viewed or downloaded from our website (<https://www.iwest.co.kr/>). For more details or inquiries, please contact us. We look forward to and value your input and feedback from stakeholders.

## Korea Western Power Co., Ltd. (KOWEPO)

### Homepage

[www.iwest.co.kr](http://www.iwest.co.kr)

### YouTube

KOREA WESTERN POWER CO., Ltd.

### Blog

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# CONTENTS

## Sustainability Overview

- 3 CEO's Message
- 4 About us
- 6 Our Business
- 12 Our Locations
- 16 Stable, Economic Power Supply
- 18 Sustainable Fuel Supply and Demand
- 20 Breakthrough Technologies and Future Growth

## Achieving ESG Together

- 24 ESG Focus 2022
- 26 Background of ESG Management
- 27 KOWEPO ESG Management System
- 30 Stakeholder Value Proposition
- 32 Stakeholder Engagement

## ESG in Action

### **E Coexistence** | Sustainable management by leading the drive to green governance

- 37 Our Approach to Carbon Neutrality
- 41 Environmental Management System
- 42 Eco-Friendly Operations

### **S Respect** | Building a Safer Future Together

- 47 Health and Safety Management
- 50 Improving Employee Value
- 52 Corporate Culture of Communication and Respect
- 56 Inclusive Growth
- 58 Social Contribution to Local Communities

### **G Empathy** | KOWEPO, an ethical and equitable company with the trust of the people

- 61 Governance
- 64 Ethical Management
- 68 Transparency and Disclosure
- 70 Risk Management

## Appendix

- 74 ESG Data Book

## CEO Message

“

With forging ahead to carbon neutrality and achieving an energy paradigm shift as our key goals, we will be a global leader in green energy at the forefront of a new era.

”



“ KOWEPO will play a leading role in engineering a new future for the power generation industry based on communication, humanism, safety, and technology.

”

### Dear esteemed shareholders:

The last two years, 2020 to 2021, were a stark reminder of the pressing need for us all to pivot with meaningful steps towards a more sustainable future, as COVID-19 has left a severe impact on the world already devastated by an unprecedented climate crisis. With the highest of expectations of the people on the roles and responsibilities of public corporations, KOWEPO infuses the value of ESG governance into everything we do, through coexistence between people and the environment (E), prioritizing social contribution (S), and empathy through transparent governance and ethical management (G). Each day, our teams work diligently to accelerate growth and inform our stakeholders of KOWEPO's progress and performance in sustainable management with the ninth edition of this report.

### We always prioritize individual life and safety.

The primary mission of KOWEPO is to provide the stable supply of power with a clean record of accidents. We are building a workplace safety culture focused on people and prevention to create a safe workplace where everyone can work without safety concerns and set up a health and safety management system on par with global standards. To that end, we are building a more robust organization, manpower, and budget allocation and meticulously inspecting our facilities to strengthen safety on site. We will go the extra mile above legal and regulatory compliance and be fully committed to sticking to the basics based on KOWEPO's firm principles.

### We lead carbon neutrality initiatives in the energy sector through differentiated technologies.

Overcoming the climate crisis is the most pressing challenge of our times, calling for real and meaningful action as a necessity rather than an option. KOWEPO is reducing the dependence on fossil fuel power generation and increasing combined cycle plants powered by liquefied natural gas (LNG) and renewable energy to achieve carbon neutrality and convert energy. Grounded in our advanced technology, we are building the Gimpo combined heat and power (CHP) plant that applies Korean-style gas turbines for the first time in the nation, and environment-friendly combined cycle plants in place of coal-powered generation stations in Gumi, Gongju, and Yeosu. We are actively engaged in renewable energy development at the forefront by constructing a large-scale offshore wind power plant in Nakwol, Yeonggwang, for example. In the future, we will secure a sustainable future growth engine by charting the way in the development of new low-carbon

technologies, including demonstration of hydrogen-fueled gas turbines, development of the next-generation water electrolysis technology, and carbon capture, utilization, & storage (CCUS) that aims to reduce greenhouse gas (GHG) emissions.

### We are your partner in our ESG initiatives with a genuine commitment to people.

KOWEPO is hard at work to fulfill our social responsibility as a public enterprise by actively undertaking projects that support the efforts to overcome COVID-19 and problems affecting local communities, as well as disseminating our ESG management practices to our suppliers.

In June 2021, we formed the ESG Steering Committee under the Board of Directors (BOD) to augment the advisory function of the BOD by leveraging the expertise of non-standing directors. The committee also regularly monitors our performance on pending ESG issues and provides feedback.

By achieving transparent governance, disclosing information, maintaining integrity and conforming with ethical practices, we will serve in the best interest of the communities we are engaged in to create a harmonious society through ESG management based on humanism and the people's trust.

### We create a sustainable growth structure through management innovation

There are growing number of factors that raise production costs such as the global energy crisis and continued inflation. Against this backdrop, KOWEPO has launched the New Turn Project designed to increase business performance and overcome the crisis to streamline the overall business management.

We will establish a structure for steady organizational growth through a complete overhaul that includes adjustment of business functions centered on increasing productivity, reorganization and reshuffling of personnel, debt reductions, divestitures of assets unrelated to the core business, and system reorganization that meets the expectations of the people.

We are confident that this report elaborating on KOWEPO's efforts made in 2020-21 succeeds in its role as a communication means that will allow the trust and expectations of stakeholders to take firmer root. We truly look forward to your unwavering support and interest in our initiatives to be a global leader in green energy at the forefront of a new era.

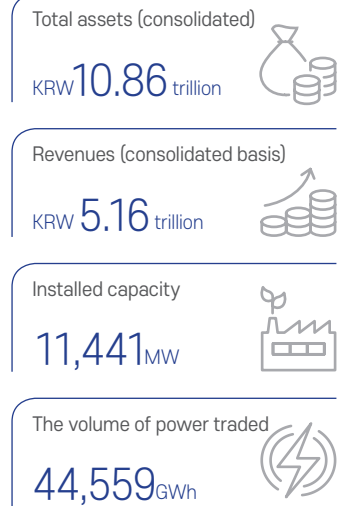
August 2022

KOWEPO President Park Hyung-duck

박형덕



## About KOWEPO



### KOWEPO Overview

KOWEPO is a public enterprise that was spun off from Korea Electric Power Corporation (KEPCO) in April 2001. The company has facilities in Pyongtaek, Seoincheon, and Gunsan, along with the Taeon Thermal Power Plant capable of generating 11,441MW, which amounts to 8.5% of the total power generated across the nation. Founded with an aim of enhancing the competitiveness of the power industry and level of service provided to electricity users, as we contribute to the sound development of the electric power sector, KOWEPO seeks to produce safe and clean energy to promote the advancement of society and the public sector as a public energy company under our vision of being "a global leader in green energy at the forefront of a new era."

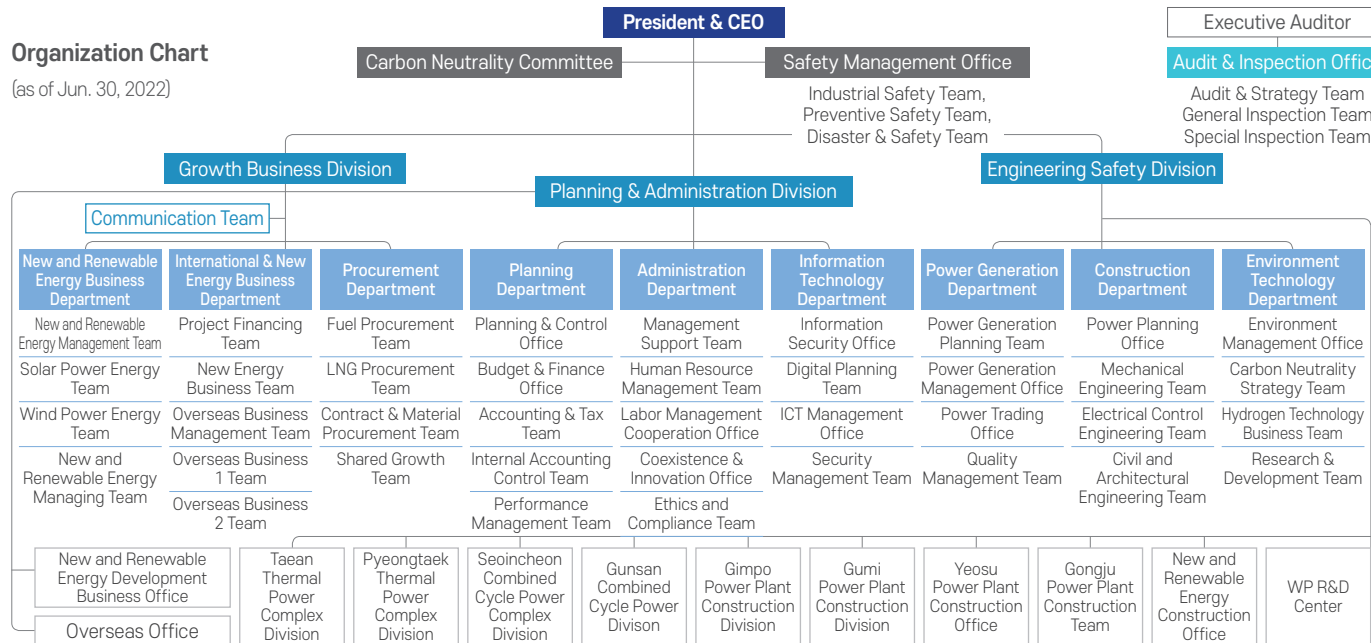
#### General status

(As of Dec. 2021)

<b>Company name</b>	Korea Western Power Co., Ltd. (KOWEPO)	<b>Date founded</b>	Apr. 2, 2001
<b>Type of business</b>	Corporation	<b>Location of headquarters</b>	285, Jungang-ro, Taeon-eup, Taeon-gun, Chungcheongnam-do, 32140, Republic of Korea
<b>President</b>	Park Hyung-duck	<b>Organizational structure &amp; the No. of employees</b>	3 divisions, 9 departments, 2 offices, 1 team, and 12 business sites/ 2,774 employees (based on quota)
<b>Legal framework</b>	Act on Restructuring Promotion of the Electric Power Industry (Dec. 23, 2000)	<b>Electricity generated</b>	11,441MWh (amounts to 8.5% of the total power generated across the nation as of the end of 2021)
<b>Our business lines</b>	Development of electricity, power generation & pertinent business, general supervision, construction project management, etc.	<b>Shareholder composition</b>	100% KOWEPO
<b>Financial status</b>	<ul style="list-style-type: none"> <li>Assets: KRW 10.86 tril (consolidated basis), KRW 10.82 tril (separate basis)</li> <li>Capital: KRW 3.73 tril (consolidated basis), KRW 3.7 tril (separate basis)</li> <li>Capital: KRW 5.16 tril (consolidated basis), KRW 4.97 tril (separate basis)</li> </ul>		

### Organization Chart

(as of Jun. 30, 2022)



### Company history & milestones

- 2001**  
04. The founding of KOWEPO
- 2002**  
09. Constructed units 5 and 6 at the Taeon Thermal Power Complex
- 2004**  
01. Closed the Gunsan Thermal Power Complex
- 2005**  
08. Built the Taeon solar power facilities
- 2007**  
06. Constructed the denitrification facility for units 1 to 6 at Taeon
- 2008**  
08. Constructed units 7 and 8 at Taeon
- 2008**  
05. Built the Samrangjin Solar Power Plant
- 2010**  
09. Constructed the Gunsan Combined Cycle Power Plant
- 2012**  
11. Acquired recertification of Carbon Trust Standard
- 2012**  
11. Built units 9 and 10 at the Taeon Thermal Power Complex
- 2014**  
10. Completed phase 1 in the 11.2MW Seoincheon fuel cell plant construction project
- 2015**  
04. Test-operated unit 9 at the Taeon Thermal Power Complex
- 2015**  
09. Moved into the Taeon head office
- 2015**  
10. First in Korea to ignite the integrated gasification combined cycle (IGCC) plant
- 2015**  
11. Completion ceremony for the Hwasun Wind Power Plant & the energy storage system (ESS)

### KOWEPO VISION 2035

KOWEPO strives in earnest to respond to the energy paradigm shift, in phase with the government's pledge to carbon neutrality, and to expand the share of renewable power generation to 35% by 2035 according to the increased renewable portfolio standards (RPS). We have revamped the corporate strategy into three strategic agendas expressed as "To lead the green, low-carbon energy industry," "To pursue sustainable growth based on financial soundness," and "To create public value centered on the people's trust." Ultimately, we are fully committed to being a global leader in green energy at the forefront of a new era.

#### Strategy of KOWEPO Vision 2035

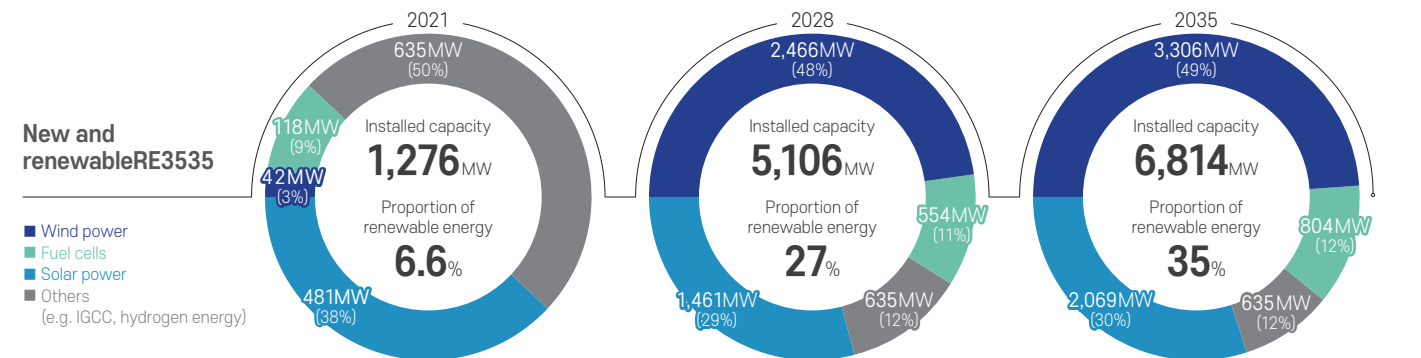


We contribute to the development of society and the public sector by producing safe and clean energy through continuous innovation.

<b>Mission</b>	A global leader in green energy at the forefront of a new era.		
<b>Vision</b>	A passion for excellence;		
<b>Core values</b>	Meeting challenges to drive growth;	Respect for individual life and safety;	Trust built by win-win partnerships/ co-prosperity
<b>Strategic agendas</b>	To lead the green, low-carbon energy industry;	To pursue sustainable growth based on financial soundness;	To create public value centered on the people's trust
<b>Management goals</b>	<ul style="list-style-type: none"> <li>GHG reduction rate <b>55%</b></li> <li>Renewable power generation rate <b>35%</b></li> <li>Fine dust reduction rate <b>90%</b></li> </ul>	<ul style="list-style-type: none"> <li>Sales (debt ratio 195%) <b>KRW 7.9 trillion</b></li> <li>Green combined cycle complex capacity <b>10GW</b></li> <li>Sales from overseas &amp; new business <b>1.4 trillion</b></li> </ul>	<ul style="list-style-type: none"> <li>Occupational accident rate <b>0%</b></li> <li><b>Highest grade</b> in inclusive growth evaluation</li> <li><b>Highest grade</b> in integrity assessment</li> </ul>
<b>Strategic tasks</b>	<ul style="list-style-type: none"> <li>Preemptive reduction of GHG emissions via breakthrough carbon neutral technologies;</li> <li>Fast expansion of renewable energy in Korea based on an inclusive business model;</li> <li>Overhaul of renewable operation systems with respect to the latest digital &amp; green technologies;</li> <li>Continuous reinforcement of eco-friendly generating facilities, and invigoration of circular economy</li> </ul>	<ul style="list-style-type: none"> <li>Timely construction of alternative combined cycle plants by securing the optimal site;</li> <li>Flexible response to energy market changes and setting up an economical fuel supply system;</li> <li>Advancement of a domestic thermal power operation system that balances productivity &amp; stability;</li> <li>Increased overseas business focused on profitability &amp; new business based on hydrogen technology</li> </ul>	<ul style="list-style-type: none"> <li>Internalization of preventative safety awareness &amp; formation of a smart safety control system;</li> <li>Expansion of practical social contribution towards sustainable regional growth;</li> <li>Strengthening the basis for the self-sufficiency of SMEs by creating demand for innovation;</li> <li>Reinforced ethics &amp; compliance system &amp; realization of empathetic management through good communication &amp; engagement</li> </ul>

### Renewable energy portfolio for achieving carbon neutrality

KOWEPO has formulated the Renewable RE3535 plan to supply over 35% of all power generated with renewable energy by 2035. This is intended to secure a new growth driver from a natural resource as a power source and to augment our role in the large-scale renewable energy business as a public power generation enterprise in response to the government policy of expanding renewable energy. In particular, we will gradually increase the share of wind power and fuel cells to expand the overall share of renewable energy use and achieve carbon neutrality.



- 2016**  
04. Completed phase 2 in the 5MW Seoincheon fuel cell plant construction project
- 2016**  
05. Built the floating solar farm in Taeon
- 2016**  
12. Won the Grand Prize at the Korea Idea Management Awards for three consecutive years
- 2017**  
08. Completed phase 1 in the Seoincheon solar power facilities construction project
- 2017**  
11. Won the Presidential Award in the Inclusive Growth Group Category
- 2017**  
12. Constructed units 9 and 10
- 2018**  
01. Completed phase 2 in the Seoincheon solar power facilities construction project
- 2018**  
07. Opened the Western Power Generation Lab
- 2018**  
09. Won the Job creation Exemplary Management Prize of Korea
- 2019**  
04. Won the Grand Prize at the National Industry Awards in the Environmental Management and Production Quality Category
- 2019**  
08. Built 1MW ESS for the solar power farm in Seoincheon
- 2020**  
04. Pyeongtaek switched from fossil fuel to green fuel
- 2020**  
06. Completed phase 4 in the 22MW Seoincheon fuel cell plant construction project
- 2021**  
03. Set a new world record for non-stop operations of IGCC (surpasses 5,032 hours)
- 2021**  
06. Completed phase 5 in the 20MW Seoincheon fuel cell plant construction project
- 2021**  
12. Constructed a floating solar farm at the Hapcheon dam



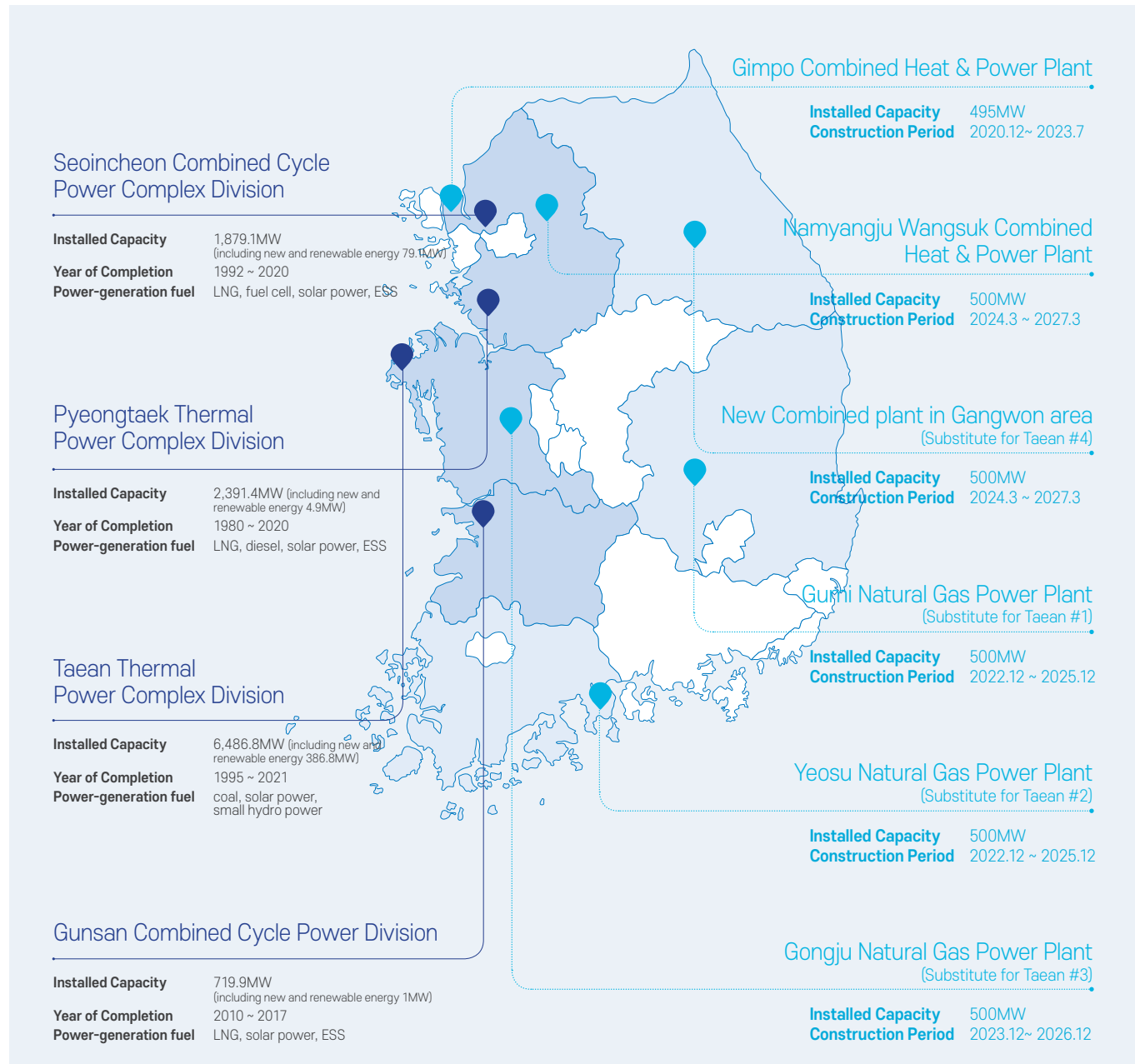
## Our Business

### Electricity generation business

KOWEPO has four power generation complexes in Pyongtaek, Seoincheon, Gunsan, as well as a thermal power plant in Taeon which, in total, generates 11,441MW of electricity. This amounts to 8.5% of the entire power generated across the nation. We are committed to providing quality electricity stably at a cost-effective price. In recent years, we reinforced our eco-friendly facilities and produced new technologies to cut down emissions of substances that cause fine dust by up to 90% until 2035 compared to the 2015 level. This way, we seek to build the most environment-friendly power stations in the world. In addition, we launched a building project for combined cycle power plants that will replace generator units 1 to 6 in Taeon, starting with the Gimpo combined heat and power (CHP) plant. This was followed up by the construction of plants in the eastern (Gumi), central (Gongju), and southern (Yeosu) regions, creating a foothold to extend beyond the west coast and take a major step to be a nationwide business.

(as of Jun. 30, 2022)

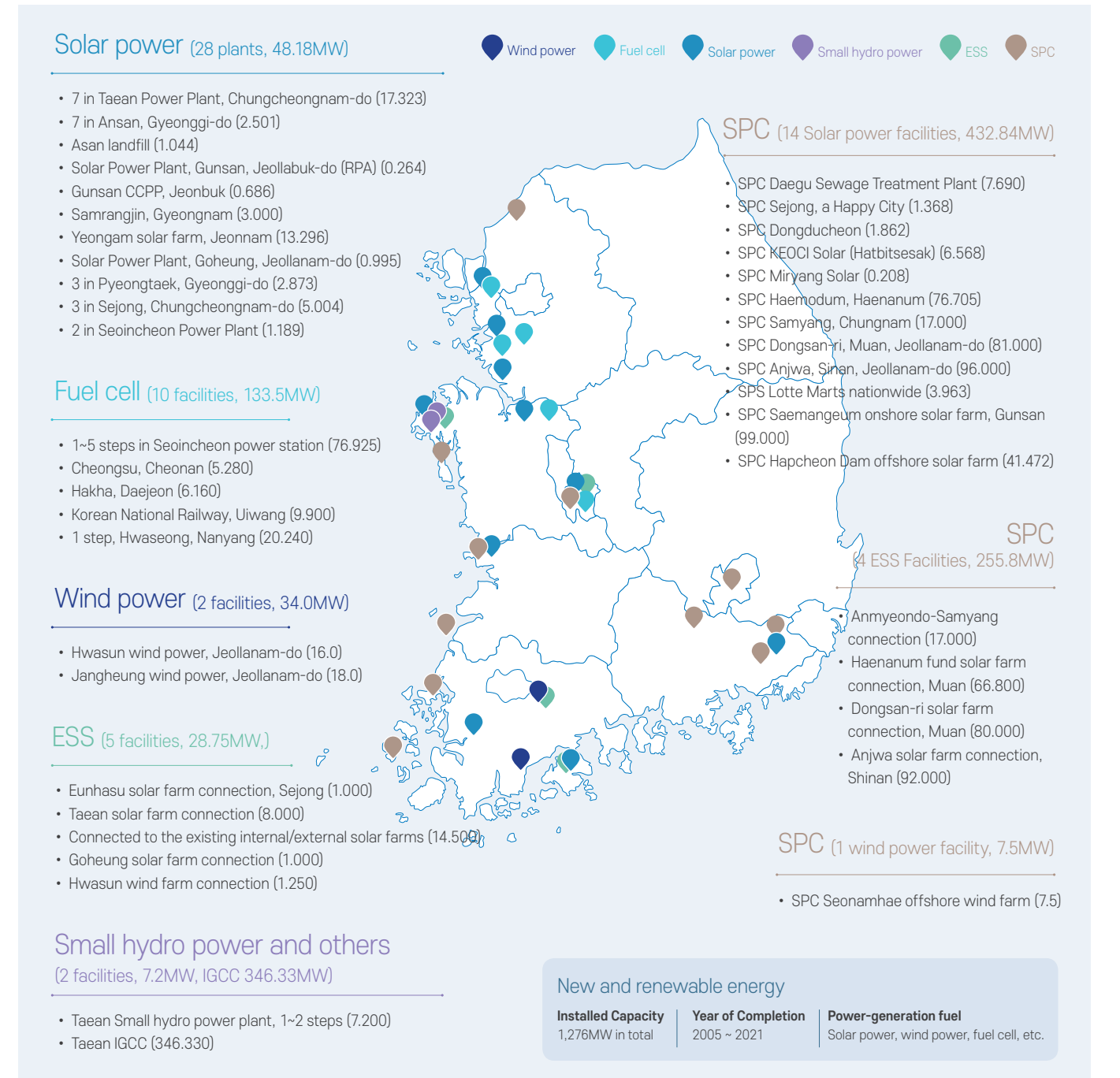
Existing plants To be established



### Renewable energy business

KOWEPO has formulated the Renewable RE3535 plan to supply over 35% of all power generated with renewable energy by 2035. This is intended to secure a new growth driver from natural resources as a power source and to augment our role in the large-scale renewable energy business as a public power generation enterprise in response to the government policy of expanding renewable energy.

(as of Jun. 30, 2022)



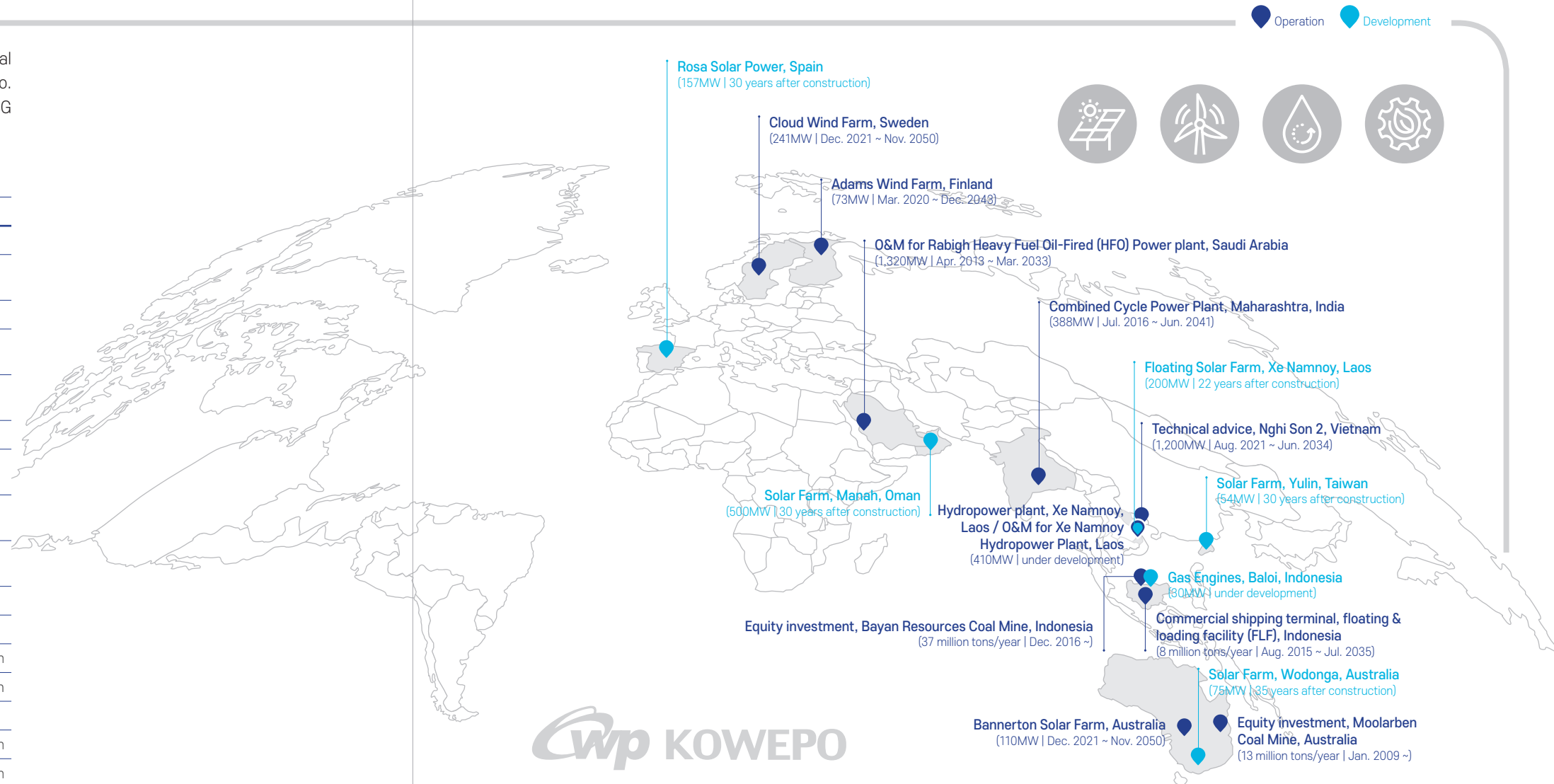
New and renewable energy		
Installed Capacity	Year of Completion	Power-generation fuel
1,276MW in total	2005 ~ 2021	Solar power, wind power, fuel cell, etc.

Overseas business

Reflecting the trends in the overseas power generation market with accelerated shift to coal alternatives, KOWEPO is undertaking the business of building our 2035 Overseas Business Portfolio. To that end, we are focusing on slashing the ratio of coal-fired generation, developing the ESG management paradigm, and advancing the generation business using renewable sources.

Overseas Business Status

Category	Project name	Capacity	Project period
Operation	Hydropower plant, Xe Namnoy, Laos	410MW	Dec. 2019 ~ Dec. 2046
	Combined Cycle Power Plant, Maharashtra, India	388MW	Jul. 2016 ~ Jun. 2041
	Bannerton Solar Farm, Australia	110MW	Dec. 2021 ~ Nov. 2050
	O&M for Xe Namnoy Hydropower Plant, Laos	410MW	Dec. 2019 ~ Dec. 2046
	O&M for Rabigh Heavy Fuel Oil-Fired (HFO) Power plant, Saudi Arabia	1,320MW	Apr. 2013 ~ Mar. 2033
	Technical advice, Nghi Son 2, Vietnam	1,200MW	Aug. 2021 ~ Jun. 2034
	Equity investment, Moolarben Coal Mine, Australia	13 million tons/year	Jan. 2009 ~
	Commercial shipping terminal, floating & loading facility (FLF), Indonesia	8 million tons/year	Aug. 2015 ~ Jul. 2035
	Equity investment, Bayan Resources Coal Mine, Indonesia	37 million tons/year	Dec. 2016 ~
	Adams Wind Farm, Finland	73MW	Mar. 2020 ~ Dec. 2043
Development	Cloud Wind Farm, Sweden	241MW	Dec. 2021 ~ Nov. 2050
	Rosa Solar Power, Spain	157MW	30 years after construction
	Solar Farm, Wodonga, Australia	75MW	35 years after construction
	Gas Engines, Baloi, Indonesia	30MW	Under development
	Solar Farm, Manah, Oman	500MW	30 years after construction
	Solar Farm, Yulin, Taiwan	54MW	30 years after construction
	Floating Solar Farm, Xe Namnoy, Laos	200MW	Under development
	Bannerton Solar Farm, Australia	110MW	Dec. 2021 ~ Nov. 2050
	Equity investment, Moolarben Coal Mine, Australia	13 million tons/year	Jan. 2009 ~
	Commercial shipping terminal, floating & loading facility (FLF), Indonesia	8 million tons/year	Aug. 2015 ~ Jul. 2035



**Xe Namnoy Hydropower Plant, Laos**

The Xe Namnoy Hydropower Plant is a hydroelectric power plant built on the Bolaven Plateau and Xe Namnoy River, a branch of Sekong River, and the Sekong River Basin. From the initial stage of development, the plant was built under a joint contract with the government of Laos as a development partner, which is the place of business, and Thailand Electric Power Corporation, the electricity customer.



**Bannerton Solar Farm, Australia**

Bannerton Solar Farm in Australia was our first solar power project conducted overseas. For this project, we secured stable profits through a 6% equity investment. The farm was completed in October 2018 as a 110MW power plant in Bannerton, Victoria.



**Adams Wind Farm, Finland**

The Adams Wind Power Complex is located near Oulu, a city 667km north of Helsinki. Since the complex began its commercial operation in January 2015, 30 wind turbines has been up and running, being applied with high feed-in tariffs (FIT) from the Finnish Government.



**O&M for Rabigh HFO Power Plant, Saudi Arabia**

The Rabigh Project is the first O&M project ordered by Saudi Electricity Power Company. KOWEPO won the deal in fierce competition with other Korean generation companies. The duration of the O&M project ends 20 years after the construction is complete, which guarantees stable revenues for two decades. Our market entry into Saudi Arabia is a milestone as we became the first power company in Korea to gain a foothold in the Saudi Arabian market.



## Our locations

### Electricity generation

#### Taeon Thermal Power Plant, the heart of the west coast era

Taeon Thermal Power Plant, the core power station of KOWEPO and the standard model for Korean thermal plants, features installed capacity of 6,486.8MW that is equivalent to 57% of KOWEPO's total installed capacity. The plant is leading the effort to produce and supply eco-friendly, high-quality electricity with environmental facilities and technology.



#### Pyeongtaek Thermal Power Plant, the hub of power supply in the Greater Seoul Area

The Pyeongtaek Thermal Power Plant is the largest hub of power generation equipped with 1,400MW of fossil fuel power generation, and 868.5MW of combined cycle power generation, which in total adds up to 2,391.4MW of power. This is an eco-friendly generating station that plays a crucial role in electricity supply to the metropolitan area with world-class operational technology and green facilities.



#### Seoincheon Power Station headed for the largest green energy station in Incheon

The Seoincheon Power Station, located near Yeongjong Bridge, which is the gateway to Incheon International Airport, is a generating station with renewable energy facilities, including a natural gas-fired 1,879.1MW class facility, fuel cells, and solar power. These are cutting-edge facilities that activate and deactivate depending on power demands with which operators can respond to changes immediately. These examples showcase how the Seoincheon Power Station is at the forefront environment-friendly power plants.



#### Gunsan Power Plant, a model urban generating station

The Gunsan Power Plant built within the city of Gunsan, is an environment-friendly power station that resolves environmental issues through rigorous management and use of green fuels. There is also an amusement park inside the plant premises that citizens can enjoy the use of. The Gunsan Power Plant is a 719.9MW LNG plant with the latest gas turbine model (G-class), achieving the highest power generation efficiency. The plant provides over 30% of electricity used in the Jeonbuk region.



### Upcoming power stations

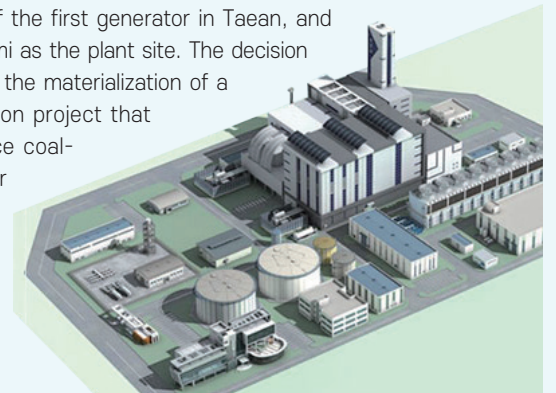
#### Gimpo CHP Plant, KOWEPO's first collective energy project

The Gimpo Power Plant's Construction Division is building the Gimpo CHP Plant, the first collective energy project by KOWEPO. The plant is slated to provide electricity to 500,000 households in the metropolitan area and heating to 70,000 households in Gimpo with the capacity to produce 500MW in electricity and 281Gcal/h in heating. Since we broke ground in December 2020, the plant will be completed in July 2023.



#### Gumi Natural Gas Power Plant, the first step to a carbon-neutral era

The Gumi Natural Gas Power Plant Project is a natural gas-fired power generation project designed to provide a stable energy supply to the Gumi region by signing a contract with Gumi City Government in April 2020. Under the project, we are building a 500MW LNG-fired combined cycle power plant between 2023 and 2025 with an investment of KRW 700 billion on a 147,000m2 site in Gumi High-Tech Valley. In particular, we confirmed the basic plan to build an LNG-fired combined cycle power plant in place of the first generator in Taeon, and chose Gumi as the plant site. The decision has led to the materialization of a construction project that will replace coal-fired power stations.



#### Gongju Natural Gas Power Station, paving the way to be a nationwide business

KOWEPO selected the Namgongju Industrial Complex as the site for the plant and concluded a contract with the local government in November 2020. Under the contract, we plan to make a KRW 700 billion investment between 2023 and 2026 and build a 500MW natural gas generating plant that will replace the second generator in Taeon on 99,000m2 of land at the Namgongju Industrial Complex. This will provide a launch pad for KOWEPO to take on nationwide operation of power plants that had so far been limited to the west coast, covering the eastern (Gumi), central (Gongju), and southern (Yeosu) regions.



#### Yeosu Natural Gas Power Plant, an LNG-fired combined cycle power plant project that will replace the third thermal power generator in Taeon

Yeosu is building an LNG Terminal at the construction site, making it easier to source LNG directly. When using cold and hot water supply complementarily, we can expect to generate high profits in the future. In 2020, KOWEPO formed a contract with the local government and began preparing for the second construction project following the Gumi project. We also secured the construction site for the combined cycle power station in place of the third thermal power generator in Taeon by acquiring a license for a 500MW class LNG-fired plant in Myodo, Yeosu-si, Jeollanam-do. For this project, we will invest a total of KRW 700 billion between 2026 and 2028.



New and renewable energy

**Taeon solar farm, the advent of renewable energy business**

KOWEPO launched the renewable energy business to complement the government's initiative of developing and distributing renewable energy, preoccupy future energy technology, and secure mid-to-long-term growth drivers. In August 2005, KOWEPO built a 120kW class solar power generation facility in Taeon as the first power generation company in Korea. Since the end of 2021, we have been running a 17.3MW solar farm under the Taeon Power Generation Plant Division, a total of 48MW internal solar facility, and 433MW solar power controller (SPC) business. Aside from the increase in renewable energy use, KOWEPO is running two hydrogen power plants using the wastewater from the Taen thermal power plant, as a part of the clean development mechanism (CDM) business.



**Combustion-free power generation, Seonincheon fuel cell business**

Fuel cell power stations produce electricity through a chemical reaction between hydrogen oxygen free of the combustion process. It is an environment-friendly form of energy with a high power generation efficiency that hardly creates any noise or dust. Fuel cells account for 12% in our Renewable RE3535 initiative, and we plan on increasing the installed capacity to 804MW by 2035. To that end, we plan to carry out the fuel cell business by not only using idle land area in our power stations, but also various means, including the development of fuel cells for heat users in large cities and joint development with municipalities and private companies.



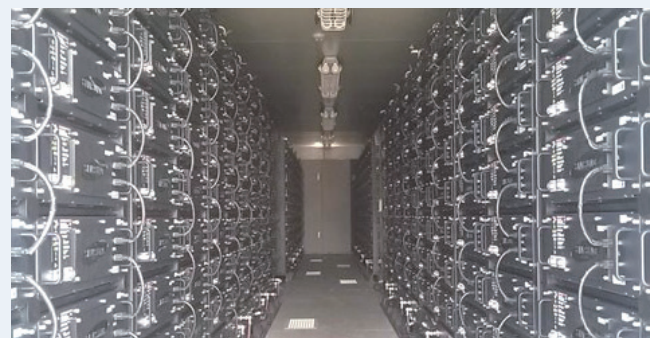
**Hwasun and Jangheung Wind Farms in Jeollanam-do, creating an onshore wind park belt**

Under the Hwasun Wind Farm Project, we built eight 2MW wind turbines on 63,043m2 of forest areas in Ilwon, Byeolsan. The site is evaluated to be the optimum area for wind parks as it is situated in a mountainous region with constant gusts of wind. The park uses the existing forest trails and thus minimizes forest damage. The Jangheung Wind Farm has a total capacity of 18MW and just began operating after 11 long years of construction since we signed an MOU with the Jangheung-gun municipality in November 2020. This is the second in-house wind farm built in six years since the Hwasun Wind Farm. This newest wind park of KOWEPO is anticipated to become a stable foothold for the future offshore wind farm business.



**ESS, achieving synergy with other business areas**

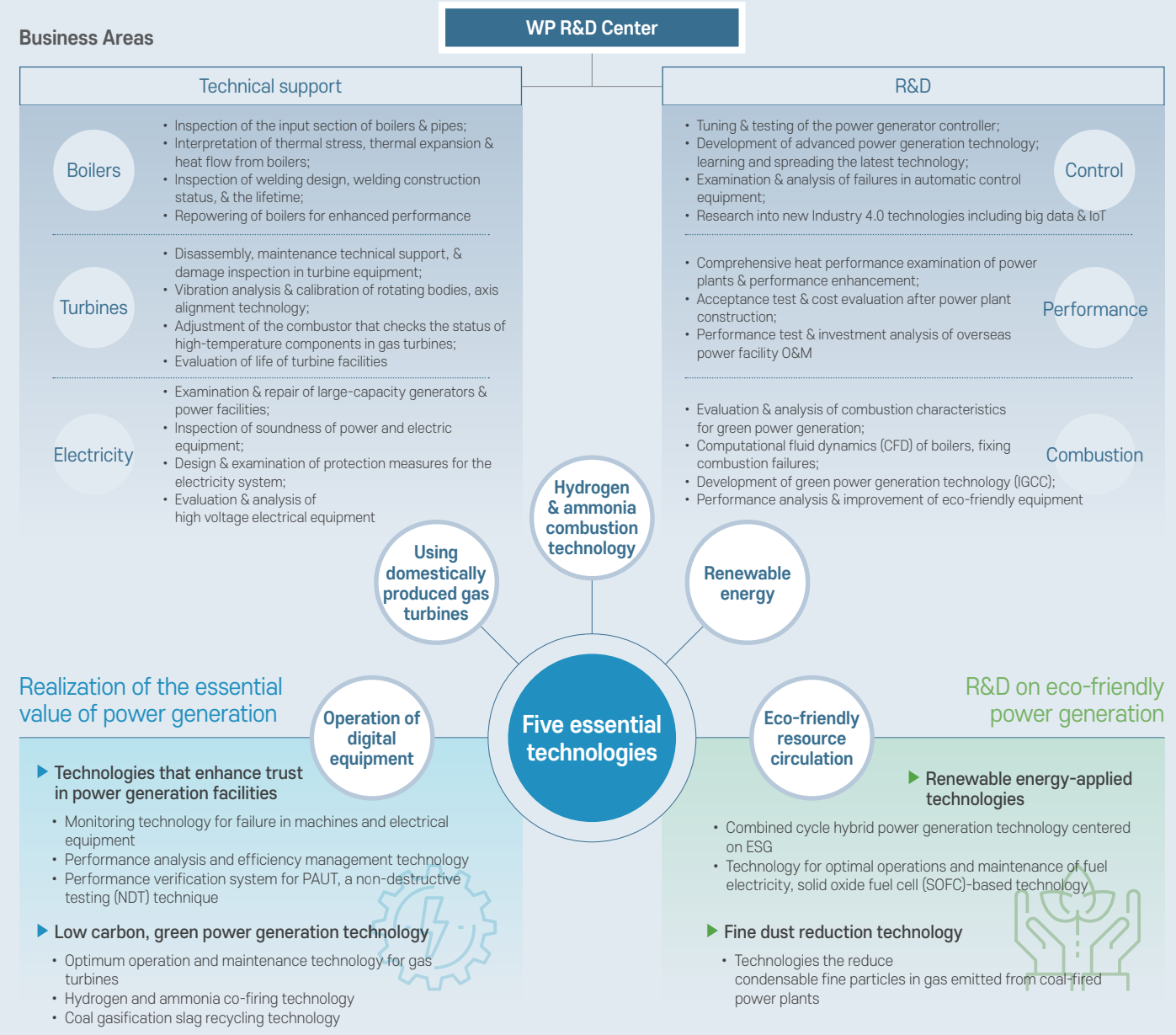
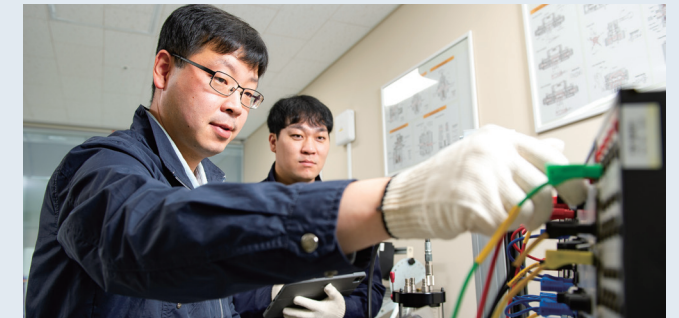
Energy storage systems (ESS) is the most essential element in renewable energy. With ESS, you can store in advance renewable energy, such as solar and wind power that are difficult to be produced at any desired time, and use them when it is needed most. It also facilitates the provision of stable energy concerning the other business areas of KOWEPO. ESS can also create social value through an energy-sharing model designed to share the profits earned with residents and promote co-prosperity and coexistence with local communities.



R&D

**WP R&D Center at the forefront of tech support and R&D**

The WP R&D Center seeks to respond to energy policies that shift according to domestic and international landscapes. To that end, the center engages in diverse R&D and commercialization projects by dividing the team into the Technical Support Division that handles boilers, turbines, and electricity and the R&D Division that covers control, performance, and combustion. The R&D Center creates new growth engines for KOWEPO through relentless research and technical support so it can help the company take strides in leaps and bounds as an energy company that leads future technologies.

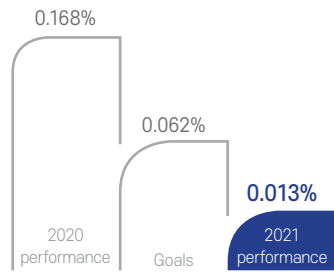






## Stable, economic power supply

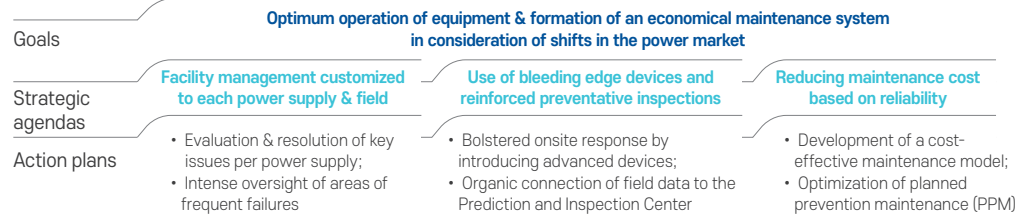
### Forced outage rate



### Securing facility reliability for stable power supply

KOWEPO is hard at work to provide stable supply of electricity by analyzing the fundamental cause of faulty equipment and expanding the scope of our analysis. We are identifying and solving problems capitalizing on the method tailored to each equipment, with a zero-rate of severe failures/malfunctions achieved. In 2021, we recorded 0.013% in the forced outage rate (FOR), which is the lowest in company history.

#### Equipment Management System



### Customized facility management

KOWEPO eliminates internal and external threats to facility reliability by implementing tailored measures based on analysis on key issues per power supply. Despite the increase in life of the Seoincheon combined cycle power generation facility (2023 → 2028) and the rise in the number of causes of breakdowns resulting from the growth in renewable energy facilities, we managed to dwindle the number of failures by 30% and downtimes by 90% through tailored management of facilities. We also rigorously managed those parts that break down/ malfunction often and decreased the number of breakdowns/ malfunctions in the electricity and control sector from 11 to 7.

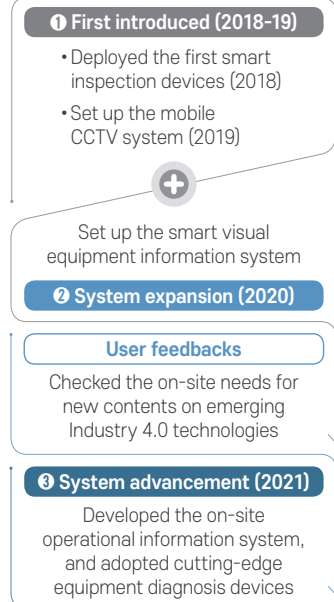
#### Details of Customized Facility Management and Key Achievements

Category	Actions taken	Achievements
Renewable energy Integrated gasification combined cycle (IGCC)	<ul style="list-style-type: none"> <li>Comprehensive measures taken to enhance reliability; - Carried out 30 strategic tasks including improving the gasifier slag treatment system;</li> <li>- Set up a joint industry-academia-research</li> </ul>	<ul style="list-style-type: none"> <li>Broke the world record for non-stop operations by operating nonstop for 5,035Hr (previous record was 3,993Hr)</li> <li>Established the basis for converting the central generator</li> </ul>
Coal-fired (Taeon #5 to 8)	<ul style="list-style-type: none"> <li>Renewal of eco-friendly equipment for Taeon units 5 through 8;</li> <li>- Built the first 500MW power generation facility &amp; the hybrid denitrification facility in Korea (#5, 6);</li> <li>- Additional installation of phase 1 denitrification catalyst (#7, 8)</li> </ul>	<ul style="list-style-type: none"> <li>Prevention of power plant outage by exceeding the regulatory limit on air pollution emissions</li> </ul>
Combined cycle power generation (Seoincheon)	<ul style="list-style-type: none"> <li>Reestablished the facility management system;</li> <li>- Shift from minimum reinforcement to efficient reinforcement;</li> <li>- 169 cases including replacement of generator circuit breakers;</li> <li>• Made guidelines for machine activation/ deactivation</li> </ul>	<ul style="list-style-type: none"> <li>Reduced downtime from breakdowns by 43% YoY at Seoincheon plant (8.6Hr in 2020 → 4.9Hr in 2021)</li> </ul>

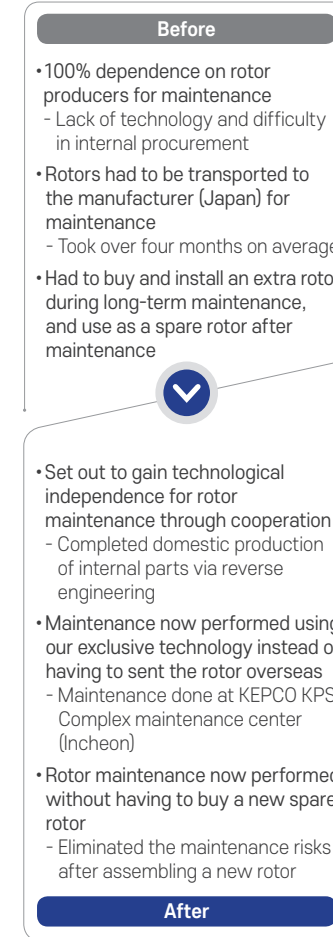
### Two-track approach to using data measured with high-tech devices

Since KOWEPO adopted Industry 4.0 technologies in 2018, we have introduced the latest technology and developed maintenance techniques to achieve the highest facility reliability and advance our operational capability. In particular, we not only check operational information immediately to solve equipment flaws at our business sites, but also take preventative measures for potential flaws through precise analysis of measured data from the head office. In 2021, we developed the Onsite Operational Data System through which users can check operational data in real time using mobile devices. We also introduced state-of-the-art facility inspection devices such as ultrasound detectors, vibration phase analysis machines, and the vibration data visualization system. This has enabled us to detect flaws, take measures immediately, analyze key issue by power supply, and carry out tailored measures. As a result, the number of failures and downtime dropped by 31% and 90% respectively, versus the previous year.

#### Advanced on-site inspection system



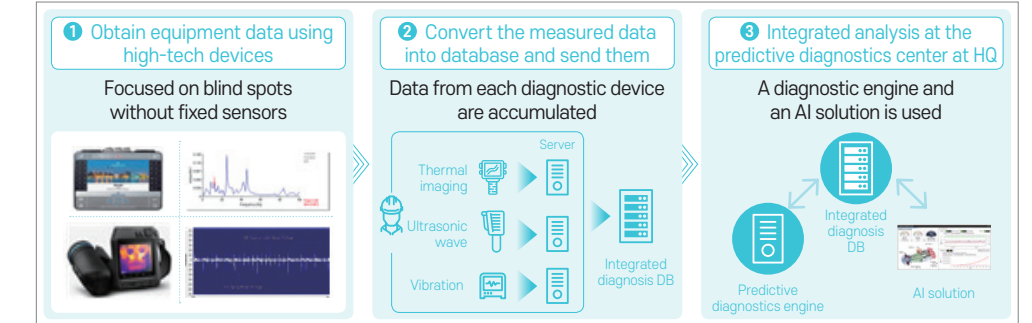
#### Major improvements made in the economical maintenance model



### Prevention of potential failures in advance with leading-edge devices

The existing prediction and analysis system only collected data from fixed measurement sensors, and did not use data measured onsite. Thus, KOWEPO installed cutting-edge devices primarily in blind spots without fixed sensors and obtained facility data. Then we analyzed them with the analysis engine and an AI solution from the Prediction and Inspection Center in a bid to prevent potential breakdowns/ malfunctions. Accordingly, we recorded the lowest FOR in company history in 2021.

#### Establishment of a predictive diagnostics engine system using data measured on-site



### Development of a cost-effective maintenance model to secure cost competitiveness

KOWEPO optimized the preventive maintenance cycle based on reliability and optimized the maintenance items to develop a cost-effective maintenance model. We also optimized PPM to cut down maintenance costs. We improved the facility reliability by jointly managing maintenance spare products and purchasing them strategically without financial burdens. We also reduced maintenance costs by adjusting the maintenance cycle of PPM—that used to be equally applied to all machines—in consideration of the operational time of each facility unit. To improve facility reliability, we developed independent maintenance technology for gas turbine rotors, ultimately advancing our competitiveness in the international maintenance market for combined cycle power plants. Moreover, we continued to achieve high performance in energy reduction across all operations of power plants to secure cost competitiveness, and conducted joint technological projects and ex post evaluations through ISO 50001 (International Energy Management Standards).

### Set a new world record for non-stop operations of IGCC

KOWEPO validated the outperforming efficiency and eco-friendliness of the IGCC plant in the operation process after constructing the IGCC demonstration plant. As for the operational efficiency, the plant recorded 42.3%, which is higher than 41% for coal-fired generation, including the newest ninth and tenth generator in Taeon. The record also exceeds the global record of 41.5% by an IGCC plant overseas, achieving the highest efficiency in the world. On the environmental front, the IGCC plant validated top-notch performance compared to coal-fired generation, recording 34% in nitrogen oxide, 3.7% in sulfur oxide, and 56% in dust. Compared to natural gas power generation, the IGCC posted 70% in nitrogen oxide. Above all, the plant recorded the longest non-stop operations of over 5,035 hours between August 14, 2020 to March 12, 2021, which surpasses the 3,917 hours by Japan's Nakoso IGCC Power GK in 2013, and 3,993 hours by China's Tianjin IGCC plant in 2018. This was attainable by taking comprehensive measures to increase facility reliability according to implementation of 30 strategic action plans including the improvement of the gasifier slag treatment system.



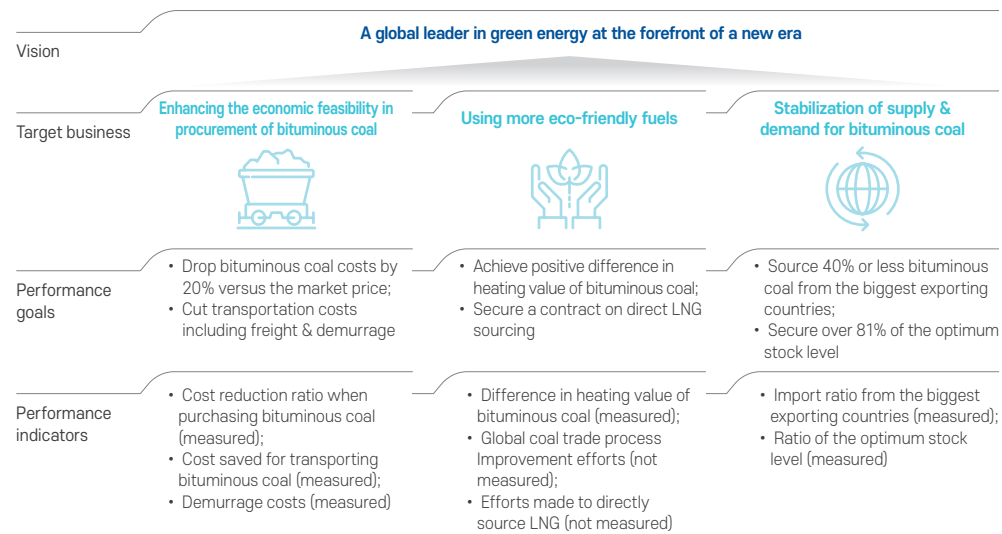


## Sustainable fuel supply and demand

### Vision 2035-driven supply and demand control system of fuels for power generation

KOWEPO set up a supply and demand control system of fuels for power generation driven by Vision 2035 to streamline the operations of all stages in fuel supply and demand and secure fuels stably and economically. We also set performance goals by target business and instituted a resource allocation and monitoring system to provide high-quality electricity by actively increasing the share of environment-friendly fuels.

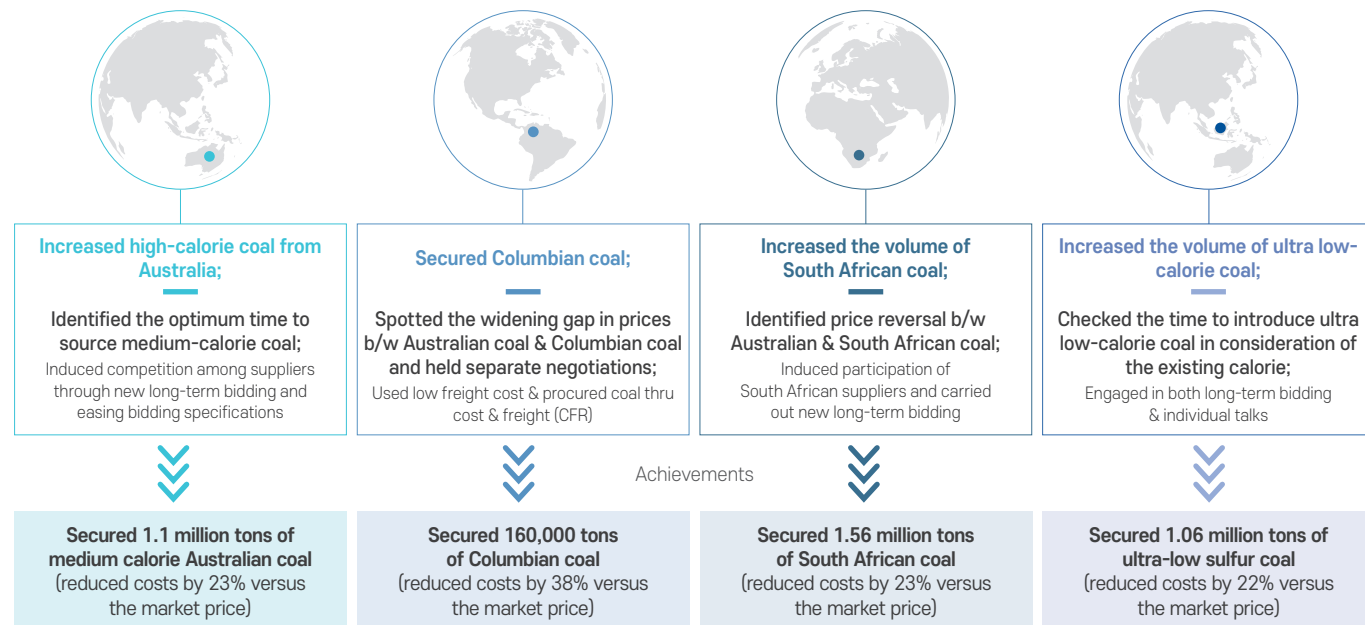
#### Supply and Demand Control System of Fuels for Power Generation



### Economic purchase of high-quality bituminous coal

KOWEPO monitors the supply and demand conditions and key price index by country to procure fuel at the most optimum time, considering fluctuations in the international market and demand for power. We managed to purchase high-quality bituminous coal through long-term bidding, procuring them at the optimum time based on the price gap between the high-calorie coal and the comparative indices.

#### Achievements of Economic purchase of high-quality bituminous coal



### Stabilization of supply and demand for bituminous coal

KOWEPO reduced the dependence on specific countries by diversifying supply sources to stabilize supply and demand of bituminous coal. As for high-calorie coal, to prevent the concentration of supply sources in Australia, we began importing coal from South African and Russia. For medium and low-calorie coal, we expanded the share of medium-calorie coal from Australia and reduced the share of Indonesian coal to secure stable supply and economic feasibility at the same time.

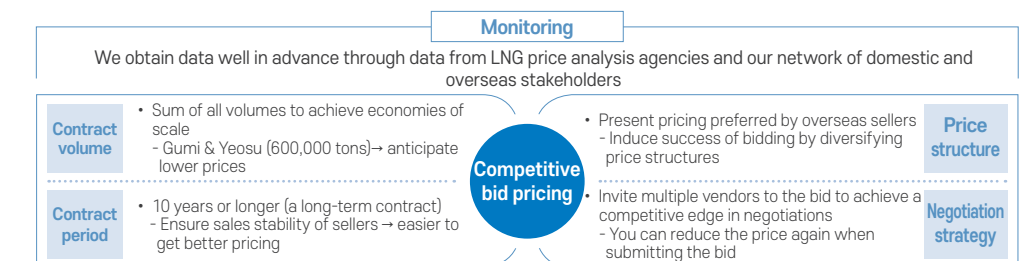
#### Import Ratio from the Biggest Exporting Countries

Category	2019	2020	2021
Import ratio from the past three years	54%	44%	36%
Australia (high-calorie coal)	33	31	28
Indonesia (low-calorie coal)	21	13	8

### Ensuring LNG cost competitiveness

KOWEPO monitors international LNG prices periodically to set the optimum bidding requirements when signing LNG supply contracts. We select stable sellers by evaluating their supply and transport capacity and the track record for long-term contracts. Then we send out the bidding instruction to form the best bidding specifications.

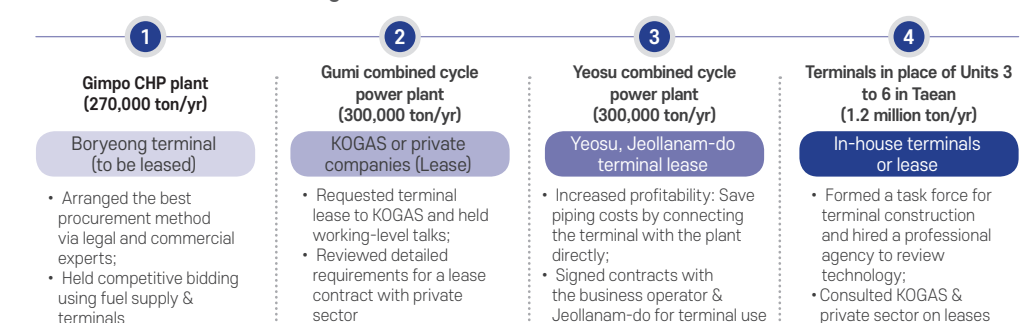
#### KOWEPO process for competitive bid pricing



### Direct LNG sourcing to expedite the shift to green energy

KOWEPO will source LNG directly and secure LNG terminals to get LNG stably at a cost-effective price, after ending coal-fired power generation and increasing LNG power stations. With an eye to enhancing our expertise in LNG, we formed a task force for direct sourcing, invigorated the pertinent network, and secured a contract on accessing LNG terminals linked to fuel supply.

#### Our Track Record of Securing LNG Terminals



# Breakthrough technologies & future growth

## Creating a western-style hydrogen-based ecosystem

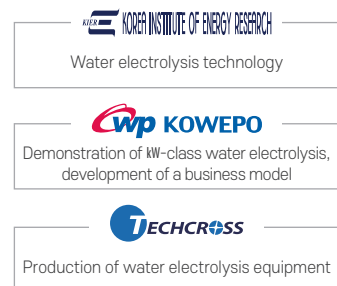
### Leader of a hydrogen-based ecosystem value chain

KOWEPO is connecting and merging the production, transport, storage and usage stages in the hydrogen-based ecosystem value chain to develop essential technologies and introduce, demonstrate, and operate prototypes as well. We will take a leading role in the effort to bring about the hydrogen economy at scale by taking the lead in building the western-style hydrogen-based ecosystem from production to use.

### A KOWEPO hydrogen ecosystem per hydrogen value chain

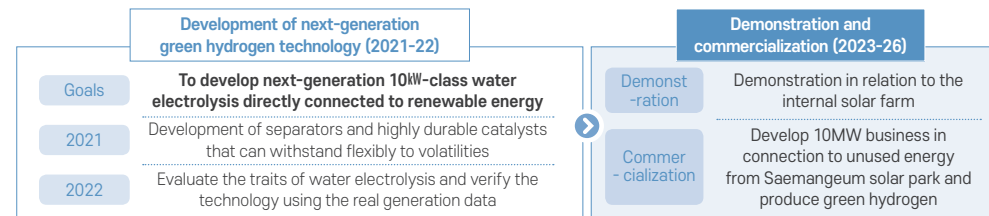
Hydrogen Value Chain	Business status	COWEPO's role as a pioneer of the hydrogen ecosystem	Building COWEPO's ecosystem (2023~)
Production	<b>Water electrolysis</b>	<ul style="list-style-type: none"> <li>Developing technology to utilize the dump power generated by renewable energy</li> <li>Development and demonstration for next-generation catalyst and separation membrane are required</li> </ul>	<ul style="list-style-type: none"> <li>Control tower</li> <li>Providing support for small-scale demonstration for next-generation water electrolysis technology and promoting large-scale industrialization</li> <li>Signing green hydrogen technology development MOU(KOWEPO-KIER- Techcross)</li> </ul> <p>Generating hydrogen with 10MW class solar power plant</p> <p><b>Generating 250,000 tons of green hydrogen per year</b></p>
	<b>Hydriding of waste</b>	<ul style="list-style-type: none"> <li>Seeking methods to utilize waste, which increased significantly</li> <li>Seizing the business opportunity with various related technologies (pyrolysis, gasification)</li> </ul>	<ul style="list-style-type: none"> <li>Modeling of hydriding wastes</li> <li>Establishing resource-recycling business model by linking with major technologies to generate hydrogen from wasted plastic</li> <li>Signing technology chain MOU driven by COWEPO</li> </ul> <p>Generating hydrogen with waste recycling technology</p> <p><b>3 tons of hydrogen/day with 20 tons of wasted plastic</b></p>
Utilization	<b>Hydrogen-fueled gas turbines</b>	<ul style="list-style-type: none"> <li>Demonstration facilities are not secured by the domestic companies owning source technologies</li> <li>Difficulty in domestic production due to the lack of mass demonstration</li> </ul>	<ul style="list-style-type: none"> <li>Link to demonstration business</li> <li>Preparing for demonstration of hydrogen turbine utilizing discarded generator and industrialization of follow-up technology</li> <li>Demonstration &amp; development of hydrogen-fueled gas turbine (KOWEPO Hanhwa Impact)</li> </ul> <p>Industrializing 150MW hydrogen-fueled gas plant</p> <p><b>Utilizing 12 thousand tons of hydrogen per one hydrogen-fueled gas plant</b></p>

### Trilateral agreement on development of next-generation green hydrogen technology



### Securing and commercializing green hydrogen generation technology

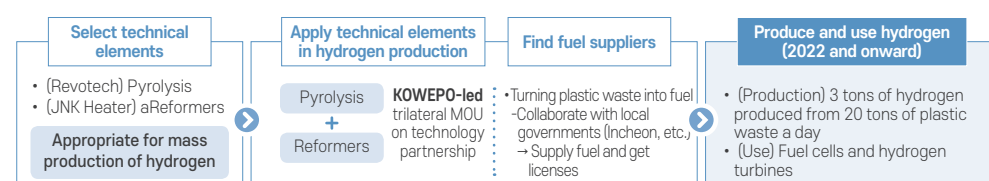
KOWEPO has differentiated the business by developing the key water electrolysis technology that can be directly linked to renewable energy. The existing water electrolysis technology was limited by a narrow operational range of input power that required ESS. This makes the system vulnerable to fire and increases investment costs. Therefore, we plan to develop 10kW next-generation water electrolysis directly linked to the stable supply of renewable energy. Then we will apply water electrolysis to our solar farm (250kW) and validate the technology.



### Production and use of hydrogen using new waste-to-resource technology

The amount of plastic waste has soared from 1.8 million to 3.2 million tons in the past decade, exacerbating the management of plastic waste. Thus, KOWEPO spearheaded the use resource recycling technology in a bid to cut production costs by generating hydrogen from plastic waste and discover environment-friendly ways to use them.

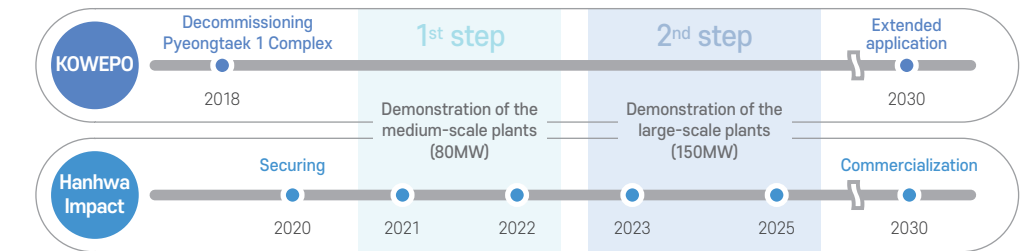
### Production of hydrogen using new waste-to-resource technology



### Introducing hydrogen energy as the next growth driver

KOWEPO is in a process of validating large-scale hydrogen co-firing technology using over 50% hydrogen to materialize the hydrogen economy at scale. We actively strive to develop key technologies in Korea in preparation of the energy transition along with hydrogen co-firing technology in gas turbines to use hydrogen as a fuel resource in the future. Building on these technologies, we are seeking to partner with the private sector as we create the foundation for a large-scale hydrogen market.

### Cooperation between KOWEPO and Hanhwa to develop hydrogen turbine



### Roadmap for the new artificial basalt business



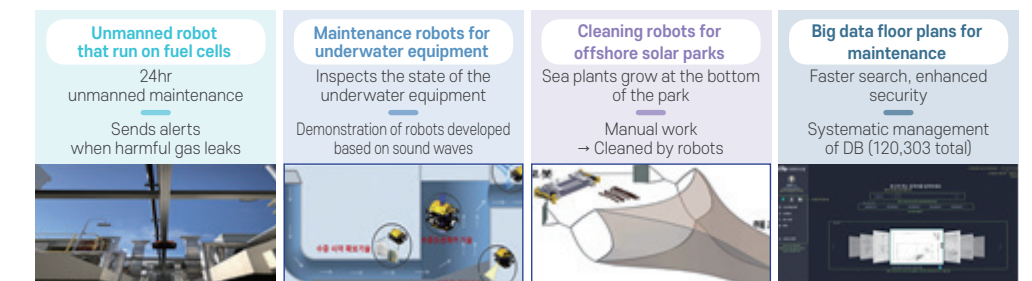
### Discovering new businesses for Green New Deal geared to resource recycling

When fuels used to create power are burned, it creates an average of 1.45 million tons of coal ash annually as a by-product. KOWEPO aims to recycle this coal ash and minimize landfill costs by making and developing artificial basalt products from coal ash. In this way, we no longer need to incur more costs to dump waste and contribute to the stable operations of ash processing plants.

### Digital packaging technology for smart power stations

KOWEPO adopted digital transformation on the factory floor to avoid human error and enhance workplace safety. For the first time in the power generation sector, we introduced a mobile operation data system and smart inspection devices and set up an automatic guide system to avoid any maloperation of operators. Moreover, we secured big data analysis technology to enhance facility reliability and information security. We also introduced automated/ unmanned maintenance and turned repair drawings into big data for increased work efficiency.

### Digital package for smart power stations



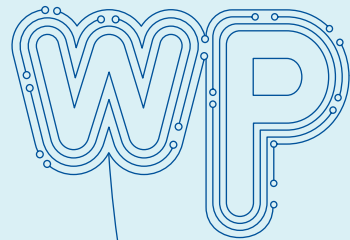
Digital Technology Transfer Center in Pangyo Technovalley

### The Digital Technology Transfer Center

KOWEPO launched the Digital Technology Transfer Center in Pangyo Technovalley in response to the onset of strong demand for big data to support the private sector to use data, and have spearheaded the development of digital technologies and new services. We also disclosed 1,836 power generation data by jointly creating a power generation data hub with the private sector. We also developed seven new energy business models such as a metaverse platform for safety management and an unmanned fuel cell AI system to promote new energy projects in partnership with the private sector.

# Achieving ESG Together

KOWEPO established our Vision 2035, a strategic business system that reflects the paradigm shift in the energy industry to achieve sustainable growth by aiming for carbon neutrality and capitalizing on new growth drivers.



- ESG Focus 2022
- Background of ESG Management
- KOWEPO ESG Management System
- Stakeholder Value Proposition
- Stakeholder Engagement



## 2022 ESG Focus



### Topped the list of power plants with the highest renewable energy installed capacity

KOWEPO is ramping up the renewable energy business amid the international response to climate change. In 2021, we ranked first place among power generation companies based on renewable energy installed capacity by leading the initiative to introduce renewable energy. To that end, we completed the construction of the Hapcheon floating solar farm (41MW) and Gunsan onshore solar farm (99MW) in 2021. In the middle waters of Anma-do and Songi-do, Nakwol-myeon, Yeonggwang-gun, Jeollanam-do, we started the construction of a 365MW offshore wind park, the largest wind farm in the nation.

### Accelerating the transition to LNG as green fuel

Since the proclamation of the carbon neutrality scenario for 2050 and the rise in GHG emission targets to 40%, KOWEPO has been working on combined cycle power generation that will replace generator units 1 to 6 at the Taean Power Plant. We will lead the fair energy transition by developing phased response strategies for civil complaints to win over community support beforehand, monitoring online conversations and launching PR campaigns using social media to prepare the foundation for the timely completion of the project.

### Reducing fine dust using new technologies

The world is calling for real and meaningful action to reduce air pollution in support of energy transition after thermal power generation has been blamed for being the largest contributor to climate change. KOWEPO drastically reduced the emissions of fine dust and air pollutants by making across-the-board improvements in environment facilities, converting coal-fired generation to LNG, co-firing hydrogen and ammonia, and introducing breakthrough technologies including cyclone desulfurization technology to use green fuel with 0.4% or less sulfur.



### Posted a clean record of fatal accidents in 2021 by prioritizing safety

With a greater emphasis on national and social responsibility for disasters and occupational accidents, KOWEPO augmented the safety-first management in terms of systems and technology led by the CEO. We introduced WP-safety grading system designed to not only check the safety and health system and improve awareness, but also promote the voluntary establishment of a safety culture from suppliers and improve the level of safety control. Using the WP-safety grading system, we have enhanced customized support and consultation by the level of safety control provided to suppliers. As a result, we achieved a clean record of severe accidents in 2021.

### Accredited as a company that has made a significant contribution to local communities for three consecutive years

KOWEPO has been undertaking the Village DreamUp project to collect views of local residents and attract interest and participation, and support them to become the key player in solving local issues. Under the project, we support business expenses, offer education programs led by experts, and provide consulting on solving regional problems. Moreover, we won the Minister of Health and Welfare Award for renovating various welfare infrastructure. The award is presented to companies that have resolved local problems and have made a significant contribution to the region.

### Achieved the highest grade in 2021 Inclusive Growth Index Assessment

To promote win-win partnerships with SMEs, KOWEPO creates a great work environment by spreading the culture of a positive workplace where you learn, feel safe, and work as a team under the campaign, "Western Power Story: Making the Workplace a Desired Destination". We also established the WP-A Metro Sharing System, an exclusive performance and cooperation benefit system at KOWEPO that aims to be a convenient, organic system much like the subway system in large cities. Using the system, we upgraded the sharing system with our suppliers, which resulted in winning the highest rating in the 2021 Inclusive Growth Index Assessment announced by the Ministry of SMEs and Startups.

### Strengthened the foundation for ESG management

KOWEPO formed the ESG Steering Committee under the BOD that deliberates and advises on Environmental, Social, & Governance (ESG) issues. The committee, comprised of three non-standing directors and two executive directors, advises on pending ESG issues using the expertise of non-standing directors. We are spreading our ESG management practices by instituting the ESG Working Group and forming an internal task force responsible for directly handling and managing ESG management duties.

### Renewal of ISO37001 for five consecutive years

KOWEPO has produced contents designed to spread the culture of integrity using the company's official integrity mascot, Tak Daeri (a corporate title in Korea similar to manager). The resulting contents were then disseminated to local communities and relevant agencies. We also launched a workplace anti-bullying project called Integrity10-SHOW, FOLLOW-5! in a bid to spread the culture of integrity that seeks to broaden mutual understanding and respect. These efforts, we renewed the anti-bribery management system (ISO 37001) certification for five straight years, implementing ethical management on par with international standards.

### Improving public relations through open and active disclosure

KOWEPO communicates with the public not only through social media supporters but also by making major communication channels on our website more accessible. These channels include the public idea contest, chatbot consultation, bidding information, and Q&A sessions. In this way, we disclose high-quality information in real time. We also had no instances of providing faulty disclosure and avoided any penalty points by strengthening our disclosure process to expand pre/ post-inspections. In recognition of our efforts, we achieved two Minister Awards for achieving outstanding performance in the comprehensive assessment of disclosure and public data disclosure.





## Background of ESG Management

### Definition of ESG management



#### Environmental

Environmental management & performance, climate change, natural resources, & environmental opportunities



#### Social

Manpower management, labor practices, local communities, stakeholders, human rights, consumers, suppliers & competitors



#### Governance

Board of Directors, shareholders, auditors, ownership structure, corporate ethics, & ethical management

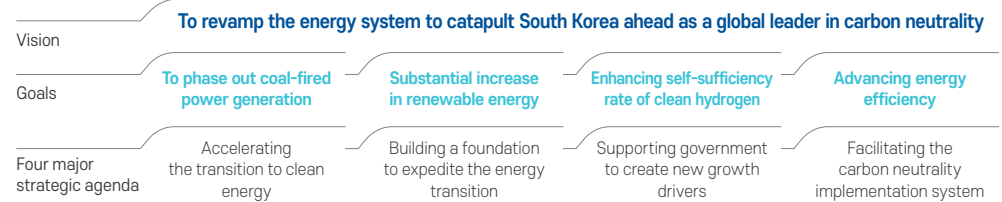
### Introduction to ESG management and KOWEPO's response

ESG management is a business strategy for how companies can responsibly manage either financial or non-financial performance, including environmental soundness, social responsibility, and transparent governance, to achieve sustainable development. KOWEPO has integrated corporate strategy with the concept of ESG to provide for transparent disclosure of ESG information to stakeholders and the organization's sustainability. In support of this effort, we reorganized our ESG management system.

### Implementation of carbon neutralization strategy of the government

The government announced the 2050 carbon neutrality scenarios, the enhanced nationally determined contribution (NDC), and energy innovation strategy via carbon neutrality. These include many tasks applicable to KOWEPO, so we are actively responding to the government initiative to innovate the energy system and catapult to a leadership stance in carbon neutrality. Above all, we identify tasks closely related to KOWEPO based on four major carbon neutrality strategies and link them to our mid-to-long-term business and ESG strategies. In this way, we are implementing business with a goal of developing and commercializing technologies related to the 2050 carbon neutrality scenarios.

### Government-led carbon neutralization strategy through the energy system overhaul



### Request from various stakeholders to disclose ESG data

With growing calls by our stakeholders, including the public, government, and investors, to disclose ESG information, the government also set up areas subject to ESG management disclosure such as environmental performance, human rights, and integrity, with a goal of adopting ESG management among public enterprises. Accordingly, KOWEPO has responded to external evaluations and managed ESG data by bolstering ESG management disclosure. We augmented the content of the Sustainability Report and expanded the scope of information subject to on-offline disclosures including the Information Disclosure System (ALIO, Environmental Information Disclosure System).

### Enhanced ESG Information Disclosure via ALIO

Category	Items	Sub-items	Disclosure interval	Level of importance
E	12. Environment protection	12-1. GHG reduction performance	Yearly	Regular (others)
		12-2. Total energy used	Yearly	Regular (others)
		12-3. Waste generated	Yearly	Regular (others)
		12-4. Water consumption	Yearly	Regular (others)
		12-5. Status of violation of environmental laws & regulations	Ad hoc	Ad hoc
		12-6. Status of low emission vehicles	Yearly	Regular (others)
		12-7. Green product purchase performance	Yearly	Regular (others)
S	14. Human rights management	14. Human rights management	Yearly	Regular (others)
G	36. Result of inclusive growth assessment	36. Result of inclusive growth assessment	Yearly	Regular (others)
	37. Result of integrity assessment	37. Result of integrity assessment	Yearly	Regular (others)

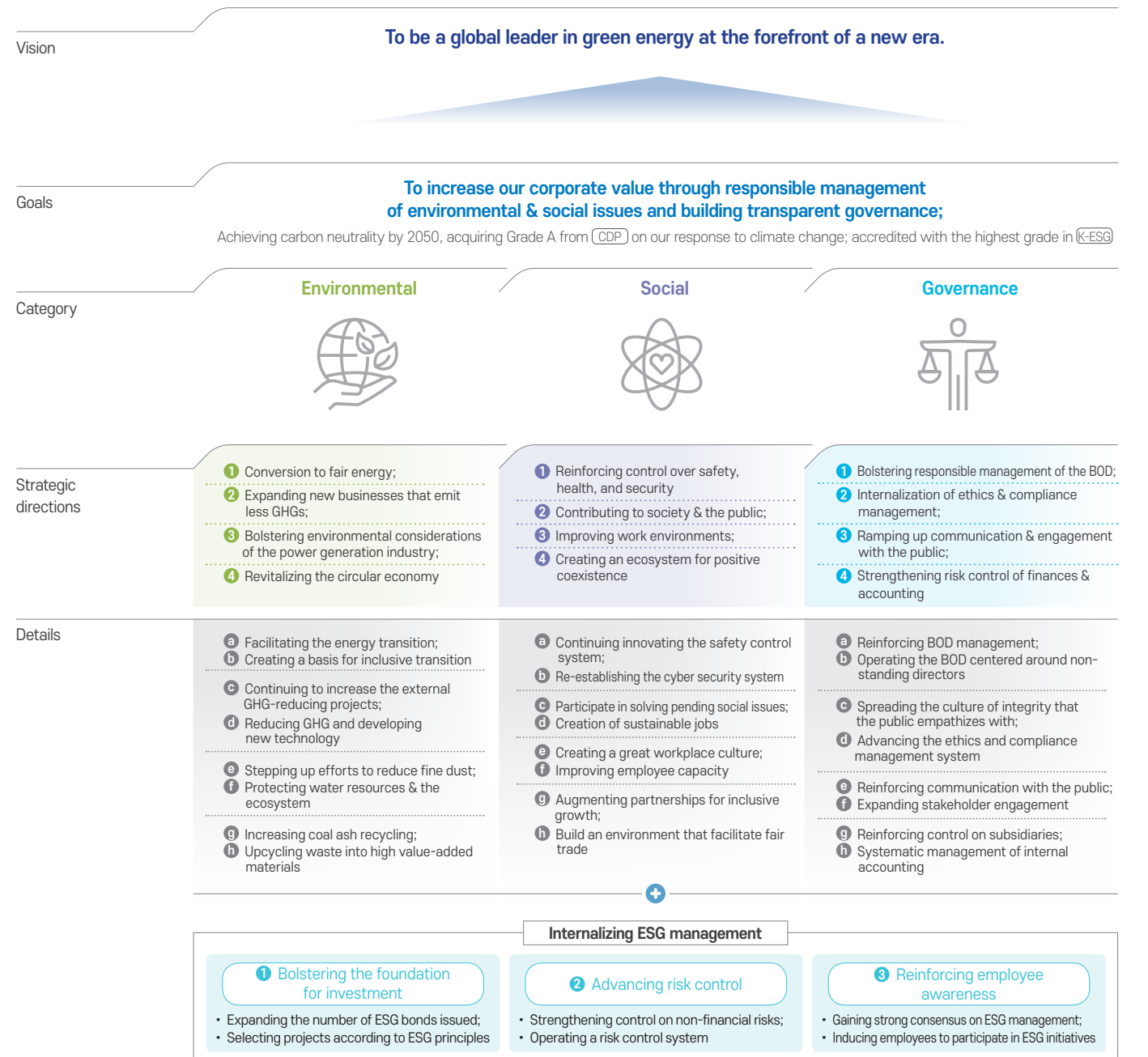


## KOWEPO ESG Management System

### An overview of KOWEPO ESG management strategy

KOWEPO has adopted ESG principles as a new paradigm that achieves sustainable growth and recognized it as an essential component of our competitiveness. We systematically combined, organized, and restructured businesses that were scattered based on ESG principles, and introduced future directions with these principles as a new management paradigm. Through this, we have sought to set ESG principles as a standard for decision-making and a framework for new strategic growth. Consequently, we identified future directions and details for each ESG category in June 2021. Then we integrated them to our 71 core annual tasks, 65 New Deal strategic agendas, and innovation tasks to manage our ESG performance.

### ESG Management Strategy



### Publicly advocate the UNGC and SDGs

KOWEPO has joined the UN Global Compact and complied with the ten principles regarding human rights, labor, environment and anti-corruption. We also vigorously reflect the 17 sustainable development goals (SDGs) with an emphasis on seeking balance among the economy, society, and the environment, so we can move forward collectively towards goals in different areas, including health, education, women, social system, poverty, environment, resources, economic growth, and win-win partnerships.




### Announcement of support for TCFD guidelines

With climate change emerging as a global issue, the Financial Stability Board (FSB), an international financial agency, established the Task Force on Climate-Related Financial Disclosures (TCFD) at the request of G20, so climate change-related risks of companies can be reflected when investors and stakeholders make economic decisions, with the TCFD setting global standards for disclosing financial information as to the climate. KOWEPO supports TCFD recommendations as a TCFD member with an intention of preparing the foundation for achieving carbon neutrality and leading the ESG management system.

#### Overview of KOWEPO's TCFD Guidelines

#### 01 Governance

An organizational governance on risks & opportunities presented by climate change




**A body dedicated to ESG & delegation of roles**

KOWEPO formed the ESG Working Group & ESG Steering Committee, and delegated roles in June 2021 in phase with our commitment to embrace ESG management and discuss carbon neutrality issues at the company level.

#### 02 Strategy

How climate change-related risks & opportunities affect the company's business, strategies, & financial plans




**Establishment of an ESG management system**

We adopted ESG as a new paradigm that achieves sustainable growth and identified tasks for each ESG category. Then we integrated them with our 71 core tasks that meet our management strategy, 65 New Deal strategic agendas, & mid-to-long-term innovation tasks to manage our ESG performance.

#### 03 Risk control

How to identify, evaluate, and manage climate change-related risks




**Managing climate change-related risks**

We developed four future directions based on our environmental vision of creating the highest level of eco-friendly power station operation system. In parallel, we are pursuing eight strategic goals by managing risks of each future direction.

#### 04 Quantitative indicators & reduction goals

Indicators & reduction goals used to evaluate and manage climate change-related risks & opportunities

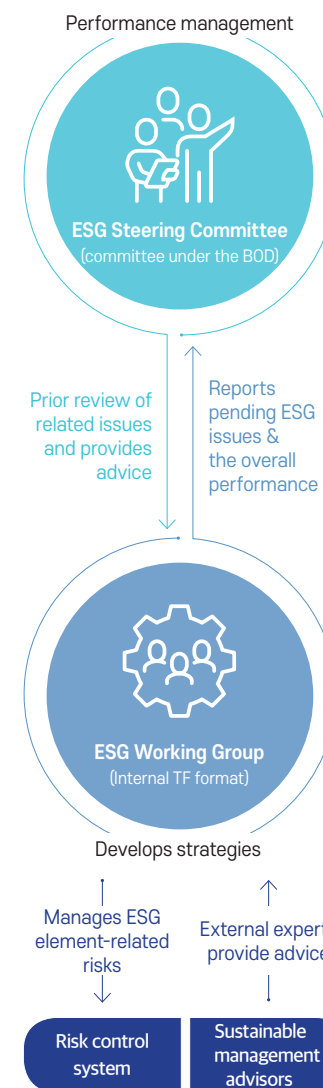


**Setting the 2050 strategies for achieving carbon neutrality**

We raised the NDC prescribed by Vision 2035 from 35% to 55% under the 2050 carbon neutrality management plan. We are on track to gradually reduce GHG emissions from 37.9 million in 2018 to 21 million tons in 2030, and to zero in 2050.



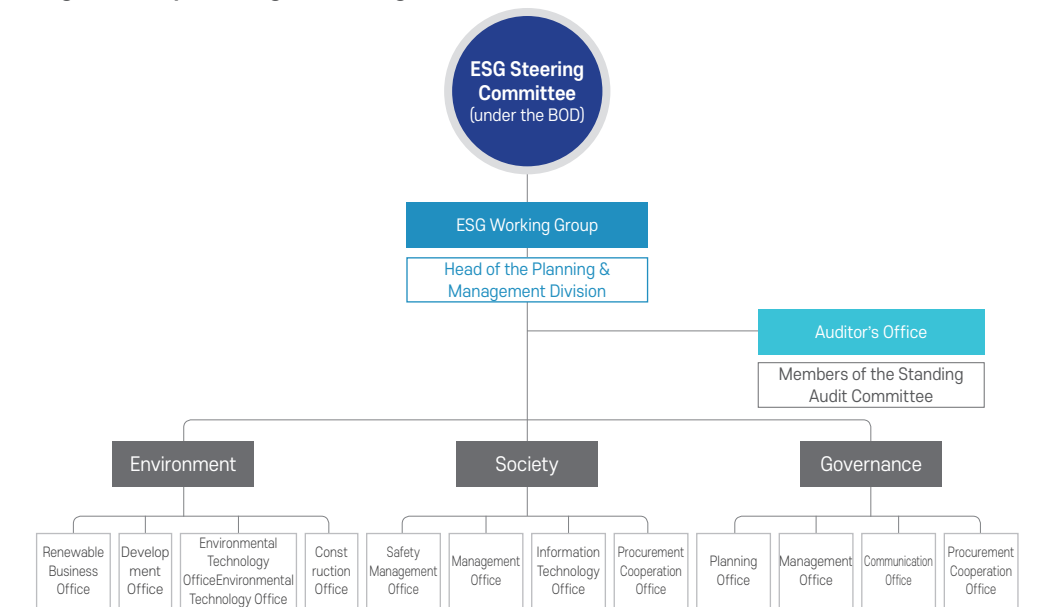
### ESG management process among related organizations



### Organization promoting ESG management

We set up the ESG Working Group and ESG Steering Committee in June 2021 to systematically and efficiently implement ESG management strategies enterprise-wide. The ESG Steering Committee serves as an advisory and deliberation system for pending ESG issues newly created under the BOD. The committee offers advice to ESG projects and deliberates on imminent ESG management issues. The expert committee was reshuffled with an emphasis on environmental management, social responsibility, and transparent governance. Standing and non-standing directors joined the committee to strengthen the alignment between tasks. In order to directly undertake and manage ESG management-related duties, the ESG Working Group actively takes on a role in the entire process, including planning, execution, and performance management, and contributes to forming an organizational culture with the aim of internalizing ESG principles in management by enhancing employee's awareness on ESG principles and supporting ESG activities.

### Organization promoting ESG management



### Issuance of ESG bonds

KOWEPO issued green bonds worth 270 billion won in July 2021 and used capital proceeds to invest in Cloud, a wind farm in Sweden, and a fuel cell construction project in Korea. In 2022, we will expand the issuance of green bonds up to a total of 600 billion won, following the hike in demand for investments in ESG bonds. As for long-term corporate bonds with over 10 years in maturity, notably, we will allocate the entire amount of ESG bonds and use these funds for the construction of an LNG alternative combined cycle power generation station and plants for renewable energy such as solar power, fuel cell, and wind power.

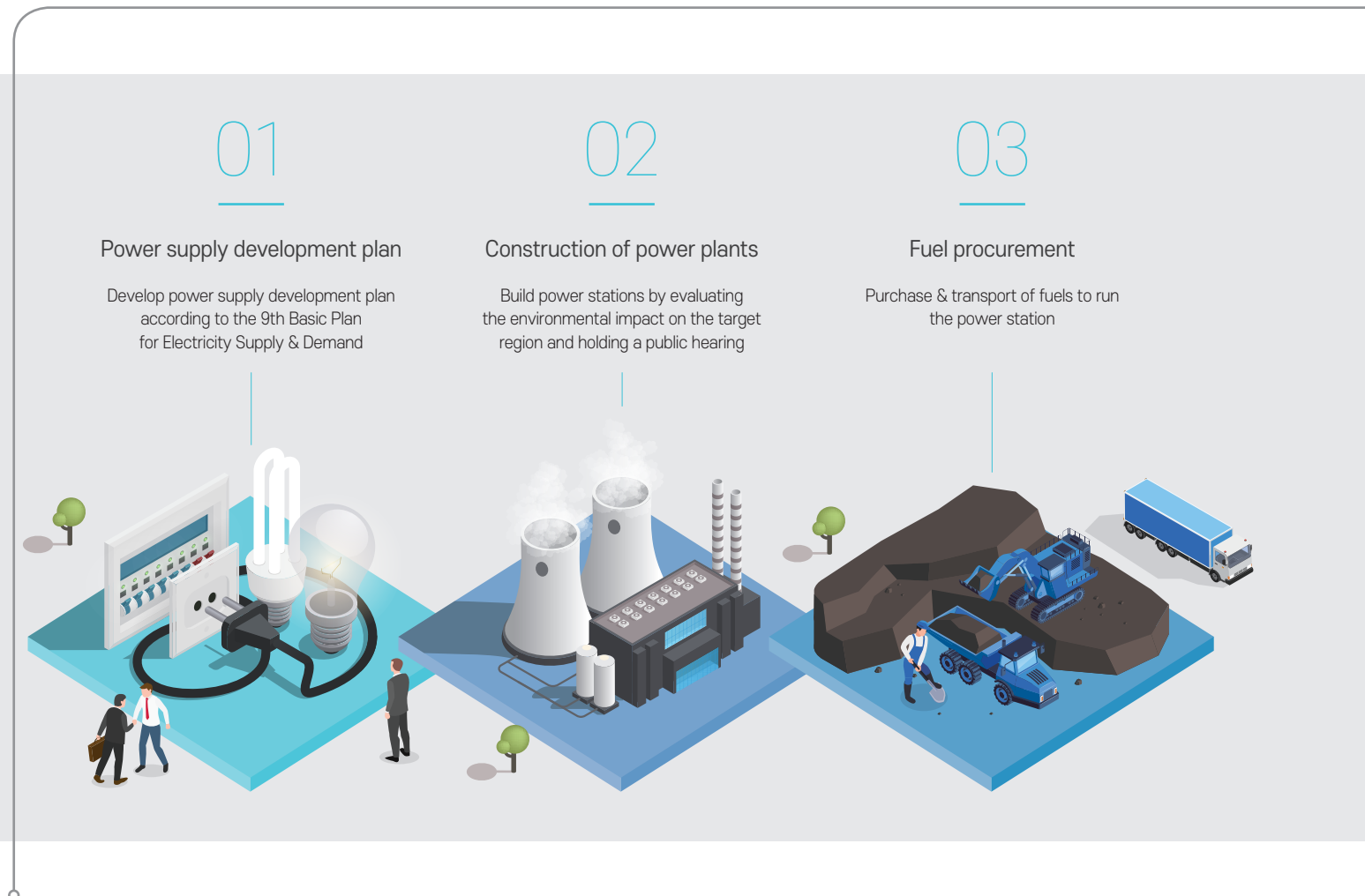
### Amount of Major ESG Bonds Issued

Category	Construction of renewable energy stations	Investment projects	Total
Amount of ESG funds executed	KRW 202.6 bil (for fuel cell plant construction, etc.)	KRW 67.4 bil (investment in Cloud, a wind farm in Sweden)	KRW 270 bil



## Stakeholder Value Proposition

(As of 2021)



## INPUT VALUE

### Financial value

Assets	KRW 10.4 tril
Outstanding liabilities	KRW 6.6 tril
Equity capital	KRW 3.8 tril

### Innovation value

Intangible assets (industrial property rights)	396
Investment in R&D	KRW 12.1 bil
R&D personnel	23

### Production value

Installed capacity	11,441MW
Power generated	47,032GWh
Tangible assets	KRW 3.8 tril

### Manpower value

Staff	2,505
Training hours per person	118.84hr
Training costs per person	KRW 25 mil

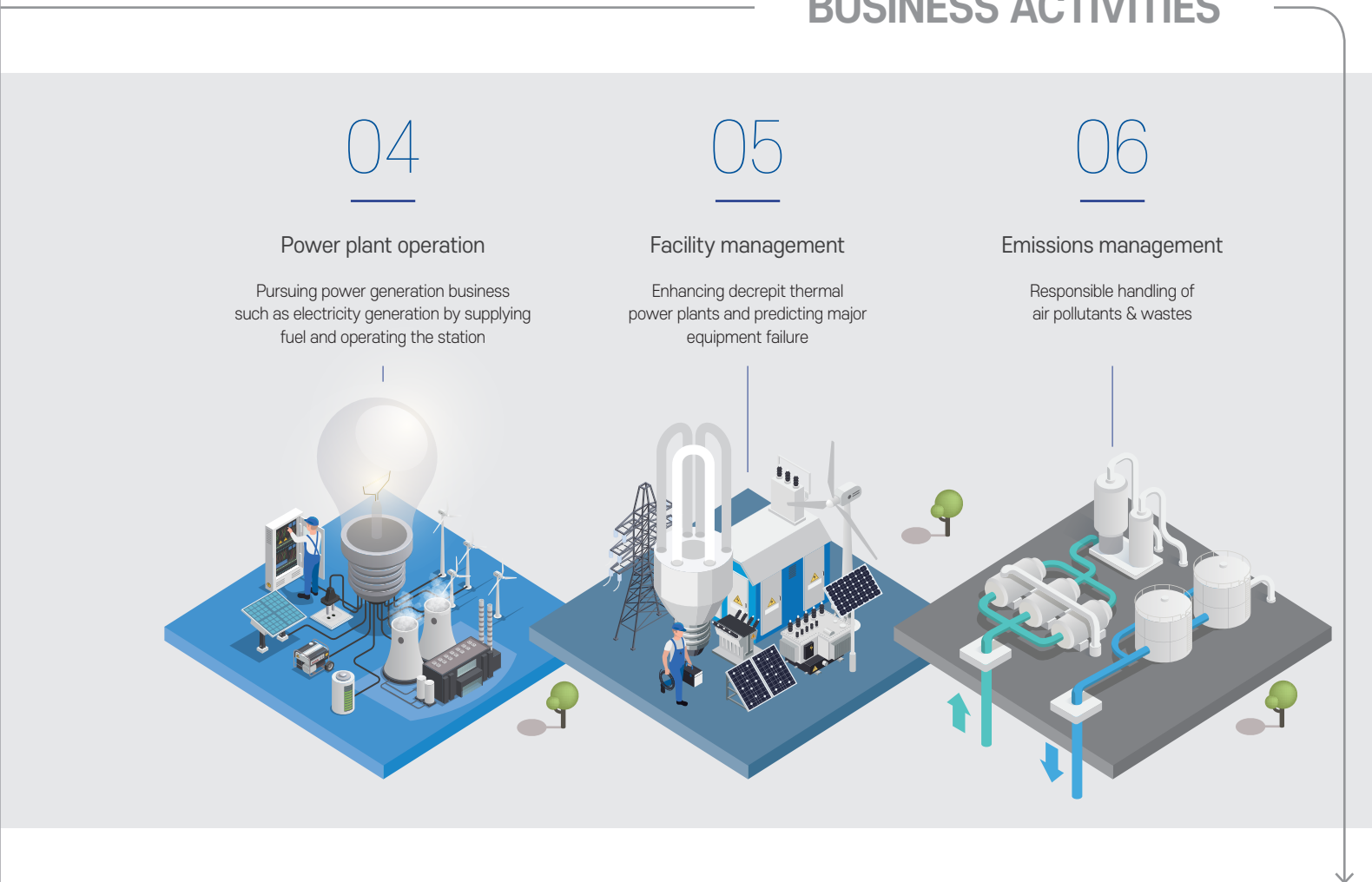
### Environmental value

Total environmental investment	KRW 72.6 bil
Operation costs for the environment sector	KRW 23.2 bil
Development costs for the environment sector	KRW 1.1 bil

### Social value

Donations	KRW 8 bil
Number of volunteers	1,982
Volunteer hours	36,006hr

## BUSINESS ACTIVITIES



## OUTPUT VALUE

### Financial value

Revenue	KRW 4.4 tril
Amount distributed to suppliers	KRW 4.2 tril
Amount distributed to staff	KRW 259.7 bil

### Innovation value

Development ratio of 5 key technologies	19.7%
No. of industrial property registration	36
No. of jobs created	113

### Production value

Power transfer volume	44,556GWh
Power trade volume	44,559GWh
Share of power generation	8.5%

### Manpower value

Ratio of female employees	303(12.1%)
Satisfaction with education	79.4points
Members of the labor union (company ratio)	1,734people (97.3%)

### Environmental value

Amount of GHG reduced	1.9 mil tons
Air pollutant reduction rate	77%
Ratio of recycled waste	129,005 tons(97%)

### Social value

Social contribution activities, such as career development support for seniors, creating jobs for seniors, and finding sales channels for local flower farms	
Satisfaction with the local community	86points



# Stakeholder Engagement

## Stakeholder engagement

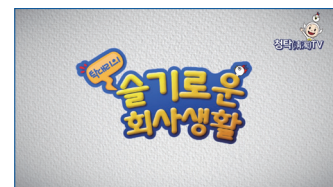
KOWEPO is facilitating our communication with stakeholders by listening to the views of various stakeholders and reflecting them in our management activities. Through the stakeholder engagement process, we identified diverse stakeholders and selected major stakeholders among them. We listen to their opinions and requests through stakeholder engagement, and make concerted efforts to improve the engagement process, so we can reflect more diverse needs.

### Stakeholder Groups and Communication Channels

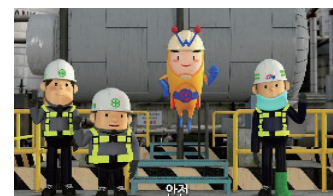
Stakeholder Group	Communication channels	Achievements
<b>Employees</b>	<ul style="list-style-type: none"> <li>Online briefing session on management issues;</li> <li>Bimonthly webzine, Seobu Gong-gam (meaning KOWEPO Empathy in Korean);</li> <li>Animation on accidents that occurred at power stations that are relayed to the company broadcast system (Dec. 2021)</li> </ul>	<ul style="list-style-type: none"> <li>Held by the CEO to facilitates face-to-face communication among employees;</li> <li>Shared imminent company issues and raised awareness on ESG criteria;</li> <li>Analyzed the cause of major accidents that occurred at power stations in the last 20 years, and presented measures to enhance awareness on workplace safety</li> </ul>
<b>Local communities</b>	<ul style="list-style-type: none"> <li>Development of revenue models based on renewable energy generation to support regional development;</li> <li>Seobu Gong-gam Wipi school, Nanum library, Seobu Gong-gam power station, career mentoring, etc.;</li> <li>A spin-off startup, 21M Co. Ltd., the second in-house venture company</li> </ul>	<ul style="list-style-type: none"> <li>Invested 56% of the total project cost (KRW 126.9 bil) for Saemangeum onshore solar farm as bonds and funds (Feb. 2022);</li> <li>Created 4 jobs and generated KRW 2.7 bil in revenue</li> </ul>
<b>Suppliers</b>	<ul style="list-style-type: none"> <li>Business Growth Response Center</li> <li>Safety Communication Council with suppliers as members;</li> <li>Safety consultation visits to business partners by the CEO;</li> <li>Inspection of safety vulnerabilities of 22 resident suppliers with external professional organizations based on the WP-safety grading system</li> </ul>	<ul style="list-style-type: none"> <li>Spent KRW 482.3 bil in improving dangerous facilities and KRW 2.3 bil in purchasing safety gears;</li> <li>Provided customized support to companies dispatching workers;</li> <li>Acquired the highest grading (A) in 2021 public agency evaluation on the level of safety activities</li> </ul>
<b>People</b>	<ul style="list-style-type: none"> <li>IWP Citizen Proposal No. 1</li> <li>IWP Innovation Contest that citizens can participate in;</li> <li>Public Contest on 4 Major Areas (care, health, education, and employment) for welfare facilities nationwide through the Seobu Gong-gam Social Vaccine Project;</li> <li>Social media such as the blog, YouTube, WP Friends acting as supporters</li> </ul>	<ul style="list-style-type: none"> <li>Used in quarterly reviews &amp; business plans as regular communication channels with the public with aim of realizing social values;</li> <li>Discovered outstanding tasks selected as priorities for citizen engagement by the Ministry of Economy and Finance (MOEF) in 2022 (June 2022);</li> <li>Supported 1,694 people in vulnerable groups who are subject to programs from 38 agencies (Jul. 2021);</li> <li>Improved KOWEPO's corporate image</li> </ul>

## Sharing our values with internal stakeholders

KOWEPO actively supports the participation of all employees and sharing ideas when setting and realizing corporate values. We are leading the efforts to disseminate our corporate philosophy, mantra, and values through diverse channels, including the in-house portal, newsletters, webzine, labor-management workshops, labor-management meetings, and training workshops. To that end, we expanded CEO-led communication channels, such as 33 Talk, intended to address inconveniences, complaints, and communication problems through constructive dialogue between the CEO and female leaders on three levels; and "Woori Tong Hat Seo" (meaning "We think alike" in Korean) that aims to resolve internal conflicts and promote the ability of female leaders to innovate through communication between the CEO and Levels 1 to 3 female leaders. In addition, we also share webtoons, web dramas, and YouTube content that convey our values, such as rooting out workplace bullying and preventing occupational accidents, through different channels to create a consensus between management and our staff.



Rooting out workplace bullying campaign using webtoons & web dramas



Occupational accident prevention animations



33 Talk



Woori Tong Hat Seo

## Sharing our values with external stakeholders

KOWEPO has set up a wide array of communication channels to promote communication with external stakeholders. We share our key management information and news through active disclosures of business information, our website, and social media targeting different stakeholders such as the government, suppliers, and local communities. For our suppliers, we help increase their productivity with the "innovative partnerships between large companies and SMEs". Starting in 2022, we have supported suppliers to enhance their capacity of ESG management. In parallel, we are creating an ecosystem for advanced inclusive growth that empowers SMEs to create new sales channels and become self-reliant in energy technology by running a Safety Communication Council with suppliers as members, as well as an open platform for inclusive growth, Business Growth Response Center, and Anti-Corruption Integrity Center. In the Saemangeum onshore solar farm project, we will build a renewable energy-based power plant, encourage resident participation, and distribute the profits. We expect the project to become a prime example of stimulating the regional economy. Going forward, we will effectively share our values through various communication channels, so our stakeholders associate KOWEPO with the image of a more friendly and transparent company.



Driving innovation & partnerships between large companies & SMEs in 2020



Breaking ground for the Saemangeum project and announcing the vision for the Smart Green Industrial Complex



Safety Innovation Council



Supporting SMEs with ESG management

## Citizen participation based on communication

KOWEPO has a public feedback process that invites citizens to provide their suggestions and help implement them, so their ideas are actually reflected in the operational activities of KOWEPO. We monitor our communication channels via an online citizen communication monitoring group and social media supporters comprising college students. Based on their findings, we garner fresh, new ideas and integrate them into practice. To further communication with the public, we opened diverse social media accounts such as the blog, Facebook, Instagram, and YouTube. We also created the company mascot Wipi and showcase it in our social contribution programs and PR materials.



Involving college students as our social media supporters



Company mascot, Wipi



Wipi School



Online citizen communication monitoring group

# ESG in Action

W P



- E Coexistence** | Sustainable management by leading the drive to green governance
- S Respect** | Building a Safer Future Together
- G Empathy** | KOWEPO, an ethical and fair company with the trust of the people



# E Coexistence

Sustainable management by leading the drive to green governance



## KOWEPO's APPROACH

As climate change continues to only worsen at a rapid pace, KOWEPO is pursuing activities in earnest that reduce our carbon footprint focused on environment-friendly management for sustainable development. We are at the forefront of carbon neutrality initiatives in the energy sector based on the combined cycle generation of green and renewable energy. We will tackle climate change, minimize our carbon footprint, and stay hard at work to contribute to a sustainable planet by increasing facility reliability and stability with the cutting-edge Industry 4.0 technologies.

## SDGs



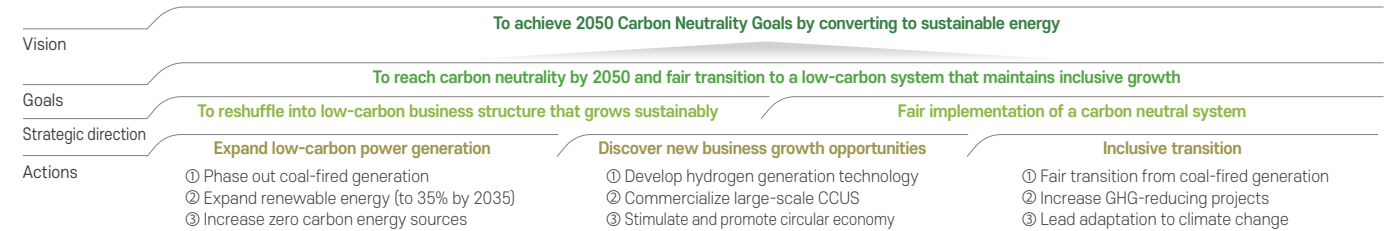
## Our Approach to Carbon Neutrality

### Climate change response

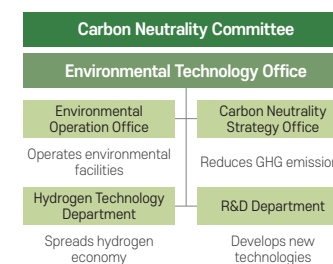
#### Climate change response system

Carbon neutrality is reducing carbon emissions generated by human activities as much as possible and increasing carbon sequestration to ultimately reach net-zero emissions. The more carbon we emit, the higher average temperature of the planet will be, which endangers the existence of humanity with extreme heat waves and cold snaps. To derive solutions to this crisis, KOWEPO has developed 2050 Carbon Neutral Management Plans by reflecting the government-led 2050 Carbon Neutrality Strategy and the revised policy that enhanced the NDC. After the government submitted the enhanced NDC to the UN, we raised our GHG reduction goals under Vision 2035 from 35% to 55%, reflecting the calls for public enterprises to cut down GHG emissions. We are on track to gradually reduce GHG emissions from 37.9 million tons in 2018 to 21 million tons in 2030, and to zero in 2050.

#### KOWEPO's Climate Change Response System



#### Important carbon neutrality bodies



#### Carbon Neutrality-Geared Organizational System

KOWEPO set up a body that supervises environmental technologies to commercialize new GHG-reduction technologies and expedite distribution of renewable energy equipment. Under this supervisory body, our renewable energy development system deployed on the factory floors has improved. We launched the Environmental Technology Office, an organization dedicated to developing environmental technology, led by the Carbon Neutrality Committee under direct control of the CEO. Through the office, we reinforced our role and function in reducing GHG emissions by carrying out carbon neutrality strategy and developing new technologies.

#### Expansion of Low-Carbon Power Generation

##### Converting coal-fired generation to LNG fuels

KOWEPO has taken a bold decision to phase out coal-fired generation that was nearing its 30th year in operation for the sake of reaching carbon neutrality. Instead, we are building combined cycle power plants that integrate renewable energy sources. We replaced fuels used for generators #1 through #6 to LNG and expect to significantly reduce emissions in 2050 compared to 2018.

#### Construction plans for LNG combined cycle power plants that integrate renewable energy sources

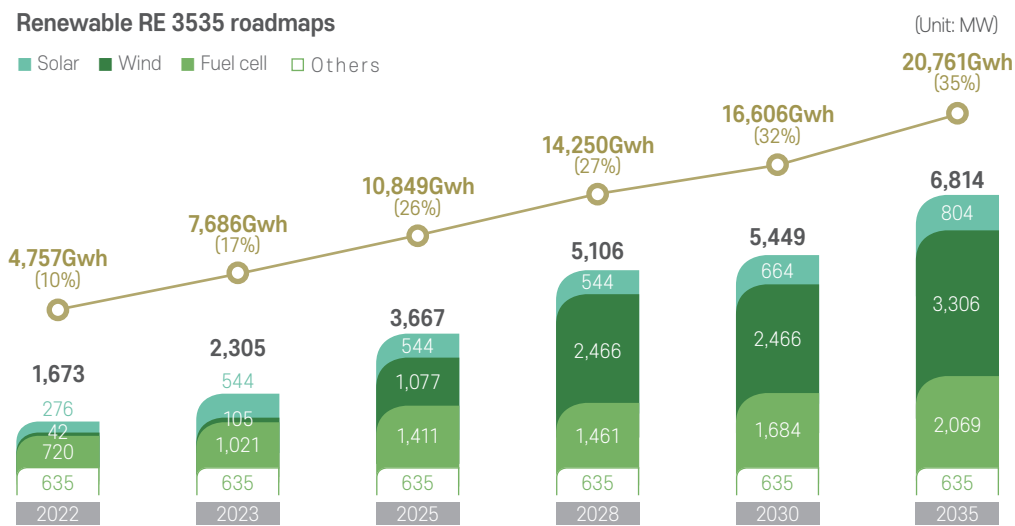
Power station	Unit	Capacity (MW)	Expected completion date	Location	Matters regarding the combined cycle power plant in place of Units 1 to 8 at Taeon
					Plan
Taeon Thermal Power Plant	1	500	Dec. 2025	Gumi (45,000 pyeong)	Acquisition of permission to change the type of power generation business (Nov. 2020) → Start the environmental impact assessment (Dec. 2020) → Complete a pre-feasibility study by MOEF (Dec. 2020) → Break ground (Dec. 2020) → Complete construction (Dec. 2025)
	2	500	Dec. 2026	Gongju (30,000 pyeong)	Acquisition of permission to change the type of power generation business (Dec. 2021) → Complete a pre-feasibility study by MOEF (Dec. 2021) → Start the environmental impact assessment (Apr. 2022) → Break ground (Dec. 2023) → Complete construction (Dec. 2026)
	3	500	Dec. 2028	Yeosu (30,000 pyeong)	Acquisition of permission to change the type of power generation business (Apr. 2021) → Complete a pre-feasibility study by MOEF (Sept 2021) → Start the environmental impact assessment (Jan. 2022) → Break ground (Dec. 2025) → Complete construction (Dec. 2028)
	4	500	Dec. 2029	Gangwon area (40,000 pyeong)	Acquisition of permission to change the type of power generation business (Dec. 2023) → Complete a pre-feasibility study by MOEF (May 2024) → Start the environmental impact assessment (Jan. 2025) → Break ground (Dec. 2026) → Complete construction (Dec. 2029)
	5	500	Dec. 2032	Undecided	Request a pre-feasibility study by MOEF (2026) → Apply for permission to change the type of power generation business (2027) → Break ground (Jan. 2030) → Complete construction (Feb. 2032)
	6	500	Dec. 2032		

※ The completion date for the Gongju-Yeosu combined cycle power station has been changed in consideration of the business progress (Yeosu-Gongju construction project to be completed by Dec. 2026 and Dec. 2028, respectively)

### Expansion of renewable energy

KOWEPO is expanding the renewable energy business in order to respond to shifts in the energy paradigm, including the trend to increase renewable energy following the carbon neutrality announcement, and the increased percentage of power under the RPS mechanism. In addition, we made the Renewable RE 3535 Plan that seeks to increase the share of renewable energy generation up to 35% by 2035, in a bid to contribute to the development of domestic business by developing new renewable energy technology and augment the role of public power companies in society through the large-scale renewable energy business. Our aim is to produce a total of 6,814MW by 2035, that breaks down into 3,306MW from wind power, 2,069MW from solar power, 804MW from fuel cells, and 635MW from other resources.

#### Renewable RE 3535 roadmaps

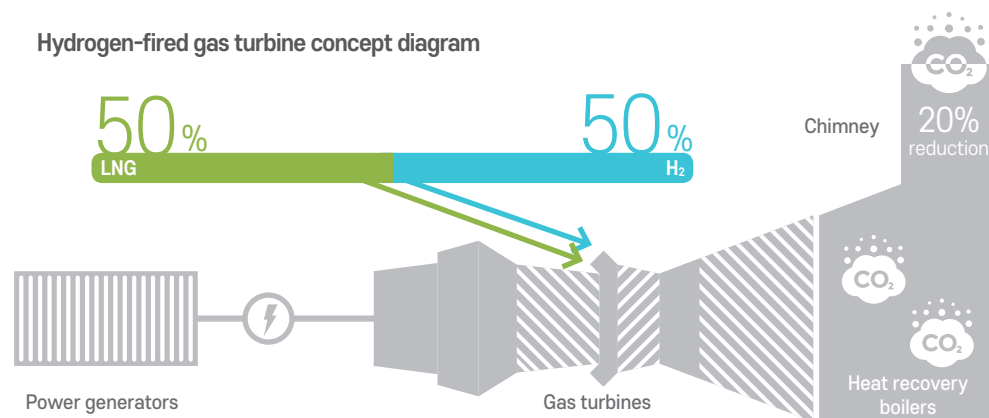


**\* What are Renewable Portfolio Standards (RPS)?**  
RPS requires that a specified percentage of electricity supplied by electricity suppliers (those mandated to supply power) that have generation facilities that exceed a certain capacity to provide renewable energy.

### Hydrogen co-fired power generation

Hydrogen co-firing is an environment-friendly generation method that uses a mix of hydrogen and natural gas to fuel gas turbines and reduce GHG emissions. When 50% hydrogen is combined, there's a 20% decrease in CO2. KOWEPO and Hanwha Impact have co-developed hydrogen co-fired gas turbine technology and plans for a pilot validation in the near future to demonstrate its viability. We will be the first in the nation to commercialize hydrogen-fired gas turbines as we remodel a decrepit 80MW gas turbine into a hydrogen turbine and apply the hydrogen co-firing technology into new turbines during validation. Going forward, we will develop essential gas turbine components and equipment in Korea in partnership with Korean parts manufacturers, and pioneer the efforts to build a domestic ecosystem for the gas turbine industry.

#### Hydrogen-fired gas turbine concept diagram



### Demonstration plan for hydrogen co-fired power generation technology

Validation of an 80MW station (2021-22)

Validation of hydrogen-fired (50%) gas turbines at Pyeongtaek Plant #1

To be increased to 70%

- (KOWEPO) will provide a combined cycle gas turbine from Pyeongtaek Plant #1 (a test bed).
- (Hanwha) will remodel gas turbines and create favorable conditions for demonstration (Daesan).

### Discovering new business growth opportunities using low-carbon energy

#### Commercialization of the original GHG reduction technology and CCUS

KOWEPO seeks to secure large-scale storage early on and create the foundation for building new growth drivers through proactive investments in R&D. We plan on starting pilot validation and a pre-feasibility study on a carbon capture and storage (CCS) project in connection with West Coast Offshore Storage and pilot validation and a pre-feasibility study on cross-ministerial carbon capture and utilization (CCU) projects.

#### Primary CCUS Technologies

<p><b>1 Post-combustion CO<sub>2</sub> capture</b></p> <p>Separating and retrieving CO<sub>2</sub> from flue gas streams using absorbents &amp; sorbents after combustion.</p>	<p><b>2 CO<sub>2</sub> capture during combustion</b></p> <p>Separating and capturing during combustion by supplying pure oxygen for fuel combustion through oxygen delivery particles.</p>	<p><b>3 Turning CO<sub>2</sub> into fuel</b></p> <p>Converting CO<sub>2</sub> into fuels (into CO<sub>2</sub>, H<sub>2</sub>, or CH<sub>4</sub>) using electrochemical, biological, or chemical methods.</p>	<p><b>4 Turning CO<sub>2</sub> into minerals</b></p> <p>Capturing or directly using CO<sub>2</sub> generated from thermal power stations, among others, to convert it into useful resources (sodium bicarbonate, magnesium carbonate, etc.) via CO<sub>2</sub> mineralization.</p>
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Category	Development of the world's leading absorbent	Designing a large-scale (150MW) capture facility
<b>Project name</b>	Validation of 0.5 MW CO <sub>2</sub> capture technology based on MAB absorbent	Assessment of large-scale capture technology/capture sources; Development of a draft design for FEED & 150MW carbon capture plant
<b>Project period/costs</b>	Jun. 1, 2017 Oct. 31, 2020 (42 months)/ KRW 11.2 bil	Apr. 1, 2021 Dec. 31, 2023 (33 months)/ KRW 6 bil
<b>Project overview</b>	Development and demonstration of the world's most efficient absorbent (MAB*) * Modulated amine blend (co-developed by KIER & Sogang University)	Comparative performance tests on domestically developed CO <sub>2</sub> capture absorbents and designing a large-scale 150MW plant
<b>Participating organizations</b>	KOWEPO/ KIER	KOWEPO/ KIER/ GS E&C

### Development Plan for Blue Hydrogen Production Technology

KOWEPO seeks to secure blue hydrogen production technology as our mid-term strategy to gear up for upcoming expansion of the new hydrogen industry. Blue hydrogen refers to hydrogen produced from natural gas supported by carbon capture equipment. In this process, less CO<sub>2</sub> is generated through carbon capture and storage (CCS). We aim to preemptively lead the age of carbon neutrality by producing hydrogen using readily available LNG and our IGCC equipment as well as developing new technologies

#### Development Plan for Blue Hydrogen Production Technology

Development Area	Focus of Development	Project period	Participating organizations	Total project cost
LNG as fuel, blue hydrogen	Pilot validation of 20kW facility; Design of a MW-class plant	Apr. 2021 ~ Mar. 2024 (36 months)	4 power lab & generating plants (KOWEPO, KOEN, KOMIPO, KOSPO)	KRW 4 bil
Blue hydrogen derived from petroleum coke	Development of a technology with 3T daily production; Development of a plant with 30T daily production	Apr. 2021 ~ Dec. 2025 (57 months)	IAE KOWEPO KIER (Three universities and four SMEs)	KRW 29.5 bil
Using IGCC High purity biohydrogen	Demonstration of a 0.5T daily production (purity of 99.8% & over); Development of a design for 10,00T annual process	Apr. 2021 ~ Dec. 2023 (33 months)	Biotechnology Service KOWEPO IAE	KRW 8.3 bil

\* [LNG → blue hydrogen] Catalytic reaction → Separation of hydrogen and carbon → Refinement → Hydrogen (fuel cell), carbon (battery, anodes)  
 \* [Petroleum coke → Blue hydrogen] Gasification → Substitution → Refinement → Hydrogen (fuel cell), CO<sub>2</sub> (reuse)  
 \* [Biohydrogen] IGCC syngas + marine microorganisms → Hydrogen production → Refine into high-purity hydrogen → Hydrogen (hydrogen cars)

### Development of water electrolysis technologies for green hydrogen production

KOWEPO seeks to develop water electrolysis technologies that can be directly applied to renewable energy. Water electrolysis is a hydrogen production process using electrolysis (water electrolysis,  $2H_2O \rightarrow 2H_2 + O_2$ ). When using water electrolysis, only hydrogen and oxygen is generated, emitting zero pollutants. It can also supplement drawbacks of renewable energy—intermittent production—by converting electricity into hydrogen which is then stored easily. Thus, we plan to create a solid foothold for new growth drivers by preemptively employing green hydrogen production technology, which is a blue ocean in the carbon neutrality field, and by developing water electrolysis technology, the next-generation alkaline electrolysis.

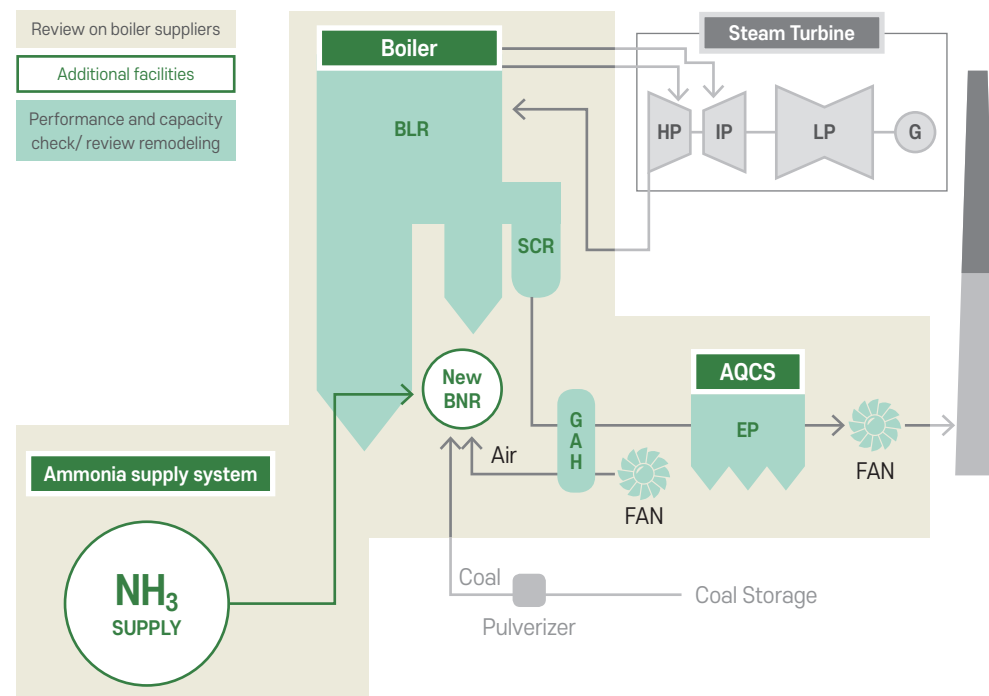
#### Water Electrolysis Technology Development Plan for Green Hydrogen Production

Category	Actions taken	Blue ocean in the carbon neutrality field
Project name	Development of a water electrolysis stack platform to ensure economic feasibility of green hydrogen	(Option A) Providing the entire hydrogen produced in Korea as green hydrogen
Business scale	Project cost: KRW 1 bil Period: Jan. 2021 - Dec. 2022 (24 months)	↓ New business growth opportunity with hike in demand, including zero emissions power generation and hydrogen cars
Participating organizations	KOWEPO, KIER	
Development goals	Development of a water electrolysis hydrogen production stack that can be directly applied to renewable energy	

### Ammonia co-fired power generation

KOWEPO will apply ammonia co-firing, using ammonia co-firing in coal plants, to reduce GHG emissions. Five power companies and electricity labs are working together to develop ammonia co-firing technology. We chose generator units among 24 coal-fired generators considering the lifecycle and generation efficiency. Based on demonstration of co-firing technology, we intend to deploy co-firing technology in Units #9 and 10 at our Taean Plant in 2030.

#### Ammonia co-firing concept

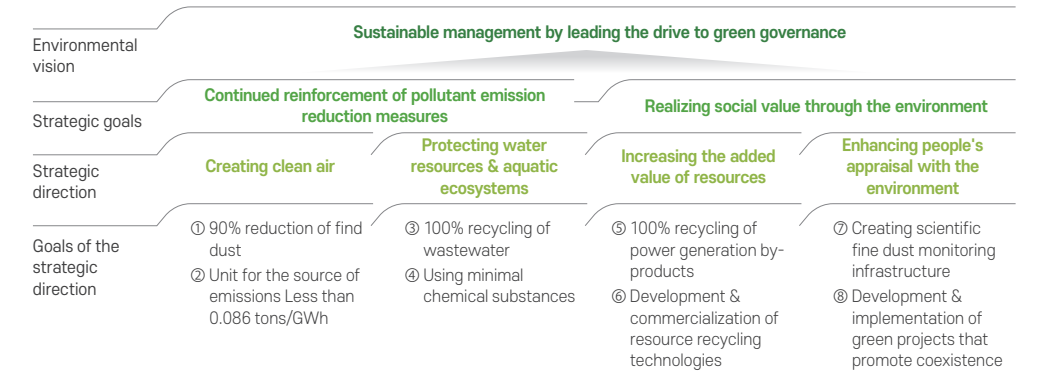


## Environmental Management System

### Environmental management goals

Under our vision, sustainable management by leading the drive to green governance, KOWEPO set creating clean air, protecting water resources and aquatic ecosystems, increasing the added value of resources, and enhancing people's appraisal with the environment as strategic directions, and developed eight goals in accordance with strategic directions. We also announced the environmental management policy as a foothold for all employees in undertaking environmental management practices.

#### Environmental Vision System



#### Environmental Management Policy

### Environmental management policy

We hereby institute and implement the following environmental management policy to achieve our environmental vision, sustainable management by leading the drive to green governance, in lockstep with our corporate mission, We contribute to the development of society and the public sector by producing safe and clean energy through continuous innovation.

- In pursuance of ESG management, we will minimize the emission of pollutants by enhancing environmental facilities and introducing new green technologies based on our environmental management system, and diligently fulfill our obligations to comply with environmental laws and agreements.
- For the sake of achieving carbon neutrality by 2050, we will endeavor to expand fuel sources and renewable energy, develop technology that reduce GHG, and materialize a low-carbon culture.
- In order to create sustainable plants applied with a resource circulation system, we will strive to add high value to by-products, diversify recycling methods, and turn waste into fuel.
- We will contribute to realizing social value through open communication, including strengthening communication channels with the public, transparent disclosure of environmental information, and reinforcing activities that help preserve the environment.

All employees including the CEO are fully informed of this Environmental Management Policy and will lead by example and practice in fulfilling the policy stipulations with an unwavering commitment.

Jun. 2021.

President Park Hyung-duck *박흥덕*



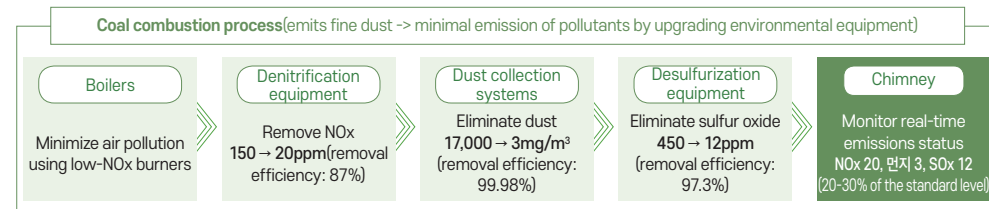
# Nature-friendly operations

## Reducing air pollutants

### Sustainable power stations emitting minimal air pollutants

We are shifting our power generation paradigm to environmentally sustainable operations in line with the government's energy transition policy and to respond to calls of the people to reduce fine dust and create a safer environment. Most of all, we are striving to curb air pollutant emissions using various facilities and treatment processes, including low-NOx burners, denitrification facilities, electrostatic precipitators, desulfurization facilities, and telemetering system (TMS).

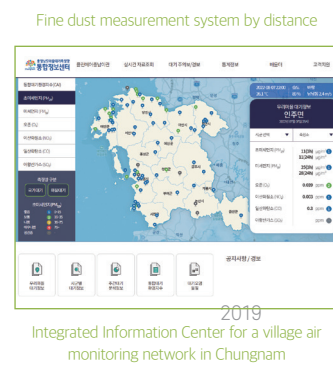
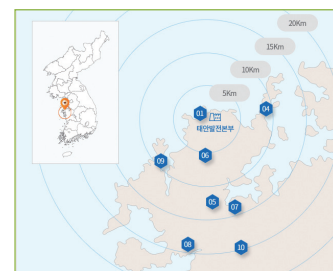
### Air pollution control systems



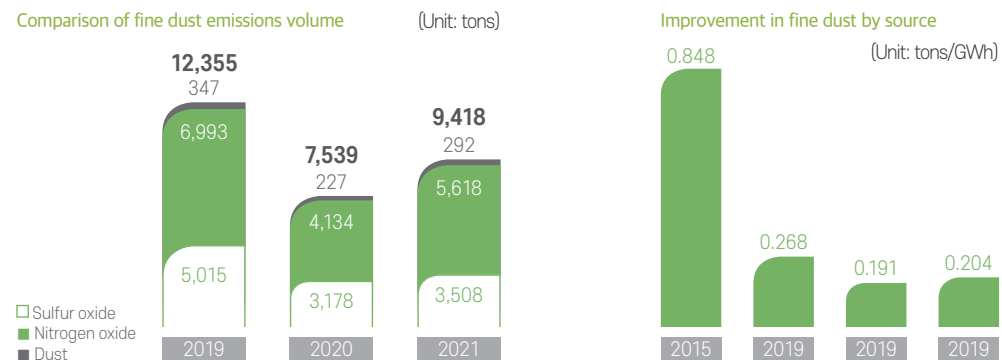
- \* Low-NOx burners: Equipment that generates less NOx through the optimal combustion of coal in boilers
- \* Denitrification equipment: Equipment that removes NOx from combustion gases by reacting with reducing agents
- \* Dust collection systems: The first equipment that removes more than 99.9% of dust from combustion gases
- \* Desulfurization equipment: Equipment that removes SOx (sulfur oxide) from combustion gases by reacting with limestone (fine dust is removed in the second stage)
- \* TMS (automatic monitoring system of the concentration level of emissions from chimneys): Measures the concentration level of emissions from chimneys in real time and sends the results to the Ministry of Environment (Korea Environment Corporation). The ME monitors in real time whether power plants follow the cap on emissions
- \* The generator units 1 to 4 at Taean are the first to introduce the new cyclone desulfurization technology in Korea, and they are generating up to 10ppm of SOx.
- \* To prevent dust from scattering in the coal storage, all units will be placed indoors by 2026 (Taean units #9 and #10 are now run in the coal storage).

### Efforts to reduce fine dust

As part of the joint project with Chungcheongnam-do for shared prosperity, we developed an integrated system for a private atmospheric measurement network. We built 10 atmospheric measurement network centers in 2019 to measure the impact of fine dust on areas around power stations. We are running these centers according to the same criteria applied to the national measurement network for fine dust, ultra-fine dust, sulfur dioxide (SO<sub>2</sub>), and nitrogen dioxide (NO<sub>2</sub>). As a result of our efforts made on multiple fronts, such as introduction of new environmental technology, storing of coal indoors, and optimum operation of environmental equipment, we cut down fine dust emissions by 77% in 2021 and reached the government goal of reducing fine dust by 61% until 2030. In addition, we redeveloped a bold plan of decreasing fine dust by 90% until 2035. Along with the continued efforts to reduce fine dust, we will lead the nature-friendly management initiative by carrying out diverse projects based on environment data, including the result of the national fine dust measurement.



### Fine dust emissions volume by source



## Saving and reusing water

KOWEPO built the new gray water facility at the Taean power plant with a view to responding in advance to the water shortage due to climate change. We are using industrial water efficiently by launching the zero leak campaign, discovering areas where wastewater can be used, and improving the process to secure the capability to provide stable supply of water. In 2021 in particular, we have developed a zero-discharge system that applies the wastewater evaporation method of crystallizing and treating pollutants with high-temperature steam. Through the system, we recycle 100% of desulfurized wastewater for power generation, through which we reduced water consumption by 290,000 tons a year. In 2022, we enhanced the performance of the existing wastewater treatment facility to reuse 100% of wastewater from power generation and built the new gray water facility. As a result, we established a zero wastewater discharge system that can secure an additional 560,000 tons of water a year for power generation.

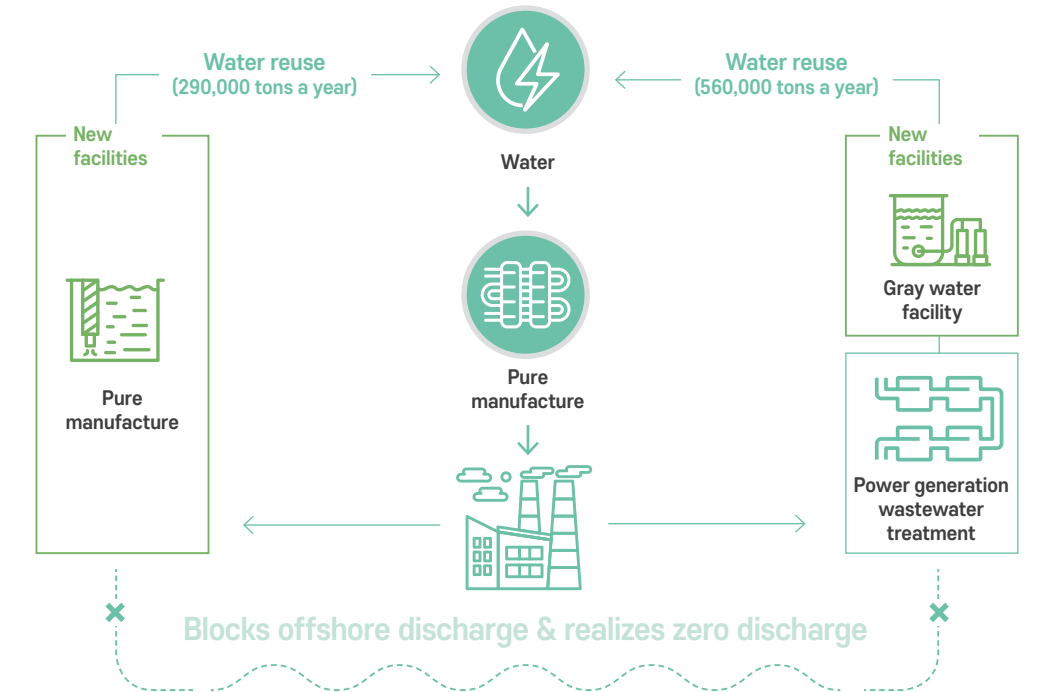


New desulfurization wastewater treatment facility (2021)

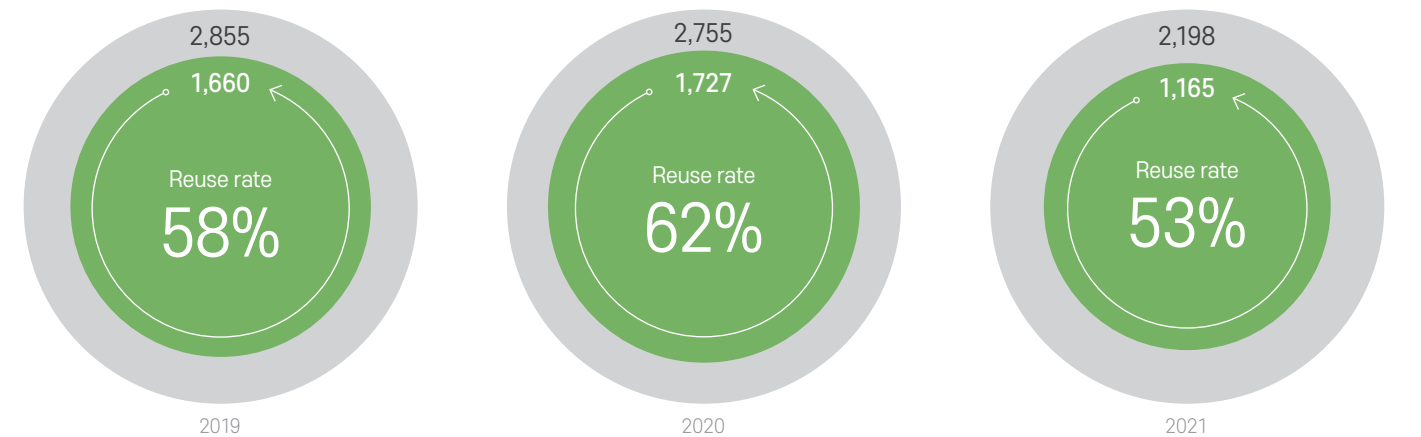


New gray water facility (2022)

### Concept of the wastewater recycling system



### Wastewater reuse status

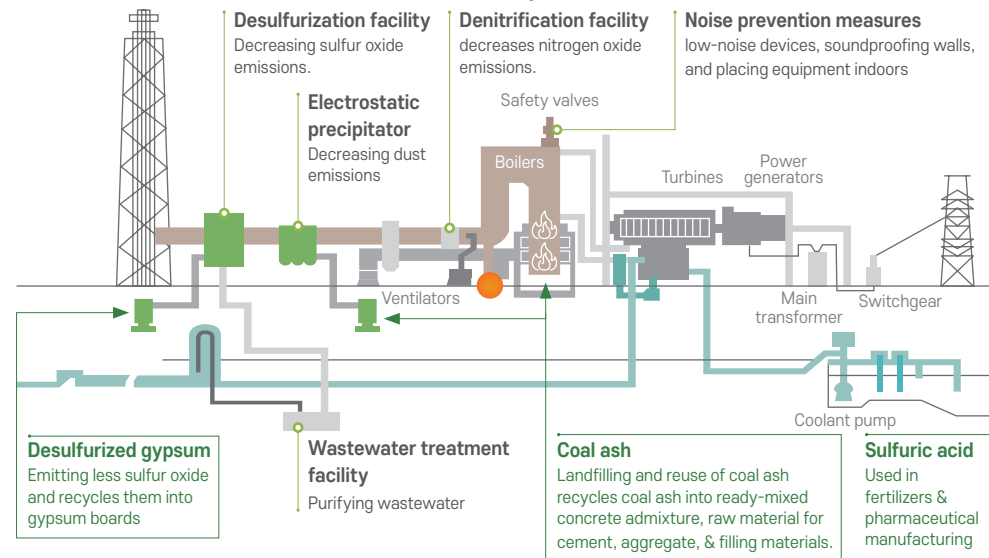


**Sustainable use of resources**

**Building plants with a resource circulation system**

Power stations, in nature, inevitably use a substantial number of resources and generate pollutants at the same time. Thus, KOWEPO intends to contribute to the sustainable development of Korean society by managing plants that employ a resource circulation system that recycle by-products, such as coal ash and desulfurized gypsum generated during generation and pollutant removal, as viable resources.

**Overview of Plants with a Resource Circulation System**



**Increasing coal ash recycling and ensuring safety**

Although fly ash among coal ash is sold as admixture for ready-mixed concrete, the remaining coal ash are landfilled and then recycled as filling or raw materials for cement. However, we need to diversify the recycling options and turn them into high value-added material with the existing method incurring high cost. Therefore, we are conducting various research projects through industry-academia-research collaboration to expand the recycling of power generation by-products. With these projects, we are developing diverse technologies and discovering new growth opportunities. A prime example of a new recycling business project we discovered is using reclaimed ash to make artificial marine structures (i.e. sofa blocks, artificial reefs). With this project, we can not only implement national resource circulation policy, but also create added value, such as revenue earned from selling by-products.

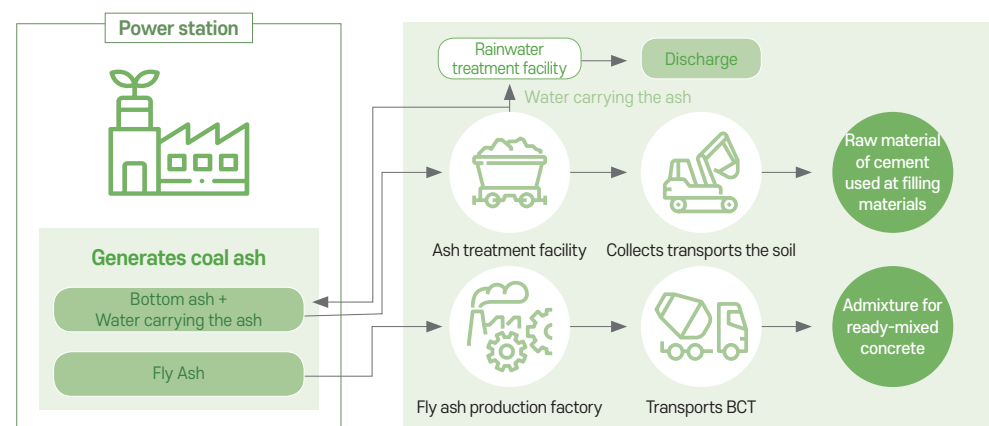


Sofa block and artificial reef diorama

**Amount of coal ash generated and recycled (as of 2020)**

Category	Amount generated (1,000 tons)	Amount recycled (1,000 tons)	Recycling rate (%)
Coal ash	1,396	1,081	77.4
Desulfurized gypsum	232	232	100
Waste	133	129	96.7
Sulfuric acid	6.4	6.4	100

**Layout of Landfilling and Recycling Flow of Coal Ash from Power Plants**



**Recycling power generation by-products**

Therefore, we are conducting various research projects through industry-academia-research collaboration to expand recycling of power generation by-products. With these projects, we are developing new technologies and increasing areas we can apply the recycling technology. Then we transfer the discoveries to small companies or in-house venture companies to support their commercialization efforts. In parallel, we will actively follow the national resource circulation policy by proposing new policies that reevaluate the value of by-products and continuously developing the latest technologies, including maximizing added value to electricity generation by-products.

**Results of R&D on Power Generation By-Product Recycling Technology**

Partnering organization	Development
Chungnam Province-F1 Tech- KOWEPO	Development of filler materials for asphalt pavement using coal ash
Gunsan University	Development of technology using filler materials for excavation and restoration of road made using reclaimed ash
HJ Enterprise - Hanbat National University (HbNU)	Development of building interior boards made of coal ash
Korea Institute of Geoscience and Mineral Resources (KIGAM)	Development of artificial basalt (i.e. building materials, steppingstones, etc.) manufacturing technology using reclaimed ash
IAE	Development of geopolymer production technology using coal gasification slag (CGS)
Korea National University of Transportation (KNUT)	Development and commercialization of construction materials (i.e. fine aggregate) using CGS
Sambo Engineering	Development of mineral fiber manufacturing technology using brown gas
Korea Institute of Ocean Science and Technology (KIOST)	Development of offshore structures using coal ash for the Green New Deal that promotes resource circulation

**Resource circulation business, the solution to the national environment problem**

We are making a considerable contribution to solving the national environment problem and job creation by developing oyster shells into high value-added products. They have recently emerged as a serious environmental issue causing bad odor after being strewn along the coasts. As a result, we transferred the patent to the technology to an SME to make it into a business. In addition, we launched the "Healthy Heal-Sea" campaign, a resource circulation program that supports the vulnerable groups in connection with our environment protection campaign and sold upcycled products made of plastic waste with social enterprises. As a result, we sold up to 2,046 products and earned a profit of 40 million won, with 15% of the proceeds earned being used to support the Coastal Cleanup Program



Business agreement ceremony for commercialization of oyster shell recycling technology



Groundbreaking ceremony for S.F.C powder & liquid slaked lime plant

# S Respect

Safety Together, Create Future



## KOWEPO's APPROACH

As a power company that delivers services for the needs of the people we serve, we fully appreciate and accept our social responsibility, and continue to fulfill our social responsibility to create a harmonious society for all. Notably, we not only enhanced our disaster response capabilities to relieve citizens' concerns by prioritizing safety, but also set up a comprehensive health and safety system by stepping up our safety measures for our own employees and those of our suppliers. We are also communicating with diverse stakeholders including our customers, local communities, suppliers, and employees in an effort to build a harmonious regional community.

## SDGs



## Health and Safety Management

### Health and Safety Management System

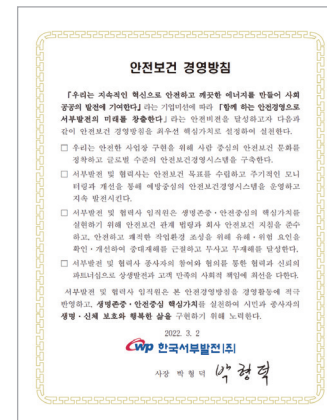
#### Safety management system

We have bolstered the body dedicated to safety not only at the head office, but also at each of our production locations to establish a business system that brings safety to the fore. The Safety Management Office at the head office supervises health and safety issues. We also set up the Process Health Department at the Taean Power Plant responsible for managing the work environment and worker's health to reinforce the safety body. Moreover, we have developed important management responsibility plans regarding health and safety every year, which is then reported to the BOD for approval.

#### Safety Management Plan 2022

Vision	Safety Together, Create Future			
Goals	Achieving a zero rate of fatalities from occupational and safety accidents			
Strategy	Protecting the life and safety of workers by establishing the onsite work system that prioritizes safety and by preventing mass casualty and fatal accidents or incidents with the maintenance and reinforcement of power generation facilities			

Action plans	Workplaces	Construction sites	Facilities	Others
	<ul style="list-style-type: none"> <li>Ensure prevention-centric safety by enhancing the impeccable hazard &amp; risk discovery system;</li> <li>Establish the WP-safety grading system among suppliers &amp; a feedback system of evaluation results;</li> <li>Continued improvement of dangerous areas onsite thru accident case studies</li> </ul>	<ul style="list-style-type: none"> <li>Systematize the health &amp; safety management system for construction sites;</li> <li>Strengthen safety of new construction sites;</li> <li>Reinforce safety obligations &amp; timely implementation of customer by construction project</li> </ul>	<ul style="list-style-type: none"> <li>Augment the facility maintenance system;</li> <li>Prevent occupational accidents thru safety inspections at specific times;</li> <li>Prevent extensive failures thru predictive maintenance and monitoring of dispersed renewable energy facilities</li> </ul>	<ul style="list-style-type: none"> <li>Enhance expert education on health &amp; safety;</li> <li>Create a safe workplace by building smart &amp; safe plants;</li> <li>Provide industrial physicians for mental &amp; physical health; Expand the operation of Mind Talk Talk, an employee assistance program (EAP)</li> </ul>



Health and safety management policy

We announced a new health and safety management policy in March 2022 by listening to and collecting the views of employees so they can empathize with and be aware of it. All employees are required to conform to the policy during their duties.



ISO 45001 (a company-wide certification)

We obtained a certificate on the occupational health and safety system (ISO 45001) based on international standards for the head office and all our domestic locations, establishing a health and safety management system on par with global standards. For our power stations at Taean, Pyeongtaek, Seoincheon, and Gunsan, we also acquired a new certificate for health and safety management system (KOSHA-MS) from the Korea Occupational Safety and Health Agency.



KOSHA-M (Taean Power Plant), KOSHA-MS (Pyeongtaek Power Plant), KOSHA-MS (Seoincheon Power Plant), KOSHA-MS (Gunsan Power Plant)





"Finding Hidden Risks" Online Self-Learning



Videos on safety exercises



Music video titled "With Safety"



Zero Fatal Accident Campaign

**3-3-3 Campaign for robust safety control**

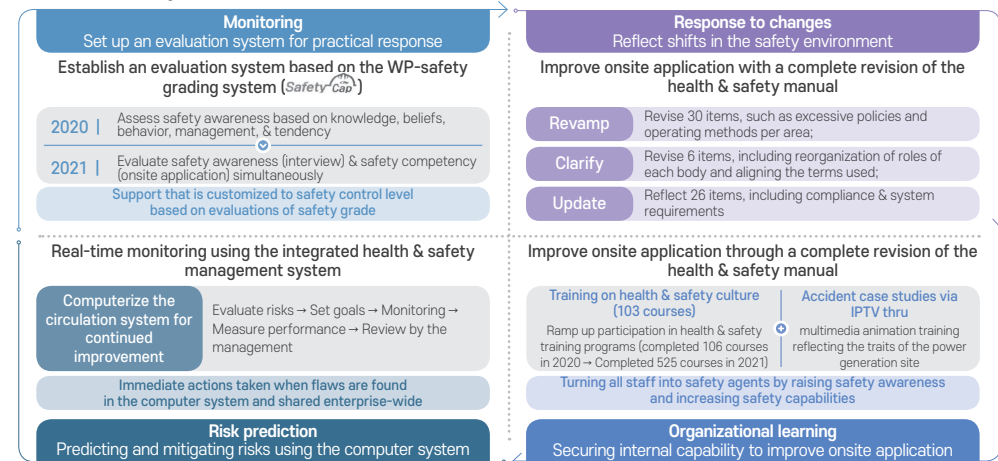
<b>Prevention of three major accidents</b>	Falls, toppling over, getting jammed Find dangerous areas & take due measures
<b>Three major risks</b>	Fire, height, sealed spaces Adopting a permit system when working at height
<b>Root out three items</b>	Ignorance, negligence, overwork Training on fatal accident prevention

**Workplace safety**

**Creating a resilient safety culture**

Resilience embodies monitoring the safety system within an organization, analyzing and diagnosing vulnerabilities, and then preparing corrective measures to learn what is important to predict potential risks. KOWEPO introduced the concept of safety resilience since 2020, and has created a virtuous cycle centered around prevention with the goal of strengthening four major capabilities of monitoring, response, organizational learning, and prediction.

**Resilient safety culture 2030**



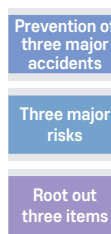
We periodically listen to the complaints and suggestions from suppliers by holding meetings with sole proprietors and running the Safety Labor Council and the Safety Reporting Center to relieve the divide in health and safety status between KOWEPO and our suppliers. Notably, we've developed a variety of contents, such as "Finding Hidden Risks", online self-learning content on safety rules for day workers who are at risk of occupational accidents, psychological counseling on safety, fitness programs, and a health center run by a resident nurse. Animation films, such as "Preventing Occupational Accidents at Power Plants with Wipi", a video on safety exercises, and a music video titled "With Safety", are unveiled to the public on YouTube and constantly relayed using our in-house broadcast at the same time to increase employee's knowledge on safety and confidence.

Considering that fatal accidents tend to occur in the second half of the year, we designated 100 days between Sept. 7 and Dec. 12, 2021, as the time vulnerable to occupational accidents. During this period, we launch the 3-3-3 Campaign to minimize serious accidents and announce the Code of Safe Practices, which we recite before all meetings and events. The 3-3-3 Campaign selects and robustly manages three major high-risk duties to eradicate three major occupational accidents, namely falling, toppling over, and getting jammed. Through the campaign, we managed to record a clean slate of zero accidents for 100 days of the campaign period, preventing fatal accidents, occupational accidents, and negligence in carrying out safety procedures.

**Evaluation targets based on the WP-safety grading system**

Business location	Targets (including suppliers)
Taeon	12 including Shinheung Technology
Pyeongtaek	Four including OES
Seoincheon	Four including Geumhwa PSC
Gunsan	Two including KEPCO KPS
Total	22 companies

**Announcement of the Code of Safe Practices**



AI safety video analysis system



AI robots that monitor generation facilities 24/7



Safety consultation visits to business partners by the CEO



Safety Innovation Council meetings



Rest areas for workers from business partners at Taeon Power Plant

KOWEPO introduced the WP-safety grading system in 2021 and evaluated 22 resident partners. As a result, companies received a Grade 2 (Good rating for 9 companies), Grade 3 (Average rating for 7 companies), and Grade 5 (Very poor rating for 6 companies). We instructed the six companies that were given Grade 5 to include health and safety matters, including a safety management plan, and develop internal improvement plans by creating their own health and safety organizational system and support measures. In March 2022, we completed the implementation check on their improvement plans.

**Facility safety**

**Expansion of the smart safety control system**

We expanded the smart safety control system using Industry 4.0 technologies to better safeguard the life and safety of onsite workers. By building the AI safety video analysis system and adopting a remote monitoring system for harmful gas in confined spaces and a real-time location tracking system for heavy equipment to eliminate blind spots and detect problems early on. We also set up an integrated control system with our business partners to enhance the efficiency of safety-related work. By applying the system, we solved the issues of dispersed operation of systems, the time-space constraints, and inconvenient integration.

**Smart Safety Inspection System**

Enhancements	Existing system	Improved system
AI safety video analysis system	Real-time video control • Staff monitoring using the mobile CCTV system (Workplace ↔ Situation room) → Limit in personnel monitoring by checking multiple monitors	AI CCTV footage monitoring • Monitors to detect the risky actions of workers by analyzing videos using deep learning → Sends out alerts when AI detects abnormal behavior
Remote monitoring of harmful gases in confined areas	Portable safety monitoring (SMP) • Remote monitoring of harmful gases in confined spaces using personal smart pads → Monitoring limited to people using a smart pad	Monitoring feature linked to the mobile office app • Remote monitoring of harmful gases in confined spaces using the KOWEPO mobile app → Multiple remote monitoring which can be shared
Real-time location tracking system for heavy equipment	Safety & staff monitoring • Ensures safety using a signalman & a banksman for heavy-duty work → Limit in controlling multiple work involving heavy equipment	Integrated control based on an IoT platform • A stand-alone control tower of real-time heavy equipment operation data → Remote monitoring of multiple heavy equipment work

**Safety culture, health and safety**

**Increased communication channels on safety**

Starting in 2019, KOWEPO have operated the Safety Management Committee involving external safety experts, and labor-management representatives from our business partners as a part of the Public Agency Workplace Safety Reinforcement Policy. In 2021, we launched the Safety Innovation Council to bolster communication with our business partners. The council is composed of 45 members, including the management of the resident partners, business heads, and worker representatives. The members get together every quarter led by the CEO to collect difficulties faced on site and deliver solutions.

Beginning in the first half of 2022, we upgraded the Safety Innovation Council to conduct safety consultation visits to business partners by the CEO. Under the program, the CEO visits factory floors to listen to the views and challenges faced by workers from our partners to communicate with them on site. Meanwhile, we invested 6.9 billion won for the past three years to enhance 30 areas that need improvement, such as the working environment and sanitation and convenience facilities at the Taeon, Pyeongtaek, Seoincheon, and Gunsan power stations. For feedback collected from consultation visits to our partners, we invested an additional 7.2 billion won to build multi-purpose buildings that include cafeterias and remodel the offices and sanitation facilities of our partners.



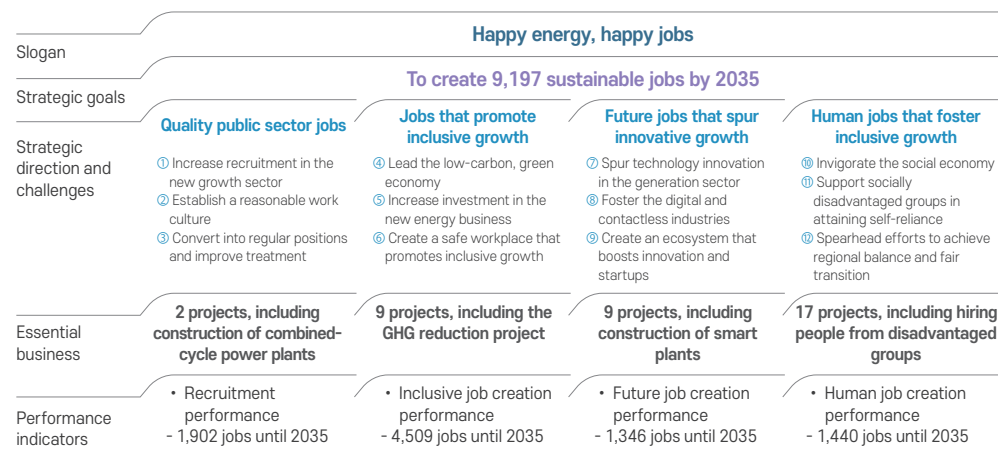
## Improving employee value

### Job creation

#### Mid- to long-term job creation strategy 2035

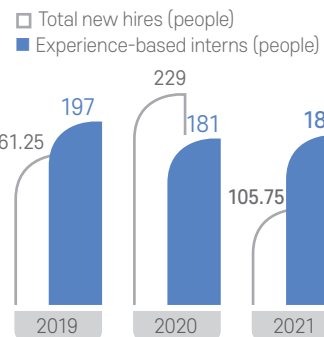
KOWEPO established the mid- to long-term job creation strategy 2035 to continue its efforts to create and keep jobs. We divided the jobs into different categories consisting of the public sector, inclusive business, future, and human and created jobs under these categories. We also measured the WP Job Index for objective inspection and monitoring of jobs to enhance the quality of those jobs. We aim to create 9,197 jobs by 2035 by setting feasible mid- to long-term goals that reflect the existing progress and by discovering new projects focused on job creation.

#### Mid- to long-term job creation strategy 2035



#### Recruitment performance

(unit: people)



#### Major recruitment performance of regular hires

(unit: people)

Category	2019	2020	2021
Young people	143.75	215	97.75
Talents from among high school graduates	22	19	13.75
Local talents	24	42	23
Veterans	14	21	14
The disabled (mild)	5	7	6
The disabled (severe)	2	0	1
Women on a career break	0	0	0

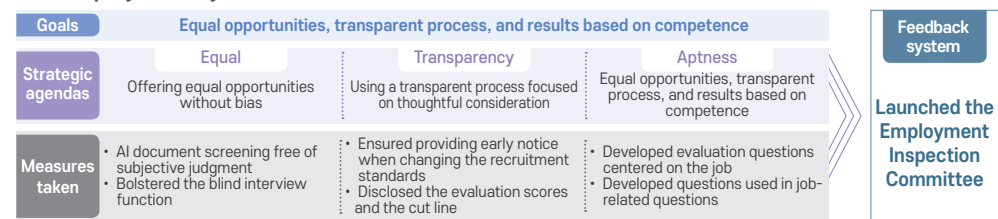
#### Job creation goals and performance by four strategic directions

Strategic direction	2020 performance	2021 performance		Major new business
		Goals	Performance	
Quality public sector jobs	229	94	106	Securing new capacity in the renewable energy, safety, and security sectors
Jobs that promote inclusive growth	247	278	304	Develop ODA for Colombia, start the patrol service for safety on factory floors
Future jobs that spur innovative growth	78	76	87	Create a document grouping system; begin data security consulting
Human jobs that foster inclusive growth	137	137	156	Support unoccupied home maintenance projects; hold screening of social startups
<b>Total</b>	<b>691</b>	<b>585</b>	<b>653</b>	<b>Achieved 112% of the annual goal for 2021</b>

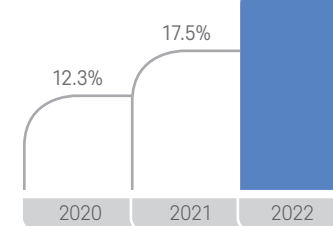
#### Increasing new hires and creating socially equitable jobs

As the economic downturn and employment crisis continue with the prolonged COVID-19, KOWEPO is working hard to make bold investments and create jobs to fulfill its responsibility as a public agency. In response to the age of energy transition toward carbon neutrality, we have facilitated the creation of a carbon management ecosystem and provided opportunities to socially vulnerable groups through social cooperation, while making diverse efforts to create jobs such as hiring local talents.

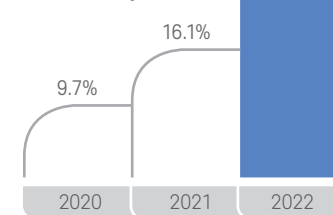
#### Fair employment system



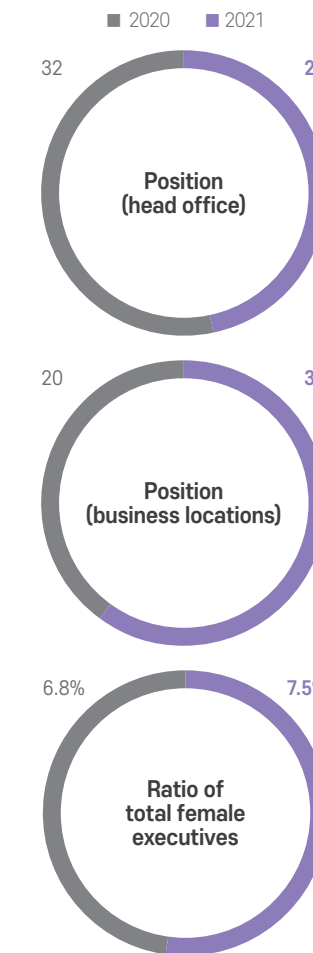
#### Ratio of new female hires in the last three years



#### Ratio of new female technical staff in the last three years



#### Number of Level 3 or higher female executives



### Gender equality

#### Expanding female hires and efforts to foster female executives in different stages of life

As our way of fostering female middle managers, we are supporting our younger employees to be motivated and to set career development goals as middle managers while expanding the participation of female employees in committees and leadership programs. Moreover, we are hiring more female executives and employees to increase the female representation. We are working hard to enhance our organizational culture by analyzing the status of female workers in different stages of life.

#### Direction of fostering female workers in different life stages



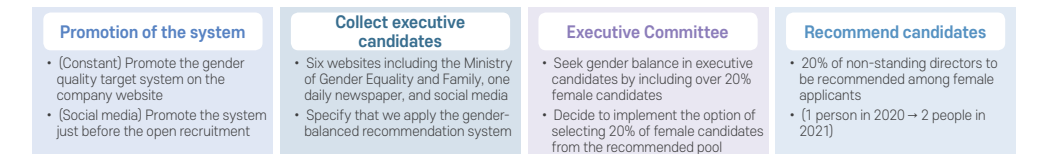
#### Gender-balanced organizational culture

KOWEPO has 33 Talk and Woori Tong Hat Seo (meaning we are on the same page in Korean) as the leading channels for promoting communication with employees led by the CEO. Woori Tong Hat Seo aims to advance the ability of female leaders to innovate through communication between the CEO and female leaders in Levels 1 ~ 3 positions. Out of the 15 proposed in the direct communication with the CEO, 13 ideas, including the expansion of rotational positions, creation of the KOWEPO Righteous Person Award, and expansion of family-friendly facilities, were chosen and implemented.

#### Gender equality when appointing executives

When appointing executives, we set the goal of increasing the number of female executives as we endeavor to achieve gender equality and announce the results on our webpage. We also clarified the application of gender-balanced recommendation system to executive candidates aimed at actively achieving gender equality. In addition, we have a forum for promoting the target executive appointment system for gender equality aimed at spreading awareness and creating consensus on the system, in order to facilitate support for female workers regarding the available position. We have turned the measure to enhance the possibility of appointing female executives into a policy based on the gender-balanced recommendation system for executive candidates to address the problem of concentration of male candidates recommended for executive positions.

#### Target executive appointment system for gender equality



#### Female executive expansion goals and performance

Category	2021		2022	2023	2024	2025	2026
	Goals	Performance					
Female executives / Executive capacity (people)	2/9	1/9	2/9	2/9	3/9	3/9	3/9
Ratio of female executives (%)	22	11	22	22	33	33	33



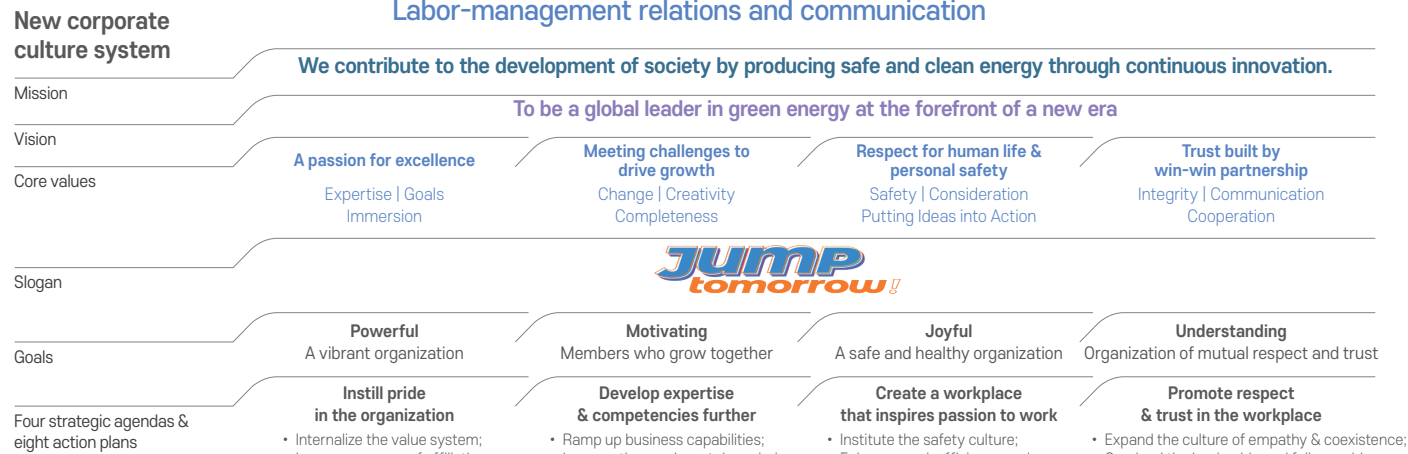
# Corporate Culture of Communication and Respect

## Strategic system for harmonious labor-management relations and development

### Corporate culture promotion system

In 2020, KOWEPO has internalized the four key values by establishing the new corporate culture establishment strategy under our corporate mantra, "Rise Again 4 WP". In 2021, we started conducting activities aimed at internalizing the 12 sub-elements and the code of conduct under the four key values to build our signature business culture, as we reflect the CEO's business philosophy of forming an efficient business culture, facilitating communication and collaboration, and instituting a safety culture throughout the company. With the wide adoption of ESG management, we enhanced activities related to social responsibility, such as integrity & ethics and social contribution, to set up a corporate culture system.

### Labor-management relations and communication



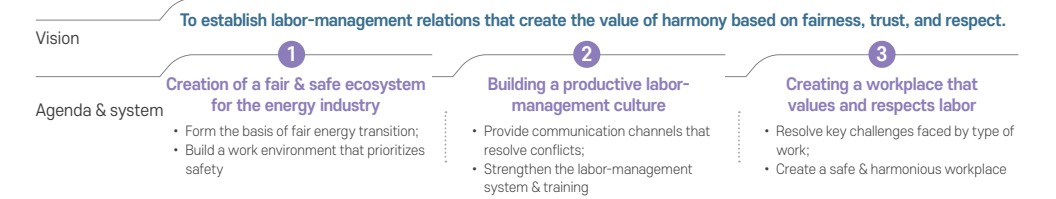
### Sub-elements and the code of conduct by key value in the new corporate culture system

Core values	Definition	Sub-elements	Code of conduct
<b>A passion for excellence</b>	Grow into a top expert in your field and duly abide by principles & regulations to achieve your goals and exhibit tenacity in work.	<b>Expertise</b>	Become an <b>expert</b>
		<b>Goals</b>	Achieve your <b>goals</b>
		<b>Immersion</b>	Exhibit <b>dedication</b> to work
<b>Challenges to drive growth</b>	Overhaul the existing work process & practices for the company's continuous growth & change, and accomplish your goals through cooperation.	<b>Change</b>	Continue to pursue <b>change</b>
		<b>Creativity</b>	Think <b>creatively</b>
		<b>Completion</b>	<b>Complete</b> the tasks with persistence
<b>Respect for human life &amp; personal safety</b>	Recognize the value of human-centered values such as safety, life, & the environment and lead the efforts to create a safe, clean workplace.	<b>Safety</b>	Create a <b>safe</b> workplace
		<b>Consideration</b>	Respect and be <b>considerate</b> of others
		<b>Put ideas into action</b>	<b>Stick</b> to the basics
<b>Public trust built by cooperation</b>	Communicate with various stakeholders based on mutual understanding & transparency to form inclusive relations & public trust.	<b>Integrity</b>	Uphold <b>integrity</b> in the workplace
		<b>Communication</b>	<b>Communicate</b> fiercely
		<b>Cooperation</b>	<b>Cooperate</b> with one another

## Strategic system for harmonious labor-management relations and development

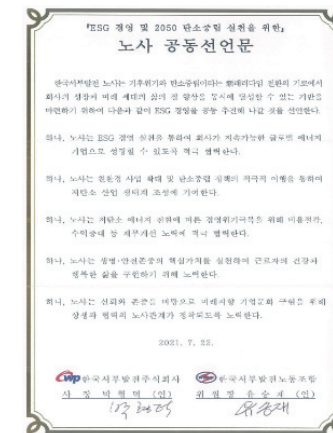
In response to abrupt changes in the business environment, we have established labor-management relations that jointly create the value of harmony based on trust and respect. We reformulated an improvement strategy for labor-management relations that reflect the pending business issues, such as carbon neutrality and application of the Fatal Accident Punishment Act. We have put in place a joint labor-management consultation system to bolster cooperation and focus on addressing imminent issues by meeting external expectations.

### Labor-management relations system



### Labor-management consultation that promotes a fair and safe work environment

KOWEPO has introduced a labor-management consultation and implementation system aimed at creating a fair and safe work environment. The labor and management jointly announced that we will adopt ESG management to achieve carbon neutrality, and thus formed a Carbon Neutrality TF and a Labor-Management-Government TF to strengthen our safety culture. We discussed future pathways for the Carbon Neutrality TF during a meeting between the labor union and business partners. We also paid more attention to the voice of workers to enhance safety management, and elevated the expertise of safety inspections.



A joint labor-management announcement aimed at accomplishing ESG management & carbon neutrality

### A harmonious workplace that values work-life balance

We adopted a new shift system to minimize instances where people concurrently handle more than two positions to improve employee satisfaction by addressing key challenges faced by employees serving different roles in the company. We also enhanced flexible working to reduce work hours and curb working on weekends/holidays and overtime stipends. As a result, we were certified as a family-friendly company for 10 consecutive years (by MOGEF) and a women-friendly company for the last three years (by Ministry of Culture, Sports, and Tourism). In 2021, we also managed to reduce average work hours per person by 23 hours compared to 2020.

### Key Performance in Promoting Work-Family Balance

Category	Actions taken	Achievements
Promoting parental leave	<ul style="list-style-type: none"> <li>Induced fathers to naturally take parental leave by improving the awareness;</li> <li>Recommended people to apply reduced work hours (2 hr/day) to reduce burdens on childcare</li> </ul>	<ul style="list-style-type: none"> <li>More male workers took parental leave (35→37);</li> <li>More people used shortened work hours (212→ 244)</li> </ul>
Facilitating the use of parental leave	<ul style="list-style-type: none"> <li>Increased the target ratio for using long-term (5 days or more) leave (70% → 80%);</li> <li>Changed the minimum hours for day offs (4hr → 0.5hr) for enhanced flexibility</li> </ul>	<ul style="list-style-type: none"> <li>People on long-term leave increased by 46%;</li> <li>1,134 people availed of hourly leave</li> </ul>
Expanding summer vacation break	<ul style="list-style-type: none"> <li>Adjusted the period recommended to take summer vacations;</li> <li>(Before) Two weeks in July through three weeks in September → (After) Three weeks in June through three weeks in September</li> </ul>	<ul style="list-style-type: none"> <li>People on summer vacations increased by 12% - 581 people in 2020 → 650 people in 2021</li> </ul>

### Work-life blending, an employee benefit that encourages employees to enjoy work and use off-hours for self-development

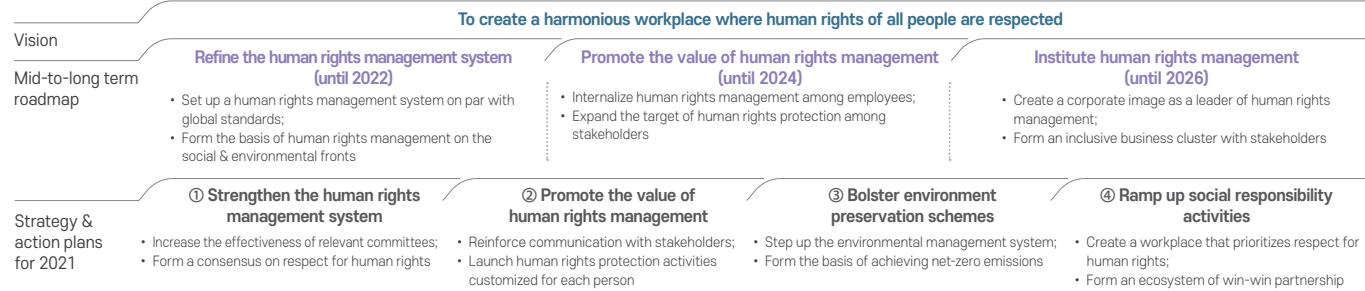
Category	Actions taken	Accomplishments
<b>Organization</b> Satisfying work hours	<ul style="list-style-type: none"> <li>Revamped the practices of working long hours by expanding the PC-off scheme, etc.;</li> <li>Implemented three campaigns (take days off as needed, adopt flexible work hours, and make it routine to go home after work hours);</li> <li>Advance the mobile office to strengthen the infrastructure for the remote work system and expand flexible working</li> </ul>	<ul style="list-style-type: none"> <li>Work hours per person decreased (1,868hr in 2020 → 1,845hr in 2021);</li> <li>Flexible working used 4,810 times including 1,420 people working from home (up by 6% from last year)</li> </ul>
<b>Individuals</b> Off-hours used for self-development	<ul style="list-style-type: none"> <li>42 learning bodies (408 people participated), including implementation of safe &amp; health-oriented management. Offered 72 educational programs for obtaining 72 types of certifications including labor attorneys &amp; social research analysts;</li> <li>Online mental health checkups (8 checks each for 1,638 people) designed to overcome COVID-19 blue &amp; healing programs tailored to different business sites</li> </ul>	<ul style="list-style-type: none"> <li>714 people completed the certification courses, and we selected 30 outstanding learning bodies;</li> <li>Special healing classes, including Building Mind Muscles, Making Flowerpots (28 classes, 339 participants)</li> </ul>

## Human rights management

### Human Rights Management System

KOWEPO supports the UN Guiding Principles on Business and Human Rights (UNGPs) and the Ten Principles of the UN Global Compact (UNGC), and complies with the human rights management guidelines set forth in the UN Declaration of Human Rights that reflects the above-mentioned. To fulfill our responsibility to respect the human rights of our stakeholders, we overhauled the WP mid-to-long term human rights management system established in October 2018 and set up a new human rights management system on Dec. 30, 2021, by reflecting the human rights management trends in Korea and abroad and the adoption of ESG management. Accordingly, we developed four strategies and 13 strategic challenges, which we linked to our ESG management strategy to include our business sites as well as partners in the scope of application for human rights policies and related systems. In parallel, we are advancing the human rights management system in consideration of characteristics of Korean ESG indicators, such as fine dust and indirect employment.

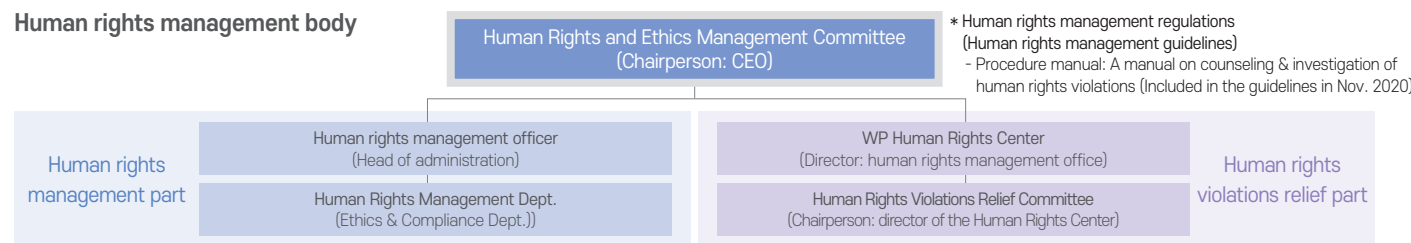
### New Human Rights Management System



### Human rights management body

In January 2019, we launched the WP Human Rights Center dedicated to consulting, receiving reports, and investigation of human rights violations and the Human Rights Violations Relief Committee in November 2020. The CEO acts as the chairperson of the Human Rights and Ethics Management Committee that is divided into two groups, which are a human rights implementation part and human rights violations relief part. While the WP Human Rights Center specializes in consulting, receiving reports, and investigation of human rights violations, the Human Rights Violations Relief Committee is dedicated to victim protection, notification of the results, prevention of secondary victimization, and making measures for preventing recurrence.

### Human rights management body



### Result of the human rights impact assessment

We obtained an average score of 99.78 in 2021 on the human rights impact assessment that we conducted internally annually pursuant to the Human Rights Management Manual for Public Agencies published by the National Human Rights Commission of Korea to check the current status of our human rights management and identify real and potential human rights risks. Our score increased by 0.23 points versus the 99.55 points in 2020. Among 20 items subject to the assessment, we earned the highest score in the information human rights category. (Points increased by 6.15 points from 93.85 in 2020 to 100 in 2021).

### Human rights training contents



A talk show (Tues. & Fri. every other week)

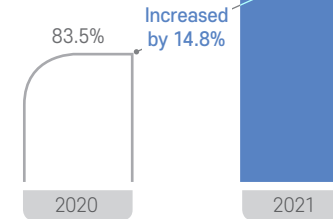


Music video on a human rights song (Mon. to Fri. every week)



Prevention of sexual harassment in the workplace (a special video)

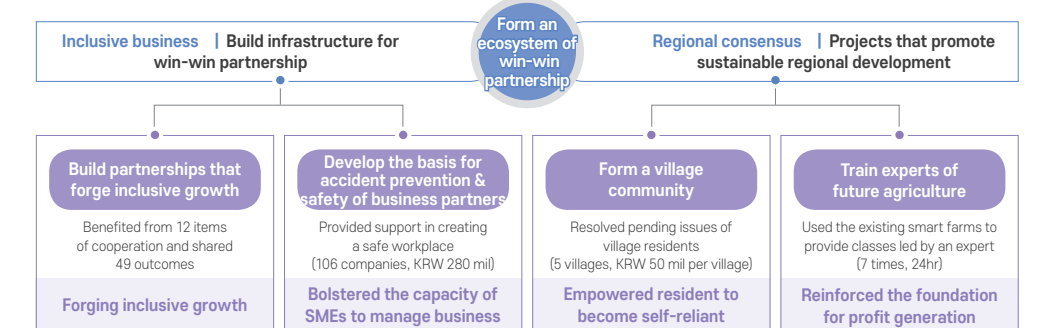
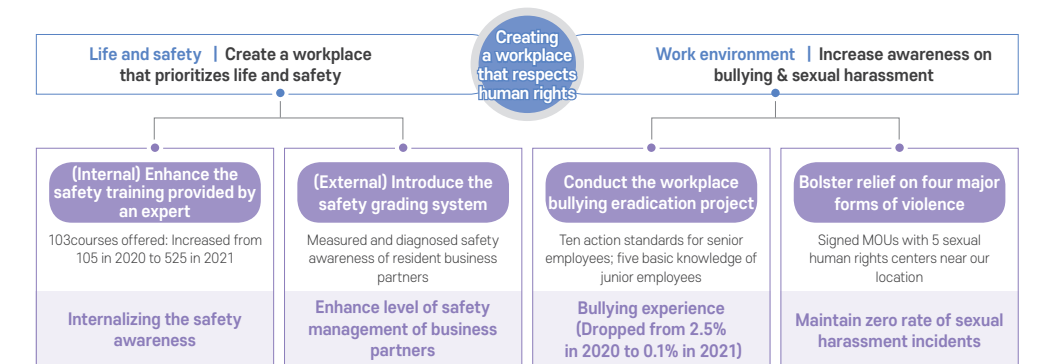
### Ratio of people who complete human rights training classes



### Major achievements from human rights management

We have uploaded human rights training contents onto the in-house broadcast system and W-Tube, an internal video sharing platform, for our employees to access to increase their awareness on human rights. Such contents include a talk show on human rights management, a music video on a human rights song, and a video on sexual harassment prevention in the workplace. We are hard at work to create a workplace that prioritizes respect for human rights by averting workplace bullying and sexual misconduct among our employees and business partners. We also launched customized human rights protection activities in collaboration with an independent third-party institution to deter human rights violations as to the right to be safe and healthy of the workers of our partners and the right to live and enjoy a clean natural environment of local residents.

### Major achievements from human rights management



### Human rights protection activities customized for each person

Stakeholders & characteristics	Better communication	Human rights protection activities customized for each person
Facilitating cooperation	Possible breach of health & safety rights attributable to working conditions at power stations	Collecting requests for improvement from contactless communication channels
	There is a threat to survival as they reside in underdeveloped areas due to the nature of power plant sites	Identified pending local issues by participating in the problem-solving platform for the Chungnam region
Local residents	Threat to future environmental rights in blind spots of the GHG reduction initiative	Selected vulnerable villages through Chungnam Sustainable Development Council

- Built 10 rest areas for workers at power plants;
- Protected the health & safety rights by enhancing vulnerable areas
- Supported commercialization of ideas suggested by residents;
  - Set eight agendas including the part-time care service
- Made 36 villages safe from climate crisis (cumulative total: 54);
  - Saved KRW 30 mil in energy costs by installing high-efficiency lights and replacing boilers

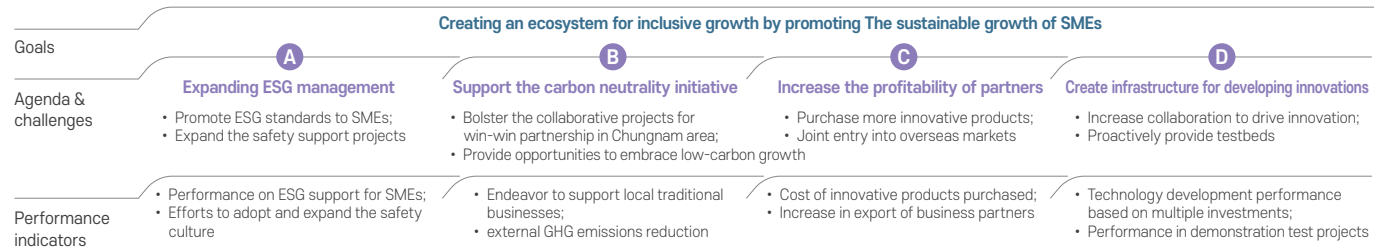


## Inclusive growth

### Inclusive growth system

We have developed an inclusive growth system and provide technical and systemic support. We are supporting business partners to manage their business sustainably through a body dedicated to inclusive business centered on SMEs. We intend to promote ESG management that is considered an essential element in a company's survival, strive to overcome the global economic downturn after COVID-19, build the basis for revenue generation by spurring innovation and growth, and support the government's New Deal by discovering relevant new businesses. We are exerting concerted efforts to form an ecosystem for inclusive growth by responding to the carbon neutrality initiative, securing first-rate generation technology, and entering the overseas market all at once.

#### Inclusive Growth System



### Forming an ecosystem of shared prosperity

#### Support project on ESG capacity building for SMEs

Over two months between December 2021 and January 2022, we have launched the Support Project on ESG Capacity Building for SMEs targeting 30 partners and provided training and consulting to develop their capabilities for the ESG framework. In 2021, we helped small business partners to hire safety managers, provide health and safety training to their employees, and install safety tools such as automated external defibrillators and fire detectors as a part of the occupational accident prevention project for 106 SMEs. In recognition of our achievements, we were designated as the most outstanding company in the Evaluation on Inclusive Growth Performance of Public Agencies in 2021 by the Ministry of SMEs and Startups in April 2022. We conducted an ESG assessment and awarded the top five companies with a plaque commending them as outperforming ESG companies. For all the companies that were assessed, we allowed them to get one credit evaluation for free. We will monitor the progress of improvement measures as a result of the assessment throughout the year 2022 and reevaluate those areas during the years as part of follow-up management. As for companies that lack ESG capacity, we provide additional support, such as replacing the existing equipment with environment-friendly equipment and obtaining ISO certifications.



Meeting on starting a project aimed at enhancing ESG capabilities of business partners



Seminar on increasing the competency of SMEs on ESG management

#### Managing ESG practices across the supply chain

We have driven our growth by diversifying the support system for innovative growth and readily assisting venture companies in order to ramp up the competitiveness of our partners. In particular, we implemented the 3-Combo (manufacture-productivity-management) Innovation Program focused on factory floors for a complete overhaul of their system, and helped them introduce ESG management practices. As a result of our rigorous efforts, two companies (i.e. Sangyong ENG and New York Korea) won the Industry Minister's Commendation for their breakthrough productivity.

#### 3-Combo Innovation Program

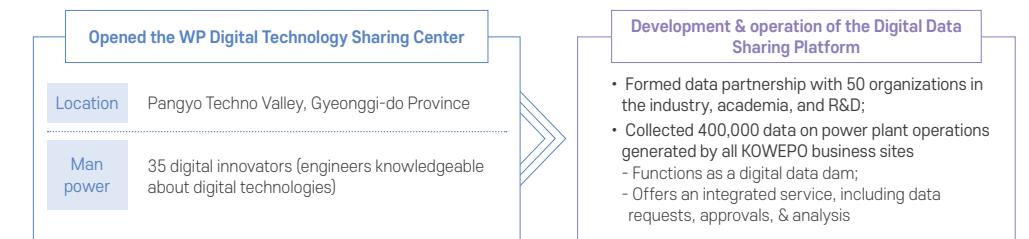
Category	Industrial innovation movement (manufacturing innovation)	Innovative partnership (breakthrough productivity)	Enhanced response to ESG issues (business innovation)
Target	Small secondary & tertiary business partners	Primary partners & companies involved in the generation business	Consignment Companies Council & unicorn companies
Activities	Introduction of facilities, equipment/ production/ quality management	Product/ organization/ process innovation, consulting	Training, ESG diagnosis, consulting, & monitoring
Performance	20 companies in 2021(cumulative total: 184)	12 companies in 2021(cumulative total: 108)	30 companies in 2021(newly added)

### R&D support for essential components

KOWEPO is actively supporting the growth of innovative companies with ingenious technologies by transferring industrial property rights free of charge and supporting them to improve their ability to protect their technology. We have also connected the domestic production project WP-KoDe30 with the materials, parts, and equipment (MPE) policy to transfer 11 patents to nine companies, thus creating a robust supply chain.

### WP Digital Technology Sharing Center

In November 2020, KOWEPO opened the WP Digital Technology Sharing Center in Pangyo, Gyeonggi-do Province. The center was founded to develop new business based on electricity data and support private companies to find sales channels for their generation business as a part of the R&D project for the transfer-sharing platform. Through the center, we are disclosing approximately 400,000 generation data created from the four power plants in Taeon, Gunsan, Pyeongtaek, and Seoincheon. Moreover, we are using technologies from Korea Electronics Technology Institute (KETI) to support SMEs to develop digital solutions optimized to power plant operations, including breakdown prediction and performance improvement.



### Business Growth Response Center

KOWEPO's Business Growth Response Center was established to resolve challenges SMEs are facing in regard to regulations and grievances raised by them in collaboration with the SME Ombudsman. The bricks and mortar center is run by the general manager and senior manager at our Contract and Materials Department and Procurement Cooperation Department, respectively. You can visit their webpage by clicking the Business Growth Response Center menu on our website.

#### Business Growth Response Center Operation



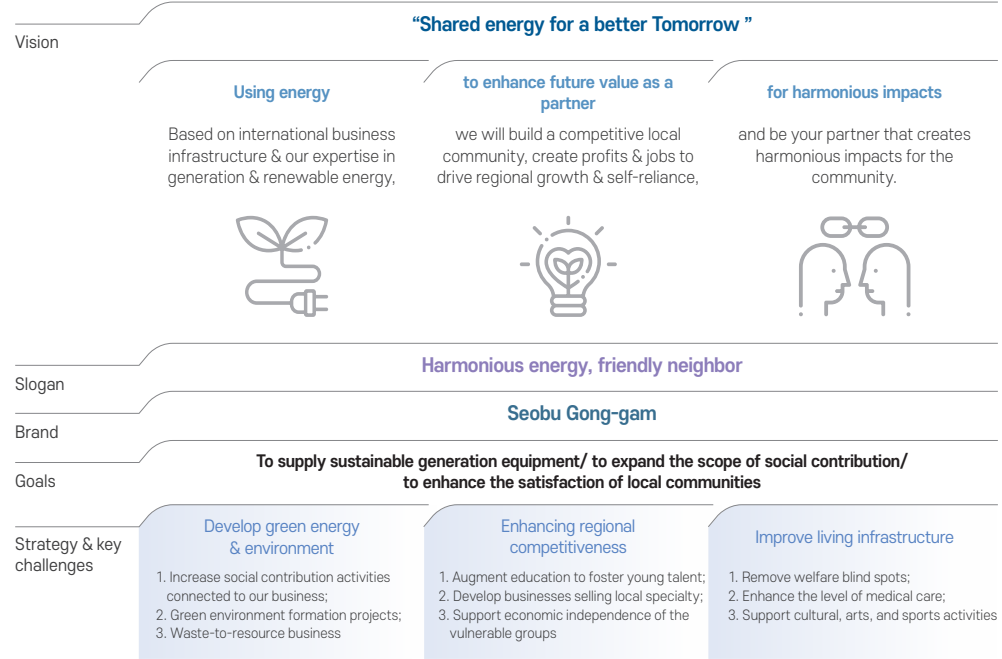


## Contribution to local communities

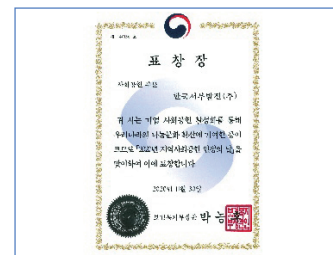
### Social contribution system

We are committed to becoming a good neighbor to disadvantaged communities as a public enterprise and creating a warmhearted world where we share harmonious vibes with local communities. To that end, we are conducting social contribution activities that reflects residents' needs by expanding communication with the region through a social contribution council. We are making efforts to fulfill our social responsibility as a public company by holding a contest on new business ideas and transforming them into real businesses in participation with four institutions, including the city of Pyeongtaek.

#### KOWEPO' Social Contribution System



Seobu Gong-gam is our social contribution brand developed through a public contest in 2021. The brand conveys our aspiration to create a warmhearted world where we share harmonious energy with neighbors as a public enterprise. The KOWEPO charity group, which has been active since 2004, is carrying out social contribution activities systematically centered on our three social contribution strategies of developing green energy and environment, strengthening the regional competitiveness, and improving the living infrastructure. Going forward, the KOWEPO charity group will diligently undertake charity activities under our philosophy "Putting service and love into action is like a debt to be repaid in return for a healthy life."



Received a commendation from the Minister of Health and Welfare in 2020 (selected as a company with significant contribution to the local community)

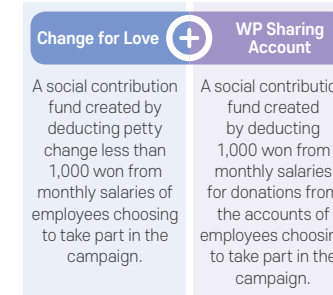


KOWEPO charity group logo



KOWEPO social contribution brand

### Structure of the Sharing the Love Funda



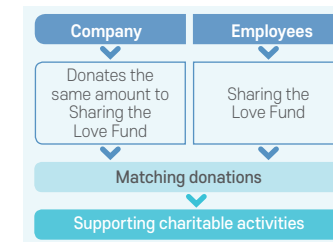
Our employees are voluntarily taking part a donation campaign called Change for Love that deducts petty change less than 1,000 won from employee's monthly salary to help people in need, and WP Sharing Account that deducts 1,000 won from monthly salaries as a donation. The Sharing the Love Fund applies the donations for social contribution projects, and receives the company's matching donation for the funds collected from employees under the matching grant system.

### Resolving regional issues

#### Enhancing regional competitiveness

KOWEPO is committed to engage in local communities and invigorate the regional economy by identifying challenges that need to be resolved in partnership with the region, reflecting the external situation and residents' needs, and improving the practical social contribution activities. As a part of the scheme, we selected five villages, including Jeonju, Jeollabuk-do Province, by receiving applications and screening candidates among Saedeul Villages (a national project aimed at helping people living in poverty by renovating living infrastructure and improving their homes). Then we offered educational sessions (3 times) on community activities, and conducted onsite checks to provide solutions to local problems. We also held a performance briefing to demonstrate the process and how the villages have improved, and conducted the Village Dream-Up program that supports restoration of the community and development of residents as main problem solvers of local issues, such as child and senior care and education.

#### Matching grant



#### Solving Local Problems through Village Communities

Category	Situation	Partnership	Solutions
Jeonju, Jeollabuk-do	<ul style="list-style-type: none"> <li>Deteriorating facilities after relocation of Jeonju Station;</li> <li>Lack of opportunities to communicate with other residents</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration of three organizations including Byuribyul Cooperative</li> </ul>	<ul style="list-style-type: none"> <li>Talent-sharing classes held at empty spaces;</li> <li>Opened a village market and began publishing a newsletter (biweekly)</li> </ul>
Andong, Gyeongsangbuk-do Province	<ul style="list-style-type: none"> <li>Lack of resources &amp; programs to care for the elderly due to aging population</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration among five organizations, including the Andong Social Welfare Council</li> </ul>	<ul style="list-style-type: none"> <li>Visiting healthcare service;</li> <li>Opened a village laundry room &amp; group work center for the elderly</li> </ul>
Geoje, Gyeongsangnam-do Province	<ul style="list-style-type: none"> <li>Population outflow after a slump in the shipbuilding business;</li> <li>Loss of community function &amp; village identity</li> </ul>	<ul style="list-style-type: none"> <li>Collaboration among four organizations, including Geoje YMCA</li> </ul>	<ul style="list-style-type: none"> <li>Village branding using flowers;</li> <li>Village festival, art shows, flower murals, etc.</li> </ul>



Launch ceremony of Wipi School mentors



Mentor-mentee college visiting program



Fish seeds release project

The WP Wipi School is our leading education talent donation and social contribution program, and began to reduce the educational divide in the Taean area and provide local teens an opportunity to get quality education and foster them into future talents. At the Wipi school, KOWEPO employees taught school subjects (English & math) and offered career counseling and a mentoring program to mentees in elementary, junior high, and high schools in Taean. In 2020, we taught the 6th class (22 mentors, 177 mentees) in January and the 7th class (7 mentors, 46 mentees) in August. In addition, since we signed an agreement in 2017 for an inclusive fishery seed release project with Taean County and Seosan Fisheries Cooperatives, we have purchases and released fish seeds worth a total of 1.19 billion won that consist of 720,000 red sea bream seeds, 800,000 blue crab seeds in 2018; 1.66 million Korean rockfish seeds in 2019, 2.08 million Korean rockfish seeds, 70,000 abalone seeds, 100,000 sea cucumber seeds in 2020; 70,000 abalone seeds, and 3 million flatfish seeds in 2021. We also promoted the need to stop indiscriminate fishing of young fish. This way, we are contributing to sustainable fishery production.

# G Empathy

KOWEPO,  
a clean and fair company  
trusted by the people



## KOWEPO's APPROACH

There are more government-wide activities carried out aimed at raising people's awareness on public institutions. Gaining trust requires not only sound governance, high level of ethics of executives and employees, but also participation of stakeholders and transparency of information. The KOWEPO Board of Directors protects the rights and interests of stakeholders according to laws and articles of association. We will establish measures that promote ESG management and put them into practice. According to the principle of communication and disclosure, we will readily reflect views of stakeholders inside and outside KOWEPO and take the lead in managing the organization based on transparency and integrity.

## SDGs



## Governance

### BOD composition

KOWEPO BOD is comprised of four standing directors that include the President and the Executive Auditor, and five non-standing directors. To ensure independence of the BOD, the chairperson of the BOD is appointed from non-standing directors in accordance with Article 21 of the Act on the Management of Public Institutions. The number of standing directors is limited to less than 1/2 of the number of directors including the President. We are working hard to increase the ratio of female directors following the enforcement of the Director Appointment Target System for Gender Equality, intended to achieve gender equality in the BOD composition. There is one female non-standing director, who accounts for 11% (1/9) of the total directors, and 20% (1/5) of the entire non-standing directors.

BOD Composition (as of Jun 30, 2022)

Category	Position	Name	Gender	Career background	Terms	Whether included in the ESG Committee	Whether included in the Audit Committee
Standing directors	CEO	Park Hyung-duck	Male	• Vice President of Planning Dept., KEPCO • General Manager of Gyeonggi Office, KEPCO	Apr 26, 2021 - Apr 25, 2024 (3yr)		
	Executive Auditor	Lee Sang-ro	Male	• Incheon Police Commissioner • Daejeon Police Commissioner	Dec 24, 2021 - Dec 23, 2023 (2yr)		○
	General Manager of the Growth Business Division	Kim Seong-kyun	Male	• Director of the Audit Office, KEPCO • Director of Real Estate Planning Office,	Jul 12, 2021 - Jul 11, 2023 (2yr)	○	
	Head of the Engineering Safety Division	Choi Yong-beom	Male	• Head of the Pyeongtaek Thermal Power Complex Division, KOWEPO • Head of the Power Generation Department, KOWEPO	Jun 20, 2020 - Jul 19, 2022 (2yr)	○	
Non-standing director (BOD chairperson)	Park Jeong-geun	Male	• Vice Chairman of Woojoo Telecom • President of Overseas Business, KEPCO	Sept 16, 2020 - Sept 15, 2022 (2yr)		○ (chairperson)	
Non-standing director	Cheon Heng-kwon	Male	• Auditor at Gwangju Chamber of Commerce and Industry • Lead Tax Accountant at Ichon Tax Firm, Gwangju Branch	Oct 28, 2019 - Oct 27, 2022 (2yr, served consecutive terms)			○ (chairperson)
Non-standing director	Jung Se-yong	Male	• Editorial advisor at Naeil newspaper • Editorial member at The Hankyoreh	Sept 16, 2020 - Sept 15, 2022 (2yr)		○	
Non-standing director	Jang Ji-sang	Male	• Professor Emeritus of Economics and Trade, Kyungpook National University • Director of KIET	Jan 21, 2022 - Jan 20, 2024 (2yr)		○	
Non-standing director	Oh Eun-kyeong	Female	• Professor of Liberal Arts, Dongduk Women's University • Member of the Northern Economic Cooperation Committee	Jan 21, 2022 - Jan 20, 2024 (2 yr)			○

### Regulations on operating the Director Recommendation Committee

Article 4 (Composition of Committee) ...  
The BOD shall appoint committee members among the well-educated and experienced candidates from various fields such as the legal, economic, media, academia, and labor circles, and is allowed to include one member who can represent the opinions of the company members... (omitted) (8).  
The committee members should reflect the characteristics of the company. The committee should be composed in a balanced way by gender and region, while the ratio of one specific gender not exceed 80% of the total number of members.

Article 17 (2) (Recommendation system for executive candidates based on gender equality)  
(1) ... If the ratio of any specific gender among the executive candidates is lower than 50%, it is allowed to include the number of persons corresponding to 50% (decimal point rounded off) in the recommended candidates.

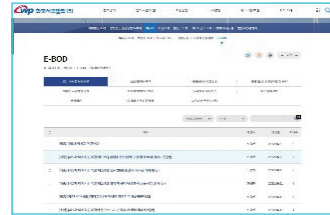
### Appointment of directors

We appoint directors based on the Act on the Management of Public Institutions and KOWEPO Articles of Incorporation. The President, Executive Auditor, and non-standing directors are appointed through recommendation of the Director Recommendation Committee. Director recommendations are done based on the gender equality recommendation system that considers gender balance so the ratio of a certain gender do not make up the majority of the candidates. Through these efforts, we ensure diversity and independence of the BOD by striking balance in gender and regional background.

### Director appointment process

Term of office	Three years	Two years	Two years	Two years
Position	President	Executive Auditor	Standing directors*	Non-standing directors
① Recruitment (ad, or both ad and referrals)	○	○		○
② Recommendation by the Director Recommendation Committee	○	○		○
③ Deliberation and resolution by the Public Institution Operation Committee	○	○		○
④ GSM resolution	○	○	○	○
⑤ Request for appointment	○ (Minister of MOTIE)	○ (Minister of MOEF)		
⑥ Appointment (performing entity)	○ (President of Korea)	○ (President of Korea)	○ (President)	○ (Minister of MOEF)

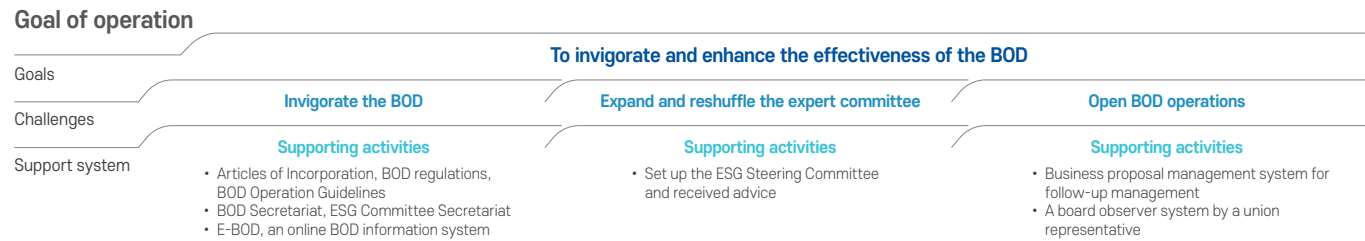
\* Excludes the President and the Executive Auditor



A screen shot of E-BOD

### BOD operations

The BOD is divided into regular and ad hoc BOD and meetings are held upon the request of the chairperson or over 1/3 of the registered directors. The BOD meeting is held when a majority of registered directors are present, while resolution is made with the approval of a majority of registered directors excluding directors who have special interest in the major agenda, such as business goals, budget, and financial planning. KOWEPO has the BOD Secretariat and ESG Committee Secretariat that are dedicated to committees. We also have E-BOD, an online BOD information system, designed to eliminate information asymmetry between standing and non-standing directors. Moreover, we periodically provide materials on pending business issues and electricity industry trends to non-standing directors. We have also enhanced the work efficiency by standardizing the BOD operational process via BOD Operation Guidelines.



### BOD attendance rate

Year	BOD attendance rate		
	2019	2020	2021
Entire BOD	89.9%	94.9%	94.3%
Non-standing director	94.5%	93.8%	96.7%

### Details of BOD agenda handled

Year	Number of meetings held	BOD resolution agenda				Reported agenda	Total
		Subtotal	Original proposal approved	Revised proposal approved			
2018	13	43	40	3	8	51	
2019	11	40	37	3	12	52	
2020	13	53	50	3	14	67	
2021	12	55	51	4	10	65	
Jan- Jun, 2022	5	19	19	0	4	23	

### Business proposal management system

We are making an active use of the BOD bulletin board to reinforce monitoring of agenda and to encourage employees to make business proposals. Since 2021, we've uploaded business proposals and progress of business departments on the BOD agenda bulletin board as our way of spurring the BOD and employees to take part in the follow-up management of BOD meetings. We are improving the effectiveness and strengthening the advisory function of the BOD through the Business proposal management system that works in the following order: Business proposal (BOD) → The proposal is uploaded on the bulletin board (Secretariat) → The improvement plan is submitted (business departments) → Gives ideas and check performance (BOD members).

Process	Description	[Case in point] Efforts to enhance profitability to reduce deficit and joint response of power companies
Business proposal	Members of the board presents ideas by deliberating on the agenda and reviewing them in advance	Continued deficit appears to be attributable to be the structural problem of the power market, and we must make measures to address the issue (Dec 2020, BOD)
Upload the proposal	Upload the proposal to the Business proposal management system and designate the dept. in charge and notify the decision to the dept.	Notified the BOD meeting result to the dept. in charge and uploaded it on the Business proposal management system (Dec 2020)
Upload improvement plans	Dept. in charge submits the improvement plans → The plan is uploaded to the Secretariat system	Reported measures to be taken to tackle the deteriorating power market and how to improve profitability (Jan 2021) - Compensation given for contribution to the CCP system. Normalized the payment for coal-fired power.
Feedback and business implementation	BOD members give suggestions on the plan development by departments and check performance	Need to execute measures to increase profitability of power trade and collaborate with power companies → Developed ways to implement the cap on coal-fired power. Normalized the compensation for contribution to the CCP system. (Mar 2021)

### ESG steering committee

The existing expert committees under the BOD (Strategic management, financial management, and the ethical management committee) was merged and newly launched as the ESG steering committee in June 2021. The committee is composed of five members, including three non-standing directors and two standing directors. The committee gives advice on ESG business strategies and plans for relevant businesses, reviews BOD resolutions on ESG-related issues in advance, and deliberates on important business issues to support BOD to make efficient and reasonable decisions.

### Major activities of the ESG steering committee

Category	Roles	Number of members (As of Dec 6, 2021)	Composition	Number of meetings held	
				2021	Jan- Jun, 2022
ESG steering committee	<ul style="list-style-type: none"> <li>Gives advice on ESG business strategies and plans for relevant businesses</li> <li>Reviews BOD resolutions on ESG-related issues in advance</li> <li>Deliberates on important business issues related to ESG</li> <li>Supports communication with external stakeholders</li> </ul>	5	Two standing directors and three non-standing directors (including the chairperson)	4 (Set up on Jun 24, 2021)	3

We received advice from the ESG steering committee on mainly 12 challenges under the ESG management strategy. We managed to augment the momentum to implement the ESG management by reflecting their views in our business.

### Major agendas of the ESG Committee

Date	① Agenda number	② ESGcommittee's views	③ What's reflected in our business
2021-07-28	Agenda #1 ESG management strategy (draft)	• It's essential to share the strategy and create consensus among employees to put ESG management into action across the company	<b>ESG management strategy</b> • Internally: Used pop-up windows to promote the ESG management strategies • Externally: Made an ESG management page on our website
2021-09-29	Agenda #2 Report on the progress of internalization of ethics and compliance in company management Agenda #3 Report on the progress of PR and expanded participation		
2021-11-04	Agenda #4 Report on the construction plans for a natural gas power plant in place of coal-fired plants for energy transition	• Sustainability and carbon neutrality is the trend of the times that requires proactive efforts to follow measures and achieve given goals	<b>Environment (E)</b> • Construction of LNG CCPP in place of out-of-date coal-fired plants
	Agenda #5 Report on the progress and plans for renewable energy business for energy transition		
2021-12-23	Agenda #6 Report on mid-term plans (draft) on the management focused on carbon neutrality	• It's important to carry out the plan in detail to improve the occupational safety and health	<b>Social (S)</b> • Implemented the safety grading system of partner companies and offered consulting
2022-03-11	Agenda #1 Report on the result of ESG management in 2021		
2022-05-13	Agenda #2 Report on the progress and plans for the Inclusive Economy Ecosystem project	• Need to communicate with the public and expand engagement though PR	<b>Governance (G)</b> • Expanded the public evaluation group. Began posting card news on social media accounts
2022-06-23	Agenda #3 Progress of the environmental management		

### Audit Committee

KOWEPO has formed the Audit Committee according to Article 20 of the Act on the Management of Public Institutions, as a company applied with this law. The Executive Auditor is appointed through the general shareholders meeting (GSM) after being recommended by the Director Recommendation Committee, while non-standing auditor are appointed by BOD resolution among external directors. Out of three auditors in the Audit Committee including the Chairperson, two auditors are comprised of non-standing auditors, while one auditor is an accounting or finance expert according to a relevant policy. We also set up an internal audit body (Audit Department) under direct supervision of the Audit Committee which is separate from the executive organization for independence.

### Major activities of the Audit Committee

Category	Roles	Number of members (As of Jun 2022)	Composition	Number of meetings held	
				2020	2021
Audit Committee	<ul style="list-style-type: none"> <li>Auditing company activities and accounting matters</li> </ul>	3	One standing director and two non-standing directors (including the chairperson)	10	8



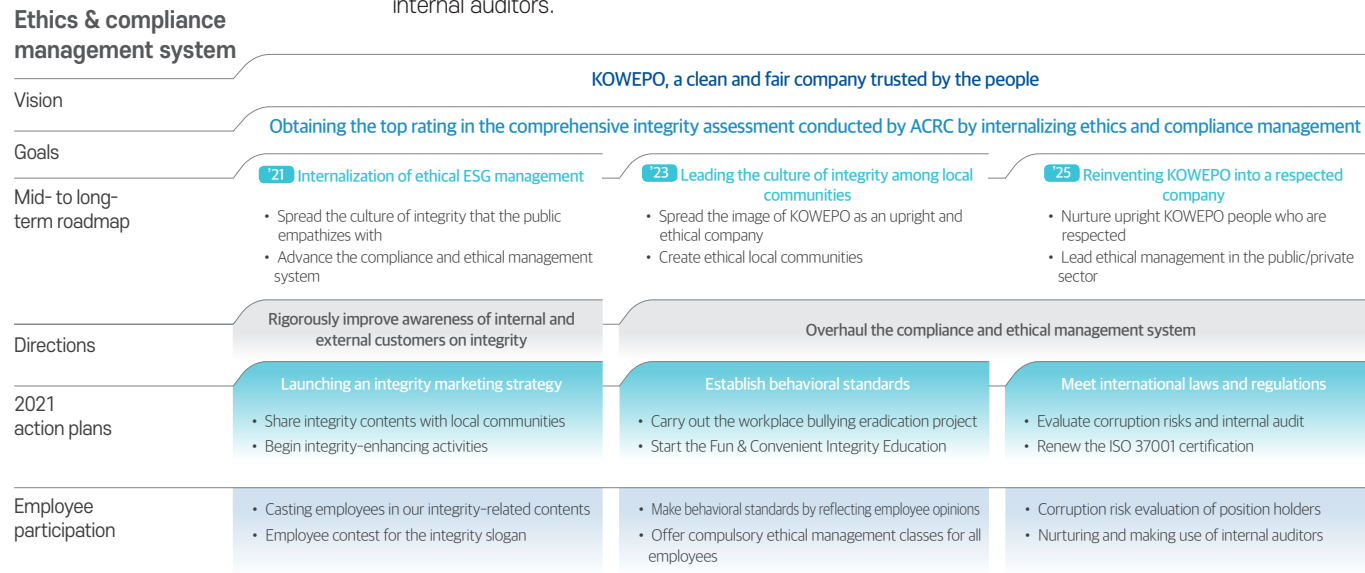


# Ethical management

## Ethics & compliance management system

### Ethics & compliance management system

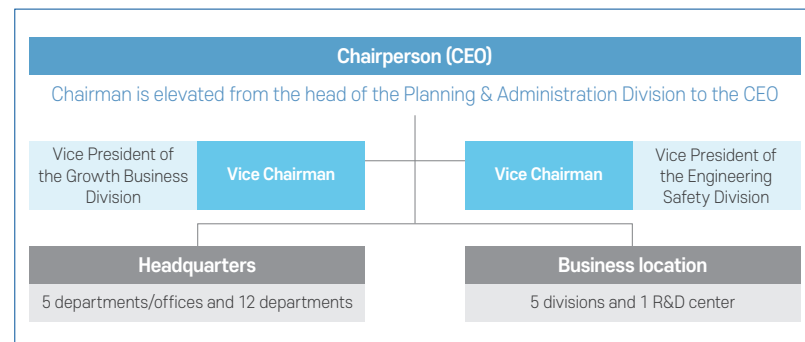
We have pledged to incorporate ethical management to achieve our vision of becoming a clean and fair company trusted by the people. To that end, we have developed and adopted the ethical management standards. In 2021, we re-established the three mid- to long-term roadmap that includes, the internalization of ethical ESG management, leading the culture of integrity among local communities, reinventing KOWEPO into a respected company. We also identified six action plans under each goal. In a bid to induce employee engagement in all stages of executing the six action plans under the three categories, we supplemented the system through the following activities: Casting employees in our integrity-related contents, an employee contest for the integrity slogan, making behavioral standards by reflecting employee opinions, offering compulsory ethical management classes to all employees, corruption risk evaluation of position holders, and nurturing of internal auditors.



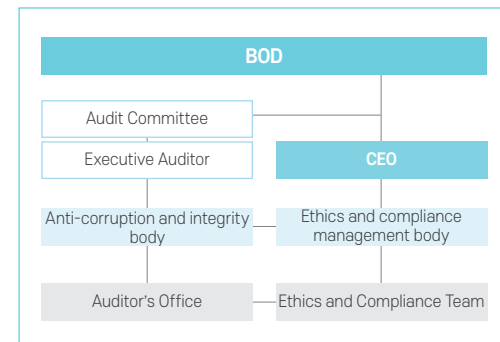
### Environmental management body

The Ethics and Compliance Team responsible for ethical management handles development and revision of ethical management policies and carries out diverse ethical management programs. As for Integrity Improvement Committee, we elevated the chairman from the head of the Planning & Administration Division to the CEO. The committee checks the progress of each action plans related to compliance and ethical management and encourages the formation and implementation of measure on plans that fall behind for overall improvement of the compliance and ethical management system.

### Composition of the Integrity Improvement Committee



### Ethical management body



## Compliance and ethical management

### Integrity Improvement Committee

KOWEPO appointed the Integrity Improvement Committee participated by the management including the CEO and all heads of our business locations. In eight meetings held in 2021, the committee assessed the KPI performance per quarter for 16 detailed plans identified to carry out ethical management and discussed ways to make greater progress. As a result, the registration ratio under the voluntary asset registration system designed to ensure fair business undertaking of the C-Suite recorded 98% as of the end of 2021, while the internal registration rate soared by 2.1 times than last year.

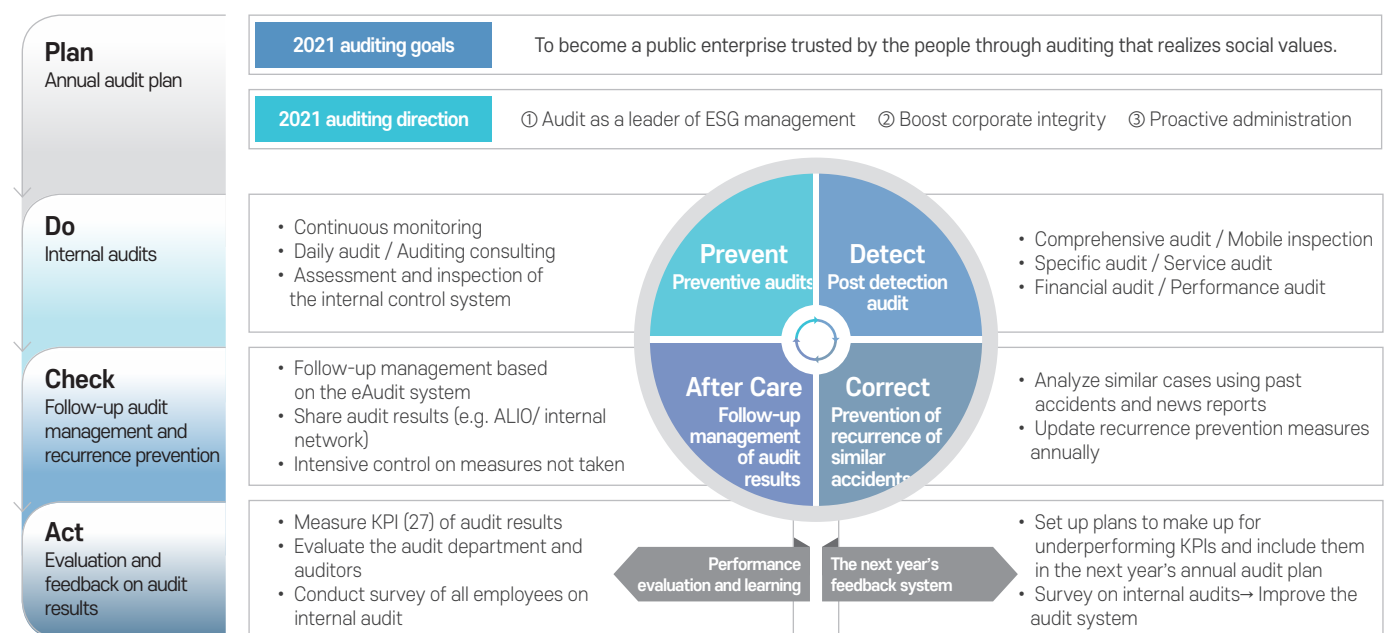
### Tasks and achievements of the Integrity Improvement Committee

Biggest challenges in 2021	Actions taken	Accomplishments
Introduction of the voluntary asset registration system	Built consensus on the cause of introducing the system among the President, Executive Auditor, Vice President, and position levels 1 and 2 (heads of businesses and position holders in the fields of business development and audit).	98% of the officers who are supposed to register by Dec 2021 registered their asset
Increasing awareness of the internal reporting system	Developed the operational guidelines for the anonymous electronic reporting system Promoted the mobile reporting system using QR codes	Number of internal reports up by 2.1 times from 16 to 49 cases in 2020

### Internal audit function intended to support ethical management

We have introduced and operated the prevent- detect-correct-after care (PDCA) process to support ethical management internally. We conducted a survey of all employees on internal audits and measured the level of audits and KPI. We have an internal check system where we reflect lagging KPIs into the next year's annual audit plan.

### Establishment of PDCA cycle for internal audit

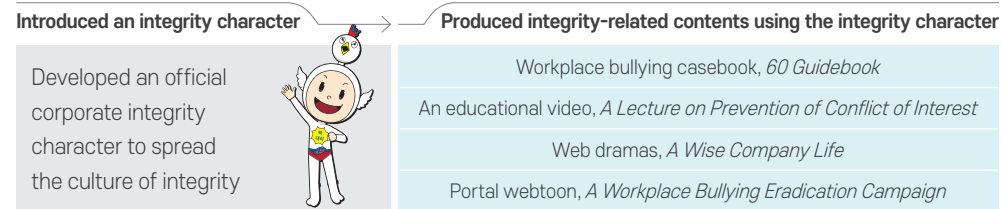


### Integrity marketing for increasing awareness on integrity of internal/external customers

We made Tak Daeri, company's official integrity character designed to spread the culture of integrity. We are using the character extensively in our integrity-related contents, such as workplace bullying casebook, educational videos, web dramas, and portal webtoons. We are working hard to increase awareness and understanding of employees on areas vulnerable to corruption, including bullying and giving unfair instruction by communicating with employees via various channels such as booklets, in-house broadcasting, and series postings on the internal portal, and by placing the integrity slogan selected in the company contest on our staircases.



### Spreading the culture of integrity with introduction of integrity character



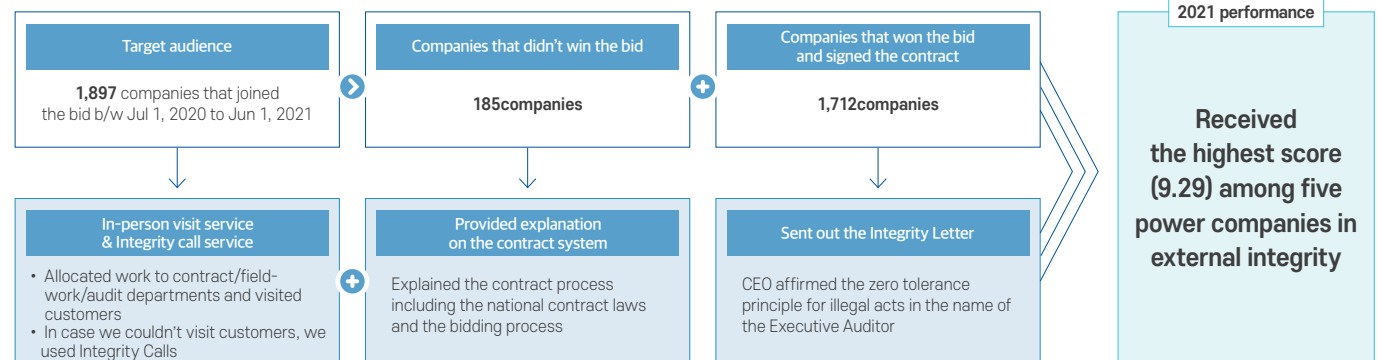
Concerning our external customers, we have registered the workplace bullying casebook made in-house for publishing on online stores. We have also issued public releases, disclose documents online available for free download, and run our YouTube channel to contribute to the spread of the culture of integrity. Our integrity policy of disclosing the in-house integrity contents to the public was included in 100 Best Practices of the Government's Four-Year Anti-Corruption Policy.

### Dissemination of ethical management to external customers

Online	Local communities
<ul style="list-style-type: none"> <li>Registered the workplace bullying casebook on online bookstore for publishing (e.g. Google Books, Naver Books, National Library of Korea)</li> <li>Put the Korea Open Government License (KOGL) mark (a system that allows distribution of copyrighted public records), issued a press release, and make it available for free download</li> <li>Opened a YouTube channel, Cheong Tak TV, and regularly uploaded web dramas</li> <li>Made them available to the public online</li> </ul>	<ul style="list-style-type: none"> <li>Conducted a KOWEPO Integrity Content Sharing Project as a joint project for 17 private, public, and R&amp;D organizations affiliated with Chungnam-do Integrity Society Public-Private Council</li> <li>Was included in 100 Best Practices of the Government's Four-Year Anti-Corruption Policy.</li> <li>Provided portal webtoons to KOWEPO Service, our subsidiary, and allowed them to use the webtoon internally</li> </ul>

Regarding 1,897 companies who joined the bidding for KOWEPO projects between July 2020 and June 2021, we settled grievances and difficulties of external customers by making in-person visits or making Integrity Calls. For companies that won the bid and signed contracts, we sent out Integrity Letters from our management and for those who didn't win the bid, we sent explanation on our contract system.

### Expanding the culture of integrity to companies bidding for a contract



### Labor-management conflict of interest prevention pledge



### Early compliance with the Act on Prevention of Conflict of Interest

KOWEPO has reached a consensus on the resolution on promotion of the enactment of the Act on Prevention of Conflict of Interest by the Integrity Society Public-Private Council at Chungcheongnam-do, with strong appeal and signing of the CEO to take part in prevention of conflict of interest. As a way to increase our determination to comply with the act, we had all employees sign the pledge. We also offered education and promoted the Act on Prevention of Conflict of Interest to improve employee's understanding on the act and to increase the legitimacy of enforcement of the act. Meanwhile, the management set examples by voluntarily registering their asset to secure fairness in the initiative.

### Anti-corruption management

#### 100 best practices of the government's fight against corruption

Public agencies need more upright and ethical corporate culture and there are numerous calls in and out of the company for change and reform regarding ethical management, for example, by obtaining the top grade in the integrity assessment conducted by ACRC. Led by the CEO, we have set up anti-corruption and integrity policy and formed the Integrity Improvement Committee to spread the policy. We have also developed exclusive contents on integrity culture and operated within the company. Consequently, we earned 8.74 points in the comprehensive integrity score, recording 0.47 higher points compared to the average score of the overall organizations. We also proactively responded to requests by multiple affiliated agencies and local communities to benchmark our practices and share integrity contents with them. This led to being included in the 100 Best Practices of the Government's Four-Year Anti-Corruption Policy selected by ACRC.

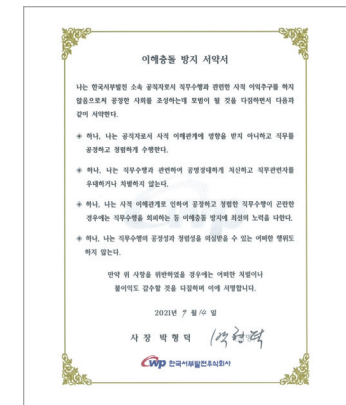
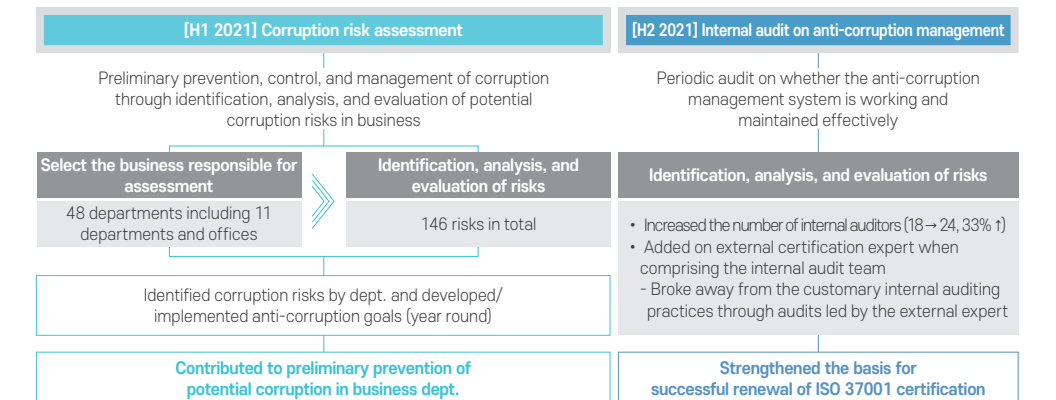
#### Result of ACRC assessment on integrity

	Grade 3 (7.92)	2019	2020	2021
Comprehensive integrity level	Grade 3 (8.32)	Grade 2 (8.95)	Grade 3 (8.74)	Grade 3 (8.74)
External integrity level	Grade 3 (8.86)	Grade 2 (9.27)	Grade 2 (9.29)	Grade 2 (9.29)
Internal integrity level	Grade 4 (7.63)	Grade 3 (7.92)	Grade 3 (7.72)	Grade 3 (7.72)
Anti-corruption policy	Grade 3 (87.02)	Grade 3 (87.2)	Grade 3 (86.7)	Grade 3 (86.7)

### Renewal of the certification for the anti-bribery management systems (ISO 37001) for five consecutive years

We have renewed the ISO 37001 certification for five years in a row since 2017, based on our Corruption Risk Evaluation and the Internal Audit. We seek to enhance the quality of audits by breaking away from the customary internal auditing practices and inviting external experts in the audits. As a result, we have proved that our anti-corruption management practices have reached the global level.

### Stepping up our fight against corruption via the corruption prevention management system



Conflict of interest prevention pledge



Certification on anti-bribery management systems (ISO 37001) (Renewed in 2021)

# Transparency and disclosure

With the increased interest and demands by the government and the public on disclosure, we increased the items subject to ESG management disclosure, such as environmental performance, human rights, and integrity with a goal of facilitating ESG management. We analyzed imminent issues by disclosure channel, and set the direction of promotion for information disclosure in our pursuit of being designated an outstanding agency by getting zero penalties in our management disclosure with augmented internal control.

## How we promote public disclosure



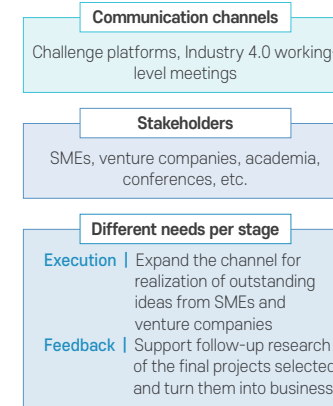
## Expanded disclosure via ALIO

All Public Information In-One, or ALIO, is a system developed by MOEF in 2006 for the public to view major business information of public agencies online at a glance. All public agencies disclose their important business data from the past five years on ALIO periodically or on an ad hoc basis according to Article 12 of the Act on Operation of Public Institutions. In March 2022, we increased the item subject to ESG disclosure according to the revised Act on Operation of Public Institutions.

## Items subject to expanded disclosure of ESG management following the revised manual on ALIO (Mar 24, 2022)

	Items	Disclosed data	Related laws and systems	Disclosure cycle
E	Total energy used	Total energy used in a year	Environmental Technology and Industry Support Act	Regular
	Waste generated	Waste generated in a year	Environmental Technology and Industry Support Act	Regular
	Water consumption	Total energy used in a year	Environmental Technology and Industry Support Act	Regular
	Status of breach of environmental laws	Environment-related accidents, etc.	Environmental Technology and Industry Support Act	Ad hoc
	Status of low emission vehicles	Status of low emission vehicles purchased	Act on Eco-Friendly Vehicles	Regular
S	Privacy	Assessed grade	Privacy Act	Regular
	Human rights management	System establishment, etc.	Human rights management manual	Regular
	Result of inclusive growth assessment	Assessed grade	Inclusive Growth Act	Regular
G	Status of the internal audit dept.	Organization and work allocation, etc.	Public Audit Act	Regular
	Result of the integrity assessment	Assessed grade	Act on Prevention of Corruption and the Civil Rights Commission	Regular

## WP-Digital Transformation Grand Challenge



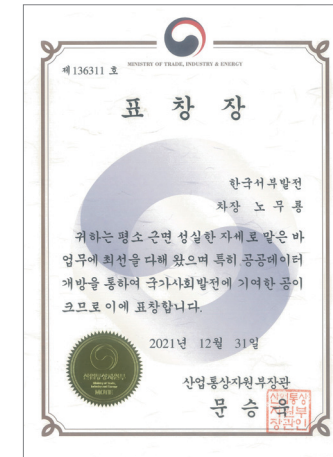
## Public disclosure of electricity production data

KOWEPO initiated the Gunsan onshore solar park project through the largest profit-sharing citizen fund in Korea to contribute to timely construction and facilitation of the solar farm by securing business receptivity through citizen participation. As a result of hard work, we managed to complete the construction of Gunsan onshore solar park (99MW) on time. For 20 years, we generated 6.94 billion won in dividend income from Gunsan citizen generation and plan to support the vulnerable groups and use the money as scholarships for local students. We also pushed ahead with the WP-Digital Transformation Grand Challenge for public disclosure of electricity production data, as a way to expand the channel for realizing ingenious ideas of SMEs and venture companies.

## Public contest of creative ideas of using the public data

We invited the people to submit ingenious ideas for different categories such as jobs, renewable energy, and safety, to propose a specific challenge aimed at solving problems currently faced by KOWEPO. Instead of having departments in charge to evaluate the ideas, we sought advice from professional organizations when selecting the best ideas. We also made it mandatory to develop specific plans for reflecting them in business when choosing ideas. Accordingly, we reflected two ideas including the environmental vision slogan. We signed a business contract worth a total of 1.9 million won by negotiating the price with the final party whom we traded the idea with.

## Public idea contest

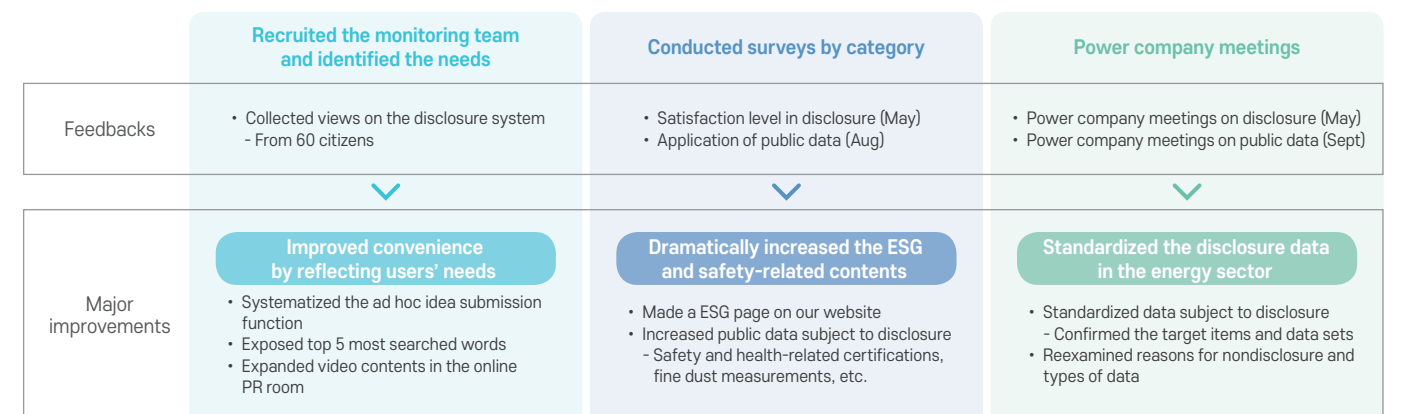


Minister prize for public data opening

## Continuous collection of opinions and feedbacks

We have upgraded the items subject to disclosure by conducting a public survey on demand, holding power company meetings, which resulted in increased public satisfaction. Consequently, we got zero penalty given to faulty disclosure by strengthening our disclosure process standards and expanding the preliminary and follow-up inspection in 2021. We also won two minister awards for our excellent performance in the comprehensive disclosure evaluation and the public data disclosure categories.

## Collection of opinions for increased trust and transparency in disclosure





## Risk management

### Risk management system

#### Risk management body

We have designated and managed a Company-wide Key Risk Indicators (KRIs) for preemptive response to business risks. We divided risk areas subject to management into financial risks and non-financial risks which are then divided into five areas. We identified 29 KRIs and set up scenarios on how we'd respond to different risk levels. We also set risk factors that affect our mid- to long-term financial risks as KRIs and significantly reinforced our management.

#### Example scenarios by risk level

Category	Big rise in the exchange rate	Scenario
Caution (Yellow)	Exchange rate of the 5-day average crosses the 20-day line	Strengthening the market monitoring
Alert (Orange)	Exchange rate rises by more than 1% after the 5-day average crosses the 20-day line	Consideration of the implementation of preemptive foreign exchange hedge
Serious (Red)	Exchange rate rises by more than 3% after the 5-day average crosses the 20-day line	Consideration and implementation of additional foreign exchange hedge

#### Status of five areas and 29 KRIs

Financial risks	Category	KRIs	General risks	Category	KRIs
Market risks	Market risks	Exchange rate, interest rate, reduction rate in unit price of bituminous coals	Business risks	Power generation	Breakdown and downtime rate, facility utilization rate, appropriate inventory of bituminous coal
	Stability	Financial soundness, goal achievement rate (6 indicators including debt ratio)		Renewable energy	Amount of renewable energy produced; amount of money transferred for RPS provisions
Financial risks	Profitability			Accidents, safety	Accident control ratio, commitment to prevent occupational accidents
	Growth potential	Sales (electricity sales revenue, overseas business)	Construction	Construction process implementation rate (domestic, renewables)	
	Activeness	Total asset turnover	Job policies	Job creation	
Investment risks	Profitability	Net profit ratio of sales (general sales in Korea/ renewable energy, overseas business) Management of investment history	Environmental Policy	Fine dust reduction rate, implementation rate of the cap and trade program	
			Innovation & Growth	Implementation rate of development of five key technologies Level of security control Performance management of digital, green, and human new deal projects	
			Ethical management	Integrity & Ethics	

#### Risk management body

We have a Risk management body that checks and responds to risk factors in advance. The Risk management body per KRI is responsible for preliminary prediction and management of risks supervised by the risk management department (Budget & Finance Office, Planning Department). Risk under different sectors are systematically managed under the Risk Management Committee, Foreign Exchange Risk Management Committee, and Business Development Deliberation Committee.

#### Risk management body

Category	Roles	Number of meetings held		
		2019	2020	2021
Risk Management Committee	Preliminary examination of risk factors for new investment projects and securing feasibility	11	8	10
Foreign Exchange Risk Management Committee	Review and resolution on the management plan on foreign exchange risks, determination of hedge ration, etc.	4	4	4
Project Selection (Working) Committee	Deliberation on feasibility of business development when undertaking joint venture projects in Korea and abroad	5	10	7

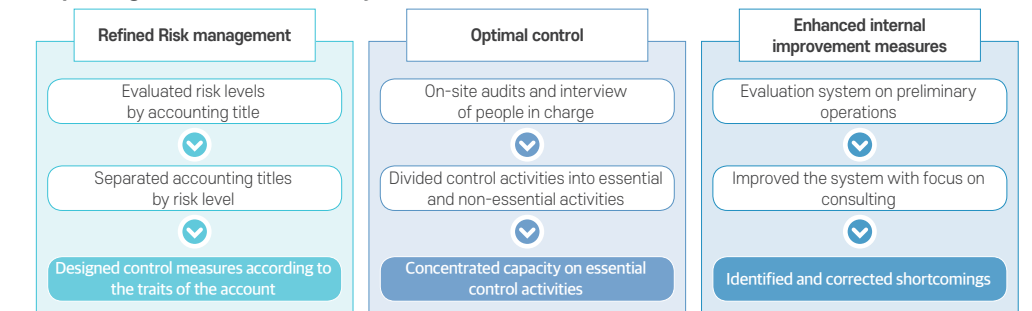
#### Agenda status per committee

Category	2021 agenda
Risk Management Committee	(Resolution) 25 cases including Yeongwol Eco Wind power generation project / (Report) 5 cases including quarterly performance of key indicators
Foreign Exchange Risk Management Committee	(Resolution) Quarterly management plan on foreign exchange risks / (Report) Quarterly management performance regarding foreign exchange risks
Project Selection(Working) Committee	1. 500MW solar power bidding project in 2 Oman (May 27, 2021) 2. 500MW solar power bidding project with Rosa Solar PV Park, Spain (May 27, 2021) 3. 364.BMW offshore wind farm project, Nakwol, Yeonggwang (Sept 14, 2021, Sept 28, 2021)

### Advancing the internal accounting control system

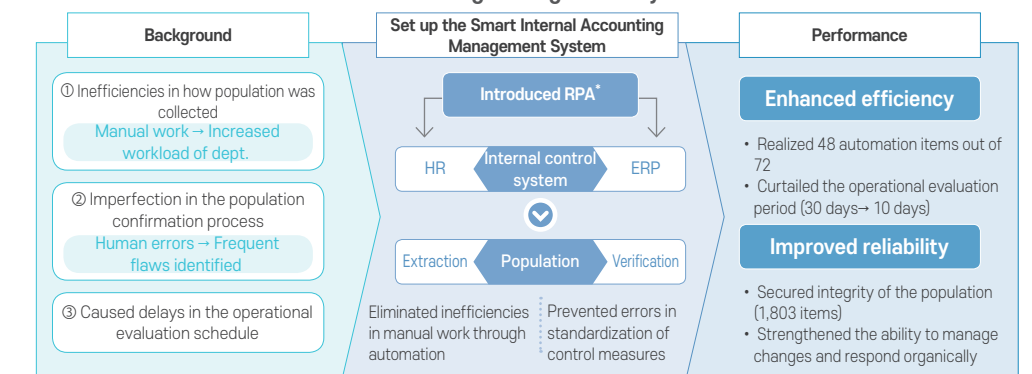
KOWEPO has developed the internal accounting control system according to Article 8 of the Act on External Audit of Stock Companies. The internal accounting control system is designed to secure reliability of our financial statements disclosed to gain reliability of our report data, among three objectives (securing the efficiency and effectiveness of corporate operation, ensuring reliability of reported information, and compliance with relevant laws and policies) of internal control aimed at achieving our business goals. We are maximizing the internal enhancement efforts by minimizing financial risks by preventing accounting errors through advancement of our internal accounting control system depending on the level of risks by major titles of account and introduction of evaluation on preliminary operation. In 2021, we selected 295 items subject to intense control from 129 titles of account and identified four shortcomings, which were all corrected before we disclosed the financial statements.

#### Improving the internal control system



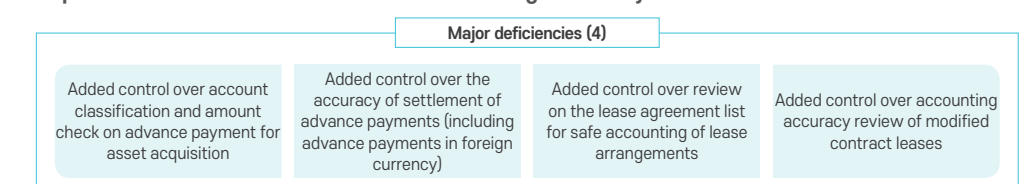
In 2021, we established the Smart Internal Accounting Management System for the first time among Korean power companies to enhance operational efficiency of internal control using the internal control system and increased reliability of financial information. We realized 48 automation items out of 72 in HR and enterprise resource planning (ERP) categories, reduced the operational evaluation period from 30 days to 10, and achieved integrity in population of 1,803 items.

#### Overview of the Smart Internal Accounting Management System

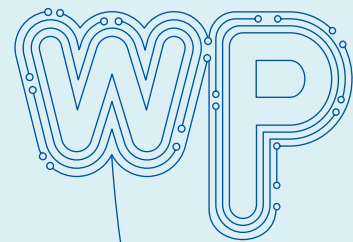


\*RPA(Robotic Process Automation) : A digital workforce that automates work and the end-to-end process to improve business efficiency using bots.

#### Improved deficiencies in the internal accounting control system



# Appendix



ESG Data Book



## ESG Data Book

### Capacity by energy source

Category	Sub category	Unit	2019	2020	2021	Remarks
Steam	Bituminous	MW	6,100	6,100	6,100	
	LNG	MW	1,400	1,400	1,400	
Combined combustion	LNG	MW	3,386.9	3,386.9	3,386.9	
New and renewable	Small hydro	MW	2.2	2.2	7.2	
	Solar	MW	48.2	48.2	48.2	
	Wind	MW	16.0	16.0	34.0	
	Bio	MW	165.0	165.0	165.0	Bio co-firing
	Fuel Cell	MW	40.0	62.0	118.5	
	IGCC	MW	346.3	346.3	346.3	

### Generation by energy source

Category	Sub category	단위	2019	2020	2021	Remarks
Steam	Bituminous	MWh	35,148,192	29,624,653	31,593,400	
	LNG	MWh	595,127	586,627	1,176,921	
Combined	LNG	MWh	9,429,200	6,909,536	11,307,679	
	Small hydro	MWh	3,318	3,187	8,607	
	Solar	MWh	59,713	58,169	57,947	
	Wind	MWh	25,164	26,911	29,511	
	Ocean	MWh	-	-	-	
New and renewable	Bio	MWh	258,305	155,932	149,182	
	Waste	MWh	-	-	-	
	Landfill	MWh	-	-	-	
	Fuel Cell	MWh	187,425	363,693	663,770	
	IGCC	MWh	780,761	1,836,128	1,677,707	

### Economic value created

Category	Sub category	Unit	2019	2020	2021	Remarks
Sales amount		GWh	44,244	37,749	44,559	
Cost of sales		KRW 100 million	44,686	36,290	50,016	
Operating income		KRW 100 million	747	(596)	(450)	
Net profit		KRW 100 million	(466)	(859)	(1,214)	

### Economic value distribution

Category	Sub category	Unit	2019	2020	2021	Remarks
Wage and welfare expense	Total	KRW 100 million	2,656	2,771	2,961	
	Wage	KRW 100 million	2,135	2,320	2,471	
	Retirement benefit	KRW 100 million	329	240	255	
Purchase from vendor (supply chain)	Welfare	KRW 100 million	192	211	235	
	Total	KRW 100 million	4,961	5,119	4,708	
	Products	KRW 100 million	1,458	1,390	1,408	
Fuel cost	Establishment	KRW 100 million	2,464	2,629	2,341	
	Services	KRW 100 million	1,039	1,100	959	
Dividends (shareholder)		KRW 100 million	30,029	22,033	34,428	
Interest (creator)		KRW 100 million	3.2	2.1	12.9	
Donation (local community)		KRW 100 million	1,480	1,344	1,302	
Tax and duties (government)		KRW 100 million	80	167	102	
		KRW 100 million	308	279	345	

### Generation facility Capacity

Category	Sub category	Unit	2019	2020	2021	Remarks
Capacity factor		%	46.82	40.04	47.04	
Thermal efficiency		%	40.73	40.28	40.88	
Power rate of facility		%	5.35	6.23	5.74	

### Generation efficiency

Category	Sub category	Unit	2019	2020	2021	Remarks
Forced outage factor		%	0.0180	0.1680	0.0130	
Unplanned outage factor		%	0.1180	0.1180	0.2180	

## Environment

Category	Sub category	Unit	2019	2020	2021	Remarks
Direct greenhouse gas emissions (scope 1)						
Direct greenhouse gas emissions		10,000tCO <sub>2</sub> eq	3,452	3,025	3,320	
Indirect greenhouse gas emissions (scope 2)						
Indirect greenhouse gas emissions		10,000tCO <sub>2</sub> eq	16	17	16	
Emission Rate Trading Scheme						
Allocated		10,000tCO <sub>2</sub> eq	3,548	3,152	2,862	
Emission		10,000tCO <sub>2</sub> eq	3,467	3,042	3,336	
GHG emission intensity						
Scope 1		tCO <sub>2</sub> eq/KRW 100 mil	776	839	668	
Scope 2			3.5	4.7	3.2	
Environmental management system certificate						
Total number of workplaces		places	5	5	5	
Environmental management system Certification/Audit/Screen (No duplication)	No. of workplaces obtained the 3rd party certificate for environmental management system	places	5	5	5	
	No. of workplaces under the 3rd party consideration for environmental management system	places	5	5	5	
	No. of workplaces under screen by the internal judge for environmental management system	places	4	4	4	
Fuel use per type						
Fuel use per type	Kerosene	kl	11,971	20,011	25,160	
	Bituminous coal	tons	14,030,026	12,108,390	12,568,607	
	LNG	tons	1,336,455	1,131,343	1,930,146	
	Wood pallets	tons	86,306	54,378	49,092	
	Organic solid fuel	tons	66,926	38,151	40,123	
	Others	kl	122,736	39,360	49	
	Renewable energy use					
Renewable/unrenewable energy use	Renewable	tons	153,232	92,529	89,215	
	Unrenewable	tons	14,102,481	11,793,140	12,447,325	
	Ratio of Renewable energy use	%	0.01	0.01	0.01	
Green product procurement						
Total product	Purchase cost	KRW million	1,648	1,411	7,275	
	Purchase cost	KRW million	1,555	1,398	3,729	
	Ratio of green product	%	94.4	99.1	51.3	
Energy consumed in group						
Total energy consumption		TJ	415,198	359,493	414,096	

Category	Sub category	Unit	2019	2020	2021	Remarks
Unrenewable energy	Fuel (Coal, kerosene, LNG, etc.)	TJ	412,687	356,311	411,192	
	Electricity	TJ	2,511	3,182	2,904	Including electricity and others
Energy integrity						
KRW per energy use		TJ/KRW	0.093	0.100	0.083	
NOx, SOx, other emissions						
SOx		tons	5,017	3,179	3,508	
NOx		tons	6,970	4,188	5,618	
TSP		tons	348	227	292	
Coal ash and desulfurization gypsum generation						
Coal ash	Generation	1,000 tons	1,392	1,183	1,397	
	Recycling	1,000 tons	1,008	1,093	1,080	
	Recycling rate	%	1	1	1	
Desulfurization gypsum	Generation	1,000 tons	297,095	247,250	235,941	
	Recycling	1,000 tons	297,095	247,250	232,282	
	Recycling rate	%	100	100	98	
Total waste generation		tons	43,235	62,160	133,504	
Waste generation by type	General waste	tons	35,333	37,701	55,608	
	Designated waste	tons	1,355	2,316	1,585	
	Construction waste	tons	6,369	21,986	76,145	
	Food, living, others	tons	177	157	166	
Waste recycling rate						
Per total waste generated	Recycling amount	tons	33,946	57,294	129,005	
	Recycling rate	%	78.5	92.4	96.7	
Waste discarded (Recycling not included)						
Total waste discarded		tons	9,288	4,860	4,905	
Waste discarded by type	landfill	tons				
	Incineration (retrieving thermal energy)	tons				
	Incineration (not retrieving thermal energy)	tons				
	Other methods	tons	9,288	4,860	4,905	
Water obtained						
Total water obtained		m <sup>3</sup>	5,806,960,473	6,178,124,635	7,019,699,763	

Category	Sub category	Unit	2019	2020	2021	Remarks
Water obtained by type	Industrial water	m <sup>3</sup>	9,035,473	8,601,635	8,300,763	
	Surface (river, lake) water	m <sup>3</sup>	0	0	0	
	Underground water	m <sup>3</sup>	0	0	0	
	Sea water	m <sup>3</sup>	5,797,925,000	6,169,523,000	7,011,399,000	
<b>Waste water discharged</b>						
Waste water generated		m <sup>3</sup>	2,937,935	2,818,788	2,289,119	
Waste water discharged		m <sup>3</sup>	1,102,562	1,388,365	1,390,729	
Waste water recycling rate		%	62.47	50.75	39.25	
<b>Water use</b>						
Total water use in group		m <sup>3</sup>	8,718,553	8,125,754	8,300,763	
<b>Amount of penalty and nonfinancial disciplinary measures due to violation of environment law</b>						
No. of violations of environment law	No. of violations finalized by regulatory institution	cases	8	0	2	
Amount of penalty or fine for violation of environment law		KRW million	13.3	0	2.8	
<b>Eco-friendly vehicle use for business</b>						
Total no. of vehicles for business		vehicles	82	80	76	
Diesel vehicles (compact car not included)		vehicles	62	50	26	
Compact car		vehicles	1	1	1	
Eco-friendly vehicle		vehicles	19	29	49	
Hybrid		vehicles	5	7	8	
Electric vehicle		vehicles	14	22	41	
Ratio of eco-friendly vehicles		%	23.2	36.3	64.4	
<b>Financial opportunities and loss due to climate change</b>						
Financial opportunities	Eco-friendly electricity sales	KRW 100 million	902	1,574	2,340	
	Other financial opportunities	KRW 100 million	42,674	33,547	45,914	
Financial loss	Power generation cost increased	%	2.7%	-1.0%	14.5%	
	Carbon credit purchase	KRW 100 million	193	- 515	653	
	Insurance for natural disaster	KRW 100 million	105	101	120	
	Other financial loss	KRW 100 million	42,980	35,945	49,494	

## Social

Category	Sub category	Unit	2019	2020	2021	Remarks
<b>Shared growth grade</b>						
Support cases on start-ups		Cases	Fine	Fine	Best	

Category	Sub category	Unit	2019	2020	2021	Remarks
<b>Employment &amp; retirement</b>						
No. of new employees		person(s)	162	229	106	
New employees by gender	Male	person(s)	141	189	76	
	Female	person(s)	21	40	30	
New employees by type	Youth (34 or under)	person(s)	144	215	98	
	Disabled	person(s)	7	7	7	
	National merits	person(s)	22	21	14	
	Highschool graduates	person(s)	22	19	14	
	Talents from regions outside of capital	person(s)	87	122	60	
	Talent from relocated region	person(s)	24	42	23	
No. of turnover and retirement	Voluntary turnover	person(s)	88.50	75.75	74.50	
Turnover or retirement rate	Ratio of voluntary turnover	%	3.52%	2.85%	2.76%	
No. of turnover and retirement by gender	male	person(s)	82.25	71.75	71.50	
	female	person(s)	6.25	4	3	
Turnover or retirement types	Voluntary turnover	person(s)	41	31.75	34.50	
	Ratio of voluntary turnover	%	46.33%	41.91%	46.31%	
	Regular retirement	person(s)	47.50	40	37	
	Dismissal	person(s)	-	1	-	
	Expulsion (death)	person(s)	-	2	-	
Turnover or retirement types	Term expired (contract workers, executives)	person(s)		2	3	
<b>Job created for youth (direct employment)</b>						
Youth internships		person(s)	197	181	186	
Youth employment		person(s)	197	181	186	
<b>Social Equilibrium Hiring</b>						
Total		person(s)	133	183	97	
By type	Talents from regions outside of capital	person(s)	87	122	60	
	Talent from relocated region	person(s)	24	42	23	
	Highschool graduates	person(s)	22	19	14	
<b>Parental leave</b>						
Infertility leaves		person(s)	-	1	2	
No. of maternity leaves	Female	person(s)	20	23	18	
	Male	person(s)	68	78	67	



Category	Sub category	Unit	2019	2020	2021	Remarks
No. of shortened working hour for child care	Female	person(s)	17	30	27	
	Male	person(s)	24	50	54	
No. of shortened working hour for child care	Female	person(s)	1	-	-	
	Male	person(s)	-	-	1	
Rate of returnees from parental leaves	Female	%	100	100	100	
	Male	%	100	100	100	
Rate of employees working more than 1 year after returning from parental leaves	Female	%	100	100	100	
	Male	%	100	100	100	
<b>Safety and Health Management System</b>						
Total workplace		places	6	6	6	
Safety and health management system Certification/Audit/Screen	No. of workplaces obtained the 3rd party certificate for environmental management system	places	5	5	5	
	No. of workplaces under screen by the internal judge for environmental management system	places	4	4	5	
<b>Industrial disasters</b>						
Employees	Disaster rate	%	0.040	0.038	0.148	
	Death toll per 10,000 people	person(s)/10,000 employees	0	0	0	
	Lost time injury frequency rate (LTIFR)	person(s)/one million employees	0.216	0.213	0.814	
	No. of death	person(s)	0	0	0	
Partners	Disaster rate	%	0.050	0.170	0.154	
	Death toll per 10,000 people	person(s)/10,000 employees	0	0	0	
	Lost time injury frequency rate (LTIFR)	person(s)/one million employees				
	No. of death	person(s)	0	0	0	
<b>Education hour per employees</b>						
Total no. of employees under education		person(s)	19,074	29,156	29,606	
- High-class executives (1, 2 class)		person(s)	1,196	1,698	1,574	
- Low-class executives (3 class)		person(s)	4,169	5,816	5,750	
- Employees (under 4 class)		person(s)	13,709	21,642	22,282	
Total education hour		hour(s)	282,002	268,178	299,635	
Education hour per 1 person		hour(s)	118.8	109.1	119.0	
Total education cost		KRW million	6,164	8,155	6,971	
Educaiton cost per 1 person		KRW million	2,596,000	3,318,000	2,769,000	
<b>Satisfaction-Level of employees</b>						
Satisfaction-Level of employees		points	76.8	77.6	75.8	Result of assessment on corporate culture

Category	Sub category	Unit	2019	2020	2021	Remarks
<b>Employment status</b>						
Total no. of employees		person(s)	2,514.88	2,654.13	2,694.88	
By employment type	Regular	person(s)	2,509.38	2,651.13	2,691.38	
	Contract	person(s)	5.50	3.00	3.50	
By gender	Male	person(s)	2,208.25	2,314.50	2,328.75	
	Female	person(s)	306.63	339.63	366.13	
By age	Under 30	person(s)	603.75	679.00	690.25	
	30~50 years old	person(s)	1,327.13	1,386.38	1,388.75	
	over 50	person(s)	584.00	588.75	619.88	
<b>Gender diversity of executives</b>						
Total no. of executives		person(s)	9	9	9	
No. of female executives		person(s)	1	1	1	
Ratio of female executives		%	11.11%	11.11%	11.11%	
Total no. of total managers (1, 2, 3 classes)		person(s)	704	726	733	
No. of female managers (1, 2, 3 classes)		person(s)	37	41	50	
Ratio of female managers		%	5.26%	5.65%	6.82%	
<b>Status of union members</b>						
No. of union memers		person(s)	1,734	1,888	1,894	
Ratio of union members		%	67.7	69.4	69.0	
<b>Result of job creation</b>						
Result of job creation	Public job (direct)	Person(s, accumulative)	791	1020	1126	
	Civil job (direct)	Person(s, accumulative)	788	1250	1797	
<b>Contributing to the local community, effect assessment, and ratio of development program operation</b>						
Win-win Cooperation with SMEs	Total	KRW 100 million	3,027	3,252	3,103	
	Purchase from SMEs (including donstruction and service)	KRW 100 million	2,977	3,191	3,051	
	Co-development	KRW 100 million	0	7	10	
	Quality certification	KRW 100 million	11	12	12	
	Marketing supports	KRW 100 million	10	6	3	
	Operation supports	KRW 100 million	13	15	18	
	Technology development fund (loan support)	KRW 100 million	11	12	7	
others	KRW 100 million	5	10	2		
Social contributions	Total volunteer activities	hours	17.78	16.03	15.69	
	Donations	KRW 100 million	79.56	167.10	119.94	

Category	Sub category	Unit	2019	2020	2021	Remarks
Vendor(partner) status						
Qualified vendor for equipments / materials	Construction (machine)	companies	144	153	146	
	Construction (electricity)	companies	79	85	68	
	Construction (management)	companies	74	75	63	
Qualified vendor for equipments / materials	Construction (civil engineering)	companies	21	18	12	
	Power generation	companies	35	41	39	
Satisfaction-Level of customers						
Satisfaction-Level of customers	Satisfaction-level on social contribution	points	86	96.4	96.8	
Everage hour wage difference between male and female employees based on legal minimum wage						
Wage based on legal minimum wage		KRW	8,350	8,590	8,720	
Ratio of hour wage for new male employee to legal minimum wage	Including general wage, for 4-year college graduates	KRW	17,504	17,933	18,102	
Hour wage for new male employees		%	2.10	2.09	2.08	
Ratio of hour wage for new female employee to legal minimum wage	Including general wage, for 4-year college graduates	KRW	17,504	17,933	18,102	
Hour wage for new female employees		%	2.10	2.09	2.08	
R&D investment status						
R&D personnel		person(s)	23	24	25	
R&D cost		KRW million	12,103	17,731	22,061	
Ratio of R&D cost to sales amount		%	0.27	0.49	0.44	
Patent application / registration status						
Total		patents	91	104	125	
Patent application		patents	49	60	74	
Patent registration		patents	42	44	51	
Result of technology transfer						
Contract		cases	7	9	9	
Technology transfer companies		companies	1	8	1	
Benefit		KRW 100 million	6	1	8	

## Governance & economic result

Category	Sub category	Unit	2019	2020	2021	Remarks
BOD composition						
Standing directors		person(s)	3	3	3	
Executive auditor		person(s)	1	1	1	
Non-standing directors		person(s)	5	5	5	

Category	Sub category	Unit	2019	2020	2021	Remarks
Gender diversity of BOD						
No. of BOD members		pereson(s)	9	9	9	
No. of male members		pereson(s)	8	8	8	
No.of female members		pereson(s)	1	1	1	
Participation Rate						
Average participation rate		%	89.9%	94.9%	94.2%	
Average participation rate of standing directors and executive auditor		%	94.5%	96.2%	90.7%	
Average participation rate of non-standing directors		%	84.1%	93.8%	96.7%	
Ratio of share of the largest shareholder and related parties						
Capital stock	as of Dec. 31, 2021	KRW 100 million	1,666	1,666	1,666	
Amount invested by KEPCO as of Dec. 31, 2021		KRW 100 million	1,666	1,666	1,666	
Ratio of share of KEPCO	as of Dec. 31, 2021	%	100	100	100	
Consolidated statement of financial position						
Assets	Current Assets	KRW million	1,004,076	1,025,047	1,378,121	
	Non-current Assets	KRW million	9,478,412	9,307,603	9,490,965	
	Total Assets	KRW million	10,482,488	10,332,650	10,495,637	
Capital and Liabilities	Total Capital	KRW million	3,838,122	3,730,940	3,734,052	
	Current Liabilities	KRW million	1,299,188	1,029,512	1,181,835	
	Non-current Liabilities	KRW million	5,345,178	5,572,129	5,482,515	
	Total Liabilities	KRW million	6,644,366	6,601,641	7,135,041	
Summary Consolidated Income Statement						
Sales		KRW million	4,468,579	3,628,985	5,001,633	
Cost of sales		KRW million	4,297,985	3,594,533	4,949,450	
Selling, General and administrative expenses		KRW million	95,894	94,013	97,205	
Operating income		KRW million	74,701	-59,561	-45,022	
Other income		KRW million	5,062	6,739	6,038	
Other expenses		KRW million	8,044	16,718	10,161	
Other profits (losses)		KRW million	-3,514	29,160	-17,826	
Financial income		KRW million	96,549	109,127	106,302	
Cost of financing		KRW million	249,743	192,096	260,984	
Loss related to associates and joint ventures		KRW million	-29,811	22,481	52,776	
Net profit before tax (loss)		KRW million	-114,799	-100,868	-168,877	
Corporate tax (revenue)		KRW million	-68,182	-14,930	-47,498	
Net profit (loss)		KRW million	-46,617	-85,938	-121,379	
Other comprehensive income		KRW million	-14,851	-21,175	124,487	
Total comprehensive income		KRW million	-61,468	-107,113	3,108	