

IR Book for FY2022 1st Quarter

2022.05

Note for Investors

As a reference material that could be used when making investment decisions, this document was prepared for the convenience of investors.

The forecast data contained in this document contains inherent uncertainty. Please note that the data may not match the company's actual business performance results when there are uncertainties such as fluctuations and risks in the market environment beyond the company's control.

Although we made every effort to prevent misleading information from being included while preparing this document, we cannot provide any guarantees or assume legal responsibility for the integrity of the content.

This document was prepared according to K-IFRS.



Table of Contents

- 1 General Facts
- 2 Business Areas
- 3 Future Growth Projects
- 4 Appendix



1. General Facts

KEPCO E&C has been designing world-class power generation plants

- KEPCO E&C is a world-class power plant design company that has dedicated itself to the design of power plants (nuclear power, thermoelectric power, hydroelectric power) and the development of related technologies for the past 45 years.
 - Provides technology services like planning, design, purchasing/procurement, commissioning support
- The only company in the world that carries out both reactor system design and comprehensive design of nuclear power plants on its own.
- South Korea's only power plant design company and exclusive supplier of nuclear power plant designs
 - (Nuclear power) Out of 34 nuclear power plants (including those under construction), KEPCO E&C participated in the design of 31 power plants (18 were designed independently by KEPCO E&C)
 - (Thermoelectric power) Possesses comprehensive design capabilities in coal thermoelectric power plants from 200MW- to 1,000MW-grade plants (designed 55 thermoelectric power plants in South Korea)
- Currently pursuing business diversifications in thermoelectric power EPC, renewable energies, and environmental projects

History

1970s~80s

1975.10 Korea Atomic Burns & Roe established
1976.10 Reorganized as Korea Nuclear Engineering Co. (KNE)
1977.04 Designated as a dedicated government institution for nuclear power engineering
1982.07 Became a subsidiary of KEPCO, renamed KEPCO E&C

1990s~2000s

1997.01 Acquired the nuclear reactor system design business of the Korea Atomic Energy Research Institute
2009.12 Listed in the Korea Stock Exchange (KOSPI)

2010s ~ Today

2016.12 Ranked 2nd in the world in overseas earnings from the nuclear power plant design business (by Engineering News-Record, United States)
2017.01 Public institution category designation changed (other public institutions → quasi-market type public enterprise)
2017.11 Acquired EUR Certificate for APR1400 and EU-APR Standard Design
2019.08 Acquired design certification for APR1400 from the US Nuclear Regulatory Commission
2021.04 Started commercial operation of UAE's Barakah Reactor Unit 1
2022.03 Started commercial operation of UAE's Barakah Reactor Unit 2

1. General Facts

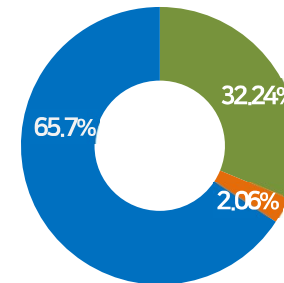
Company Overview

Company Name	▪ KEPCO E&C (Inc.)
CEO	▪ Kim Sung Arm
Date of Establishment	▪ 1975.10.1
Key Business Areas	▪ Design and engineering
Organization and Employees	▪ 4 divisions, 1 bureau, 1 institute, 2,293 persons (as of '22.4.1)
HQ Address	▪ Gimcheon, Gyeongsangbuk-do
Capital	▪ 76.4 billion won
Date of Listing	▪ 2009.12.14
Credit Rating	▪ International A2 (Moody's), ▪ South Korea AA (NICE, Korea Ratings)

Shareholders and Dividends

Shareholders (as of Dec.31, 2021)

Shares issued 38,220,000



Others 12,293,806 shares

- National Pension Service
- Treasury stocks
- Employee stock ownership association
- Ordinary shareholders, etc.



Korea Atomic Energy Research Institute

787,500 shares

Dividends

Fiscal Year	Dividend Payout Ratio	Total Dividends (100 million won)	Dividends per share (won)
2018	41%	53	140
2019	45%	117	310
2020	53%	107	282
2021	55%	90	238

※ Dividend Payout Ratio = Dividends/Net Income * 100

2. Business Areas

Based on its excellent power plant design technologies, KEPCO E&C has ventured into diverse business areas

Design & Engineering

Possesses comprehensive design technology for independently building nuclear power/thermoelectric power plants

- Nuclear power plant
- Thermoelectric power plant
- Combined thermoelectric power plant & cogeneration plant

O&M

Improves operability and repairability through comprehensive technical support for power plants in operation

- Improves performance and operational continuity
- Performance recovery, lifetime extension, and fuel conversion projects



Energy Solution Package

Expansion of business to the entire value chain, including pre-management and follow-up management

- Fund raising
- Consulting
- Purchase and procurement
- Follow-up management

Environment Projects

Actively develop and nurture environment-friendly technologies

- Gas Desulfurization/DeNOx equipment
- ESCO, renewable energy projects
- Water quality pollution prevention
- Waste treatment equipment

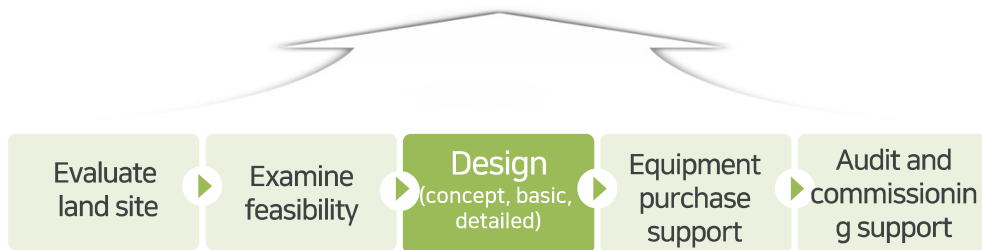
National Project

Carries out national technology development projects

2. Business Areas

1. Comprehensive design of new power plants

Establish self-reliance in the design technology for nuclear power & thermoelectric power plants and lead the development of Korea-tailored power plant reactor



- Solely responsible for designing South Korea's nuclear power plants
 - * The only company in the world that carries out both reactor system design and comprehensive design of nuclear power plants on its own
- Designed most of the coal thermoelectric power plants in the national power supply development plan (55 out of 57 plants)
 - * Using its world-renowned standard thermoelectric power plant design technology, the company designs and develops economically improved power plants.
- Carried out the design of around 60% power generation-related facilities in South Korea
 - * Possesses the capability to design Korea-tailored nuclear reactor (OPR1000, APR1400), Korea-tailored coal thermoelectric power (500MW/800MW/1000MW grade)

Nuclear power plant design capability and projects undertaken

- Out of 34 nuclear power plants (including those under construction, KEPCO E&C participated in the design of 31 power plants (18 were designed independently by KEPCO E&C)

Category	Reactor	Capacity	Power Plant	Characteristic
1990s	OPR1000	1000MW	Hanbit 3~6, Hanul 3~6 Shin-Kori 1~2 Shin-Wolsung 1~2	<ul style="list-style-type: none"> • Developed the Korean-standard nuclear power plant • Established self-reliance in nuclear power plant design
	CANDU6	700MW	Wolsung 1~4	<ul style="list-style-type: none"> • Heavy water nuclear power plant • Joint design with AECL of Canada
2000~2010s	APR1400	1400MW	Shin-Kori 3~6 Shin-Hanul 1~2 UAE Barakah 1~4	<ul style="list-style-type: none"> • 3rd-gen. new nuclear reactor • Main reactor chosen in domestic construction • Reactor exported overseas (UAE)
	SMART	100MW	Saudi PPE project	<ul style="list-style-type: none"> • South Korea's unique integrated modular nuclear reactor
2020s~	APR+	1500MW	Developed new nuclear power plant technology	<ul style="list-style-type: none"> • New light water reactor with better safety and economic advantages

Thermoelectric power plant design capability and projects undertaken

- Developed the capability to design a coal-fired thermoelectric power plant with facility capacity that can meet customer demand, acquired world-class technical competencies in thermoelectric

Category	Capacity	Characteristics
Coal thermoelectric power plant	500MW	<ul style="list-style-type: none"> • Progenitor of super critical pressure Korea-tailored thermoelectric power plant • Environment-friendly design
	800MW	<ul style="list-style-type: none"> • Enhanced economy and heat efficiency
	1000MW	<ul style="list-style-type: none"> • Ultra-super critical pressure high efficiency • Large-capacity design technique
Combined thermoelectric power plant	380MW	<ul style="list-style-type: none"> • Clean coal thermoelectric power generation technology

2. Business Areas

2. Power plant performance improvement (O&M*)

Improve the operability, economics, and safety of power plants by providing comprehensive technical support to nuclear power plants and thermoelectric power plants in operation in South Korea

Design & Engineering



Nuclear & Thermal Power Plants



Offering Total Solutions

O&M Activities

- Suggest ways of technically resolving problems identified during the operation of a power plant
- Improve the facilities of nuclear power plants in operation
- Replace key equipment and facilities
- Increase the power output of plants
- Provide technical assistance related to obtaining permits and applying new regulatory requirements

* Conducts the development of earthquake response technology, safety agenda, and major accident response technology to meet the increased requirements regarding nuclear power plant safety

*O&M: Operations & Maintenance

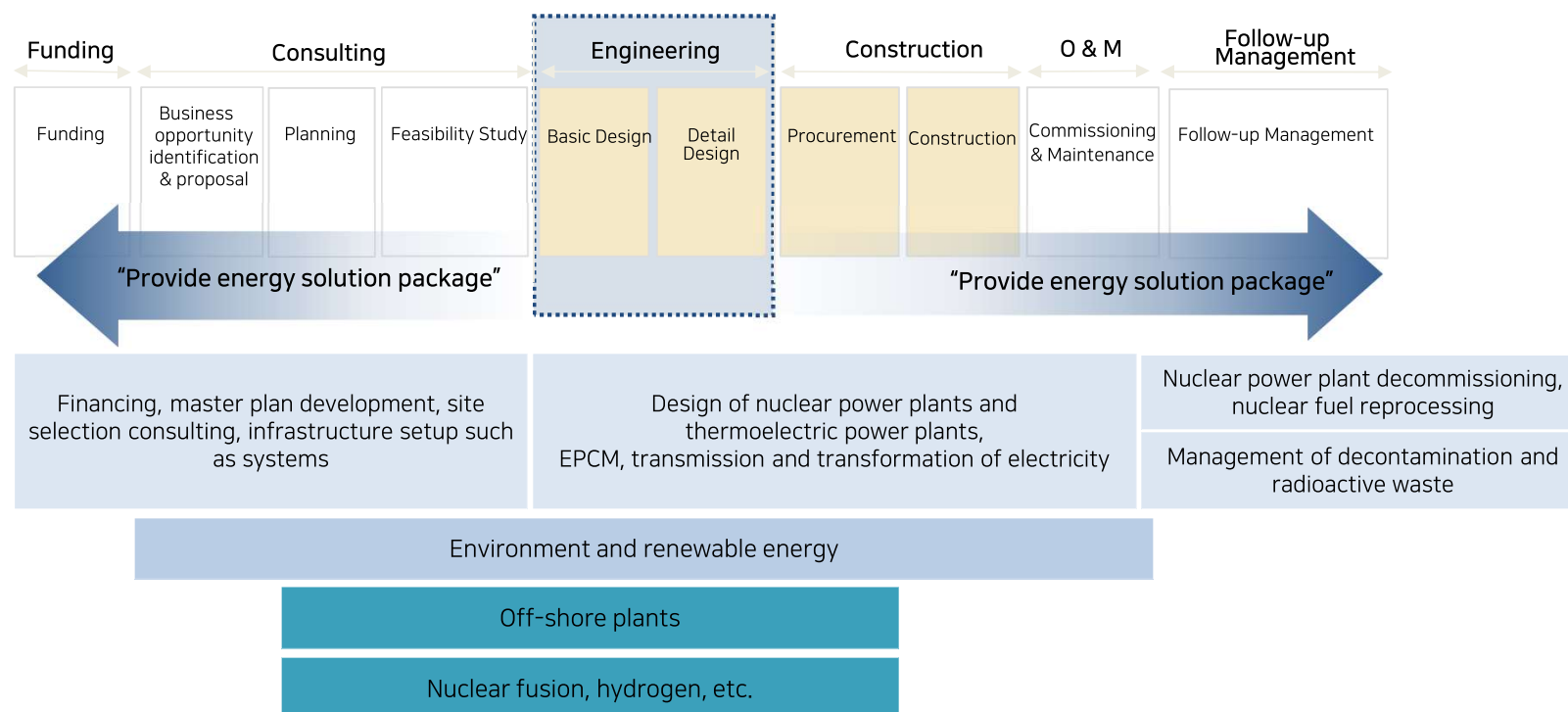
Status of domestic commercial nuclear power plants (24 units)

Reactor	Nuclear power plant	Date of commercial operations	Design company
PWR (APR1400)	Shin-Kori #3,4	'16.12/'19.08	KEPCO E&C
PWR (OPR1000+)	Shin-Wolsung #1,2	'12.07/'15.07	KEPCO E&C
	Shin-Kori #1,2	'11.02/'12.07	KEPCO E&C
PWR (OPR1000)	Hanul #5,6	'04.07/'05.04	KEPCO E&C
	Hanbit #5,6	'02.05/'02.12	KEPCO E&C
	Hanul #3,4	'98.08/99.12	KEPCO E&C
	Hanbit #3,4	'95.03/'96.01	KEPCO E&C-WEC
PHWR (CANDU)	Wolsung #3,4	'98.07/99.10	AECL-KEPCO E&C
	Wolsung #2	'97.07	AECL-KEPCO E&C
PWR	Hanul #1,2	'88.09/'89.09	Framatome
	Hanbit #1,2	'86.08/'07.06	Bechtel-KEPCO E&C
	Kori #3,4	'85.09/'85.04	Bechtel-KEPCO E&C
	Kori #2	'83.07	Gilbert

2. Business Areas

3. Energy solution package

In addition to engineering and EPC, the company is expanding its business footprint to the entire value chain that includes follow-up management as well as energy areas beyond power generation



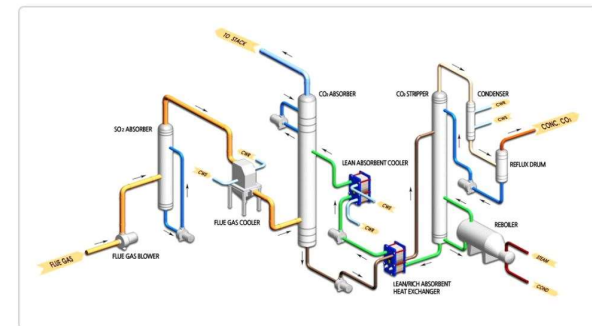
2. Business Areas

4. Environment-friendly projects and national projects

Lead low-carbon, green growth based on know-how and experience in designing environment-friendly power plants

- Prepared (coal-fired power reduction and increased renewable energy) for transition to environment-friendly energy mix
 - * Development of technologies and businesses related to renewable energy sectors like offshore wind power, solar power, fuel cells, biomass, and hydrogen energy
- Improved the state of aging environmental facilities at coal-fired power plants, possesses many environment-friendly technologies related to air pollution prevention facilities
 - * Possesses technologies for reducing fine dust such Flue gas desulfurizer System, DeNOx System and CCS (Carbon Capture Storage)
 - * Participated in the country's largest CDM project (Landfill gas recovery project in landfills located in the Seoul area)

* CCS engineering



Environment-friendly projects

- FGD(Flue gas desulfurizer) : Removal of sulfur oxides, which are the main causes of acid rain and respiratory and skin diseases
- DeNOx System : Remove nitrogen oxide, which is the main cause of photochemical smog
- CCS (Carbon Capture Storage): Lower greenhouse gas emissions by capturing and storing carbon dioxide
- Energy consumption reduction projects (ESCO)
- Prevention of water pollution, site selection, and environment assessment

National projects

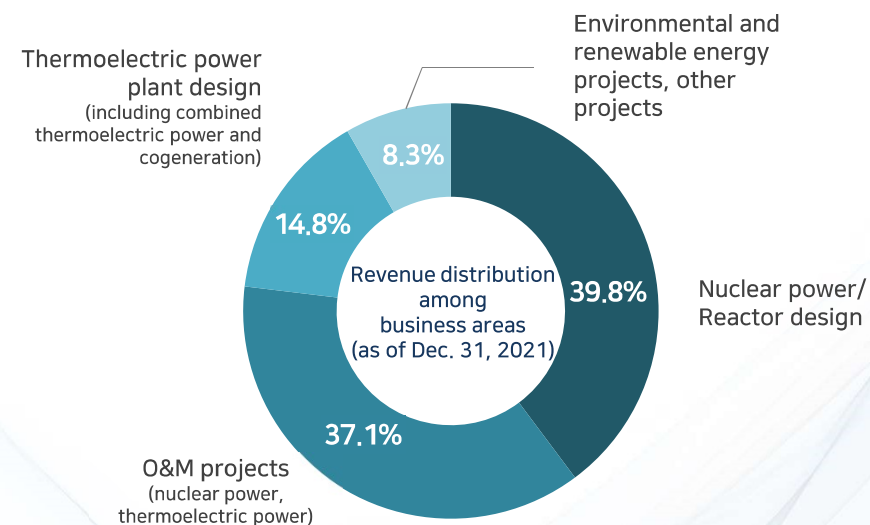
- Lead the development of national technologies as a listed public engineering company that is the only one specializing in nuclear power plant design in the country

2. Business Areas

Revenue per business area

(Unit: 100 million won)

Category	2021	Share of total revenues (%)	2020	YoY
Nuclear power/ Reactor design	1,722	39.8%	2,071	-16.8%
Thermoelectric power plant design (including combined thermoelectric power and cogeneration)	641	14.8%	657	- 2.4%
O&M projects (nuclear power, thermoelectric power)	1,609	37.1%	1,520	5.9%
Environmental and renewable energy projects	345	8.0%	45	666.7%
Other projects	14	0.3%	24	-41.7%
total	4,331	100%	4,317	0.3%



2. Current Business Status

Status of key projects won (nuclear power, nuclear reactor)

(Unit: 100 million won, as of Dec. 31, 2021)

Category	Client	Project Name	Project Period	Project Amount
Nuclear Power Plant	Korea Hydro & Nuclear Power	Comprehensive design service for Shin-Hanul Units 1 and 2	2009.05 ~ 2022.05	3,704
		Comprehensive design service for Shin-Kori Units 5 and 6	2014.04 ~ 2023.03	4,931
		Comprehensive design service for Shin-Hanul Units 3 and 4 (this design service has been suspended)	2016.03 ~ 2023.12	4,263
		Development of APR1400 NSSS design and standard design in comprehensive design area for acquiring EUR Rev.E certification	2020.06 ~ 2024.06	288
		System design technical service for nuclear power plants in operation in 2021	2021.02 ~ 2022.02	310
	KEPCO	Comprehensive design service for UAE nuclear power plant	2010.03 ~ 2020.12	8,030
	Nawah Energy Company	LTEA (long-term engineering support) service for nuclear power plant in operation in Barakah	2018.01 ~ 2031.01	3,400
	ITER IO	ITER cable engineering service	2012.04 ~ 2022.12	298
Nuclear Reactor	Doosan Heavy Industries	ITER CMA (construction management service)	2016.06 ~ 2026.08	271
		Nuclear reactor system design service for Shin-Hanul Units 1,2	2009.07 ~ 2021.08	1,303
		Nuclear reactor system design service for UAE nuclear power plant	2010.06 ~ 2020.12	1,826
	Nawah Energy Company	Nuclear reactor system design service for Shin-Kori Units 5,6	2014.08 ~ 2023.03	1,596
		LTEA (long-term engineering support) service for the nuclear power plant in operation in Barakah	2018.01 ~ 2031.01	900

2. Current Business Status

Status of key projects won (new energy projects)

(Unit: 100 million won, as of Dec. 31, 2021)

Category	Client	Project Name	Project Period	Project Amount
New energy projects	Korea Midland Power Co., Ltd.	Design technology service for the construction of Shin Seocheon thermal power plant	2014.06 – 2023.12	709
		Design technology service for the construction of Seoul Combined cycle power plant Units 1,2	2007.08 – 2021.12	289
	Korea Western Power Co., Ltd.	Comprehensive design service for Taeon Thermal Power Plant Units 9,10	2011.06 – 2024.09	1,129
	SK E&C	Comprehensive design service for Goseong Green Power	2014.05 – 2022.01	886
	Samsung C&T	Comprehensive design service for Gangneung Anin Thermal Power Plant Units 1,2	2014.02 – 2023.06	1,031
	Jeju Hanlim Offshore Wind Co., Ltd.	Jeju Hanlim Offshore Wind Farm EPC Project	2019.12 ~ 2025.02	2,021
	Nonsan Bioenergy Co., Ltd.	Nonsan Biomass EPC Project	2021.03 – TBD	745
	Hanju Corp.	Hanju CCPP EPC Project	2021.05 – 2023.11	646
	Korea East-West Power Co., Ltd.	Design technology service for the construction of Eumseong Combined Cycle Power Plant	2019.12 ~ 2027.03	246

3. Future Growth Business

Revenue structure of main business

Centered on the construction of new nuclear power plant and coal-fired power plants

Centered on the national power supply development plan

62.3%
(2019)

61.6%
(2020)

54.6%
(2021)

Revenue structure is oriented toward construction design, government policy drive projects

Business transformation roadmap

Flagship Business

Definition
Businesses with competitive advantages

Goal
Maintain the company's essential function

- Business
- Design of new nuclear power plants
 - Design coal-fired/combined thermoelectric power plant
 - Develop next-generation reactors

Growth Business

Definition
Business that ties in existing customers

Goal
Energy transformation soft landing

- Business
- O&M of plants in operation
 - Consulting business (focused on environment, safety)
 - Renewable energy business

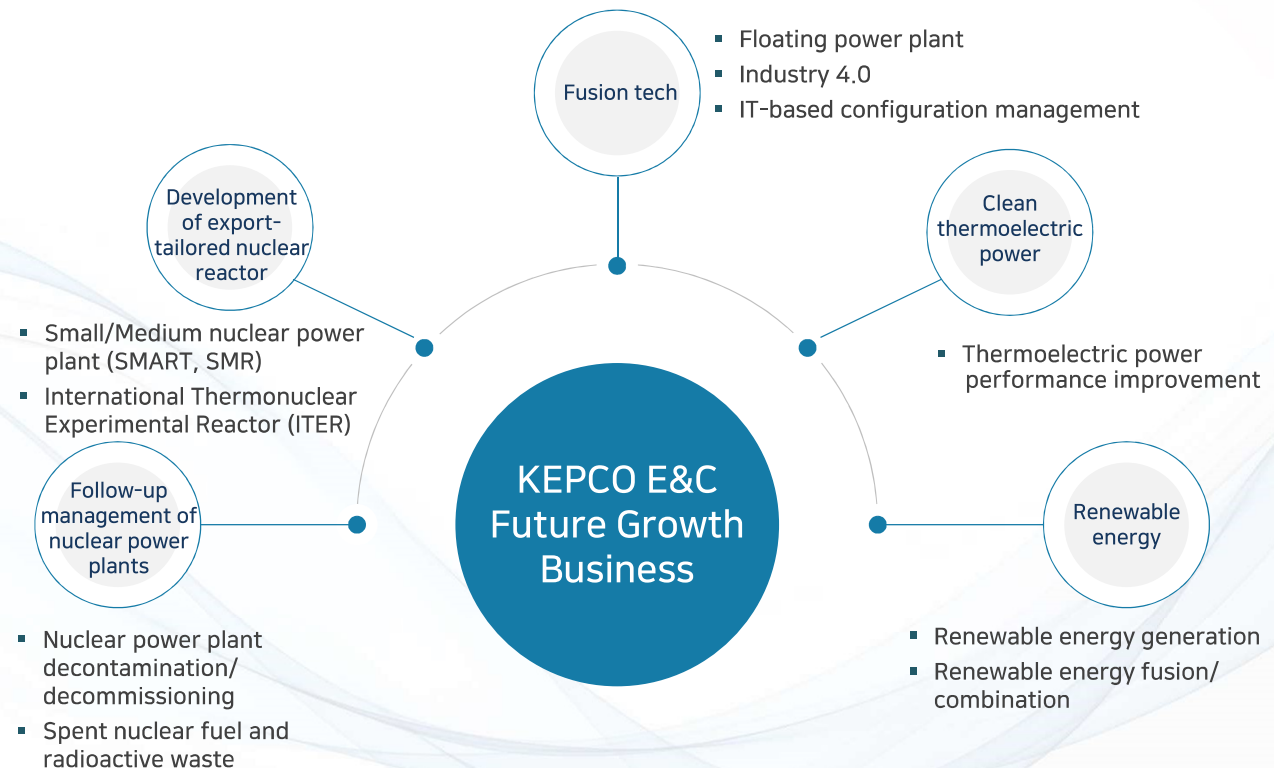
Future Business

Definition
Diversify growth engine

Goal
Continued growth in the energy transformation era

- Business
- Nuclear power plant follow-up management
 - New energy business

10 future/growth businesses in 5 areas were selected as part of the business transformation strategy adopted to deal with energy transformation trends



3. Future Growth Business

Follow-up management of nuclear power plants

Expand the nuclear power plant follow-up management business to respond in a timely manner to the sudden shutdown of nuclear power plants

History of nuclear power plant follow-up management business

- 2001: Participated in the sending of expert manpower for the decontamination, decommissioning, and construction of TRIGA nuclear power plant (~2008)
- 2003: Expert manpower support for obtaining permit for a uranium conversion facility
- 2004: Manpower support for the dismantling of a uranium conversion facility
- 2016: Carried out joint research (with Preussen Elektra in Germany) on replacing the system for cost and energy optimization when nuclear power plants are dismantled
- 2017: Businesses related to nuclear power plant dismantling, spent nuclear fuel, and radioactive waste were added to the company target business under the company's articles of association

Current ongoing projects

- Awarded the contract for Kori Unit 1 decommissioning comprehensive design service (2018~2030)
 - Ceased operation of domestic nuclear power plants :
Kori #1('17.06), Wolsung #1('19.12)

Renewable energy

Expand the share of renewable energy businesses in response to the government's Renewable Energy 3020, 3rd Energy Basic Plan

3rd Energy Basic Plan ('19.06)

- Transition to a clean, safe energy mix
 - Nuclear power plant reduction and fine dust cutback
 - Increase share of renewable energy generation to 30~35% by 2040
 - Implementation of 2030 greenhouse gas emission reduction roadmap

Renewable energy projects pursued by KEPCO E&C

- Wind Power : EPC business with the Jeju Hanlim Offshore Wind Power Plant
- Solar Power : Design research for developing different types of solar cell modules
- Others : Fuel cell power generation, biogas power plant, coal gas-fired power plant, energy self-reliant islands, zero energy building

3. Future Growth Business

New small/medium nuclear power plant (SMR, SMART)

Develop SMR-dedicated reactor and enter overseas small/medium reactor market based on the SMART business

SMART nuclear power plant

- South Korea was the first country in the world to complete a standard design for 100MWe-grade small/medium-sized nuclear power plant
- Completed a construction engineering project (PPE) to build SMART nuclear power plant Unit 2 in Saudi Arabia (2019.2)
 - Increase safety through the deployment of a complete passive safety system
 - Prepare a safety assessment report for obtaining a construction permit
- Saudi Arabia is pursuing the construction of 20 to 30 small/medium nuclear power plants, so it signed a cooperative agreement with neighboring countries Jordan and Kuwait to build SMART nuclear power plants

SMR development status and outlook

- Over 70 different types of SMRs are being developed today across the world
 - United States (17 types), Russia (17 types), China (8 types) are leading the SMR development efforts
- Until 2050, between 500 and 1000 are expected to be built (US Department of Energy)
 - The global market for 65~85GW-grade SMR is expected to be formed by 2035 (UK National Nuclear Laboratory, 2016)
- SMR can replace the existing fossil fuels and provide distributed power to areas near the demand region or in remote places

International Thermonuclear Experimental Reactor (ITER)

Secure technological capability for developing nuclear fusion demonstration reactor/commercial reactor by participating continuously in the ITER project

- Project name: International Thermonuclear Experimental Reactor (ITER)
- Project period: 2006 ~ 2025
- Project size: Around 7.1 billion euro
- Project owner: ITER international body (joint participation of 7 nations)
- Total amount in ITER design service subcontracts: around 63.8 billion won
- Key subcontracted projects
 - CMA (Construction Management Agreement) project
 - CIS (Central Interlock System) design, purchase, pilot turnkey project
 - Development of detailed execution procedure for ITER
 - Measurement control system network facility service
 - ITER pipe support design/supply project

3. Future Growth Business

Construction of an IT-based configuration management system

The need for more stringent configuration management to enable plant operators to handle major accidents better has increased

Background

- 25~29% of nuclear power plant accidents are attributable to configuration management errors
- Issuance of regulation guidelines means regulation requirements must be satisfied
- Design requirements for nuclear power plant, alignment of facility configuration information, and physical configuration must be established



Goal

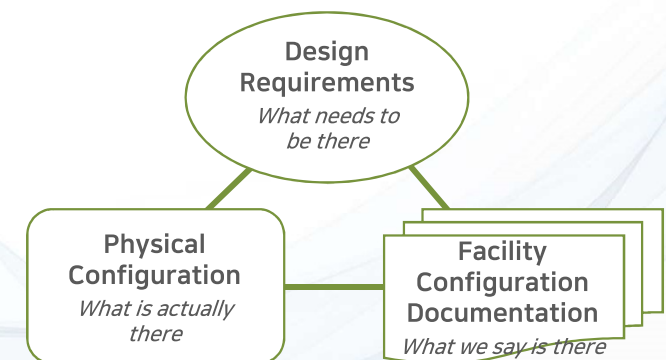
- Paper document-based → Set up an IT-based configuration management system
- Maintain the equilibrium of the 3 elements critical in SSC configuration management
- The availability of power during a power plant's lifecycle can be guaranteed only when the power plant operating data meets the design requirements

Current ongoing project

- Service description : Construction of a design configuration management system for Shin-Kori Units 5,6
- Contract period : 2019.1 ~ 2023.10
- Contract amount : 27.1 billion won

Definition of configuration management

The process of identifying and documenting the characteristics of a facility's structure, systems, and components (SSCs) (including computer systems and software) and ensuring that consistency is maintained between the design requirements, physical configuration, facility configuration, and documentation.



4. Appendix

Summarized balance statement (based on consolidated financial statement)

(Unit: 100 million won)

Category	2021	2020	YoY
Current assets	2,564	2,379	7.78%
Non-current assets	4,491	4,624	-2.88%
Total Assets	7,055	7,003	0.74%
Current liabilities	1,836	1,873	-1.98%
Non-current liabilities	85	139	-38.85%
Total Liabilities	1,921	2,012	-4.52%
Equity capital	76	76	-
Reserves	4,914	4,835	1.63%
Unappropriated retained earnings	251	186	34.95%
Elements of other stockholder's equity	△107	△107	-
Total Capital	5,134	4,991	2.87%

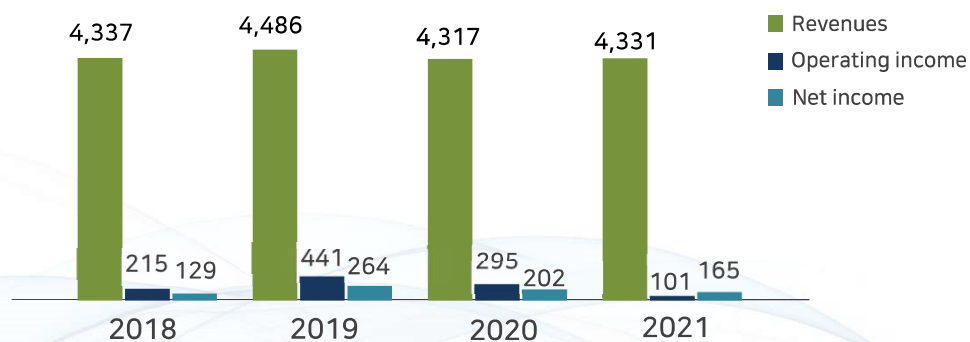
Summary statement of income (based on consolidated financial statement)

(Unit: 100 million won)

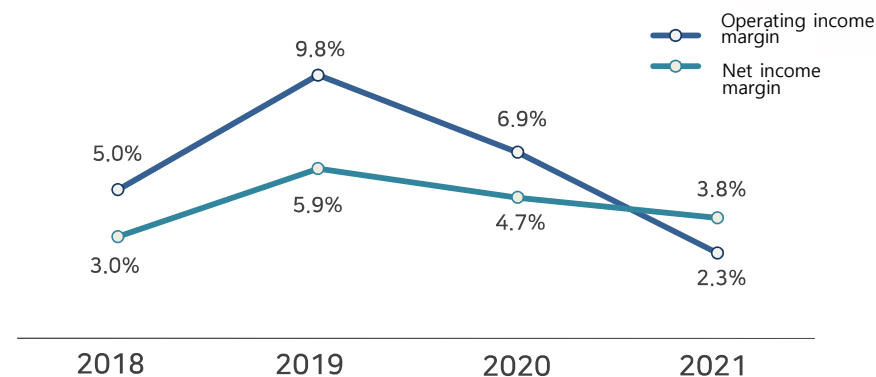
Category	2021	2020	YoY
Revenues	4,331	4,317	0.32%
Cost of revenues	3,262	3,097	5.33%
SG&A expenses	968	924	4.76%
Operating Income	101	296	-65.88%
Financial revenues	20	20	-
Financial expenses	-	-	-
Other revenues	76	33	130.30%
Other expenses	25	83	-69.88%
Other income (loss)	1	-	-
Income (loss) from investment in affiliate companies and venture businesses	5	1	400.0%
Gross Income	177	265	-33.21%
Income tax expenses	12	63	-80.95%
Net Income	165	202	-18.32%

4. Appendix

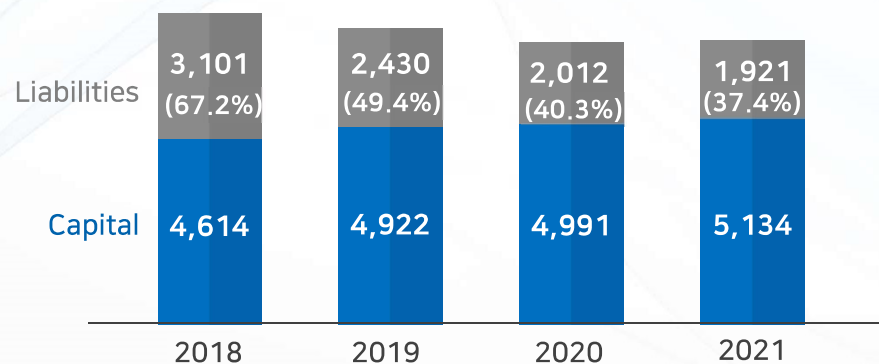
Profit and Loss (Unit: 100M won)



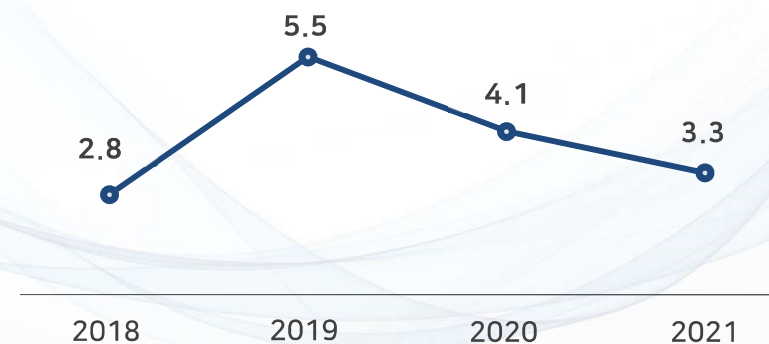
Profit Margin



Financial Position (Unit: 100M won)



Return on Equity (ROE)



Thank you

newpower, newstandard
 **KEPCO**
E&C

