

Resilient Energy Transition Beyond Energy Crisis

Lee, Jonghwan

Corporate Senior Vice President
Chief Business Operations Officer
Korea Electric Power Corporation

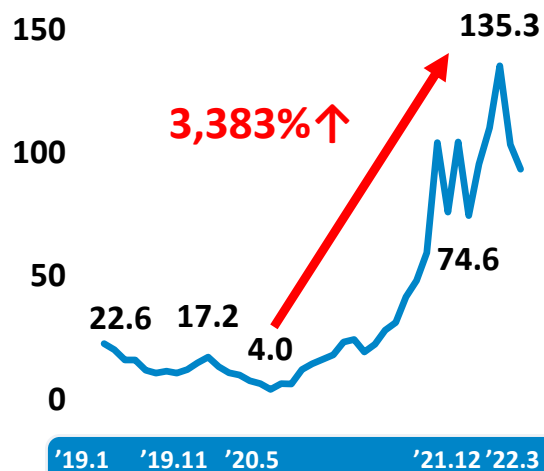


1. Trilemma in global energy policy

- Recently, the global economy is facing an unprecedented trilemma.
- The achievement of carbon-neutrality goals is threatened in these crisis.

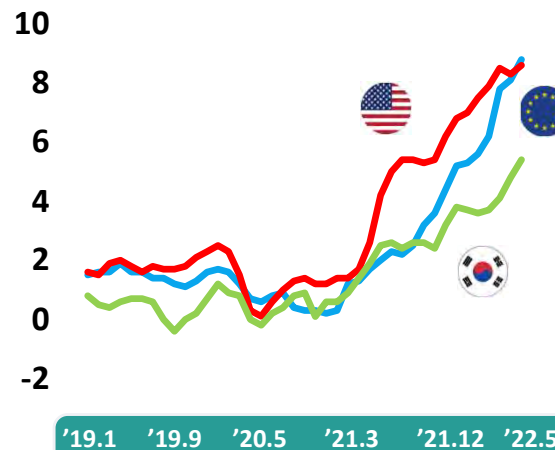
Energy Security

Gas (€/MWh)



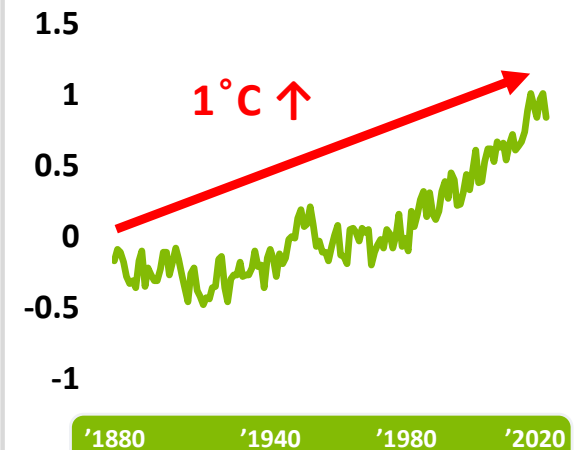
Energy Poverty

Inflation (%)



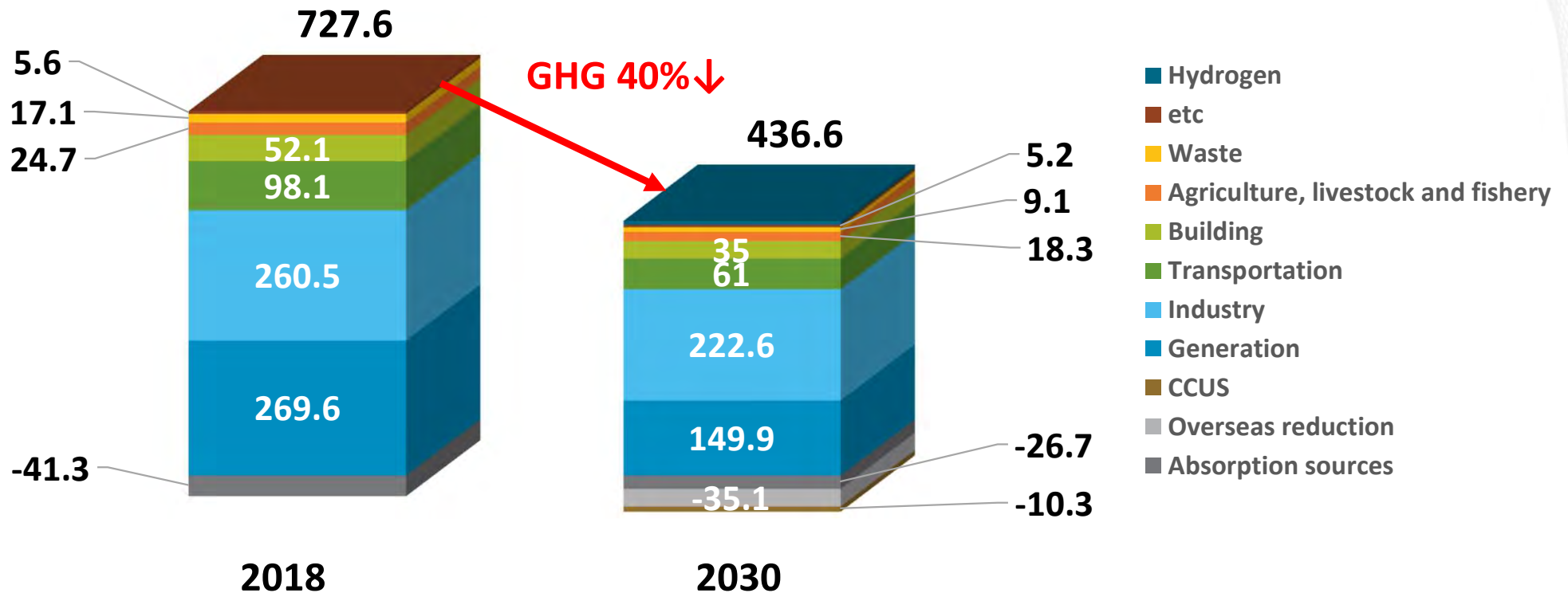
Climate crisis

Temperature (°C)



2. 2030 NDC of Korea

- The Korean gov't submitted 'enhanced 2030 NDC' to the UNFCCC in 2021.
- The updated and enhanced target is to reduce National GHG emissions by **40%** (previously 26.3%) from the **2018 level** by 2030.



3. New government's GHG reduction policy

- The new government announced several policy outlines this month to implement 'enhanced 2030 NDC' target.

GHG reduction path

A realistic adjustment of GHG reduction path by sector and year

Energy mix

Increasing the utilization of nuclear power plants

Continuous deployment of renewable energies

Incentive

Financial incentives for voluntary GHG reduction for mainly industry sector

4. KEPCO's role to achieve carbon-neutrality



Improvement of energy efficiency in entire value chain



Innovations in power grid planning, building and operating



Comprehensive decarbonization including scope 3 level



Research and development on net-zero technologies

5-1. Energy efficiency in entire value chain

- KEPCO will enhance the energy efficiency of the entire value chain from generation to consumption.

Generation

Applying sector couplings technologies

Promoting eco-friendly fuel conversion

Increasing the utilization of nuclear power plants

Consumption

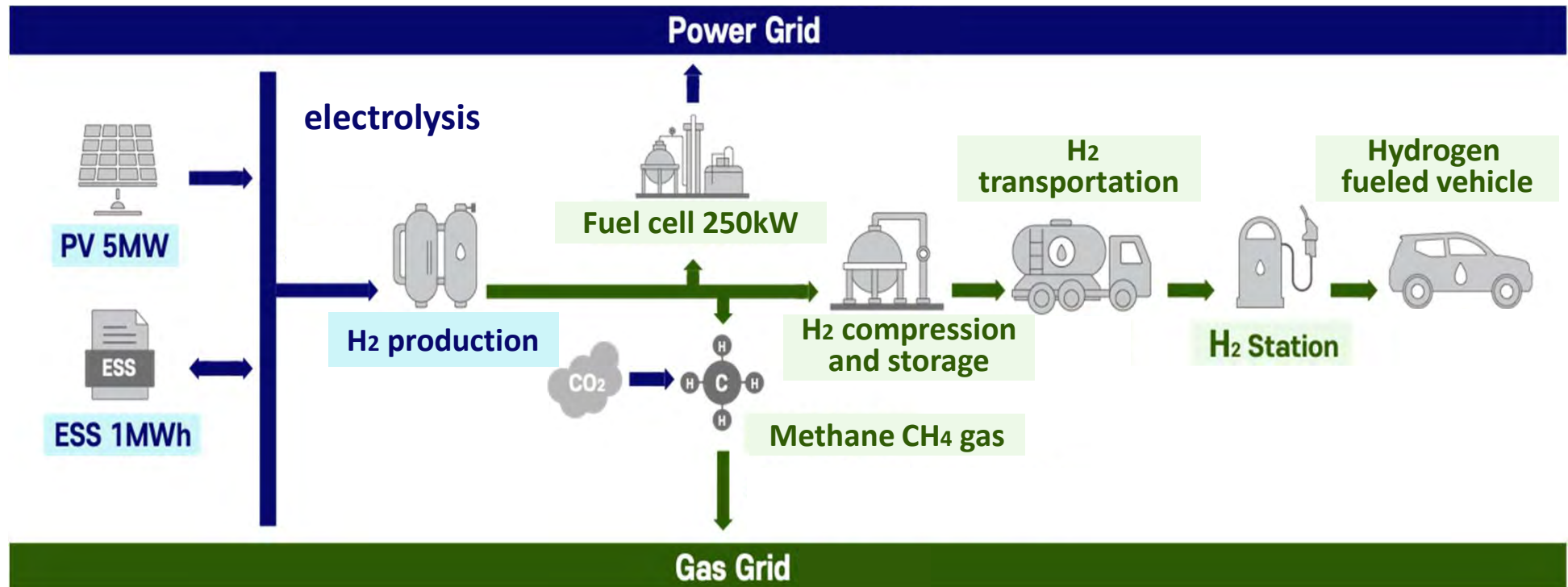
Expansion of energy efficiency improvement projects such as EERS

Demand shift to renewable generation time

Inducement for large-scale demands to move near supply-concentrated area

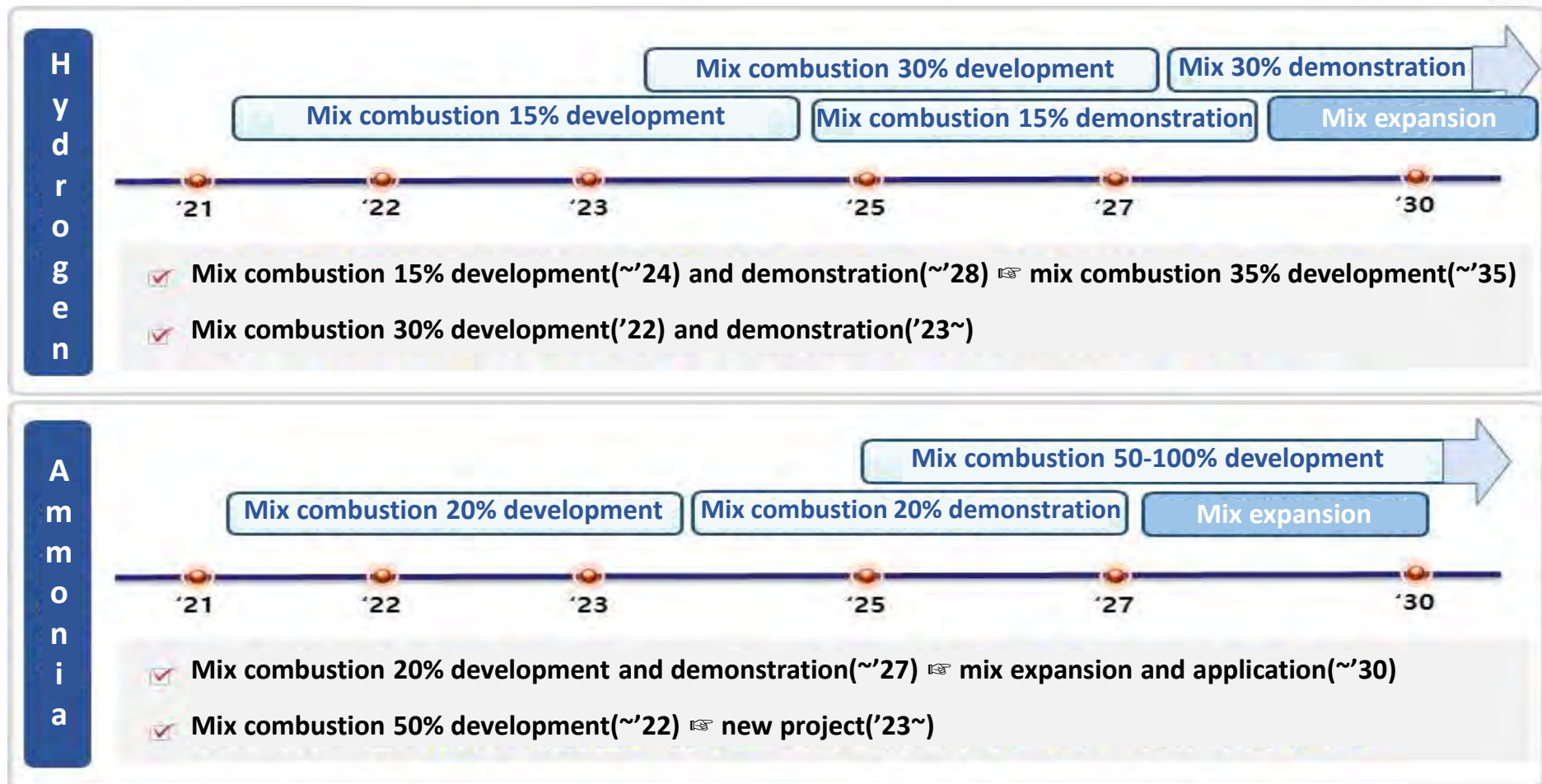
5-1. Energy efficiency in entire value chain

- KEPCO have installed PVs and electrolyzers at MW scale in Naju and Ulsan.
- We are demonstrating the core technologies for sector couplings that produce and use green hydrogen for fuel cell power generation.



5-1. Energy efficiency in entire value chain

- KEPCO and power generation subsidiaries are jointly developing and demonstrating hydrogen and ammonia mixed combustion technology.



5-2. Innovations in power grid

- KEPCO will play a significant role to achieve carbon-neutrality through various innovations in power grid planning, building and operating.

Building the timely connection process

Promoting preemptive power grid reinforcement

Improvement of renewable energy connection method

Increasing public acceptance

Enhancing power system stability

Integrated renewable energy control system

Securing flexibility resources

Advancement of digital-based power grid

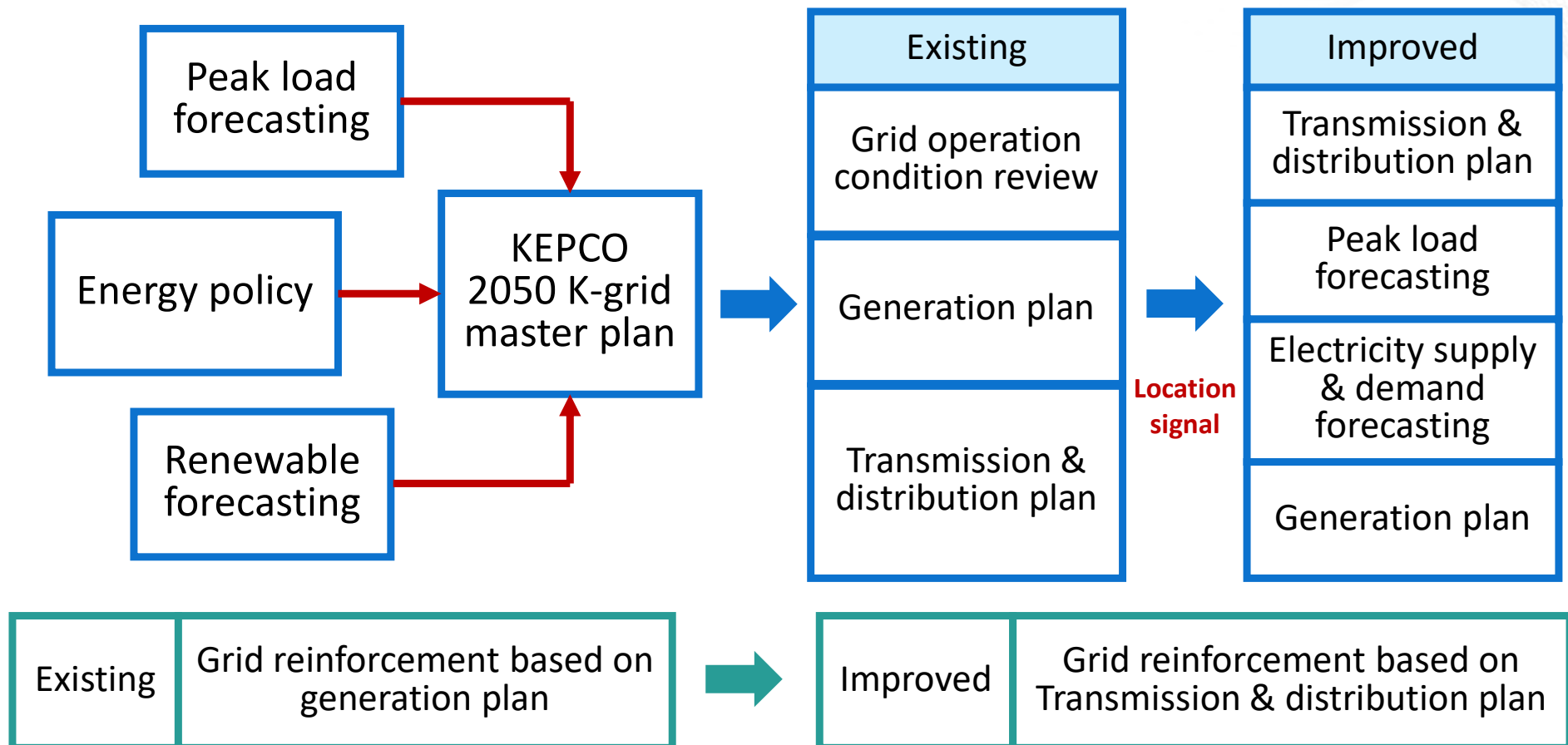
Innovation of electricity supply and demand

Establishment of power grid-based electricity supply and demand plan

Securing long-term power demand forecast capability

5-2. Innovations in power grid

- Innovative approaches in power grid planning process to increase the renewable energy integration



5-3. Decarbonization in supply-chain

- KEPCO will lead the comprehensive decarbonization including all of the supply chain, in the perspective of scope 3 level GHG reduction.

Support of eco management

Improvement of procurement policies and systems

Support for eco-friendly certification costs

Improvement of delivery and disposal procedures

Equipment development

R&D collaboration with suppliers

Eco GIS development

Eco transformer development

SF₆ gas harmlessness

Replacement of non-eco equipment

PCBs eradication

P.P insulation of power cable

SF₆ gas equipment replacement

Improving equipment efficiency

5-3. Decarbonization in supply-chain

- KEPCO is improving the procurement system, focusing on the voluntary inducement of supplier's eco-friendly management.



Goal

Accomplishment the purchase rate of environmental power equipment to 50% by 2030



progress method

System improvement

Introduction of preferential policies for eco-friendly suppliers

Technology innovation

Development of eco-friendly equipment

Perception change

Conversion of eco-friendly purchasing paradigm

5-4. R&D on net-zero technologies

- KEPCO will focus on core technology R&D and innovate its R&D process to meet the carbon-neutrality goal more efficiently and effectively.

Core technology R&D for carbon-neutrality

Renewable energy

Carbon-free fuel conversion

Energy efficiency improvement

Intelligent power grid

R&D process innovation

R&D planning, selection process

Performance-oriented R&D evaluation

Open innovation

International collaboration



Thank you