

2021 Japan-Russia Energy and Environment Dialogue:
The Paris Agreement and Energy Security in Northeast Asia

**Korea's National Policy Concept for Energy Transition
and Energy Security
(in a perspective of regional Cooperation
towards achieving the Paris Agreement goals)**

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**Dr. Yang, Euyseok,
Senior Research Fellow
International Energy Cooperation Group
Korea Energy Economics Institute(KEEI)**

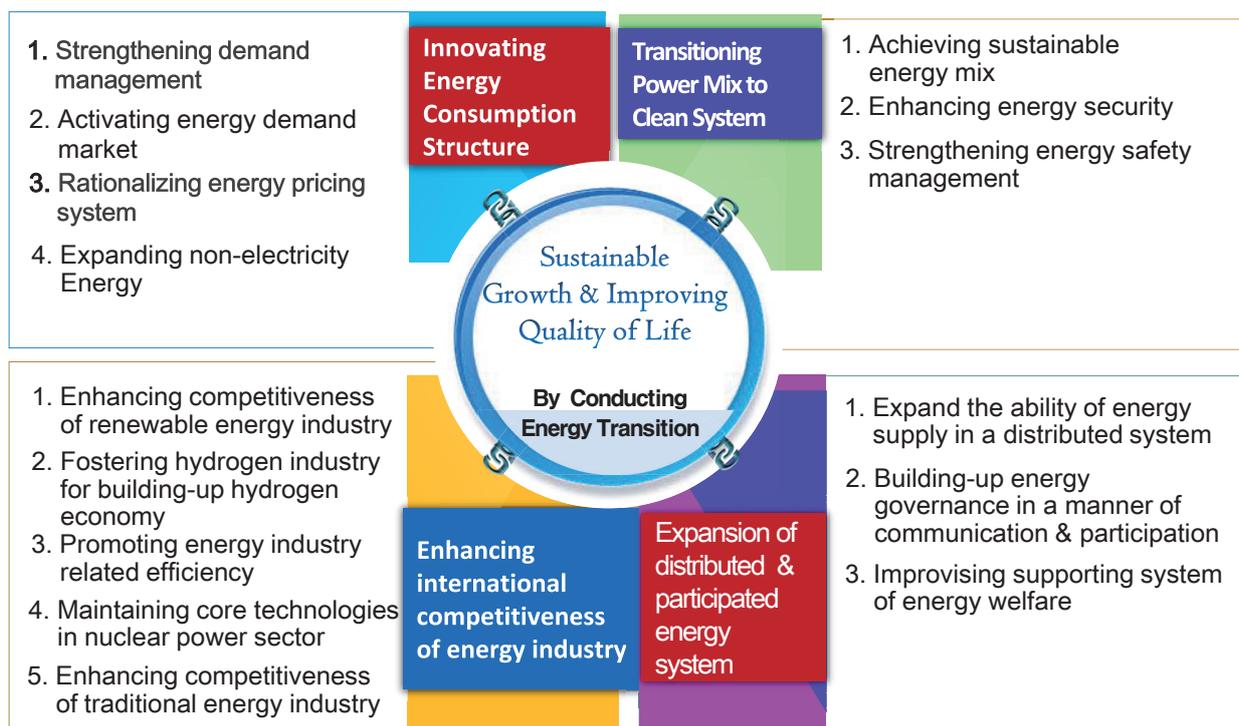
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I. Energy Transition Policy of Korea

1. Vision of Korea's Energy Policy

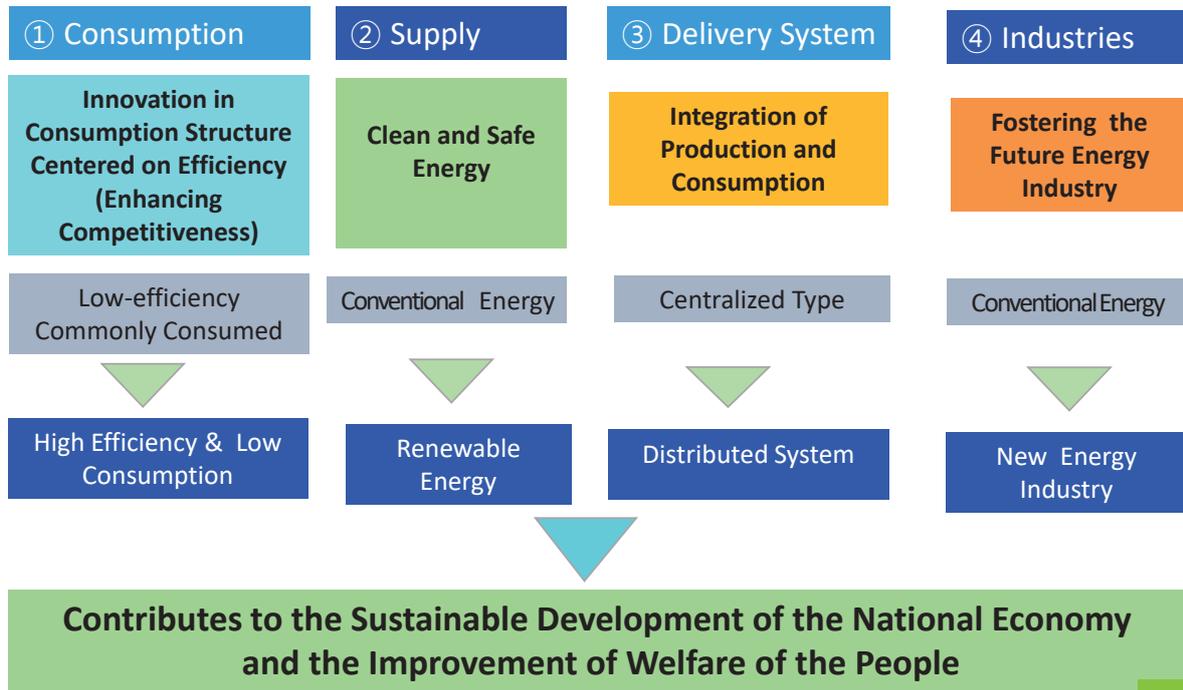
■ Main Frame of the Energy Master Plan of Korea



Sources: The third Energy Master Plan of Korea(2019.6)

2. Basic Direction of Energy Transition Policy

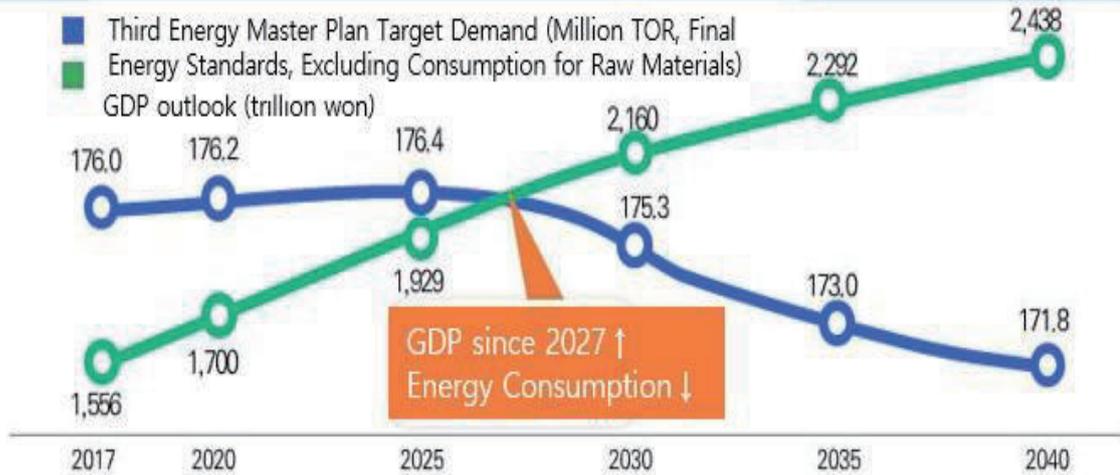
Energy Transition Is Not Only Changes in Power Mix but also Innovation in Factors of Energy Systems such as Consumption, Supply, Delivery and Industries



3. Main Objectives of Energy Transition Policy

3.1) Decoupling b/w economy and Energy

Korea's GDP Growth and Energy Consumption Goals



“Realizing the Energy Consumption Structure of Advanced Countries that Achieves Economic Growth and Reduced Energy Consumption at the same time through Energy Efficiency Innovation”

3. Main Objectives and Policy Tools of Energy Transition

3.2) Reduction in Energy Demand

■ To Reduce Energy Demand: Goal(~2040)

- Plan to reduce final energy consumption by 18.6% compared to BAU in 2040 through innovation of energy consumption structure

<Demand Management Target(2017-2040)>

Items \ Year	2017	2030	2035	2040	AAGR(%)		
					'17~'30	'30~'40	'17~40
BAU Demand (million toe)	176	205	209	211	1.2%	0.3%	0.8%
Target Demand (million toe)	176	175	173	172	0.0%	-0.2%	-0.1%
Reduction Rate(%)	-	14.4%	17.2%	18.6%	-	-	-

Sources: The third Energy Master Plan of Korea(2019.6)

- Demand Reduction(Δ 18.6%):
 - Decreasing Factor: ▪ Oil : - 8.4%p, ▪ Coal: - 3.7%p, ▪ Electricity: -5.7%p, ▪ City gas: - 2.1%p, ▪ Heat 0.5%p
 - Increasing Factor : ▪ Renewable +1.8%p
- Improving the final energy consumption intensity by 38% in 2040 compared to 2017 :
 - ('17) 0.113 toe/mil.KRW→('30) 0.082 toe/mil.KRW→('40) 0.070 toe/mil.KRW

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3. Main Objectives and Policy Tools of Energy Transition

3.3) Reduction in GHG Emission towards Archiving the Paris Agreement

■ To Reduce GHGs: Goal(~2030), Nationally Determined Contribution

- Plan to reduce GHGs by 37.0% compared to BAU in 2030

<Reduction Target of GHGs(Green House Gas) (2017-2030)>

Items \ Year	2030
GHGs Emission(BAU) (million toe)	850.8
➡ Target GHGs (million ton)	536.0
Reduction Rate(%)	37.0%

Sources: Revised National GHGs Reduction Road-Map(2018.7)

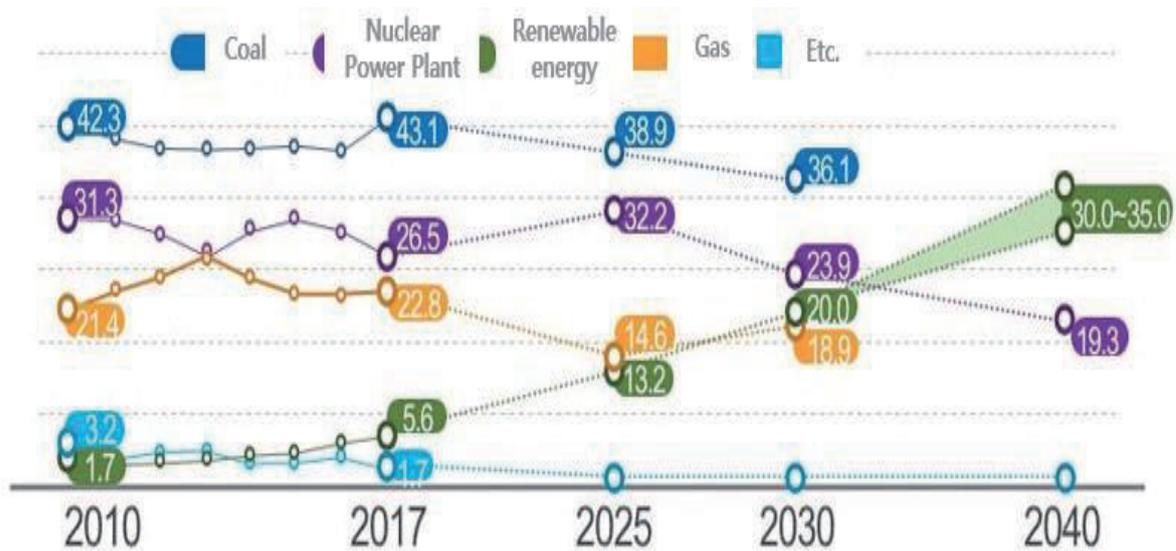
- Reduction Rate (Δ 37.0%):
 - Domestic Reduction Rate(276.5 million ton, + 57.5 million ton) (25.7% ➡ 32.5%)
 - Oversea Reduction and Forest Carbon Sink : 38.3Million ton

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3. Main Objectives and Policy Tools of Energy Transition

3.4) Transition in Power Mix

Power Mix Performance and Prospect



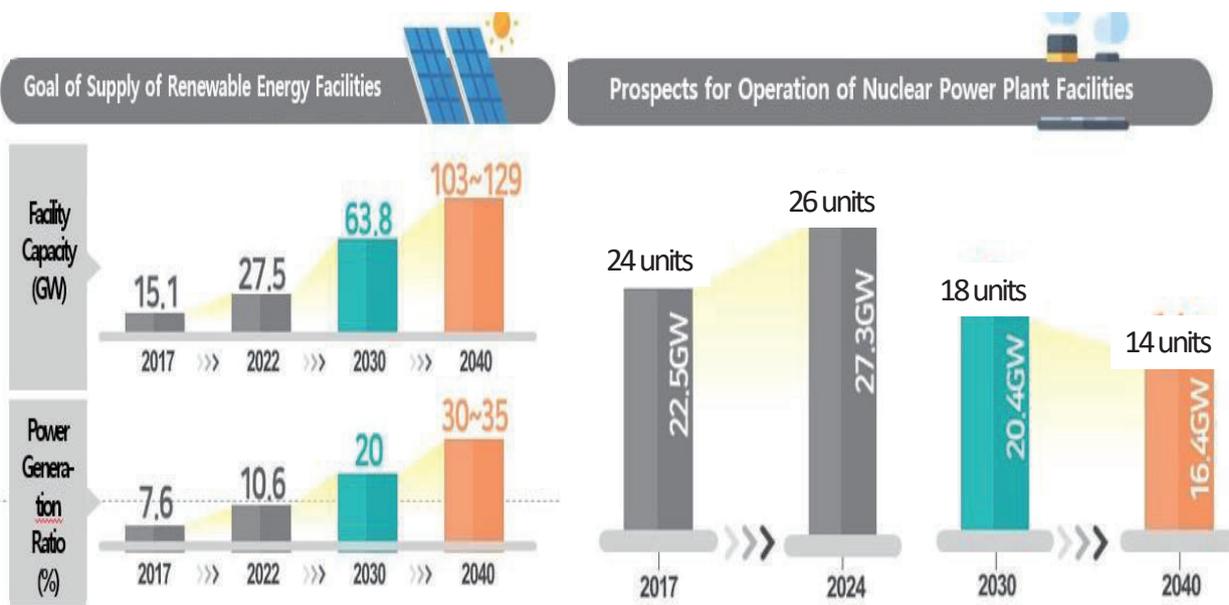
○ The outlook for 2030 is based on the 8th basic plan for electricity supply and demand (without own new and renewable use)

○ Based on the 3rd Basic Energy Plan for 2040

3. Main Objectives and Policy Tools of Energy Transition

3.5) Transition in Power Mix

Power Capacity of RE and Nuclear Plants



3. Main Objectives and Policy Tools of Energy Transition

3.6) Renewable Energy Generation in 2030

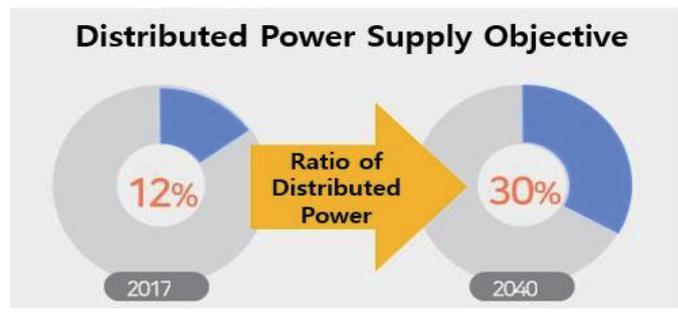
**Achieve 20% of Renewable Energy Generation in 2030:
Supply of Clean Energy such as Solar and Wind Power**



3. Main Objectives and Policy Tools of Energy Transition

3.7) Expansion of Distributed Power

Scale up of Distributed Power Sources



Power Source near Demand Area

Expansion of installation of fuel cells for power generation, cogeneration plant, and substantialization of zone electric business

Power Prosumer

Expanding the supply of solar energy for self-generating power and fuel cells for home buildings

Power Brokerage Market

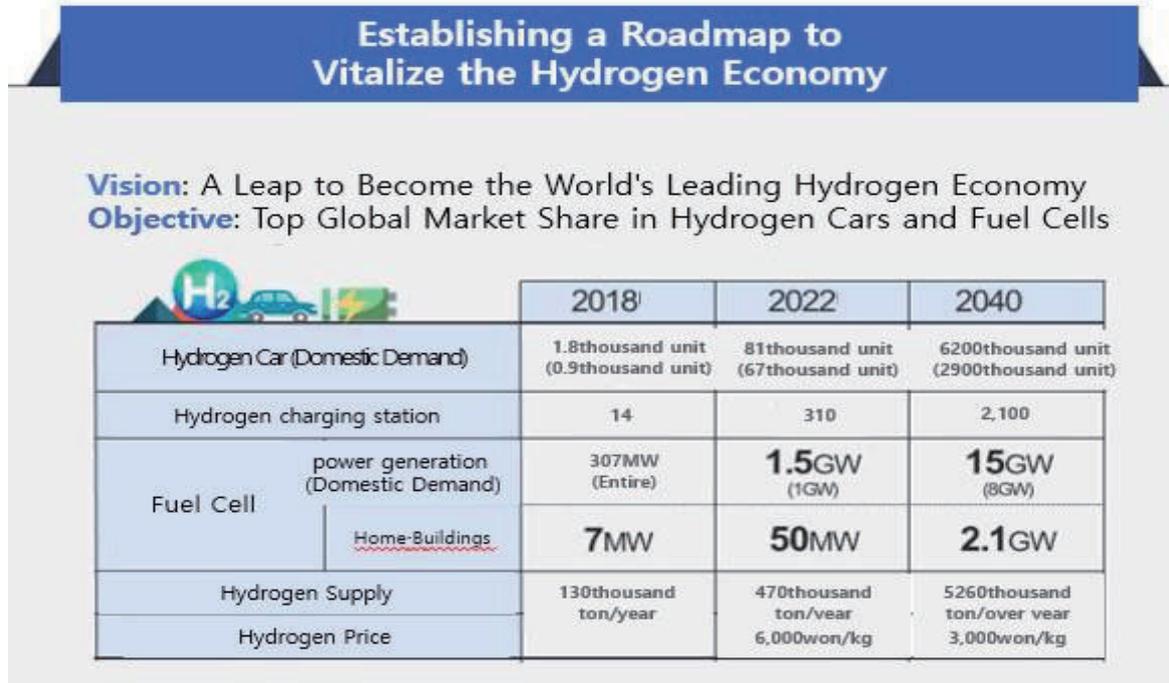
Collect small distributed power sources such as solar energy, ESS, and V2G to participate in virtual power plants.

*Distributed power means power generation facilities of a certain size or smaller that can be installed near power demand areas to minimize the construction of power lines

3. Main Objectives and Policy Tools of Energy Transition

3.8) Build-up Hydrogen Economy

▣ Road-Map to Hydrogen Economy



4. Green New Deal of Korea

4.1) Vision and Policy of Green New Deal of Korea



4. Green New Deal of Korea

4.2) Backdrop of Green New Deal of Korea

■ Purpose and Policy Tools

- To Transform the Nation into a Green Society that achieves a balance between people, nature and growth.
- To Accelerating the transition towards a low-carbon and eco-friendly economy

■ Focusing Area for Green New Deal

1. Green Transition of Infrastructure
2. Low-carbon and Decentralized Energy
3. Innovation in the Green Industry

■ Investment Plan

- USD 63 billion(73.4 trillion won) will be invested (around USD 37 billion from the treasury*) by 2025

- * ① Green infrastructures (USD10.3 billion)
- ② Renewables(USD20.6 billion)
- ③ Fostering Green Industry(USD5.4 billion)

■ Expected Outcome

- 659,000 jobs will be created by 2025.

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4. Green New Deal of Korea

4.3) Green Energy System

■ Projects for Expanding Green Energy

- **(Wind)** Support the measurement of wind conditions and the implementation of feasibility studies on up to 13 regions to locate sites for large-scale offshore wind farms
 - ✓ Demonstration complexes will be established in phases
- **(Solar)** Provide a benefit sharing mechanism for renewable energy projects to the local community with various support to encourage greater participation among communities and residents
 - ✓ More support on loans for renewable energy to encourage the participation of residents in agricultural areas and industrial complexes
 - ✓ Support 200,000 households to facilitate the installation of renewable energy facilities in residential or commercial buildings for private use
- **(Hydrogen)** Support the development of all core and original technologies for hydrogen throughout all phases
 - ✓ Support the establishment of hydrogen cities (e.g. Ulsan, Jeonju & Wanju, Ansan)
- **(Fair Transition)** Support regions facing challenges from the reduced use of coal-fired power and conventional resources to adapt to the renewable energy sector (e.g. green mobility, digital management of renewable energy, platform for offshore wind turbines)
- **(Policy Action)** To establish a foundation for companies to participate in the global RE100 campaign, a revision to the Enforcement Decree of the Electric Utility Act is under consideration
 - ✓ A revision will allow companies to sign third-party power purchase agreements (PPAs)

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II. Regional Energy Cooperation

1. Regional Energy Cooperation Issues and Tasks

1-1. Oil and Gas Issues

To diversify import sources of oil and gas and expand stockpiling

- Oil and Gas : To diversify import sources and reduce import costs, improve import portfolio(Natural gas)
 - To diversify import sources to improve economic feasibility and supply stability;
 - To diversify the existing long-term contract-oriented structure into a short-, mid-, long-term and spot structure to withstand unpredictable changes in gas demand
- (Stockpiling) To systemize stocks by adjusting the stockpiling

1-2. Oil and Gas Issues(~)

To promote Northeast Asia natural gas cooperation

- (LNG) To build an LNG cooperation system between Korea, China and Japan, which are major consuming countries, to improve the transparency and flexibility of the global LNG market
 - Promote the qualitative growth of the Northeast Asia LNG market by alleviating rigid contract conditions, responding to supply and demand emergencies and expanding swap transactions
- (PNG) To review the possibility of connecting natural gas pipelines among major Northeast Asian countries in the long-term to diversify gas import methods

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1-3. Connection of Power Grid

To Build-up Northeast Asia Super Grid(Joint Research)

- South Korea - North Korea - Russia route:
 - Korea (KEPCO) and Russia (Rossetti, etc.) to complete joint research (by 2020); South Korea, North Korea and Russia will continue joint research in the future when the right conditions are in place.
- Korea - China - Japan route:
 - The Korea-China network is under preparation with a completion target of 2022, while cooperation is being expanded for the Korea and Japan network through private sector-led joint research.

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1-5. New Issues: Green Energy in NEA

- ☐ To Generate cooperative clean energy issue;
- **(Hydrogen)** Do research for Hydrogen Supply chain in NEA
 - To Build-up a cooperative mechanism for developing all core technologies for hydrogen supply chain in NEA throughout all phases
- **(Fair Transition)** Do co-work in order to face challenges
 - To reduce use of coal-fired power and conventional resources to adapt to the renewable energy sector
 - green mobility, digital management of renewable energy platform for offshore wind turbines

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2. Suggestion for instigating energy cooperative works※

1. To Pursue energy cooperation works in NEA in a short term perspective

- To establish policy dialogues channel between governments in the NEA region for creating building cooperative environment
- To promote information/data exchange and sharing mechanisms
- To do joint research/study with identification of possible cooperative energy projects: Natural gas pipelines, power interconnection, oil stockpiling
- To carry out capacity building projects for developing countries in the region
- To encourage energy expert/business dialogues & participation

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※ Dr.Ryu, Ji-Chul, "Future Prospects for Energy Cooperation in Northeast Asia", Sept 25-26 2019 . ERINA International Workshop on 'Changing Landscapes in the Korean Peninsula and Prospects for Economic Cooperation in Northeast Asia'

4. Suggestion for instigating energy cooperative works※

2) Long-term agenda for Regional Energy Cooperation

- To create institutionalized frameworks for multilateral regional energy cooperation by enacting a treaty, charter, regional energy community at the regional basis
- To do policy coordination functions with the established institutional arrangement
- To develop joint policy agenda for common goals/task sharing

※ **Dr.Ryu, Ji-Chul**, “Future Prospects for Energy Cooperation in Northeast Asia”, Sept 25-26 2019 . **ERINA International Workshop on ‘Changing Landscapes in the Korean Peninsula and Prospects for Economic Cooperation in Northeast Asia’**

Thank you for your attention!