



Korea's Electric Power Policy and Grid Modernization

ASIA CLEAN ENERGY FORUM 2026

Beyond Transition: Building Secure, Resilient, Inclusive, and Intelligent Energy Systems
Lessons from Korea's Energy Grand Transition

DaeKeun Shin | Deputy Director, MCEE, Republic of Korea | June 11, 2026
8-11 June | ADB Headquarters, Metro Manila, Philippines



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Why Korea Is Transforming Its Energy System

93%

of primary energy imported

Middle East conflict exposed the critical vulnerability of fossil fuel dependence. A new energy security strategy is urgently needed.

AI

& Data Centers
Driving Demand Surge

Physical AI, semiconductor fabs, and advanced industries are pushing electricity demand to unprecedented levels.

53–61%

GHG reduction by 2035 vs. 2018 (NDC)

Korea's climate commitment requires full energy system transformation — an opportunity for green industrial leadership.



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Energy Grand Transition Plan — What Is Already Happening

Key progress as of 2026 | Based on MCEE official press release (April 6, 2026)

Solar Power Surge

- Q1 2026 solar deployment: +35.5% vs Q1 2025
- Midday solar share exceeded 50% for the first time
- Daytime power prices actively lowered to absorb surplus

ESS Grid Service Market × 17

- Cumulative bids: 68 MW (Q1 2025) → 1,196 MW (Q1 2026)
- Government-run procurement scheme for grid-stabilizing ESS
- 17× growth in one year — private capital following policy

EV Mainstream Era

- 2025 EV sales: 221,000 units — highest ever
- Jan–May 2026: 150,000 units — fastest record pace
- Jan–Apr 2026: EVs = 22% of all new car sales

Grid & Market Reform

- Time-of-use tariffs: day cheap / evening higher (April 2026)
- 7.9 GW of dormant grid capacity recovered and redistributed
- West Sea offshore HVDC submarine cable under construction



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Energy Grand Transition Plan — 3 Policy Directions (April 2026)

1. Renewable Energy Expansion

100 GW | 20%+ | Coal 60 plants → 0

- 2030 target: 100 GW total capacity
- Renewable power share → 20%+ by 2030
- Solar / Wind / BESS: all-out deployment
- Coal phase-out: 60 plants by 2040

2. Green Manufacturing

EV 40% | Heat pump | H₂ steel

- EV: 40% of new car sales by 2030
- Heat pump roll-out (gas → electric heat)
- Green hydrogen steel (2028 pilot)
- Clean industry global competitiveness

3. Distributed Grid & Energy Income

HVDC | Smart tariff | 10M citizens

- Distributed grid: local produce-store-consume
- Offshore HVDC backbone (West Sea)
- Smart time-of-use tariff reform
- 10 million citizens in energy income programs



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Jeju Island: World's Largest Smart Grid Testbed

2011–2013 | 153 technologies validated | 9 business models proven | High renewable penetration environment

Intelligent Renewables	Intelligent Grid	Demand Response	EV Integration	Jeju Green City 2026
Wind/solar grid integration Generation forecasting EMS real-time control	Smart metering (AMI) Real-time data collection Grid interoperability	DR platform Real-time energy trading Virtual Power Plant (VPP)	Charging infrastructure V2G (Vehicle-to-Grid) Mobility–energy link	AI KRAKEN pilot VPP · V2G · ESS · P2H Distributed special zone

→ Jeju model now scaling nationwide | AI & digital twin upgrade underway | Reference for island / isolated grids globally



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Thank You / 감사합니다

Korea's Energy Grand Transition offers a replicable pathway for Asia's intelligent and secure energy future.

DaeKeun Shin

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