

Nuclear Power in the Republic of Korea: Korea-US-Japan Cooperation for Carbon Reduction

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A fully integrated national system with a 48-year record of delivery

ONE NATIONAL SYSTEM



Policy & Promotion

Promotion Committee chaired by the Prime Minister · Climate & Energy Ministry (domestic build) · MOTIE (exports)



Independent Regulation

Nuclear Safety & Security Commission — a vice-ministerial body — supported by KINS technical review



Research & Development

KAERI, plus nuclear engineering programs at more than 10 universities



Delivery & Supply Chain

KHNP · KEPCO E&C (design) · KNF (fuel) · Doosan Enerbility (equipment); built by Samsung, Hyundai, Daelim & POSCO E&C — 500–1,000 suppliers

TRACK RECORD & BUILD COSTS

28 + 4

units built in Korea since 1978 — with 4 more under construction

1/3+

of national electricity — the anchor through past energy crises

\$3.0-3.5k

per kW to build APR1400 in Korea — vs ≈ \$4k/kW at Barakah

4 + 2

overseas units: Barakah (UAE) plus the Czech export — Egypt & Romania roles

APR1400 reference plant

70,000 KRW/MWh · 0.5–0.7 million m³ concrete · 60–90 thousand tonnes of steel

Korea-US-Japan Trilateral Cooperation

Complementary strengths aimed at growth markets and next-generation technology

REPUBLIC OF KOREA

Manufacturing & construction

UNITED STATES

Technology provider

JAPAN

Manufacturing & Financing partner



TRILATERAL MOU IN PLACE



SMR Deployment

- Trilateral MOU already in place
- Target markets: Southeast Asia, Africa & the Middle East
- Each partner leads where it is strongest — technology, finance, manufacturing



Fuel Security

- 2040–50 outlook: Korea + Japan 60+ GW; US target 400 GW
- Global capacity $\approx$ 1,200 GW — about 3 $\times$ today
- Enrichment shortfall $\rightarrow$ closer Korea–Japan fuel cooperation



Co-Development

- LEU-fueled SMRs: high uranium use & more spent fuel
- HALEU supply for SMRs still uncertain
- US backs recycling; pyroprocessing is nearing practice $\rightarrow$ develop jointly

Technology, finance and manufacturing — aligned for a 3 $\times$ global nuclear build-out

Unlocking SMRs' Carbon Contribution

A dedicated Carbon Credit Framework for SMRs under the Paris Agreement

01 · FINANCING



EU Taxonomy

The 2022 Complementary Climate Delegated Act recognizes nuclear as a green investment — opening the capital pipeline for SMR projects.



02 · CREDITING



Article 6 Mechanisms

COP29 activated Art. 6.4 (PACM) and opened Art. 6.2 (ITMOs), transitioning from the CDM — SMR reductions can become tradable credits.



03 · QUALITY



Core Carbon Principles

Additionality, corresponding adjustments and other CCP requirements give SMR credits credibility in international carbon markets.

“EU taxonomy opens the financing, Article 6 opens the credits, and the Core Carbon Principles set the quality bar.”

PROPOSAL · Establish a dedicated Carbon Credit Framework for SMRs