[ADB Project by Key Sector] (2) Energy

CAREC Energy Transition: ADB Operations and Business Opportunities

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CAREC Energy Sector Operations at a Glance

Key messages

1. CAREC is a strategically important energy market linking East Asia, Central Asia, and South Asia.
2. Energy investment needs are rising, driven by demand growth, aging infrastructure, and decarbonization goals.
3. ADB's energy operations span generation, transmission, distribution, and energy efficiency.
4. Business opportunities are expanding in grid modernization, smart metering, renewable energy, and private sector participation.

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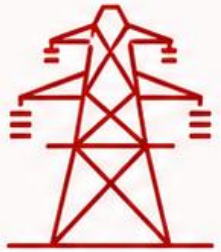
Why CAREC Energy Markets Matter Now

Rising Electricity Demand

Rapid urbanization, industrial growth, and improving living standards are increasing electricity demand across many CAREC countries.



Aging and Constrained Infrastructure

Legacy generation assets, weak grids, and high system losses are creating urgent needs for rehabilitation, expansion, and modernization.

Pressure to Decarbonize

Countries are seeking cleaner generation, greater efficiency, and more resilient energy systems while balancing energy security and affordability.

Need for Capital and Technology

The scale of investment required is opening opportunities for technology providers, EPC contractors, utilities, and private investors.

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Five Trends Shaping CAREC Energy Landscapes

Cleaner and More Flexible Generation

Renewables, gas transition assets, hydropower, storage, and hybrid systems are becoming central to new capacity planning.

Solar • Wind • Distributed Renewables • Hydro • BESS Hybrid System

Transmission Expansion and Grid Stability

Grid reinforcement, substations, high-voltage lines, regional interconnections, and renewable integration are becoming investment priorities.

HVDC • Digital Substations • BESS • Regional Interconnections

Distribution Modernization and Digitalization

AMI, distribution SCADA, automation, data platforms, and loss reduction are increasingly important.

AMI • Smart Metering • Smart Grids • Automation • Distributed Renewables • EV Infrastructure

Energy Efficiency and Industrial Decarbonization

Utilities and industries are looking for solutions to reduce energy intensity, emissions, and operating costs.

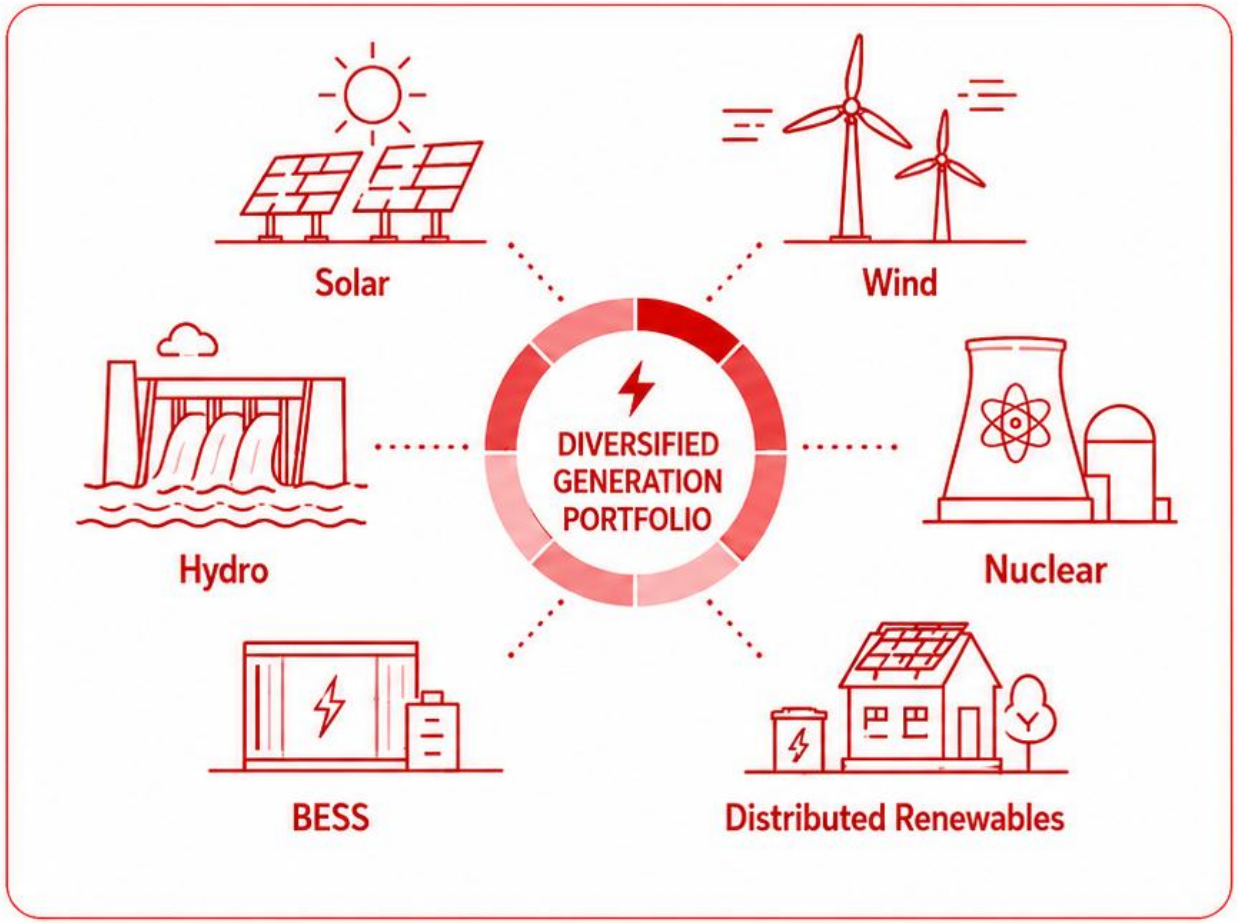
Efficiency • Electrification • Fuel Conversion • Modernization

Private Capital Mobilization

Countries are exploring IPPs, PPPs, concessions, privatization, and blended finance to close the investment gap.

IPP • PPP • Concessions • Blended Finance

Generation: Cleaner and More Flexible Supply



Where opportunities are emerging

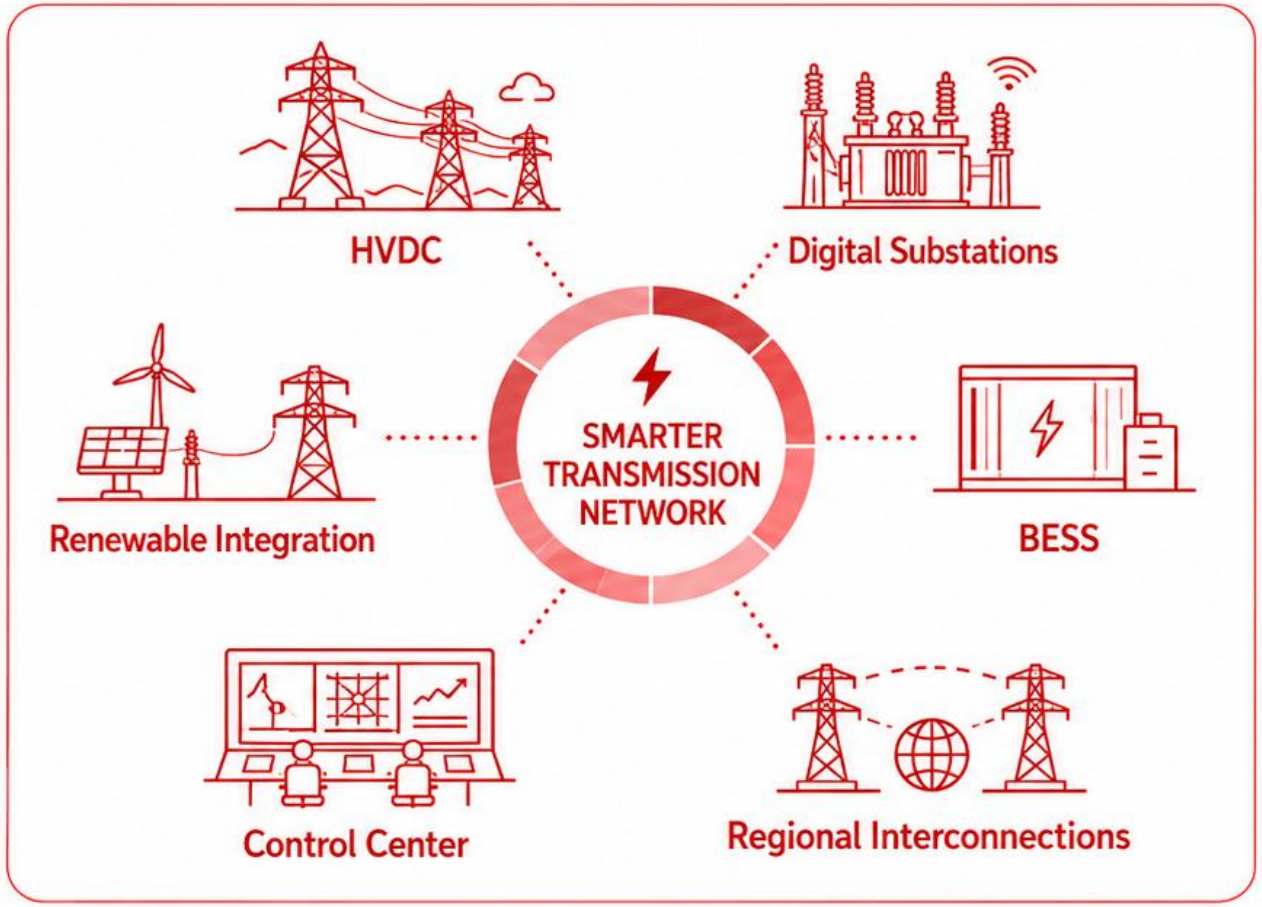
Utility-scale renewables
Solar and wind projects supported by competitive procurement and private investment.

Firm and balancing assets
Hydropower, BESS, hybrid systems, and renewed interest in nuclear are supporting system reliability and renewable integration.

Distributed energy solutions
Rooftop solar, mini-grids, and battery-backed systems for remote and underserved areas.

Project development capabilities
Feasibility, grid studies, financing, EPC, O&M, and long-term asset management.

Transmission: New Bottleneck of Energy Transition



Where opportunities are emerging

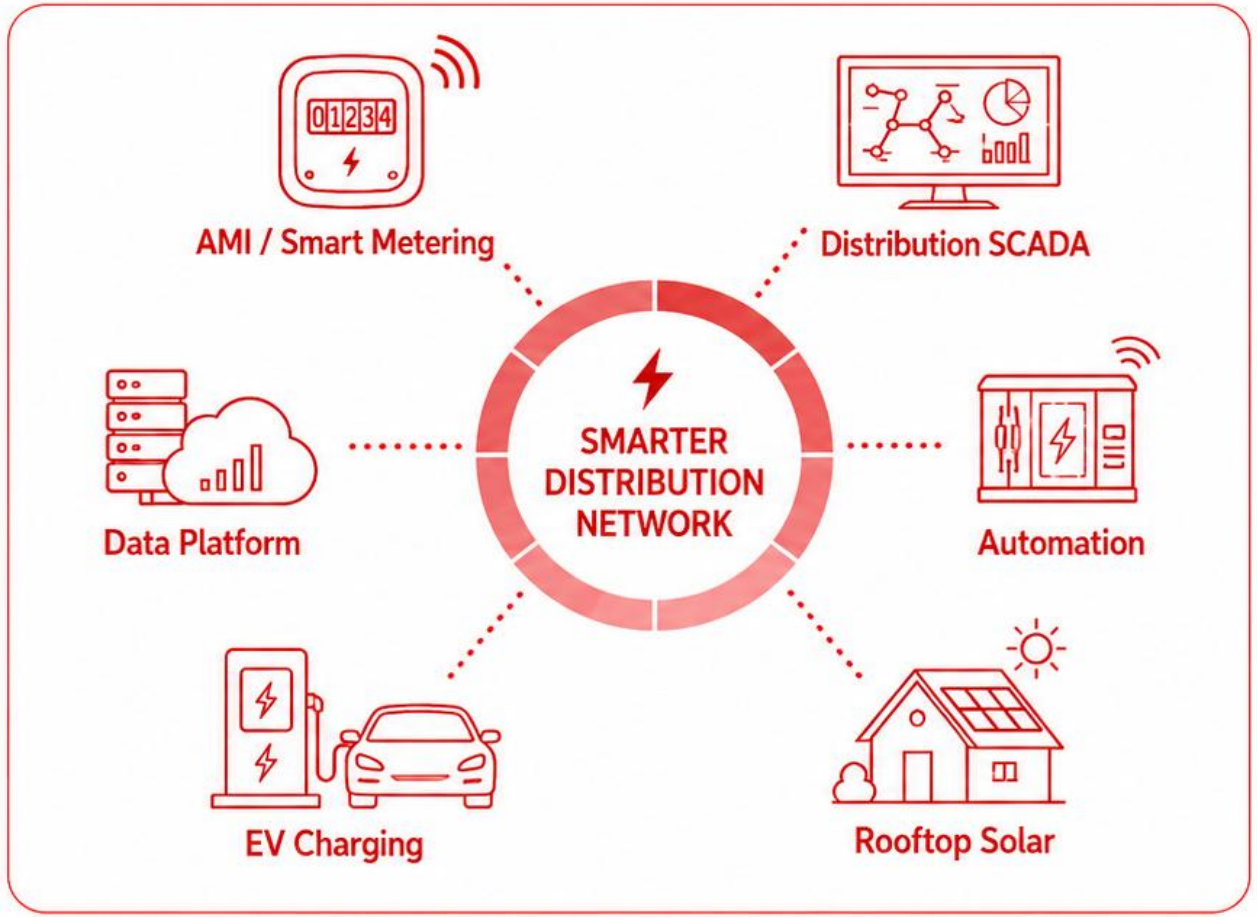
High-voltage transmission lines
HV lines and HVDC corridors to connect demand centers, generation zones, and regional markets.

Digital substations and grid automation
Digital substations, protection systems, SCADA, and grid monitoring solutions.

BESS and grid stability solutions
Storage, reactive power support, voltage control, and frequency stability for renewable integration.

Regional interconnections
Cross-border transmission projects to support energy security and regional power trade.

Distribution: Shift to Smart Grid Platforms



Where opportunities are emerging

AMI and smart metering
Smart meters, data management systems, billing integration, and customer analytics.

Distribution automation
Remote monitoring, feeder automation, fault detection, and outage management.

Smart grids and DER integration
Grid readiness for rooftop solar, distributed renewables, storage, and EV infrastructure.

Utility data platforms
Data centers, analytics, asset management, and digital customer service.

Country Opportunity Snapshot: Selected Markets

Pakistan

- Transmission line construction
- STATCOM installation
- Battery energy storage
- AMI and Asset Performance Management System
- Distribution network modernization

2026–2029

Uzbekistan

- Transmission line construction
- Grid reinforcement for renewable integration
- Substation and system modernization opportunities

2027–2028

Kyrgyz Republic

- Kambarata hydropower development
- Associated transmission and grid integration opportunities
- Technical advisory and engineering services

Pipeline opportunity

Tajikistan

- Rogun hydropower development
- Large-scale hydro construction and related infrastructure
- Power evacuation and grid integration opportunities

Ongoing
(Construction in progress)

Azerbaijan

- Distribution network modernization
- Smart grid and digital utility solutions
- Loss reduction and reliability improvement

Prospective 2027–

Mongolia

- Small-scale AMI deployment
- Distribution network modernization
- Grid reliability and digital utility solutions

Prospective 2027–

Case Study 1 – Smart Metering Projects

1. Case Snapshot

Uzbekistan

- AMI deployment in the power sector
- Korea's KT emerged as a successful bidder
- KT leveraged telecom and ICT capabilities
- The value proposition went beyond meters to communication, data, billing, and customer systems

Pakistan (IESCO)

- Smart metering rollout in the distribution sector
- Korea's KT amd China's Kaifa were joint successful bidders
- The project reflected growing demand for digital utility solutions

2. Why the Case Matters

- Early AMI projects created entry points for advanced digital utility solutions
- The initial edge came from system integration, not meter supply alone
- Over time, the market matured and specifications became more standardized
- Chinese and local firms intensified price competition

3. Lessons for Future Opportunities

- Enter early, before specifications are fully shaped
- Compete through integration, performance, and lifecycle value
- Position AMI as part of broader digital utility transformation
- Combine advanced technology with local implementation and after-sales support

Competitive Dynamics in Public Procurement

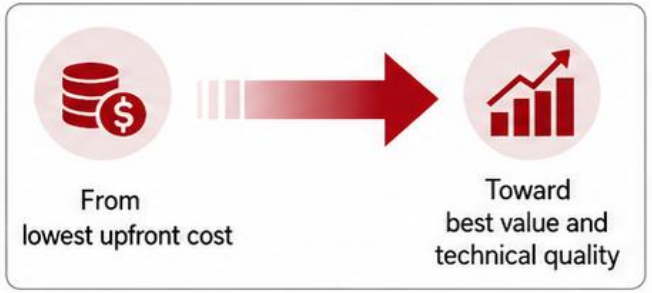
1. Current Competitive Landscape

- Many opportunities exist across CAREC energy projects.
- Korean participation in ADB-financed energy procurement remains limited.
- In goods and EPC, Chinese suppliers and contractors are highly competitive on price.
- In consulting and technical advisory, European firms are especially active.

Goods / EPC	→	Price-driven competition
Consulting / TA	→	European strength
Advanced technology niches	→	Room for Korean entry

2. What May Change

- Merit point criteria may create more room for quality, innovation, and lifecycle value.
- Borrowers are showing greater interest in smart, digital, and future-ready solutions.
- Higher-technology segments may offer better entry points than pure commodity competition.



3. Implications for Market Entry

- Early pipeline visibility can improve market positioning.
- Understanding employer needs and specification design is often important.
- Technology-led segments such as smart metering, automation, SCADA, digital utility systems, and high-efficiency equipment may offer stronger entry points.
- Partnership models combining Korean technology, local presence, EPC capability, and O&M support can be effective.

Beyond Public Procurement: Private Sector Shift

1. Why It Matters

- Public resources alone are not enough to meet growing energy investment needs.
- Energy transition requires not only equipment, but also capital, risk-sharing, and long-term operating capability.
- ADB is placing greater emphasis on private sector development and mobilizing private capital.
- This is expanding the opportunity set beyond traditional public procurement.

- Capital gap
- Need for bankable projects
- Long-term partnerships

2. Main Opportunity Models

A. Private Investment in Energy Assets

- Renewable IPPs
- Battery energy storage
- Flexible generation
- Rooftop and on-site solar for commercial and industrial users

B. PPP and Concession Models

- Transmission line PPPs
- Grid-scale storage PPPs
- District heating modernization
- Distribution concessions / management contracts
- Asset rehabilitation with private O&M

3. Typical Enablers

- Nonsovereign financing
- Guarantees and credit enhancement
- Blended finance
- Project preparation support
- Policy and regulatory reform support
- Transaction structuring and advisory support

Case Study 2 – Lessons from Private Power Projects

1. Case Snapshot

Pakistan – Patrind Hydropower Project

- Korean consortium-led private hydropower development in Pakistan
- Entered through a private power development model
- Showed that Korean firms could participate as sponsors and developers

Uzbekistan – Samarkand Solar 1 & 2

- Utility-scale solar projects developed by ACWA and Japanese partners
- ADB's partial credit guarantee helped reduce project risk
- Demonstrated how de-risking instruments can mobilize private capital

2. Why These Cases Matter

- Private power projects can create an alternative route to market beyond public procurement
- They reduce dependence on highly price-competitive sovereign bidding processes
- Success depends on more than equipment supply: it requires development capability, financing, risk allocation, and long-term partnerships
- MDB support, including guarantees and credit enhancement, can make projects more bankable and investable

3. Lessons for Future Opportunities

- The era of selling equipment alone is becoming less sufficient
- Opportunities are shifting toward projects that combine technology, capital, and development capability
- Firms that understand project structuring, financing, and risk mitigation may be better positioned
- Private sector development offers a complementary pathway alongside sovereign procurement opportunities

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Thank You