Cross-border electricity trade in SAARC

Mitigating challenges and Opportunities for Investment

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Power system connectivity activities in Asia

While there are many cross-border power system connectivity initiatives across Asia, progress is limited compared to other regions (e.g. mostly bilateral, no power pools).
Power system connectivity: the opportunity

• **Economics:**
  - Access to lower-cost resources
  - Potential for export revenues
  - Increased economies of scale for investments

• **Security:**
  - Lower reserve margin requirements
  - Increase resource diversity

• **Sustainability:**
  - Access to regions with high RE potential
  - Enables integration of variable RE (resource smoothing)

• **EU:** 15% interconnection target for 2030; grants for “Projects of Common Interest”.

• **US:** NREL Interconnections Seam Study:¹ benefit-to-cost ratio of 1.2 to 2.5, depending on scenario.

• **Africa:** multiple regional power pools; “Continental Power System Master Plan” under development

Power system connectivity: the challenges

- **Political will**
  - Some “champions” but varying support

- **Financing infrastructure**
  - Estimated benefits and allocating costs
  - High capital costs; need for private capital

- **Institutional arrangements**
  - Institutions with limited capacity/authority
  - Absence of regional institutions

- **Alignment with sustainability**
  - Absence of frameworks/explicit policies

- Moving from bilateral to multilateral power trading

- Need for increased technical, policy, and regulatory harmonization; capacity building across range of stakeholders

- Disconnect between ambitious clean energy goals (RE and net-zero targets) and role for connectivity
UN ESCAP’s Regional Roadmap on Power System Connectivity in Asia

Vision, principles and **nine strategies** to enable sustainable connectivity

| **Planning**                  | • Coordinate cross-border transmission planning  
|                              | • Develop a regional master plan                  |
| **Financing and development** | • Mobilize investment in cross-border infrastructure |
| **Operations**                | • Move toward multilateral trading and competitive markets  
|                              | • Co-ordinate cross-border system operations      |
| **Cross-cutting**             | • Build trust and political consensus             
|                              | • Develop intergovernmental agreements            
|                              | • Capacity building and sharing of best practices |
|                              | • Ensure coherence of connectivity with the SDGs  |

Regional power system planning

Third ASEAN Interconnection Masterplan Study (AIMS) III

• Designated responsible entities
  • Heads of ASEAN Power Utilities/Authorities (HAPUA) with support from ASEAN Centre for Energy (ACE)

• Optimisation of interconnectors at sub-regional level
  • Moving beyond bilateral benefits

• RE scenarios
  • 23% RE target and “Higher VRE” case enabled by multilateral power trading

Source: ASEAN Centre for Energy
Financing interconnectors

Accelerating investments

• **Third-party financing**
  • Already utilized in South Asia (USD 5 billion investments in India, 1,200 km “Tala line” between Bhutan and India)

• **Joint ventures among utilities**
  • Southern Africa: Motraco owns and operates cross-border transmission lines

• **Public-Private Partnerships**
  • Central America: 230 kV backbone line built and owned by EPR

• **Merchant lines**
  • Proposed Australia-ASEAN Power Link

Financial support for connectivity

• **AIIB:** Cross-border connectivity to make up 25% to 30% of financing approvals by 2030

• **ADB:** “[New energy strategy] will promote regional energy cooperation and the integration of energy systems to strengthen energy security and increase cross-border access to cleaner energy sources.”

• **MCDF:** new multilateral initiative to provide grant finance to foster high-quality infrastructure and connectivity investment in the developing countries

Multilateral power trade

Types of regional markets

- **Harmonized bilateral**
  - Common framework for bilateral trading (PPA templates, wheeling agreements)

- **Secondary**
  - Multilateral trading exists as a “secondary” option to national market structures
  - Examples: Southern African Power Pool; SIEPAC (Central America)

- **Primary**
  - Trading is multilateral and regional by default
  - Examples: Nord Pool, PJM (US)

SARI/EI Task Force-3 for South Asian Regional Electricity Market

Key Issues for Enabling the Regional Power Market in South Asia

Source: SARI/EI
ESCAP support for connectivity initiatives

Capacity building

Trainings for regulators (SE Asia, South Asia) and utilities (SE Asia, Pacific Islands)

Developing cross-border interconnectors in NE Asia (planned 2022)

Analysis

Green Power Corridor Roadmap for North-East Asia (under development)

Convening stakeholders

Expert Working Group on Energy Connectivity

Green Grids Initiative – One Sun, One World, One Grid (GGI-OSOWOG) Asia-Pacific Working Group
ESCAP
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