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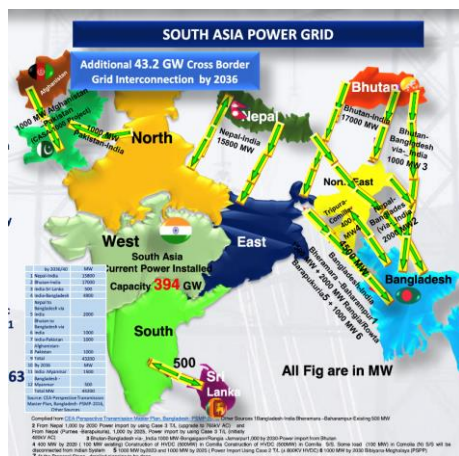
Cross-border electricity trade in SAARC

Mitigating challenges and Opportunities for Investment

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Power system connectivity activities in Asia

South Asia



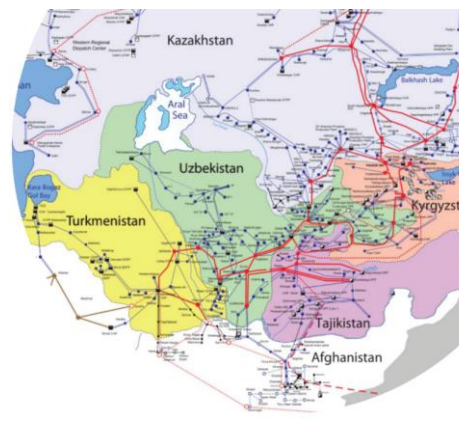
Source: IRADE

South-East Asia



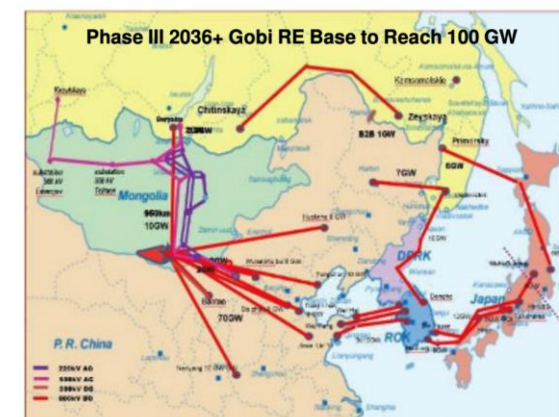
Source: ASEAN Centre for Energy

Central Asia



Source: USAID

North-East Asia



Source: ADB

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

1. <https://ieeexplore.ieee.org/document/9548789>

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

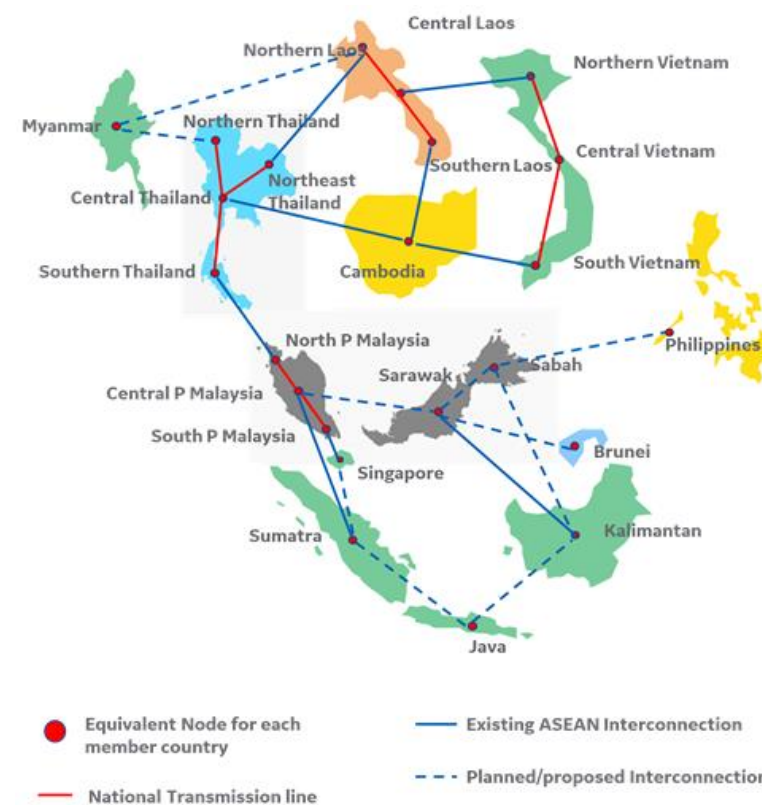
- Build trust and political consensus
- Develop intergovernmental agreements
- Capacity building and sharing of best practices
- Ensure coherence of connectivity with the SDGs

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

AIMS III: Optimization of interconnectors across sub-region



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.”¹
- **MCDF:** new multilateral initiative to provide grant finance to foster high-quality infrastructure and connectivity investment in the developing countries

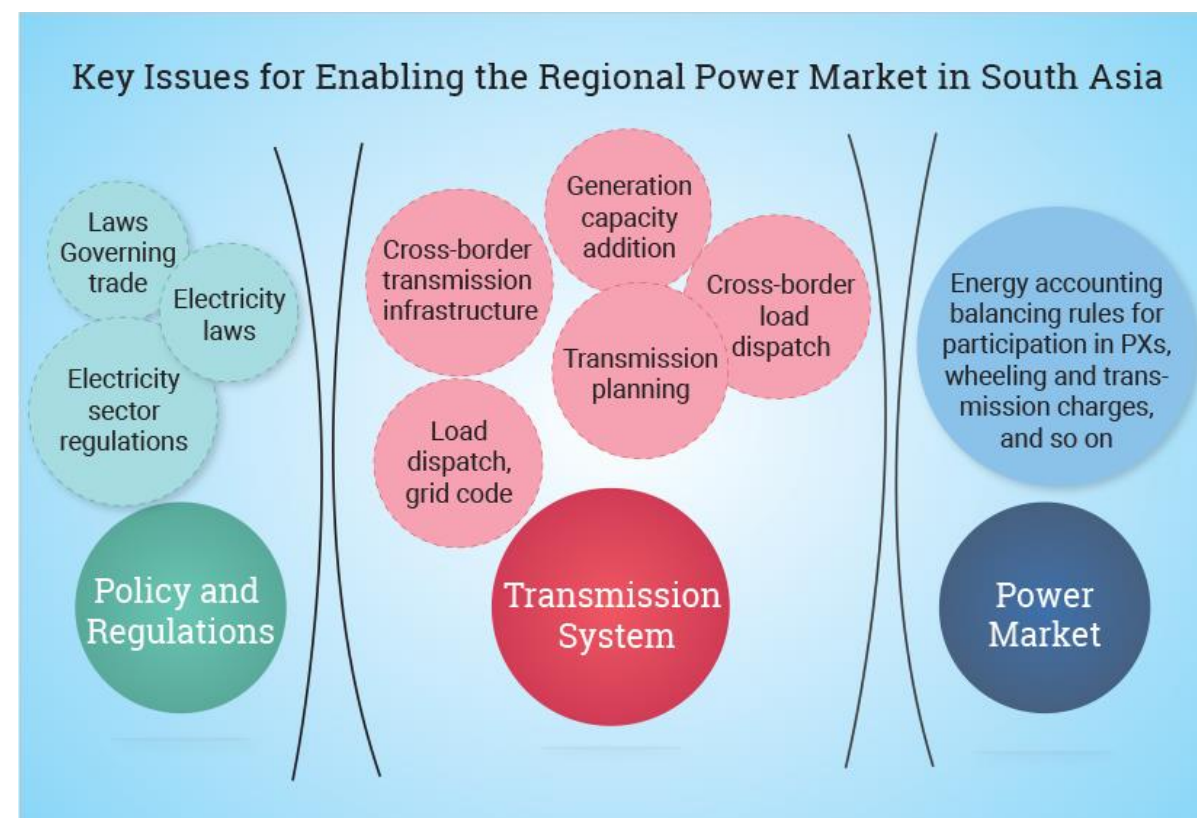
1. <https://www.adb.org/news/new-adb-energy-policy-support-energy-access-and-low-carbon-transition-asia-and-pacific>

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



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





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