



# Regional Power Trade Development: ADB Support

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SASEC Cross-Border Power Trade Development Study  
Tour to Nord Pool Spot

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# Presentation Outline

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- Regional cooperation
- What is ADB doing?
- Power Sector in South Asia
- Economic Benefits: Case Studies
- Barriers to overcome
- Final Remarks



# Regional Cooperation

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## ■ Regional Integration

- A core emphasis in ADB Strategy 2020 and Energy Policy
- Energy, Transport and Trade Facilitation key areas
- ADB focused to assist countries in
  - Moving towards a fully interconnected regional electricity transmission grid
  - Develop power generation
  - Establishing an integrated power market
  - Sharing knowledge and experience



# Regional cooperation helps

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- Expand the clean energy development beyond country boundaries
  - Sharing expertise and experience
  - Investment
- Lower fossil fuel based generation
- Lower reserve capacity requirements
- Reduce power deficits
  - Fast implementation times
- Improved reliability of supply



# What ADB is doing

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- Central Asia Regional Economic Cooperation (CAREC) – 10 countries
  - Afghanistan, Azerbaijan, People's Republic of China, Kazakhstan, Kyrgyz Republic, Mongolia, Pakistan, Tajikistan, Turkmenistan, and Uzbekistan
- ADB a key partner among 6 multilateral agencies
- Flagship projects
  - CASA-1000 and TAPI Gas pipeline



# What ADB is doing .....

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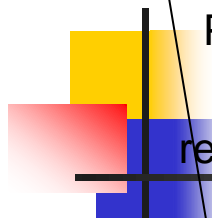
- Greater Mekong Subregion (GMS)
  - Economic area bound together by the Mekong River; 2.6 million square kilometers; 326 million people
  - Cambodia, PRC (Yunnan Province and Guangxi Zhuang Autonomous Region), Lao PDR, Myanmar, Thailand, and Viet Nam
  - Supports strengthening developing generation projects and cross-border transmission links
  - Regional Power Trade Coordination Committee (RPTCC)



# What ADB is doing.....

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- South Asia Sub-regional Economic Cooperation (SASEC)
- Bangladesh, Bhutan, India, Maldives, Nepal and Sri Lanka
- SASEC Energy Working Group



Afghanistan and Pakistan: Access to large hydropower resources; experience severe power shortages

Nepal and Bhutan: Large hydropower resources; Nepal experience severe power shortages

India: High demand growth, coal power dominated, coal shortages, power deficits, significant advances in clean energy development

Bangladesh: power shortages, heavy reliance on domestic natural gas and plans for large coal power development

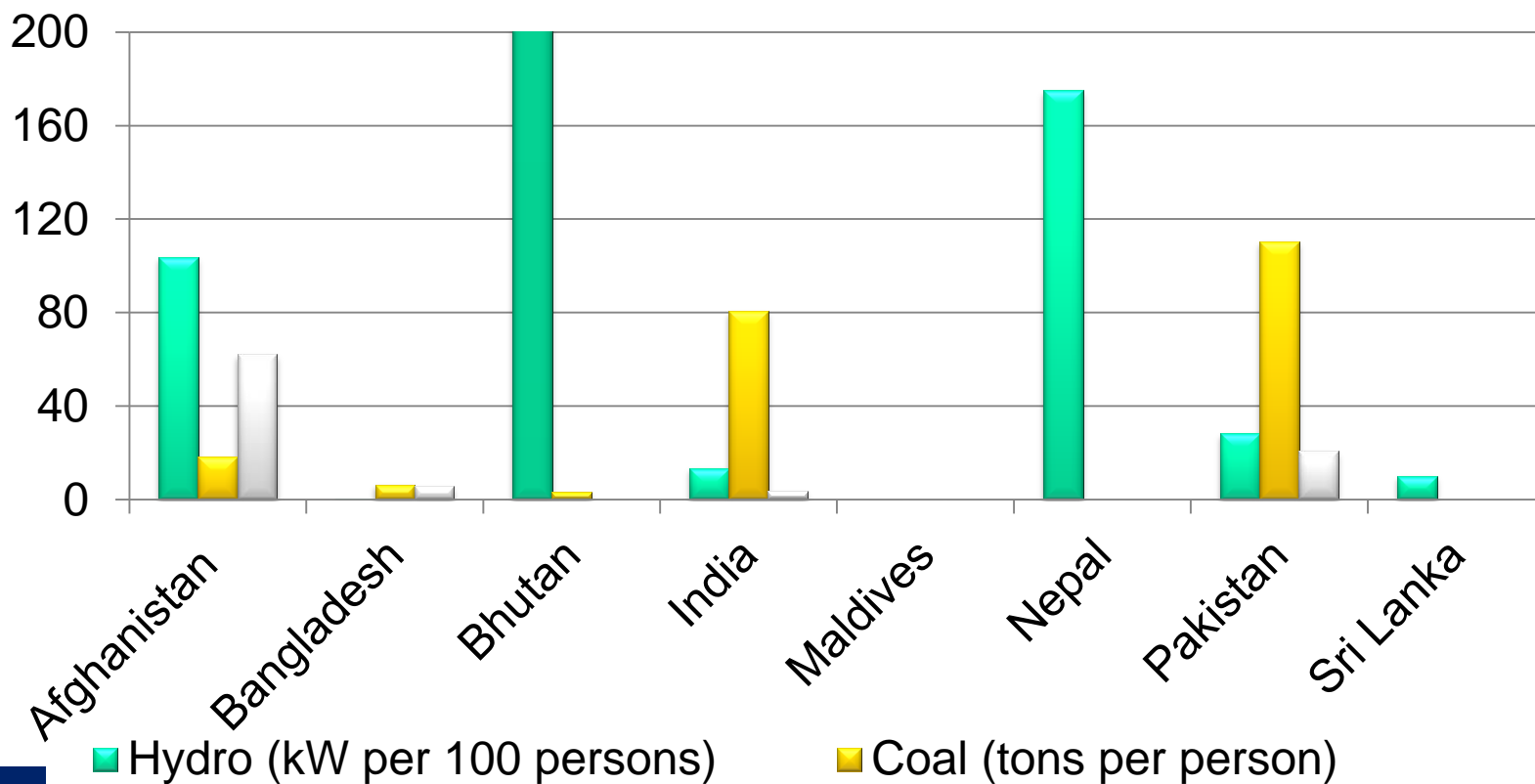
Maldives: Heavy reliance on liquid fuel and ongoing large scale distributed solar power development

Sri Lanka: Heavy reliance on liquid fuel and ongoing large coal power development





# Resources



# Cross Border Transmission



- India-Nepal power interconnections
  - Power imports in the short terms
  - Long term, export Nepal hydropower
- Bangladesh-India power interconnection
  - Import to Bangladesh
  - Transit in Bangladesh (NE India to N India)
- Bhutan-India interconnections
  - Export Bhutan hydropower



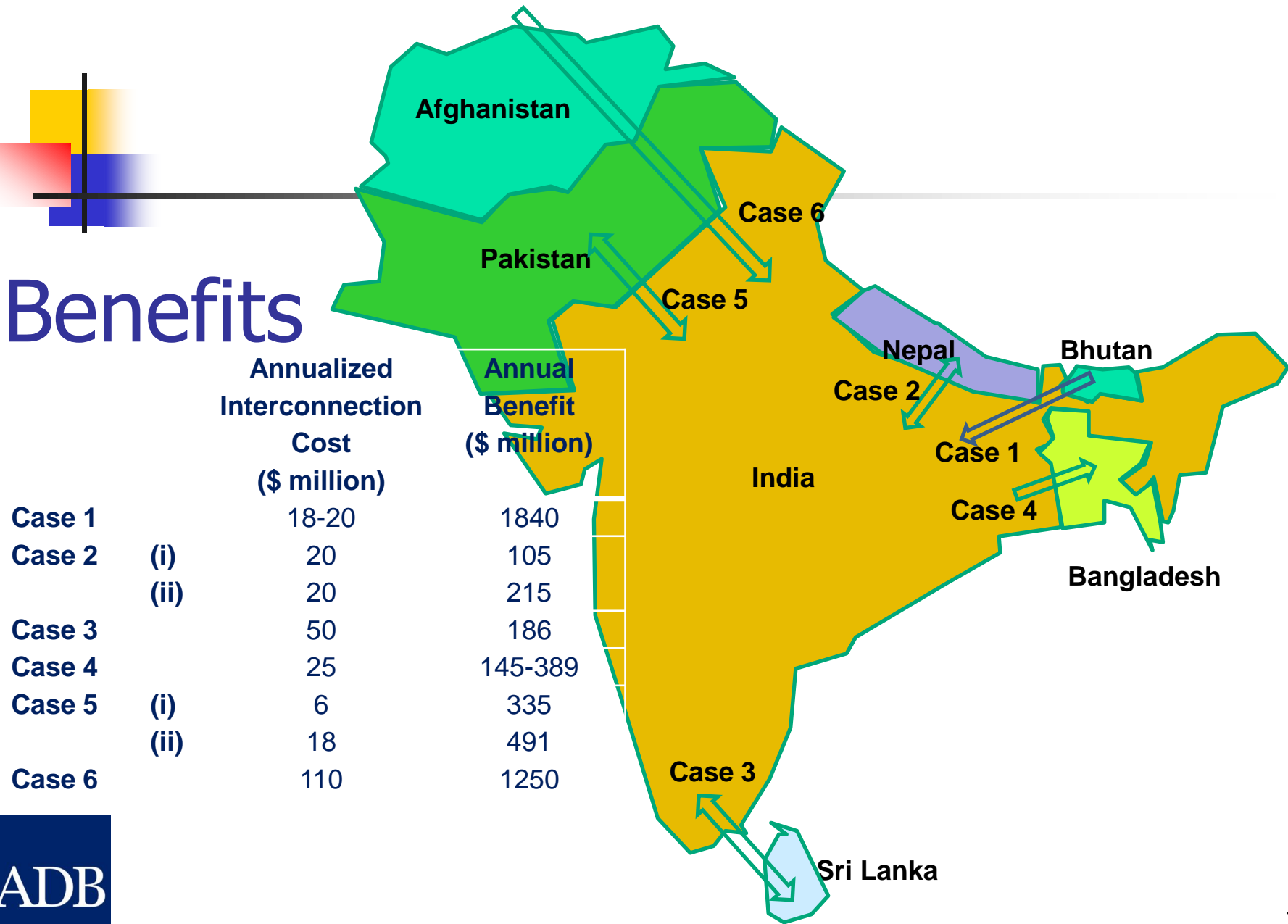
# Cross Border ...

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- India-Sri Lanka interconnection
  - Exchange of power
- Afghanistan- Pakistan-India
  - Short term – import from India
  - Long term – import hydropower from Central and West Asia
- Interconnections with Maldives
  - Distant possibility at this stage

# Benefits



	Annualized Interconnection Cost (\$ million)	Annual Benefit (\$ million)
Case 1	18-20	1840
Case 2 (i)	20	105
Case 2 (ii)	20	215
Case 3	50	186
Case 4	25	145-389
Case 5 (i)	6	335
Case 5 (ii)	18	491
Case 6	110	1250





# Barriers to overcome

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- Policy and regulatory environment for cross-border trade
- Cross-border transmission infrastructure
- Mutual understanding among key stakeholders on regional cooperation
  - Policymakers, Regulators, Utilities, Investors

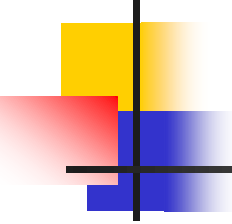


# Policy and Regulatory Barriers

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- Recognition of regional electricity trade in policies, laws, regulations and rules
- Multilateral/ bilateral agreements
- Nodal agencies for cross-border trade
- Regulation relating to market access
  - Specific regulations of the energy regulators
  - Trade licenses from the relevant ministries
- Tariff regulation relating to cross-border trade

# Policy and Regulatory Barriers

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- .....
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- Open access to transmission
  - Grid codes
  - Cross-border transmission plan
  - Transmission charges
  - Mechanism for dispute resolution



# Overcoming barriers

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- Policy issues
  - SASEC and SAARC Energy Working Groups
  - Intergovernmental meetings of experts
  - Bilateral interactions
- Institutional
  - Nodal agency for power trading
  - South Asian Forum for Infrastructure Regulation (SAFIR)
    - Focused group for power trade
  - SASEC Transmission Utility Forum (SETUF)
    - Address technical issues





# ADB Soft Support

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- SAARC Regional Energy Trade Study
- South Asia Regional Power Exchange Study
- South Asia Transmission Master Plan study
  - Cross border transmission for large scale power transfers
- SASEC Electricity Transmission Utility Forum
- Awareness workshops, seminars and study visits



# Project Assistance

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- **Bhutan-India**

- Dagachchu 114MW
- Nikachchu 120MW

- **Bangladesh-India**

- 500MW, 400kV transmission interconnection
- Enhancement to 1000MW
- Facilitation of transactions
- Possible support for additional transmission and HVDC facilities



# Project....

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- India-Nepal
  - Transmission facilities for power evacuation towards the cross border lines
  - Feasibility study – 2<sup>nd</sup> cross border line
  - Detailed engineering design of 350MW Dudh Koshi hydropower plant



# Project ....

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- India-Sri Lanka
  - Assistance for detailed design and construction of interconnection
  - Facilitation negotiations
  - Support for related developments
    - Transmission network strengthening
    - Wind power development



# Final remarks

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- Energy development in South Asia
  - Catalyzed by regional cooperation
  - Sharing resources, experience, expertise
- Requires recognition in policies, laws and regulations
  - Minimum interventions in the short term
- Existing institutions adequate to handle issues
- Access to the Indian Power Market helps
- Multilateral institutions like ADB have a key role to play



# Thank you

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