USAID-Funded Nepal Hydropower Development Project (NHDP)

Regional Cross-Border and SAARC Model Regulations

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What is Cross Border Power Trade?

Cross Border Power Trade

‘Cross Border Power Trade’ means trade involving import or export of electricity between 2 or more countries to meet some or all of the following goals:

- *Bridging the demand-supply gap*
- *Optimal utilization of resources*
- *Exploiting complementarities*
- *Regional Integration*

Drivers of Cross Border Electricity Trade

- Electricity supply shortage in the region
- Low electrification ratio in the region
- Energy mix challenges
- Rising oil imports effecting the forex reserve
- Optimum utilization of generation capacity
- Efficient operation of power plants
- Increased power system reliability
- More economical power flows
- Reduction of adverse Greenhouse Gas (GHG) impacts

Cross Border Electricity Trade in South Asia

01 Potential for large scale hydropower plants in countries like Bhutan and Nepal, coupled with demand for large scale clean power in India and other SA countries

02 Seasonal generation shortage in hydro power dependent countries like Nepal, which can be offset from other SA countries

03 Availability of surplus generation and stranded assets in India, vis-à-vis power deficit in countries like Nepal and Bangladesh

04 Unavailability of adequate hydropower as a variable generation source for system balancing under high rates of RE penetration in India

05 Difference in time zones leading to diversity in peak demand

06 Ease of access to isolated border towns from grids of neighboring countries rather than from domestic power grid

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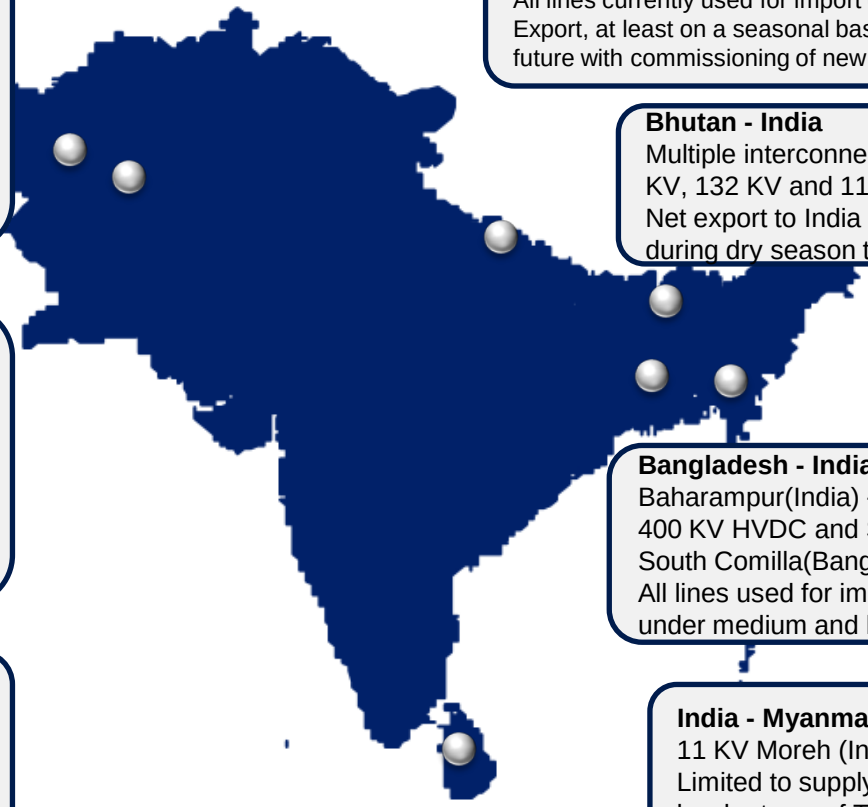
Cross Border Electricity Trade in South Asia

Afghanistan – Central Asia
Interconnection with Iran at 132 KV, and with Tajikistan, Turkmenistan and Uzbekistan at 220 KV.
All lines used for import of power to Afghanistan.
More interconnections with Central Asia under progress (CASA-100).

Pakistan – Central Asia
Multiple interconnections with Iran at 132 KV and 20 KV
All lines currently used for import of power to Pakistan
More interconnections with Central Asia under progress, through Afghanistan (CASA-100).

Sri Lanka - India
No existing arrangements for electricity trade.
Future plans for undersea interconnection cable.



Nepal - India
Multiple interconnections at 220 KV, 132 KV, 33 KV and 11 KV
All lines currently used for import of power to Nepal
Export, at least on a seasonal basis is expected to commence in future with commissioning of new large hydro power plants

Bhutan - India
Multiple interconnections at 400 KV, 220 KV, 132 KV and 11 KV
Net export to India on an annual basis, though during dry season there is import from India.

Bangladesh - India
Baharampur(India) - Bheramara (Bangladesh)– 400 KV HVDC and Surjyamaninagar(India) - South Comilla(Bangladesh)– 132 KV
All lines used for import of power to Bangladesh under medium and long term PPAs with India

India - Myanmar
11 KV Moreh (India) – Tamu (Myanmar)
Limited to supply of nearly 3 MW to the border town of Tamu in Myanmar.

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Drivers for Cross Border Electricity Trade for Nepal

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Why Nepal needs greater regional integration?

- **Bridging seasonal demand – supply gap**
  - *Large demand – supply gap and load shedding*
- **Potential Market Development for Large Nepalese Hydropower Projects**
  - *Commercial exploitable hydropower potential at 42 GW*
- **Monetizing free power allocated to Government**
  - *Upper Karnali (900 MW) has 12% free power component*
  - *Arun 3 (900 MW) has 21.9% free power component*
- **Looking at Alternate markets like Bangladesh in near term**
  - *The difference between power generation and demand in Bangladesh is over 1500 MW which is managed through a combination of cross border import and load shedding.*
  - *The power transfer capacity between India and Bangladesh already stands at 1000 MW, through HVDC interconnections.*
  - *As on August 2018, there was a generation shortfall of 1415 MW due to gas shortage*

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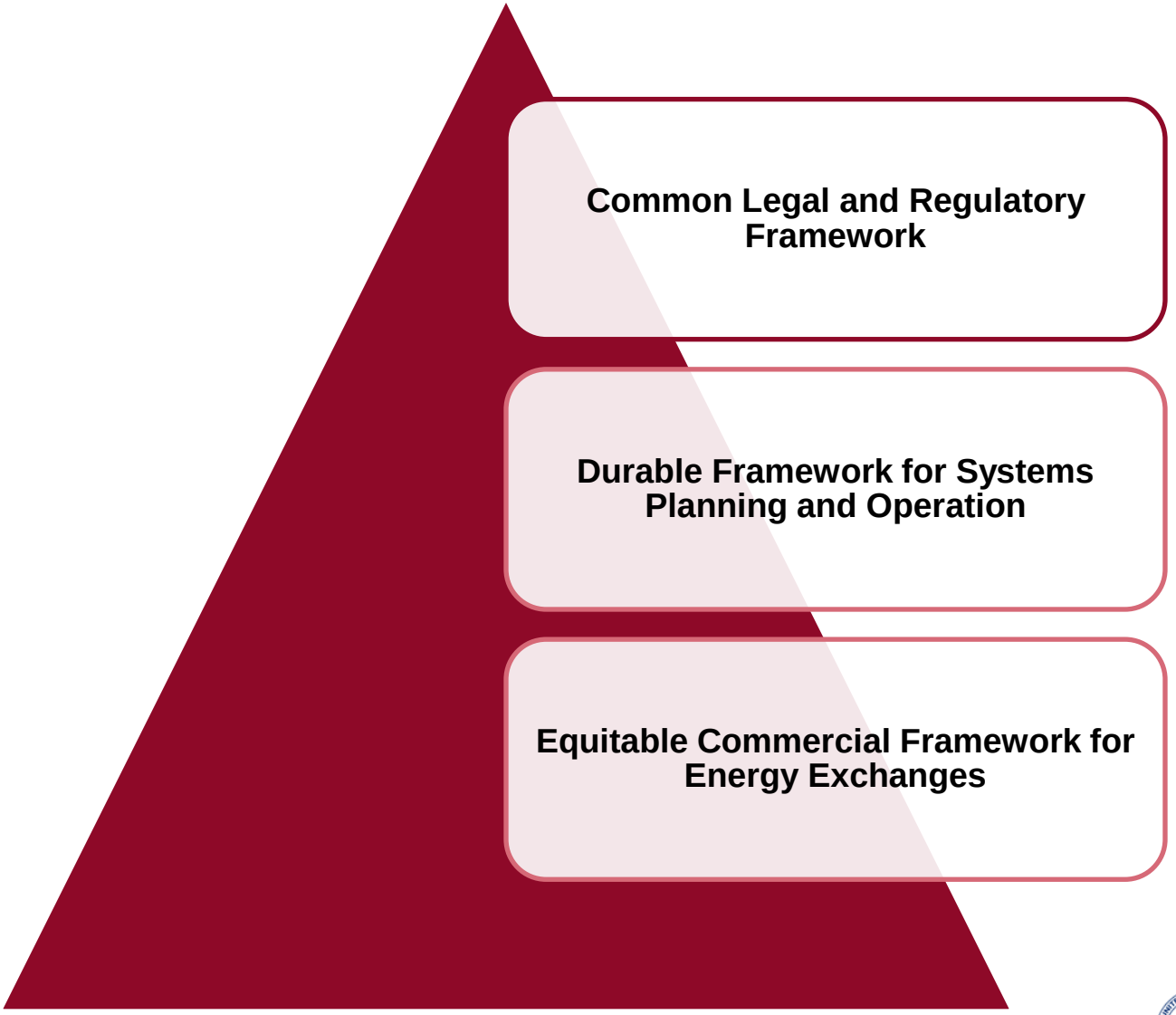
Evolving Regulatory and Policy Framework

Enablers for Cross Border Power Trade



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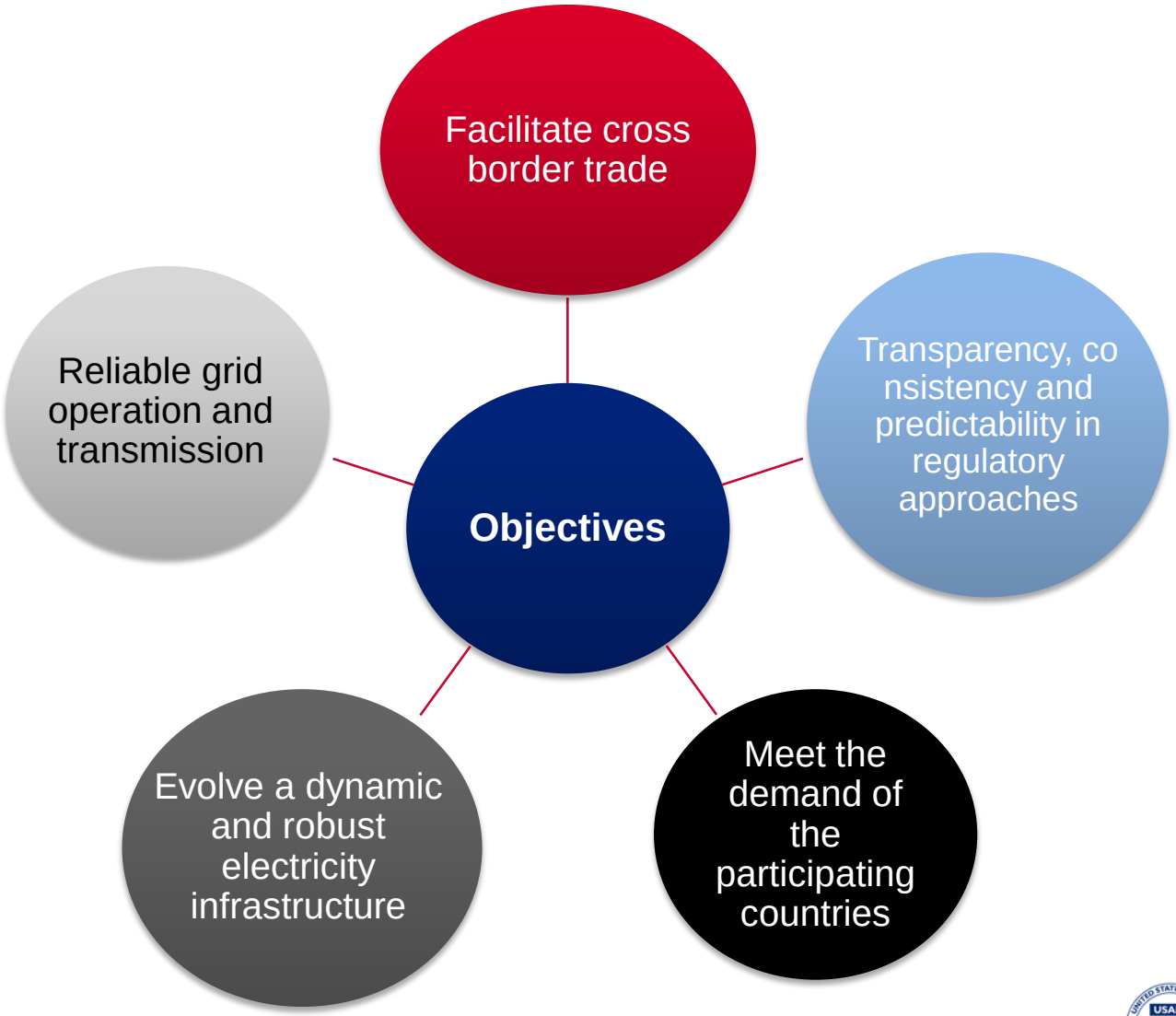
Evolving Regulatory and Policy Framework

- In order to facilitate and promote cross border trade of electricity, the Ministry of Power (Government of India) recently issued the new Guidelines on cross border trade of electricity
- Ministry of Power, had notified Member (Power System), CEA as the ‘Designated Authority’ and the ‘Competent Authority’ for carrying out the functions prescribed under the Guidelines
- As outlined in the guideline Central Electricity Regulatory Commission (CERC) of India framed the draft regulation for facilitating cross border trade with neighboring countries
- CEA has also released the business rules outlining its function, responsibilities and business process as the competent Authority

CBT Guidelines: Objectives



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CBT Guidelines: Institutional Framework

Ministry of Power, GoI

Appoint Designated Authority

- Authority to facilitate the process of approval and laying down the procedure for cross border trade
- planning, monitoring and coordinating the commissioning of cross border transmission lines for cross border transactions
- the grid security, safety and operation

Central Electricity Regulatory Commission (CERC)

Regulator

Frame appropriate regulation for facilitating cross border trade

CBT Guidelines: Eligibility to participate in cross border trade – *Promoting Indian Ownership of Assets*

Must take one-time approval from the Designated Authority and comply following conditions-

1. Import of electricity by Indian entities from generation projects located outside India and owned/funded by Government of India /Indian Public Sector Units/private companies with 51% or more Indian ownership

2. Import of electricity by Indian entities from projects having 100% equity by Indian entity and/ or the Government / Government owned or controlled company(ies) of neighboring country

3. Import of electricity by Indian entities from licensed traders of neighboring countries having more than 51% Indian entity(ies) ownership

4. Export of electricity by distribution licensees / Public Sector Undertakings (PSUs), if surplus capacity is available and certified by the concerned distribution licensee or the PSU

Any other entity shall also be eligible to participate in cross border trade after obtaining approval on case to case basis.

CBT Guidelines: Tariff – *Hydro exempted from Competitive Bidding*

Under Government to Government (G to G)

Import/ Export → **Tariff to be determined through G to G negotiations**

Other than G to G

Import to India → **Long term/ medium term/ short term agreement through a process of competitive bidding.**

Hydro exempted from Competitive Bidding

Export from India → **Long term/ medium term/ short term agreements may be as mutually agreed or through competitive bidding**

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CBT Guidelines: Trade through Power exchanges

- Majority Indian owned generation plants / traders shall be eligible for cross border trade of electricity through Indian Power Exchanges under the categories of Term Ahead Contracts, Intra Day Contracts/ Contingency Contracts

- Other entities shall be eligible to participate in the Indian Power Exchanges through the eligible licensees (Electricity Traders)

- Quantum of trade through PXs shall be prescribed by DA from time to time

CBT Guidelines: Transmission System, Scheduling and Accounting

- The transmission interconnection between India and its neighboring country shall be **planned jointly by transmission planning** agencies of the two countries.
- The generator located outside the country may develop transmission lines to supply electricity to the pooling station at their cost. However, the associated transmission system in India shall be planned by CEA/CTU
- Transmission line **from pooling station of one country to the pooling station of the other country will be planned jointly** by the nodal transmission agencies of the participating countries.
- Pooling station will be the sub-station which shall be monitored by the system operator of the respective countries.
- Ministry of Power shall **notify Indian Nodal agency for each neighboring country** which shall be responsible for settlement of grid operation related charges as per CERC regulations.
- Indian Generating Stations supplying electricity exclusively to neighboring countries may be allowed to build independent transmission system for connecting to the neighboring transmission system.

Thank You !

USAID’s Nepal Hydropower Development Project
Baluwatar, Kathmandu, Nepal