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Integrated Research and Action for Development

South Asia Regional Initiative for Energy Integration

Status of Cross Border Energy Trade (CBET) Suggested Future Road Map for CBET in South Asia

Presented by SARI/EI/IRADe

SOUTH ASIA REGULATORS WORKSHOP On "CROSS BORDER ENERGY TRADE : ISSUES BEFORE REGULATORS"

19th-20th February,2013

Nepal, Kathmandu

Content

- Potential Benefit of CBET
- Existing Interconnections
- Existing legal, Regulatory , Technical, Financial Status of the sector and need for harmonization
- Suggestion for Nepal

Potential Benefits from CBET

- Reduced investment in Generating Capacity
- Improving load factor and diversity
- Diversity in generation mix.
- Electricity trade increases sector revenues and can avoid or defer national generation investment costs. For example, Bhutan's power exports contributes 25% of its GDP and 60% of State revenues.
- Rapid exploitation of Hydro potential and renewable power , Climate change Mitigation .

Existing Interconnection

Key existing/Envisaged Interconnection		
Interconnection	Description	Capacity(MW)
India-Bhutan	Tala Hydro Project (Bilateral), Export of 10,000 MW is Planned	1020 MW
India-Nepal	132 kV interconnections Duhabi – Kataiya, Gandak – Ram Nagar Mahendra Nagar- Tanakpur 33 kV interconnections: 14 nos of connection, All the interconnections are operated on radial mode. 400 kV D/C AC line under consideration	70 MW – PTC Bihar – Bidirectional 150 MW
India- Sri Lanka	500 MW HVDC line envisaged with submarine cable	500 MW
India-Bangladesh	IBheramara - Bahrampur, 400kV D/c line with HVDC back-to-back at Bheramara under construction likely to be commissioned in Sept/Oct,2013	250 MW – GOI allocation 250 MW from open market thru PTC
India-Pakistan	400 kV HVAC line with back-to-back with convertor station (Preliminary Discussions)	500 MW
Afghanistan Imports from Central Asia		

Barriers to regional energy Trade

- Poor Grid connectivity and infrastructure
- Power sector reform , Poor operational efficiency and lack of credit worthiness of utilities across South Asia
- Institutional , Operation and infrastructure absence .
- Financing of transmission infrastructure .
- Commitments from governments.
- Lack of conducive policy for private participation in the south Asians hydro sectors.
- National policies and the political mindset
- Regulatory capacity

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Existing Legal , Regulatory ,Technical, Commercial, Operational, Institutional aspect of CBET

- Regulation and Policy
- Technical Issues
- Financial Issues
- Commercials
- Infrastructure

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Regulation and Policy

Laws and Acts: Apex legal and Regulatory Institutional Frame work

Country	Laws and Acts	Independent Regulatory Body	Appellate Authority / Concerned Institutions which looks in to the disputes etc.
Afghanistan	Laws are in Draft form		
Bangladesh	Bangladesh Electricity Act,1910	BERC(through BERC Act 2003)	No dedicate Appetite Authority , BERC takes care of Disputes .
Bhutan	Electricity act of Bhutan (2001)	BEA	Concerned Ministry of Court of law
India	EA-2003	CERC,SERC	APTEL
Nepal	EA-1992	DoED	
Pakistan	NEPRA ACT-1997, Amended Version of EA-1910	NEPRA	Provincial high Court and Supreme court of India
Sri Lanka	Srilanka Electrity Act ,2009	PUCIL	Court of Appeal Srilanka
Maldives		Maldives Energy Authority	

1)To have transparency and accountability , need to have Independent Regulatory and Appellate Body.
2) Act, laws, Regulation and governing Institution Build confidence for private sector participation

National Policy , Rural Electrification Policy , Renewable policy

Country	electrity Policy	Rural electrification Policy/Intiative	Policy on Renewable	Policy and Acts , Regulations Recognizes CBET
Afghanistan				
Bangladesh	National Energy Policy 1995	**YES,** Rural Electrification Board Ordinance 1977		
Bhutan				**YES**
India		**YES**		
Nepal				**YES**
Pakistan				
Sri Lanka				
Maldives				

Suggested Future Road Map : Steps towards Commercialization of the Sector

1. Independent Regulator
2. Unbundling for accountability
3. Recognize trading as an activity and permit import and export
4. Open access in transmission
   - Transmission pricing & loss sharing
   - Independent system operator

5.Encouraging private investment into the generation

- 5.1Creating a level playing field
- 5.2Transparency in selection
- 5.3Attractive returns, Long term commitment (Multi year Tariff Policy)
- 5.4 Approvals & clearances, ROW and land acquisition issues

6. Consumer protection and Balancing mechanism for schedule deviations UI
7. Electricity Trading , exchanges, Provision of ancillary services
8. Provisions for transiting of electricity and priorities
9. Export / import duties or restrictions

Power Sector Reform and Unbundling

Country	Independent Regulator	Unbundled	Unbundled with Government holding	Private sector in distribution
Afghanistan		NA	NA	
Bangladesh	Yes, BERC	No	Yes, Bangladesh Power Development Board Controls Generation and distribution	NO
Bhutan	YES, BEA	YES	YES, State owned transmission and Distribution Company (BPC) , Generation Druk green Power Cooperation	NO
India	YES,CERC,SERC	YES	YES	yes
Nepal	No	No		
Pakistan	Yes, NEPRA	yes		
Sri Lanka	YES,PUCIL	no		
Maldives	NO	no		

Open Access , Independent system Operator,

Country	Open Access in Transmission	Independent system Operator	Recognize trading as an activity and permit import and export	Transmission pricing	Commercial and merchant Electrity Trading
Afghanistan		NA	yes		
Bangladesh	yes	No	NA		
Bhutan	NO	No	Yes		
India	YES	YES,POSOCO	Yes	Yes	
Nepal	No	No			
Pakistan	Yes, NEPRA	NO	Yes		
Sri Lanka	NO				
Maldives	NO	no			

Open Access

1) brings competition, improves effenicy and encourages private participation in the sector.

Private Sector

Country	Private Sector Participation	Transparency in selection	ROI, Attractive returns,	Long term commitment (Multi year Tariff Policy)	Approvals & clearances, ROW and land acquisition issues	Any special l Policy for Private Sector Participation
Afghanistan	NA			yes		
Bangladesh	Yes			Yes		yes
Bhutan	Yes			Yes		
India	YES			Yes	Yes	
Nepal	Yes					
Pakistan	Yes,			Yes		
Sri Lanka	Yes					
Maldives	NA					

Private Sector participation :

UI, Provision for Electricity trading , Duties

Country	Balancing mechanism for schedule deviations UI	Provisions for transiting of electricity and priorities	Export / import duties or restrictions		
Afghanistan	NA				
Bangladesh					
Bhutan					
India	YES		Yes	Yes	
Nepal	Yes				
Pakistan	Yes		Yes		
Sri Lanka					
Maldives	NA				

Suggestion :

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Technical Issues

Technical Issues

- Transmission planning criterion
- System Construction, connectivity, metering & operation codes
- Load Despatch
- Harmonising equipment standards
- Long term Electricity plan for generation & transmission
- Long term Load forecasting

Technical Issues

Technical Parameters: Calls Need for Harmonization						
Country	Permissible Frequency Band	Permissible Deviation	Transmission Voltage Level	Permissible deviation	Load dispatch , Control center	Communication Systems
Afghanistan						
Bangladesh	49.0-51.0Hz	(+/- 2%)	20,132kv	(+/- 10%)	Single dispatch	PSTN,PLCC
Bhutan	49.2-50.3Hz	(+/- 2%)	66,132,220,400	(+/- 6%)	Single dispatch	PSTN,PLCC OPGW
India	49.2-50.3Hz	(-1.6%+0.6%)	765, 400,230,220,132,110,100,66 KV	420-360 Kv 245-200 Kv 145-120 kV	NLDC,4 RLDC,33SLDC	WIDEBAND,VAST,GSM,PLCC
Nepal	49.5-50.5	(+/- 1%)	66,132	(+/- 10%)	No Hierarchical Structure	PSTN,PLCC,OPTICAL FIBER
Pakistan	49.5-50.5	(+/- 1%)	500,220,132,66	(+/- 10%)	3	Tele,Fax,PLC, OPGW
Sri Lanka	49.5-50.5	(+/- 1%)	220,132	(+/- 5%)	National Level	PSTN,PLTS,PLC
Maldives	49.5-50.5	(+/- 1%)		(+/- 10%)		

Technical Issues

Country	Grid Connective Code	Grid Operation Code	Metering Code	Grid Discipline
Afghanistan				
Bangladesh	yes		Yes, in built in BERC electrity code	Following Grid Code is Grid Discipline
Bhutan				NO
India		IEGC		Following IEGC Rules
Nepal				NO
Pakistan				Following Grid Code is Grid Discipline
Sri Lanka	Draft Stage	Draft Stage	Draft Stage	No
Maldives				NO

Long term Electricity plan for generation & transmission, Long Term Load Forecasting

Country	Long term Electricity plan for generation & transmission	Long Term Load Forecasting		Load Shedding	
Afghanistan					
Bangladesh	yes	yes	17,304MW by 2020		
Bhutan	yes				
India	yes	yes			
Nepal	yes				
Pakistan	yes				
Sri Lanka	yes	YES	600 Mw by 2020		
Maldives					

Financial

Tariff policy , Government subsidies, Level playing field

Country	Tariff policy	Government subsidies	Level playing field
Afghanistan			
Bangladesh	yes	Yes , Rural Electrification Board	
Bhutan			
India	yes	Yes for BPL	
Nepal		yes	
Pakistan			
Sri Lanka	yes		
Maldives			

Commercial

1) Payment security mechanism for IPPs

2) Standard bidding and agreement documents

3) Metering standards, reading and accounting

Commercial

Country	Payment security mechanism for IPPs	Standard bidding and agreement documents	Metering standards, reading and accounting
Afghanistan			
Bangladesh			
Bhutan			
India	yes		
Nepal			
Pakistan			
Sri Lanka			
Maldives			

Suggested Future Road Map : Commercialization of the Power Sector in Nepal

- A commercial and finically healthy power sector is essential for Sustainable Cross Border Energy Trade.

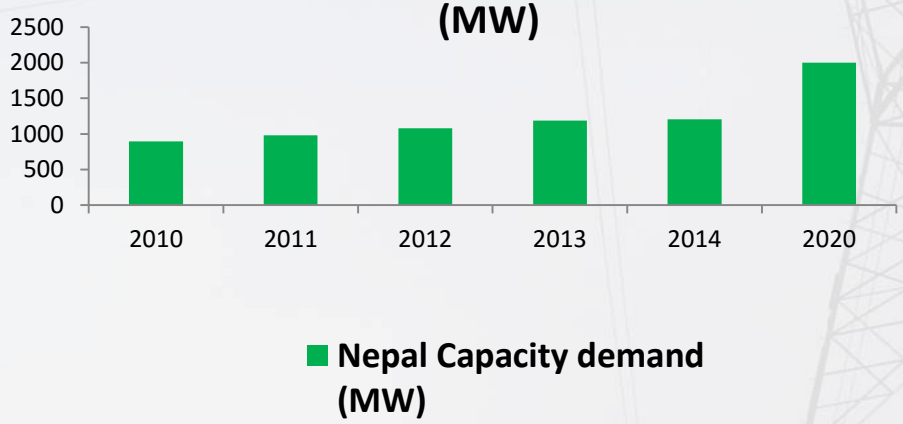
  - Independent regulators : can bring more transparency and accountability in the sector
  - Unbundle the vertically Integrated Structure
  - Recognizing the Electricity trading
  - Open Access in Transmission , single buyer and multi buyer and multi seller model.

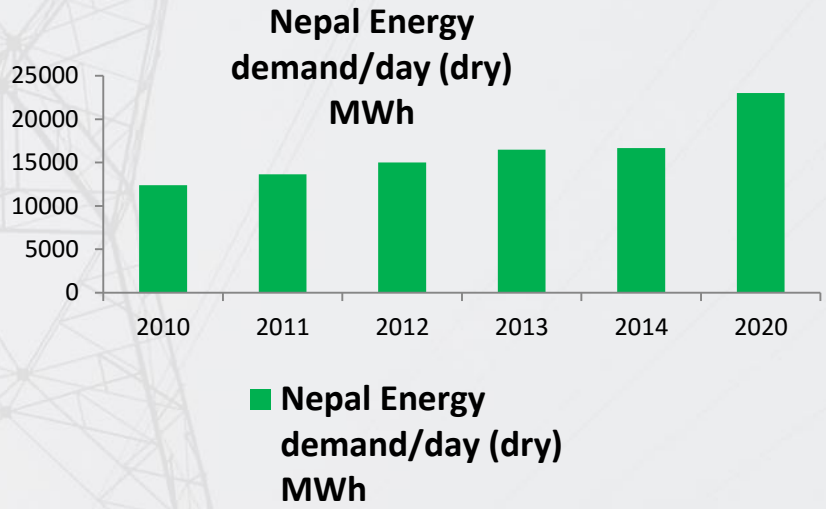
    Transparent transmission pricing

Suggestion For Nepal

Power Situation In Nepal

- Current Capacity - 705 MW





Currently Nepal is a net importer of Electricity. Nepal receives power in three modes:

1. Under River Treaty- Koshi , Gandak and Mahakali River treaty
2. Contiguous Border Town Exchange Program

Based on radial system at different points at 11 kV and 33 kV.

Commercial Trading Arrangement- for short term-driest season- PPA with PTC India

Current level of import is around 120 MW

Potential Benefits to Nepal from CBET

- Opportunity for economic exploitation hydro potential of Nepal and investment in Nepal economy.
- Increased power availability in Nepal through power market and access to buy power from Bhutan and Bangladesh .
- Nepal and India, Seasonal diversities complement each other.
- Open up and access to the lucrative power export market in SAS. Most South Asian countries facing energy deficit– Bangladesh, Bhutan, Eastern India and Nepal.
- Improve the overall viability of power Sector in Nepal.

Issues in CBET with India

- Inadequate capacity
- Absence of Umbrella Agreement
- Need to have Commercial Power Trade.

OPERATIONAL ISSUES:

- Synchronization between two systems,
  Loop flows
  Grid code
- Grid Security standards , UI transparency, and operational protocols
- Inadequacy of load dispatch and communication facilities to
- handle the commercial trade of power
- strengthening of Nepal TL system

Issues with Hydro power Development in Nepal

- DoED has issued licenses to over 500 power developers, with an expected combined generation capacity of 14399 MW.
- Lack of investment .
- Most of th licensee have not started construction due to various facts .

Strategy for Nepal.....

- ✓More transmission linkages with India to enhance Power Trade.
- ✓Take the advantage of India's power markets .
- ✓Incentive for Private Hydro power Developers and for FDI
- ✓Export oriented hydro power development
- ✓Strategy for rapid deployment of Hydro power
- ✓Open access in Transmission
- ✓Developing Nepal's Own Power Market , separate institution should be established for power trade between federal states and with neighbouring countries.

- Creating Regulatory Commission
- Commercialize NEA and restructuring , Unbundling of the Generation , Transmission and distribution, Distribution Should be out of NEA.
- tariff for bulk power purchase agreements
- Rationalization of Tariff and reduce subsidy
- initiate power market study of India in the context of availability of surplus energy in Nepal after five years(As per the Task force Recommendations)