



# Role of Power Market and Market Intermediaries in Facilitating Investments in South Asian Region

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# Existing Regional Cooperation in South Asia



- Presently, inter-country cooperation mainly on bilateral basis
- Mostly as Govt. to Govt. initiatives with an intermediary as facilitator
  - Indian Govt. has identified a nodal agency (PTC India Ltd.) for power trade with Bhutan (3 operational projects) and Nepal
- Bhutan – India
  - PTC imports ~1400 MW power annually from Bhutan
  - Single largest revenue earner for Bhutan
- Nepal - India
  - PTC facilitates power sourcing for Nepal in winters on commercial terms
- Regional cooperation now moving as a mix of Govt. to Govt. and competitive routes
- Bangladesh – India
  - 250 MW supply to Bangladesh as Govt. to Govt. arrangement
  - Another 250 MW through competitive bidding route (PTC)

# Status of current collaboration efforts

## Bhutan-India

- Currently India imports about 1400 MW from Bhutan.
- Another 5000 MW likely to be added by 2020.

## Nepal-India

- Several transmission interconnections exists on Radial Mode
- The 400 kV Muzaffarpur-Dhalkebar line once implemented will have carrying capacity of 1000 MW.

## Bangladesh-India

- 500 MW power is being supplied from India via 400 kV HVDC Behrampur-Bheramara line.

## Srilanka-India

- Proposed HVDC interconnection between Madurai (India) and Anuradhapura (Sri Lanka) through the Palk Strait
- The carrying capacity of the line will be 1000 MW

## Pakistan-India

- Proposed interconnection between India and Pakistan with carrying capacity of 500 MW under discussion

**The above are small but crucial steps towards formation of a SAARC power Market. But there are many more barriers required to be removed to create a vibrant South Asian Power Market place**

# **Key Challenges in creating a Regional Power Market**

## Laws and Regulations

- Need of incorporating necessary regulations to permit cross Border trade of power
- No common regulatory framework for Cross border trade of Power w.r.t.:
  - Non-Discriminatory Open Access to Transmission network-Application to Implementation
  - Absence of Electricity Regulator in a few SAARC countries
  - **A SAARC region Electricity Regulator may be a good idea!**
    - For building common Transmission Infrastructure. Ownership and Management of Transmission networks to be independent of generation and distribution
    - System pricing and System studies including stability modeling
    - To decide on using existing market place or create a specific SAARC regional electricity market place

## Political and Legal

- Assurance of non-disruption of electricity supply in case of any eventuality including political
- Level playing field for cross-border players vis-à-vis domestic players
- Establishment of a Regional Electricity Appellate Tribunal

# Technical and Commercial challenges



## Technical

- Harmonization of Grid Codes, Connectivity Standards etc.
- Common metering standards
- Effort of creating AC Infrastructure instead of HVDC to minimize Investment
- Penal mechanism for Incidences of Grid Indiscipline

## Commercial

- Currency?
- Billing Cycles
- Payment Security Mechanism
- Level playing field for cross-border players vis-à-vis domestic players
- Establishment of a Regional Electricity Appellate Tribunal
- Check and balances e.g. Common Deviation Settlement Mechanism etc.

## Investment

- Assessment of Impact of Regional integration on existing Investments
- Funding requirement for creation of Generation/Transmission assets

# What will an Investor/FI look for?

- Policy & Regulatory scenario in the country/state
  - How helpful authorities are in granting various clearances
  - Long-term visibility and stability
- Status of project
  - Status of various clearances
  - Land acquisition status
  - **Financial closure status**
  - **Equity put in by the promoters**
- Experience of promoter
  - **Credit rating**
- Source of power
  - Fuel tie-ups/hydrology/WRA (Wind Resource Assessment)
- **Marketability of power**
  - **Cost of project**
  - **PPA**
- **Availability of Evacuation System**



## Summary

- Investors need confidence that contractual underpinnings will be honored
- Any dispute will be settled rapidly and fairly
- Underlying cause of dispute will be sustainably addressed
- A credible power off-take arrangement is in place preferably through a counter party

# Market Intermediaries



# Role of Intermediaries in Transition to a Competitive Power Market



- Act as Counter Party
- Add liquidity
- Find new ways/opportunities to mitigate risks
- Facilitate attraction of capital to the generation and Transmission Inter-connections
- Bring transparency to the markets
- Remove Information Asymmetry
- Expand transactional opportunities

# Role of Intermediaries: Buyer's and Seller's Perspective



## Seller's perspective

- Arrange off-take of power as made available by the seller
- Identify buyer for off-take of contracted capacity and enter into requisite commercial agreement on back to back basis
- Manage entire transaction such as Open Access, scheduling, Energy accounting & other system compliance/approvals
- Co-ordinate with relevant agencies for transfer of power
- Facilitate sale of power to third party from alternate sources in case of short off-take by original buyer
- Ensure payment security
- Facilitate energy settlement
- Ensure power for testing & commissioning of Power station/Transmission lines

## Buyer's perspective

- Arrange power as per requirement of buyer
- Identify Seller for supply of contracted capacity and enter into requisite commercial agreement on back to back basis
- Manage entire transaction such as Open Access, scheduling, Energy accounting & other system compliance/approvals
- Co-ordinate with relevant agencies for transfer of power
- Facilitate supply of power from alternate sources in case of generator outages
- Ensure supply comfort (Contract performance)
- Facilitate energy settlement
- Supply of power to Industries/large consumers

# **Power Market and Role played by Power Traders- The Indian Experience**

- Trader have played key role in optimization of existing energy resources and bring vibrancy to commercial outlook in the sector
  - Short & Medium Term transactions for peak/off-peak load balancing: **different products brought in the market**
    - Duration of Transactions (Few hours to 3 years)
    - Hours of Supply
      - Round the Clock
      - Evening Peak / Morning Peak
      - Night Off Peak / After Noon Off Peak
  - “As and When Available” Power for balancing Scheduled Interchanges
  - “Weekend / Holiday Power”

***Different products for power developed; earlier unthinkable***

# Experience so far: Power Traders & Indian Power Market



- Increasing realization among utilities of power as a source for revenue earning
  - Improved PLF, particularly of State Power Utilities
  - No backing down
  - Reduction in load shedding
- The short term market has created “**Value**” for power. There is a distinct shift towards higher revenue realization
- Traded volumes are rising (11% of total energy generation in the country under Short term trading)
- **Expanding market size**

Term	Size of bilateral trading Market (Rs. Crore)	Size of Power Exchange Market (Rs. Crore)	Total Size of Market (Rs Crore)
2010-11	13268	5389	18657
2011-12	14979	5553	20532
2012-13	15624	8648	24272
2013-14	15061	8891	23952

***Power as a resource for earning revenue did not exist***

# Experience so far: Power Traders & Indian Power Market



- Traders are catalyzing investment into the Power sector, mainly from the private sector e.g. Valid and binding PPAs with Power trading companies is recognized by Lenders for Project Financing

## Capacity additions in various plans

(Capacity in MW)

Plan	Term	State	Private	Central	Total
7 <sup>th</sup>	1987-92	11867	0	9534	21401
8 <sup>th</sup>	1992-97	6835	1430	8157	16422
9 <sup>th</sup>	1997-02	9352	5262	4504	19119
10 <sup>th</sup>	2002-07	6244	1930	13005	21180
11 <sup>th</sup>	2007-12	16732	<b>23012</b>	15220	54963

- Many states *have devised policies to become Power Hubs*
- Higher short term power rates through trading has encouraged IPPs to invest in generating assets
- Large merchant capacity got added to the grid (market determined returns)
- Paradigm shift from **cost plus return regime** to **market determined returns**

# Role played by Market Intermediaries in South Asian Region

**A few examples**

# Implementation of Muzaffarpur- Dhalkebar Transmission line



- Nepal faces acute electricity shortage especially during winters during which Power is supplied from India.
- Further with slew of Hydro Power projects lined up with intended export of power to India, Muzaffarpur-Dhalkebar line has been recognised as lifeline for evacuation of such power.
- The Muzaffarpur-Dhalkebar link is the rescue rope for implementation of large Hydro projects, the first of these will be Upper Tamakoshi project, expected to start producing by 2017.
- The financial closure of the transmission line necessitated a long term agreement of power import/export through this line.
- To make the line commercially viable and marketable, PTC has signed PPA with NEA for supply of 150 MW power on long term basis from an Indian IPP leading to financial closure of the line



# Implementation of Nikachhu Hydro Power project in Bhutan



- Bhutan is in the process of developing 2x59 MW(118 MW) Nikachu HEP (Tangsibji Hydro Energy Limited)
- The estimated cost of the project is around USD 225 million to be financed through a mix of local and foreign currency.
- Bhutan invited bids RfP for Sale of power from the project for a period of 25 years through tariff based competitive bidding
- PTC was the sole bidder who participated in the RfP process with a market determined competitive tariff which meets the requirement of making the project financially viable and achieve financial closure
- PTC has initialled PPA with Tangsibji Hydro Energy Limited for purchase of power from the project for onward supply to a state utility in India
- Accordingly PTC is acting as a counter party to this transaction making project financially viable.

# Inferences and Way ahead

- Market Intermediaries have already played pivotal role in bringing vibrancy to Indian Power market helping to bring Investor confidence
- The same has led to exponential investment especially by private sector in the country
- Market Intermediaries have played crucial role in facilitating Investments in South Asia as and when opportunities exists.

## Way Forward

- The need of the time is to suitably align the policy framework for the entire region and put endeavour to build a common market place for the entire region which is not limited to any political boundary
  - Set up a committee for creation of Regional Power market. Detailed deliberation on framing common laws and bylaws/Harmonization of Technical requirement/Commercial arrangement within specified timelines
  - Creation of Vehicle for funding of Power Infrastructure in South Asia!
  - Creation of SAARC Regional Power Regulator and a Regional Appellate tribunal

**The above would provide comfort to the investors for making investment in the Power market of South Asian Region**

# Thank You