



SAARC ENERGY CENTRE
ISLAMABAD

**SAARC Workshop on
Harmonizing Regulations and Policies for Cross Border
Power Trade, Risk Sharing and Financial Settlement Issues**

Session 2
SAARC Power Market
Power Trade Scenario in SAARC Region

Kathmandu, Nepal
26 June, 2014

We Remember



Hilal A Raza
Director, SAARC Energy Centre



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**SAARC Workshop on
Harmonizing Regulations and Policies for Cross Border
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Cross Border Power Trade

Lessons from India-Bangladesh Power Trade

Session 2

Power Trade Scenario in SAARC Region

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Islamabad

Kathmandu, Nepal

26 June, 2014



Presentation Outline

- **Backdrop of I-B Electricity Interconnection**
- **Critical Issues of Power Trade**
- **SAARC Declaration and Future Prospect**
- **Governing Frameworks of SMS**
- **Lessons learned**

Backdrop of Electricity Interconnection

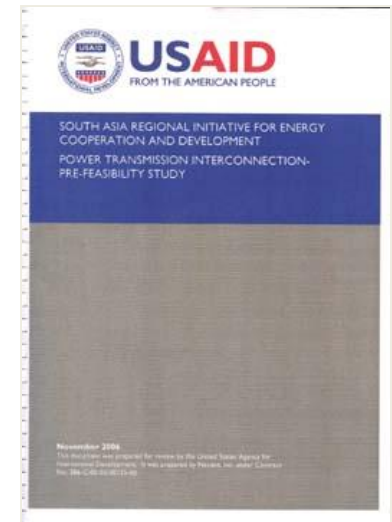
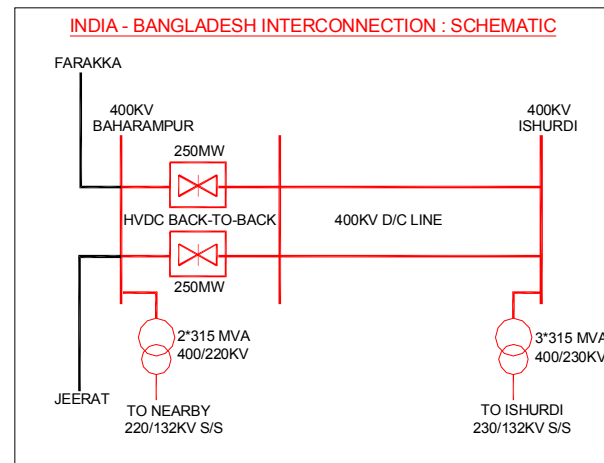
Four Border Electricity Interconnection

Pre Feasibility Study on Four Border Electricity Interconnection conducted by USAID(SARI/E) in 2000.



Power Transmission Interconnection

Pre Feasibility Study on Power Transmission Interconnection between India-Bangladesh conducted by USAID (SARI/E) in 2006.





The background image shows a section of the Berlin Wall, heavily covered in graffiti. Visible text includes "ES GILT VIELE MO...", "FRANCA NAINS LIBRES", "YoZ", "PEACE Tristan Jéhus", "en force de 44 et 57 Pœ en France Anthony", "FUK Santoz", "Comité contre les autriches nées (CS)", "2V4 WAS HIER GLU.", "REKONSTRUIERT 1. JULI 2000 - U+5+1", and "FIBZU REICH". A large, light blue starburst graphic with a dark blue outline is centered over the wall.

Signing of MOU

India-Bangladesh MOU

Memorandum of Understanding Signed on **11th January 2010** between the Government of the People's Republic of Bangladesh and the Government of the People's Republic of India.

Areas of Cooperation

- Exchange of Power;
- Power Generation;
- Grid Connectivity;
- Development of Renewable Energy
- Consultancy Services;
- Training;
- Research and Development;
- Energy Efficiency and
- Investments subject to policies and legislations.

Implementation Framework

Joint Expert Team

To study technical details, grid interconnection, modalities of its implementation and operation;

Joint Working Group

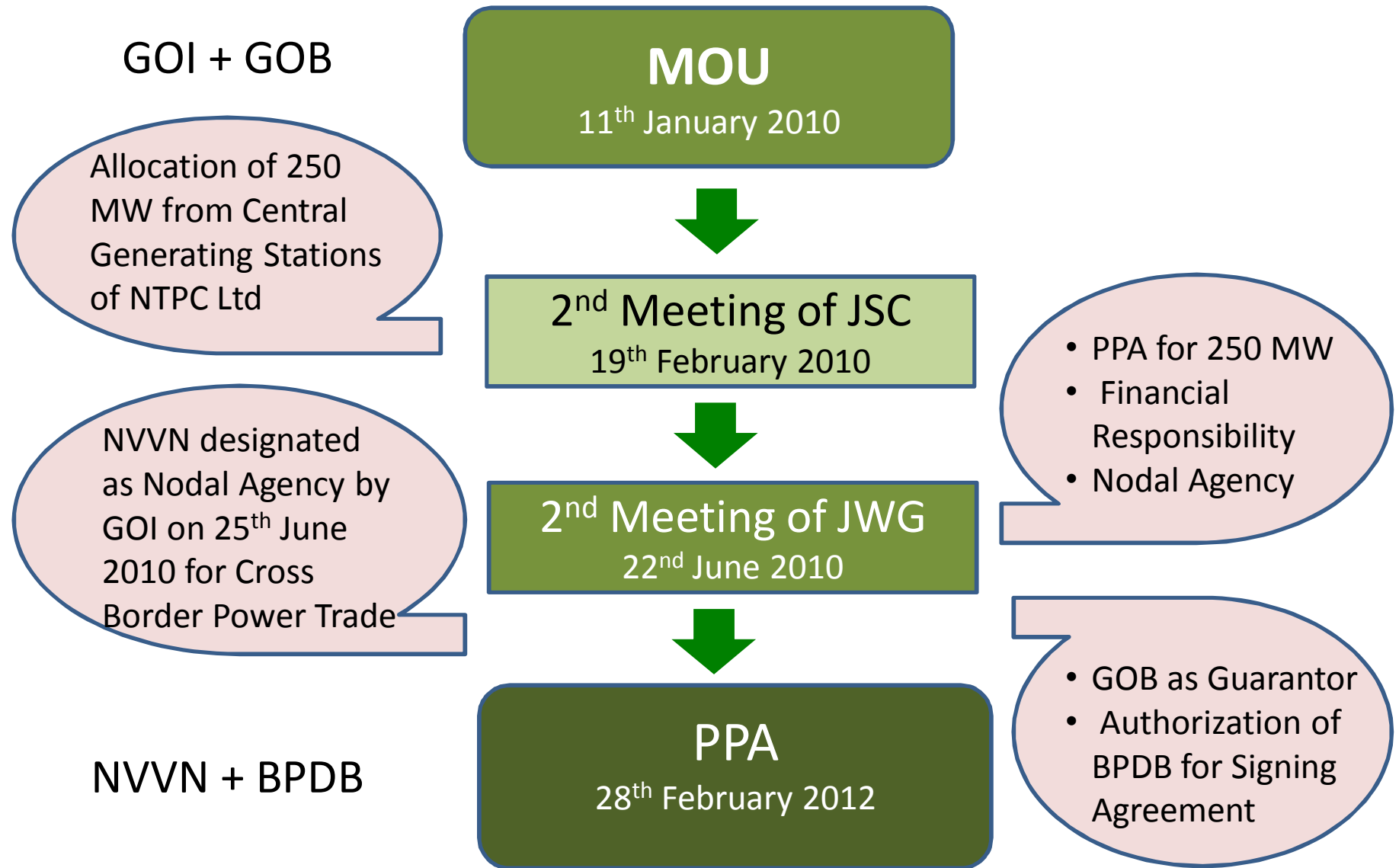
To Promote and Facilitate Cooperation under the MOU. The Group will meet at least twice a year at mutually agreed venue;

Joint Steering Committee

Co-chaired by Power Secretaries of the two countries to review the Progress of the Joint working Group. The Committee will meet at least once a year at mutually agreed venue;

This MOU shall remain in force for a period of Five Years and shall be renewed thereafter on a quinquennium basis....;

Flow Diagram of India-Bangladesh EI



PPA for 250 MW from GOI Plants

Salient Features of PPA

Contract Validity

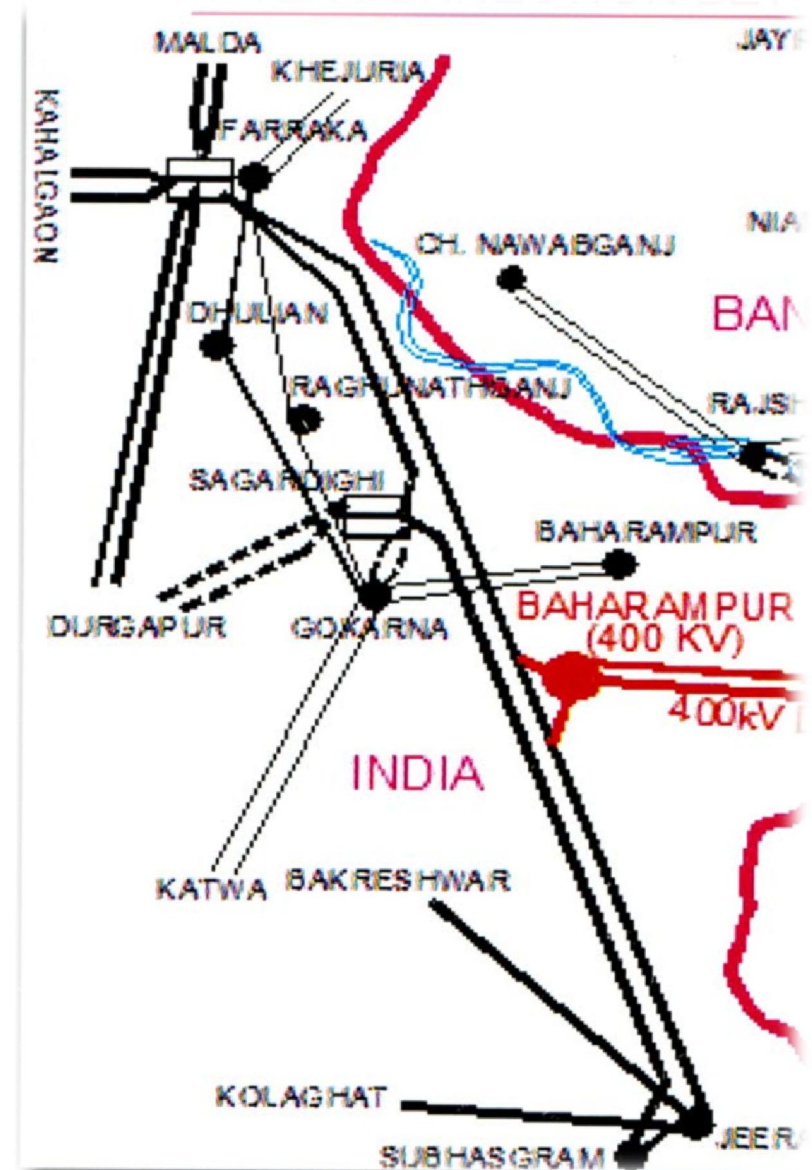
Valid initially up to 25 years from the date of commencement of supply;

Delivery Point

Bohrompur Substation, Murshidabad, India at 400 KV level;

Charges

All charges including transmission charges, scheduling fees, open access charges, transmission losses and adjustment shall entirely be to the account of BPDB;



Salient Features of PPA

System Monitoring and Control

- NLDC/POSOCO will schedule, monitor and control operation including voltage, frequency, active and reactive power flows;
- BPDB/PGCB will provide/exchange information to the control room of NVVN on scheduling on a daily basis;

Outage and Maintenance Schedule

Maintenance program shall be guided by the Regional Power Committee;

Metering

As per Agreement signed between CTU/PGCI and BPDB through Main and Check Meters (less than 0.2% difference acceptable);

Salient Features of PPA

Energy Accounting and Scheduling

- Energy Accounting by ERPC according to IEGC on monthly basis;
- Unscheduled Interchange Accounts by ERPC/NLDC on weekly basis;

Energy Tariff

Tariff will be determined as per Central Electricity Regulatory Commission Regulations, 2009;

Components of Tariff

- Capacity Charge;
- Energy Charge;
- Other Charges;
- Trading Margin of Rs 0.04/KWh (Max. Capping 0.07/KWh)
- Unscheduled Interchange charge, if any;

www.cercind.gov.in: Terms and conditions of Tariff, Regulation

Salient Features of PPA

Taxes, Duties etc.

All statutory taxes, levies, duties, royalty, fees or any other kind of levies imposed/charged by either GoB or Gol or ... shall be borne by the BPDB;

Rebate

- 2% rebate for payment through L/C;
- 1% rebate if paid within 25 days other than L/C or directly to NTPC within a period of one month from the presentation of invoice;

Salient Features of PPA

Invoices

- NTPC shall raise invoice for Capacity and Energy charges;
- NVVN shall raise Trading Margin Invoice;

Payment of Invoice through Sight LC

- Payment of NTPC and NVVN will be made through sight LC;

Interest

Any amount due/unpaid after the Due Date shall bear Interest Charges at the rate of 1.25% per month on the amount outstanding for the period of non-payment beyond 60 days of Invoice date (as per CERC Regulations). Interest shall be calculated on daily basis and shall be compounded monthly.

Salient Features of PPA

Sovereign Guarantee

- The failure to make payment by BPDB and other obligations under this Agreement shall be duly secured by the Sovereign Guarantee of the GOB.

Dispute Resolution

- Amicable Settlement;
- Chairman NVVN and Chairman BPDB;
- Secretary (Power) GOI and the Secretary, Power Division, MPEMR, GOB;
- International Arbitration Centre, Singapore.

Salient Features of PPA

Force Majeure Event

- Act of God;
- Act of War;
- Radioactive Contamination.

Relief for Change in Law

Any tariff implications or changes in law shall be to the account of BPDB;

Salient Features of PPA

Governing Law

This Agreement shall be governed and interpreted by and construed in accordance with the laws of **England**, without giving effect to the principles of conflict of laws there under. This Agreement shall be subject to the exclusive jurisdiction of the courts situated at Singapore, alone. The competent courts in the respective country shall have jurisdictions to execute the order(s) of Courts of Singapore.

Language

The meaning of any trade term and the rights and obligations of parties shall be as prescribed by Incoterms. Incoterms means international rules for interpreting trade terms published by the International Chambers of Commerce (latest edition), 38, Cours Albertter, 75008, Paris, France.

Salient Features of PPA

Compliance with Electricity Act 2003

Despite anything contained in this Agreement, if any provision of this Agreement shall be in deviation or inconsistent with or repugnant to the provisions contained in the Electricity Act, 2003 of India, or any rules and regulations made thereunder, such provision of this Agreement except the provisions of Dispute Resolution and Governing Law shall be deemed to be amended to the extent required to bring it into compliance with the aforesaid relevant provisions as amended from time to time.

Salient Features of PPA

Termination of Agreement

... the expiry date of this Agreement shall be modified in case the understanding between the two Governments changes or MOU between the Governments is terminated. ...

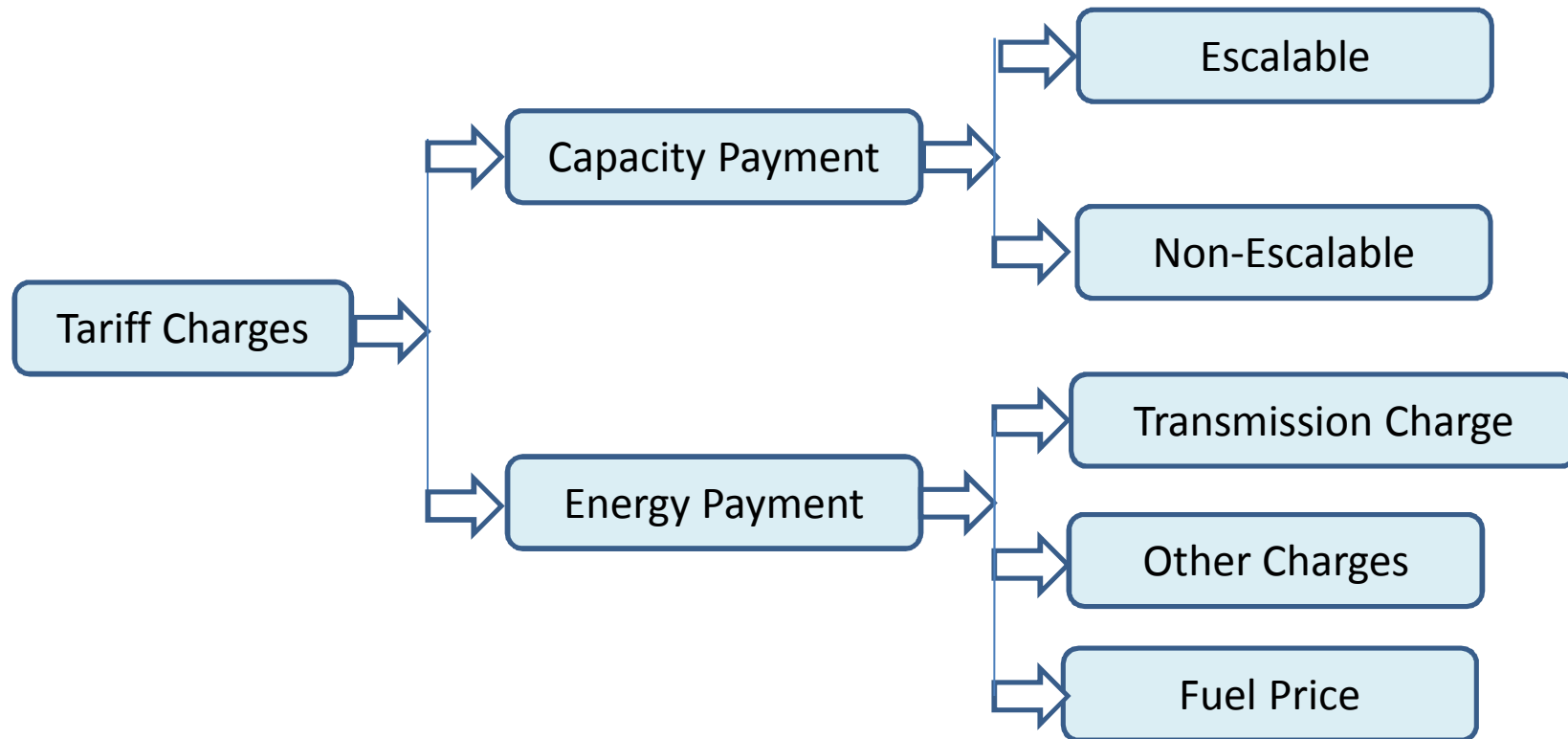
PPA for 250 MW from Electricity Market

Quality of the Bidder

- Company incorporated under the laws of the People's Republic of India;
- Capacity to execute PPA;
- Licenses for supply and delivery of electricity to Bangladesh;
- Contracted Availability 95%;
- Contracted Capacity not less than 250 MW;
- Delivery at the 400 KV side at Bohrompur Substation, Murshidabad, India;



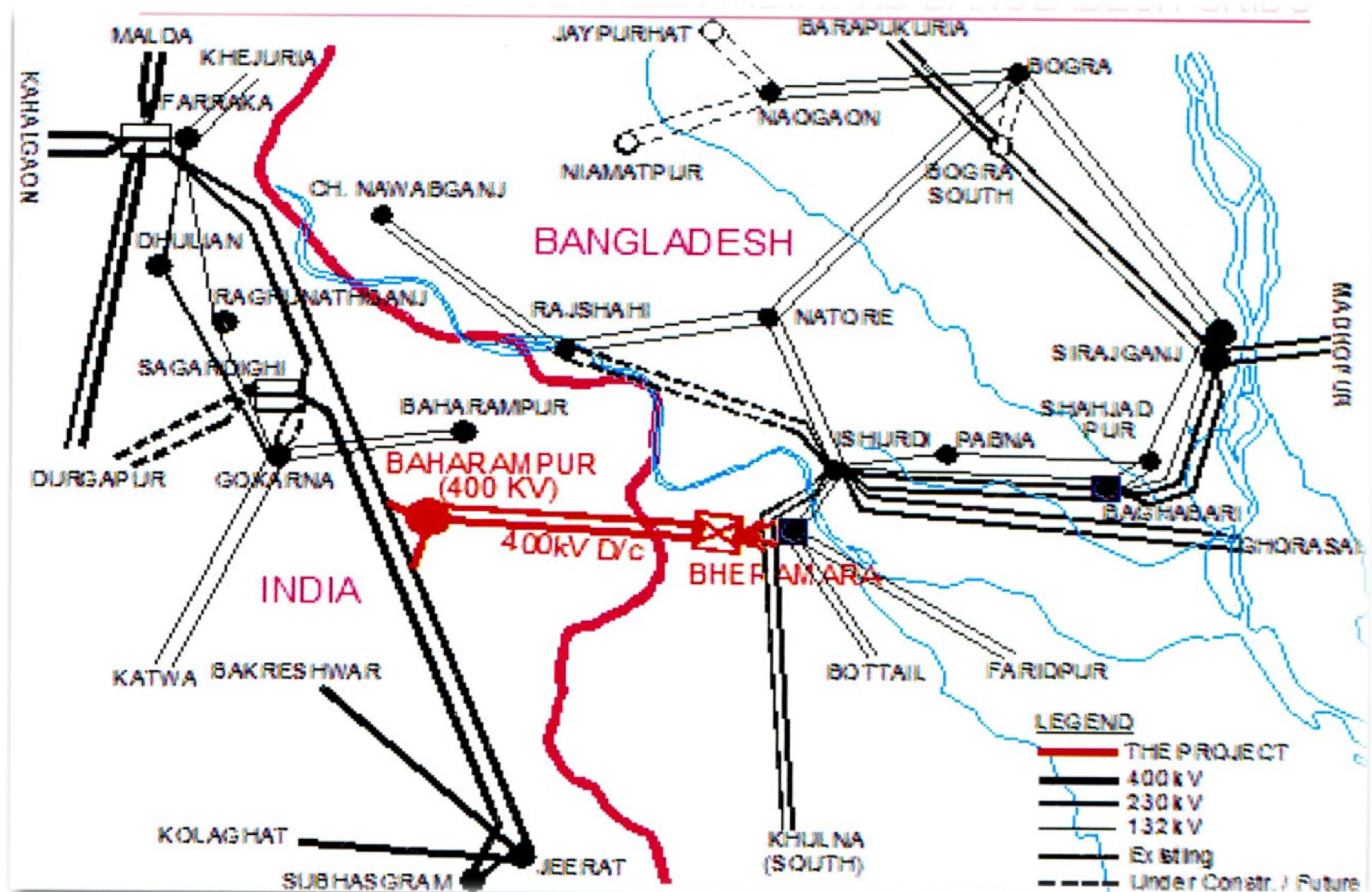
Structure of Tariff Charges



Capacity Payment : USD/KW/month

Energy Payment : USD/KWh/month

Single Line Diagram of Interconnection

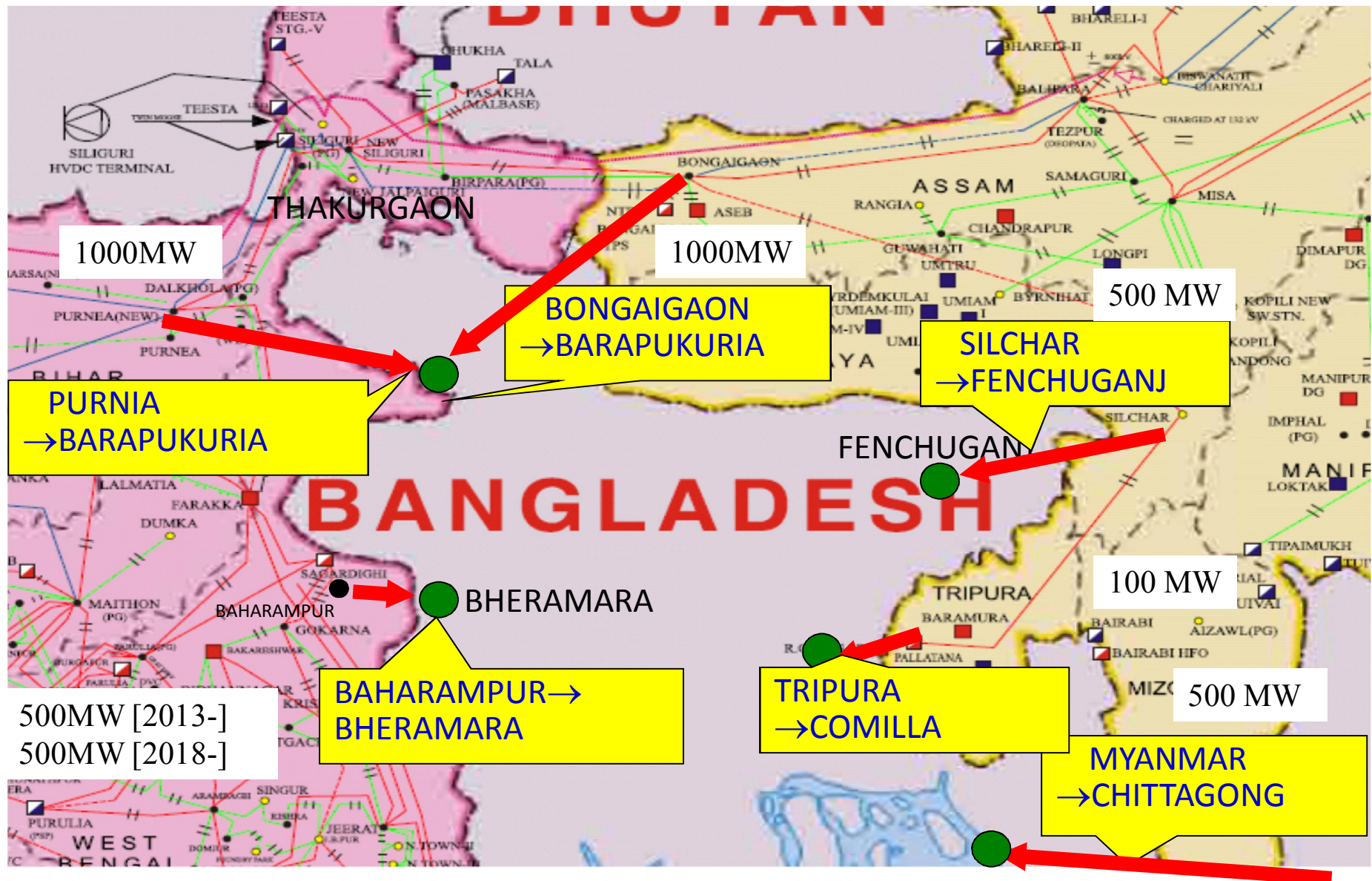


Pictorial Views of Interconnection

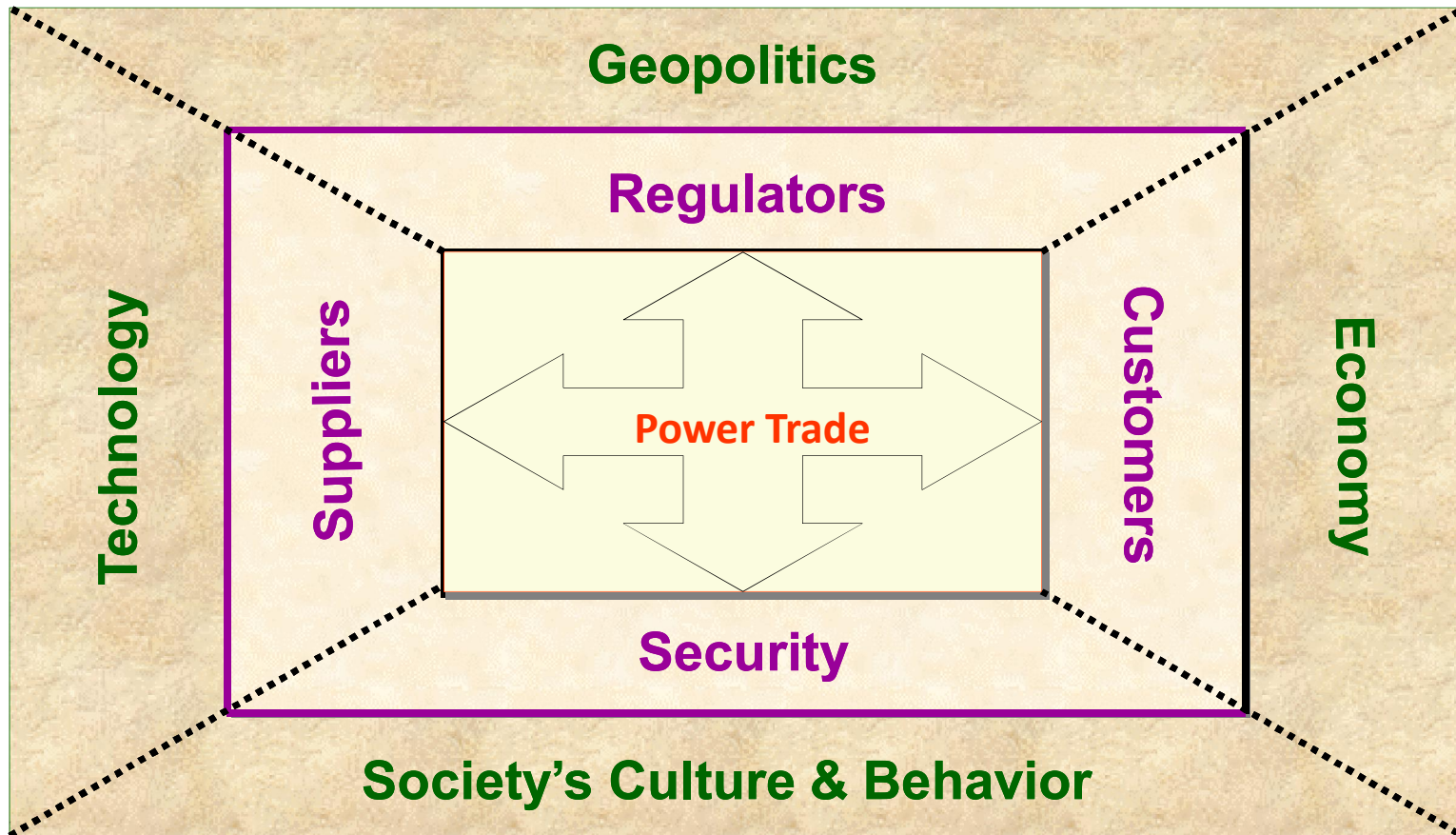
Item	Bgd Part	Ind Part
Transmission Line	400KV D/C, 27.35 km 230 KV D/C, 4.5 km	400 KV D/C, 73.5 km
HVAC SW. Stn.	-	400 KV Sw. Stn
HVDC BtB Stn.	400-230 KV, 500 MW (BtB)	-



Future Scope of Interconnections



Critical Issues of Power Trade



SAARC Declaration

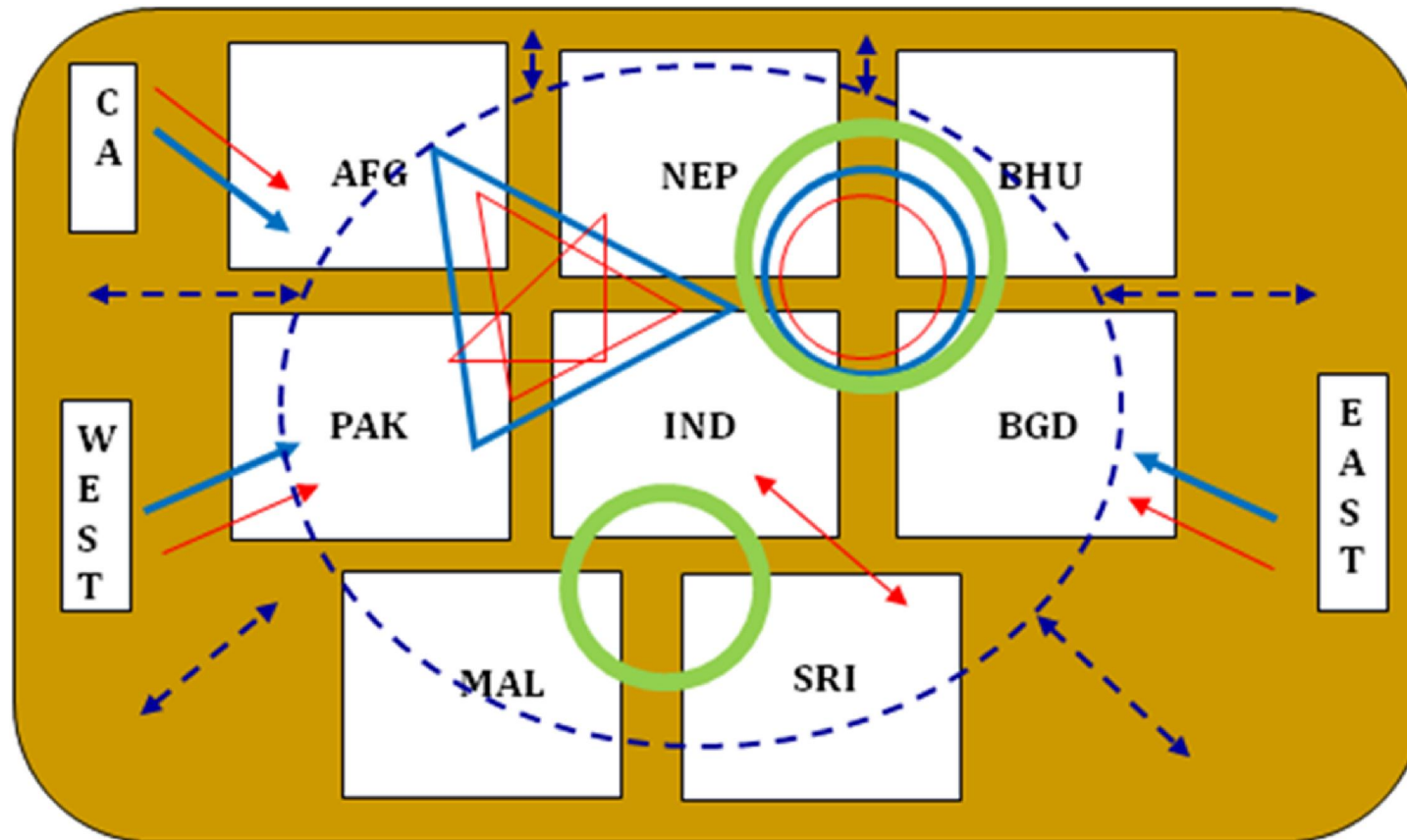


Declaration of 15th SAARC Summit ...

- The Heads of State Governments of SAARC in its 15th SAARC Summit held in Colombo in 2008 recognized the need to expeditiously develop regional and sub-regional energy resources in an integrated manner and the trade in energy.
- The Summit also stressed the urgent need to develop the regional hydro potential, grid connectivity and gas pipelines.
- SAARC Energy Ministers and Expert Group on Energy also highlighted the importance of regional electricity trade.



Proposed SAARC Energy Ring



Legend

EAST : Myanmar; West : Iran; CA : Central Asia (Tajikistan, Kyrgyz Republic, Uzbekistan)

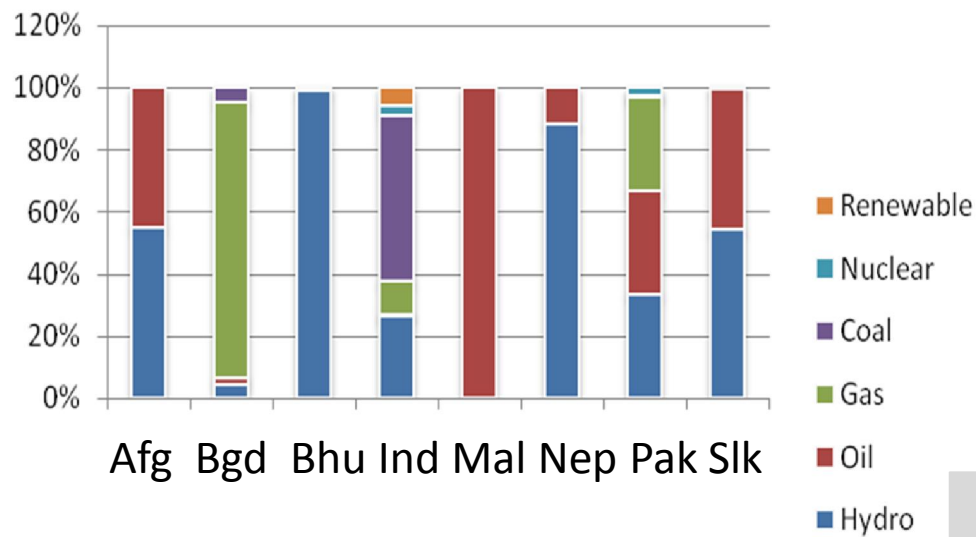
Smallest width represents : Electricity Transmission Interconnection

Medium width represents : Gas Pipeline Interconnection

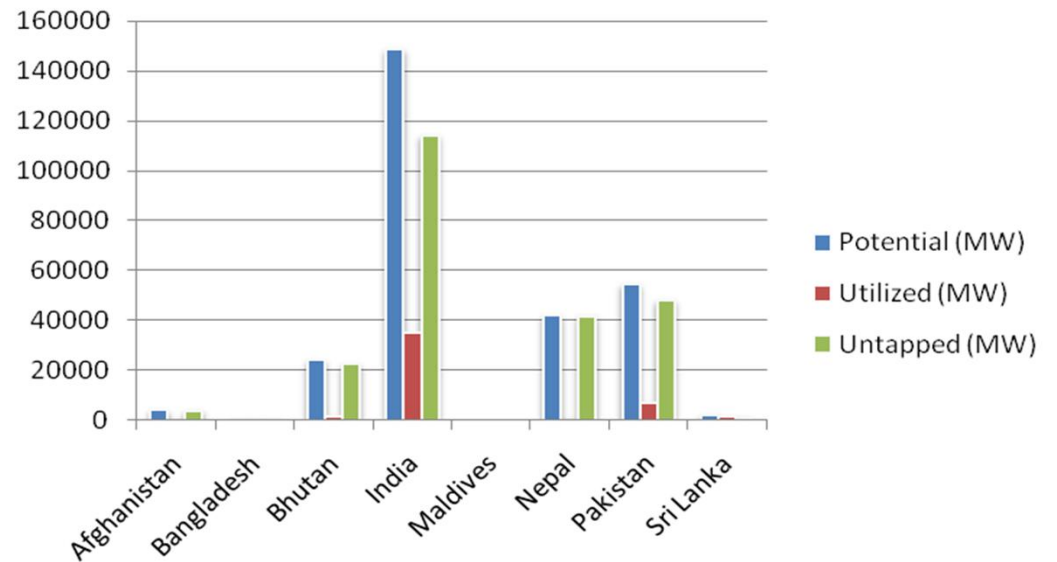
Larger width represents : Oil Pipeline/maritime Interconnection

Dotted line represents : Technology, Knowledge, Energy Service Sharing

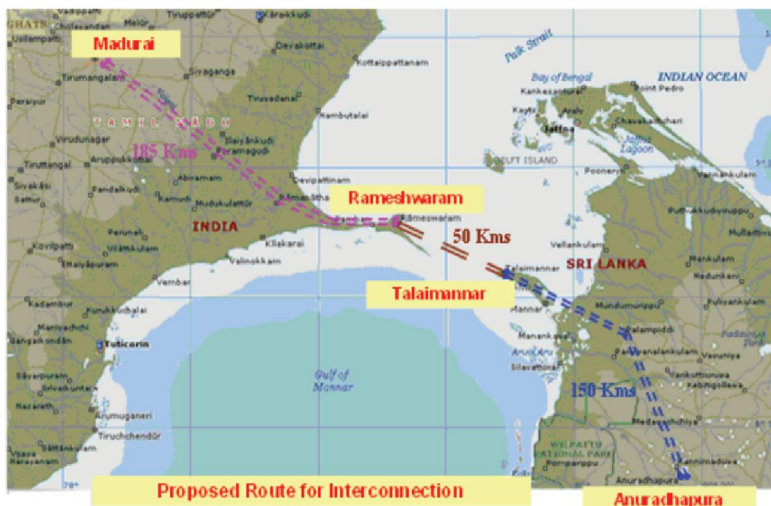
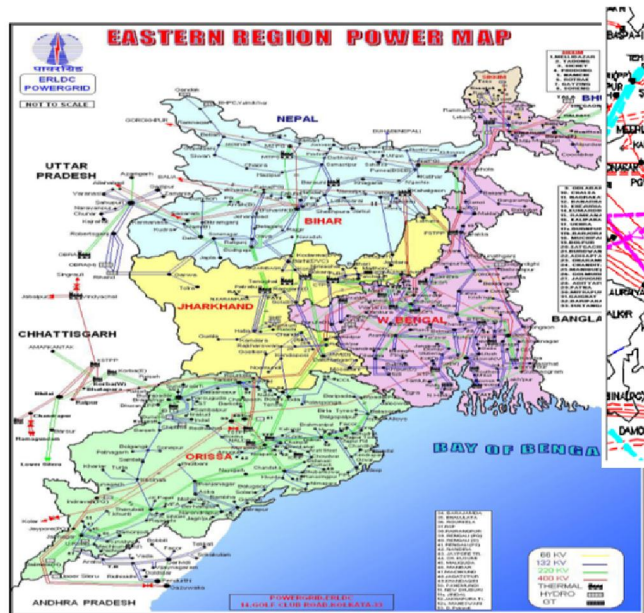
Fuel Mix and Opportunity



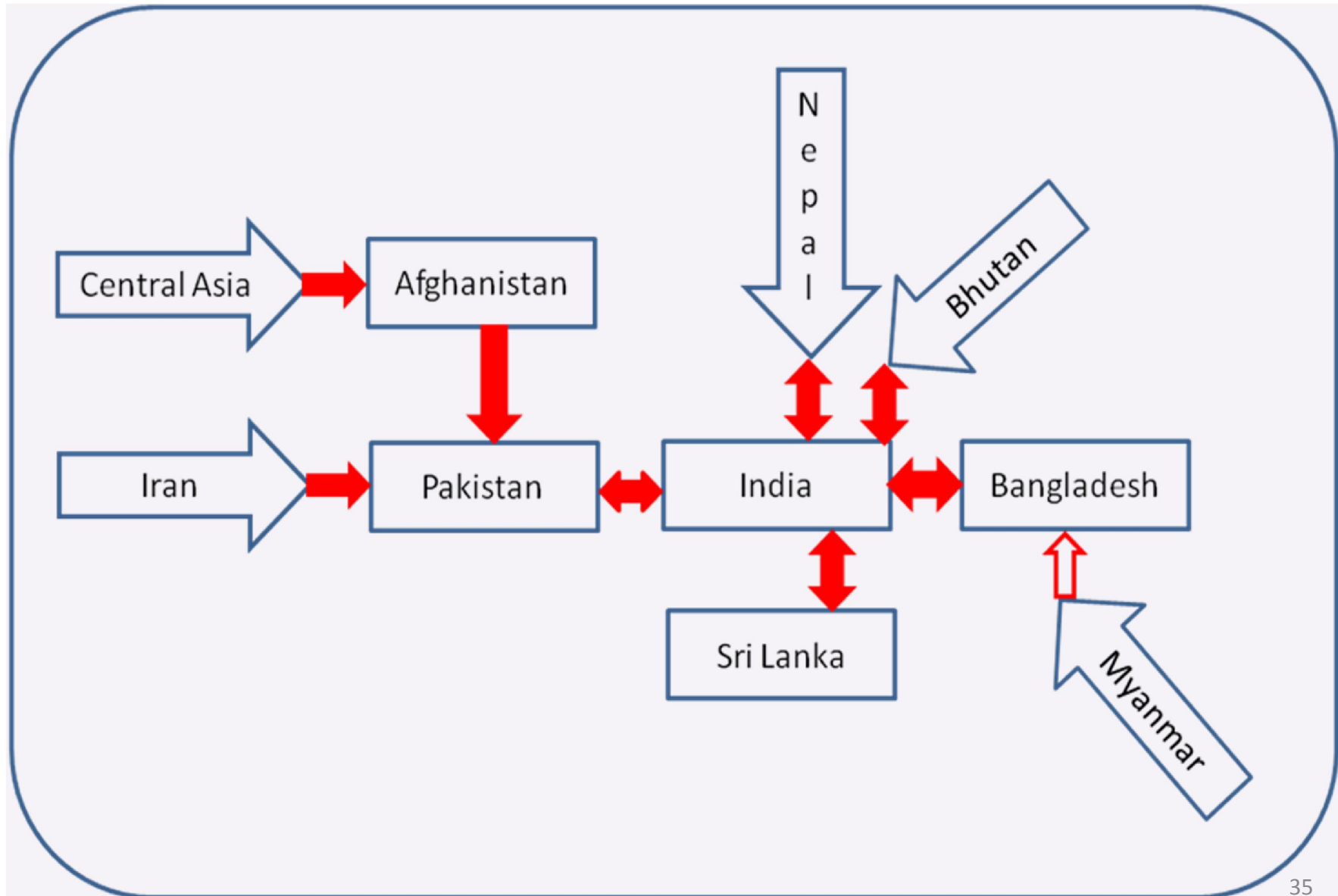
Hydropower Potential of SMS



Bilateral Electricity Interconnection in SMS



Schematic Diagram of Future SAARC Power Grid



Major Issues for Power Trade

- Laws, Regulations and Policies;
- Technical, Commercial, Financial and Legal Issues;
 - Physical Operation – Reliability, Stability, Economic Operation;
 - Commercial Operation – Settlements and Reconciling the Obligations, Contracts;
 - Harmonization of Market Structures;
 - Rules for Capacity Constrained and Allocation;
 - Optimal Usage of Available Capacity;
 - Fair and Non-discriminatory Access;
 - Overall Tariff Framework;
 - Interaction Among Regulatory Agencies;
 - Dispute Resolution and Arbitration;

Major Governing Frameworks of SMS

Country	Governing Frameworks
Afghanistan	■ Electricity Law of Afghanistan ■ Electricity Sector Policy
Bangladesh	■ Electricity Act 1910 ■ Bangladesh Energy Regulatory Commission Act ■ National Energy Policy ■ Private Sector Generation Policy ■ Policy Guidelines for Private Participation in Power Sector
Bhutan	■ Electricity Act 2001 ■ Bhutan Hydropower Policy 2008
India	■ Electricity Act 2003 ■ Tariff Policy ■ National Electricity Policy
Maldives	■ Energy Policy of Maldives
Nepal	■ Electricity Act 1992 ■ Water Resources Act 1992 ■ Hydro Power Development Policy 2001 ■ Water Resources Strategy 2002
Pakistan	■ Electricity Act 1910 ■ Electric Power Act 1997 ■ National Electric Power Regulatory Act ■ Policy for Generation Projects
Sri Lanka	■ Sri Lanka Electricity Act 2009 ■ Public Utilities Commission of Sri Lanka Act 2009 ■ National Energy Policy and Strategies of Sri Lanka

Licensing Authority and Utilities of SMS

Country	Generation		Transmission		Trading	
	Authority	Utility	Authority	Utility	Authority	Utility
Afghanistan	MEW/AERA	DABS	MEW/AERA	DABS	MEW/AERA	DBAS
Bangladesh	BERC	BPDB, IPP	BERC	PGCB	PD, MPEMR*	BPDB*
Bhutan	BEA	DGPC	BEA	BPC	BEA	BPC
India	CERC/SERC	IPP, CPP, CP, GC, SEB	CERC/SERC	PGCI	MEA/CERC	PTC
Maldives	MEEW/MEA	STELCO, IPP	MEEW/MEA	STELCO	-	-
Nepal	MWR	NEA, IPP	MWR	NEA	MWR	NEA
Pakistan	NEPRA	WAPDA, PEPCO, KESC, IPP	NEPRA	NTDC	MWP	WAPDA, NTDC
Sri Lanka	PUC	CEB, IPP	PUC	CEB	-	-

Lessons Learned



Findings ...

- All the SMS have emphasized on the need of regional power trade among the South Asian countries;
- All the SMS developed their policies, acts, laws, rules and regulations according to the need of the country;
- There is no restriction to extend these policies, acts, laws, rules and regulations to promote regional electricity interconnections and trade;
- All the governments are empowered to develop and amend electricity act, laws, rules, regulations and policy;



Basic Requirement ...

- Inter-Governmental Memorandum of Understanding for SAARC Electricity Trade;
- SAARC Electricity Grid Master Plan;
- SAARC Electricity Grid Code;
- SAARC Electricity Trade Code;
- Inter-Governmental Agreement for SAARC Electricity Trade;
- Inter-Utility Agreement for SAARC Electricity Trade;

Concluding Remarks ...

- In the globalized world, regional cooperation is no longer a dream but reality.
- In spite of being one of the richest regions both in terms of natural and human resources, South Asia has the highest number of poor, illiterate, malnourished and unemployed people in the world.
- Comparative advantages of regional resources should be utilized in a win-win manner where regional cooperation can flourish.
- Effective and modern electricity market will promote energy security & economic stability to the benefit of all SAARC countries.
- Teeming millions in South Asia are looking for their better future through regional cooperation, particularly in Electricity.

True global energy security will be a result of cooperation and engagement, not isolationism. When investment and expertise are allowed to flow freely across borders, the engine of innovation is ignited, prosperity is fueled and the energy available to everyone increases. At the same time, balancing the needs of producers and consumers is as crucial as increasing supply and curbing demand. Only then will the world enjoy energy peace-of-mind.

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Thank You!

