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IRADe Integrated Research and Action for Development

Energy Integration in South Asia Region

Progress, Key Achievements and Way forward

V K Kharbanda
SARI/EI/IRADe

HAPUA- UNESCAP Workshop
17-19th April'2017, Jakarta, Indonesia

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Contents

- USAID's SARI/EI Program Structure and Framework for development of Cross Border Electricity Trade in South Asia Region
- Overview of South Asia Power Sector & current Status of Trade
- International Experience on Energy Integration and Key Leanings
- South Asia Experience on Energy Integration and Key Leanings
- Critical success factors for CBET and Way Forward

Overview SARI/EI Program: South Asia Regional Initiative for Energy Integration (SARI/EI)

- **SARI/E is a long standing program of USAID started in the year 2000.**

- **Program has consistently strived to address energy security in South Asia by focusing**
  1) Cross Border Energy Trade
  2) Energy Market Formation and
  3) Regional Clean Energy Development.

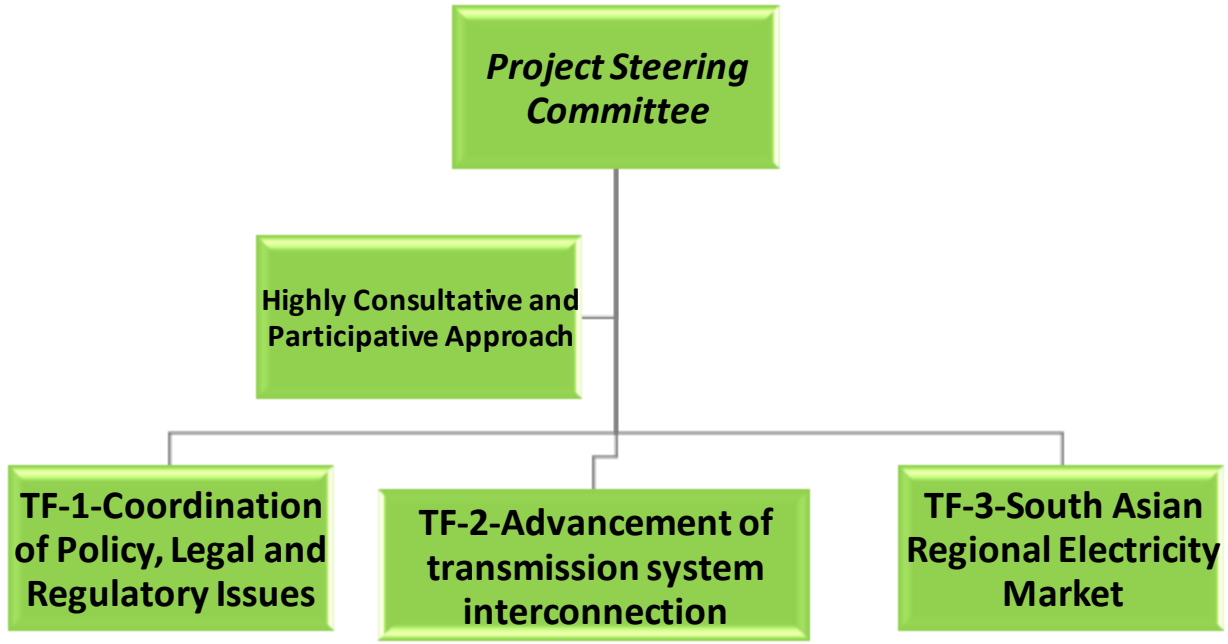
- **SARI/EI–Phase IV (2012-2017): Key Outcomes.**
  Three Key Development Outcomes:
  1. *Coordinate policy, legal and regulatory issues.*
  2. *Advance transmission interconnections.*
  3. *Establish South Asia Regional Electricity Markets.*

- **Demand Driven 'Bottom Up' Approach**

- **IRADe, a regional organization, is implementing partner**

SARI/EI Framework

- **Project Steering Committee (PSC)** is the apex body of the program and provides overall strategic directions.
- PSC members consist of **Senior level officials from the country governments, SAARC, ADB, Independent Energy Experts/Diplomats.**
- Task Forces are **represented by Government Nominated members of level of Directors/Chief Engineers/Members etc. from Utilities, Regulators, planners, Power Exchanges of SA countries.**



- **TF1: Coordination of Policy, Legal and Regulatory issues**

- **TF-2: Advancement of transmission system interconnection**

- **TF 3: South Asian Regional Electricity Market**

SARI/EI Overall Framework for development of CBET in SA

SAARC Framework Agreement on Energy (Electricity) Cooperation

CBET facilitation through

Institutional Mechanism

Demand Driven Studies

- Regional Regulatory Guidelines
- Regional Investment Framework and Investment Policy Guidelines
- Harmonization of Grid Codes
- Assessment of Trading Potential
- Model framework for Open Access and Trading License Regime
- Transmission Master plan and Pricing
- Model Regulation for Power Market Development
- Standard Contracts (Bankable PPAs/TSAs)
- Mock Exercise for SARPEX

Undertaken as part of the TF-1 and has been Published

Suggested Changes/Amendments in Electricity Laws, Regulations and Policies (L&R&P) of South Asian Countries.

International Consultants

Deloitte, KMPG

PRDC, PWC, ICF

Mercados, E & Y

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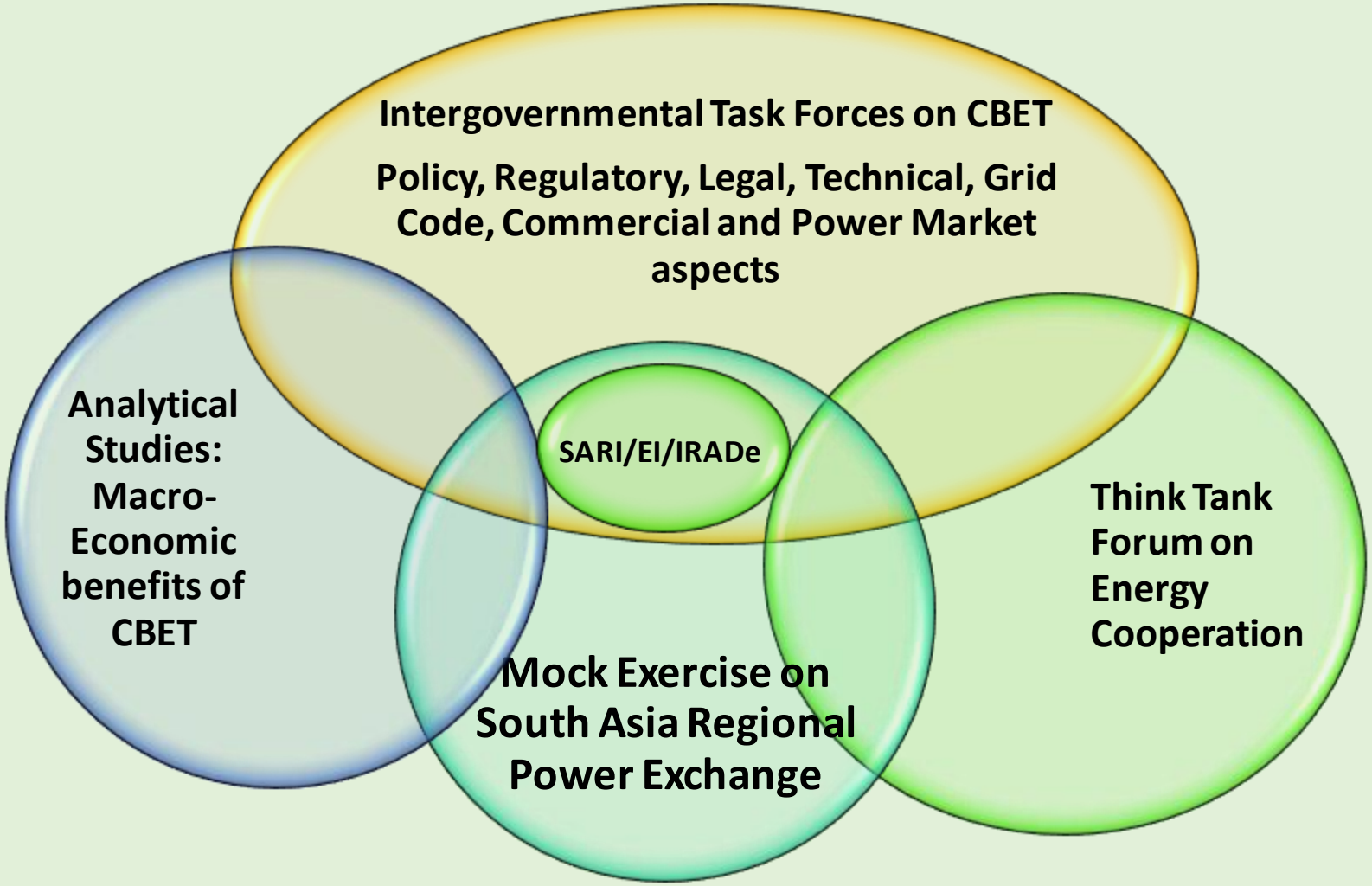
SARI/EI: Various Streams of Work



Overview of South Asia Power Sector

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Overview of South Asia Power Sector

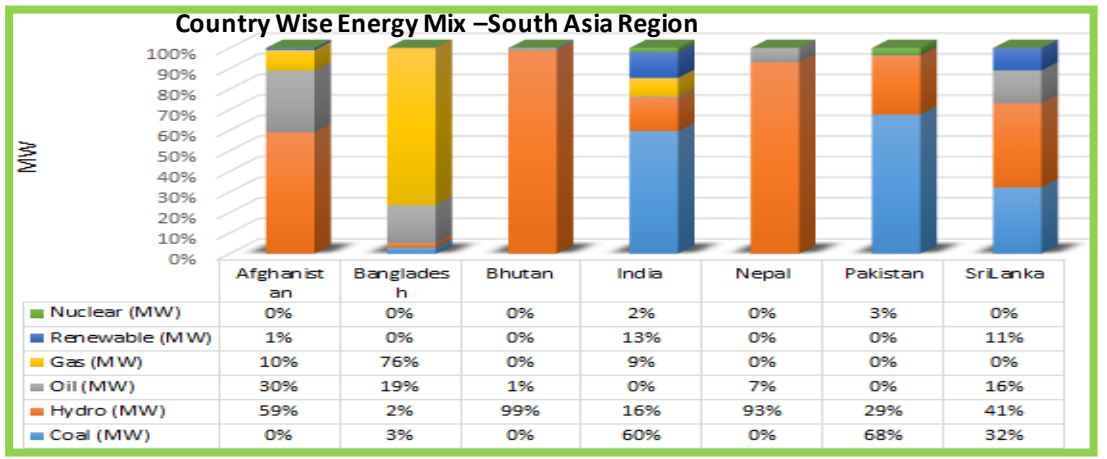
South Asian Power Sector. Total Installed capacity of around 3,60,603 MW

- ✓ **Afghanistan :** Small Power system(1341 MW), Electricity Imports high, Hydro Dominated.
- ✓ **Bhutan:** Small Power system (1614 mw) Hydro dominated, Surplus Hydro , Exporting to India
- ✓ **Bangladesh :** Gas Dominated, Resource Constraints , Imports Electricity from India and in future will remain as a Importing Country.
- ✓ **India:** Very Large Power System, Coal Dominated, reducing deficits, long terms electricity demand are huge and potential large market, Electricity importing and exporting nation.
- ✓ **Nepal :** very Small Power system (765 MW), Hydro based, very high deficits, Importing Electricity from India , Potential exporter and importer of electricity.
- ✓ **Sri Lanka:** hydro dominated but the fuel mix is changing, no trading at present, High peak demand.

Overall SA region is a power hungry region and per capita consumption is very low. Large part of population remains without access to electricity.

Country	Installed Capacity (MW)
Afghanistan	1341
Bhutan	1,614
Bangladesh	12,578
India	**315426**
Nepal	765
Sri Lanka	4050
Pakistan	24,829
Total	**360603**

Source : Compiled form various sources PGCB, DGPC,CEA,Annual Report NEA, Status of Industry Report NEPRA, Task Force 1 Report IRADe Report on CBET in South Asia: Challenges and investment oppoutinuties, etc.



	Afghanistan	Bangladesh	Bhutan	India	Nepal	Pakistan	SriLanka
Nuclear (MW)	0%	0%	0%	2%	0%	3%	0%
Renewable (MW)	1%	0%	0%	13%	0%	0%	11%
Gas (MW)	10%	76%	0%	9%	0%	0%	0%
Oil (MW)	30%	19%	1%	0%	7%	0%	16%
Hydro (MW)	59%	2%	99%	16%	93%	29%	41%
Coal (MW)	0%	3%	0%	60%	0%	68%	32%

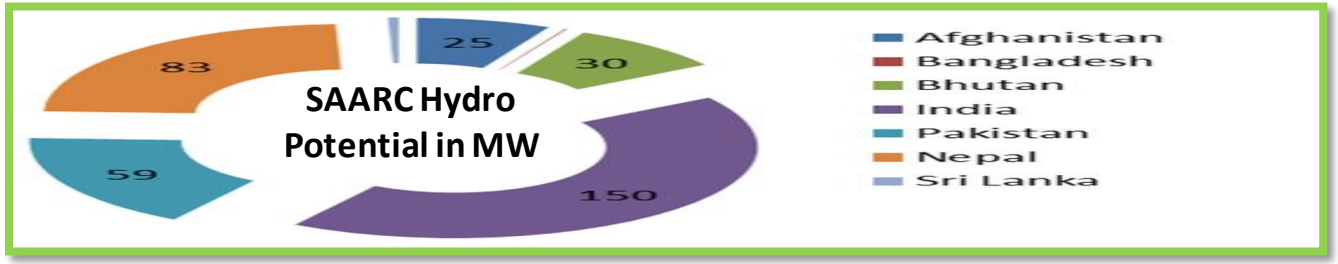
Resource Potential: Hydro Potential :350 GW !

- ✓ Vast potential of hydro power:350 GW
- ✓ Bhutan, Nepal, Pakistan, India: 30,83, 59, 150 GW respectively.
- ✓ Nepal and Bhutan can build export oriented hydro power plants
- ✓ Significant Coal deposits in India and Pakistan.
- ✓ Coal deposits in Bangladesh yet to be exploited.
- ✓ In addition to the conventional energy resources, there is huge renewable energy resources like solar and wind.

Country	Coal (million tons)	Oil (million barrels)	Natural Gas (trillion cubic feet)	Biomass (million tons)	Hydro (GW)
Afghanistan	440	NA	15	18–27	25
Bhutan	2	0	0	26.6	30
Bangladesh	884	12	8	0.08	0.33
India	90,085	5,700	39	139	150
Maldives	0	0	0	0.06	0
Nepal	NA	0	0	27.04	83
Pakistan	17,550	324	33	NA	59
Sri Lanka	NA	150	0	12	2
Total	108,961	5,906	95	223	349.33

Source: SAARC Secretariat (2010) for Bangladesh, Bhutan, India, Nepal, Sri Lanka; CWC (2005) for Indian States and WAPDA (2011) for Pakistan

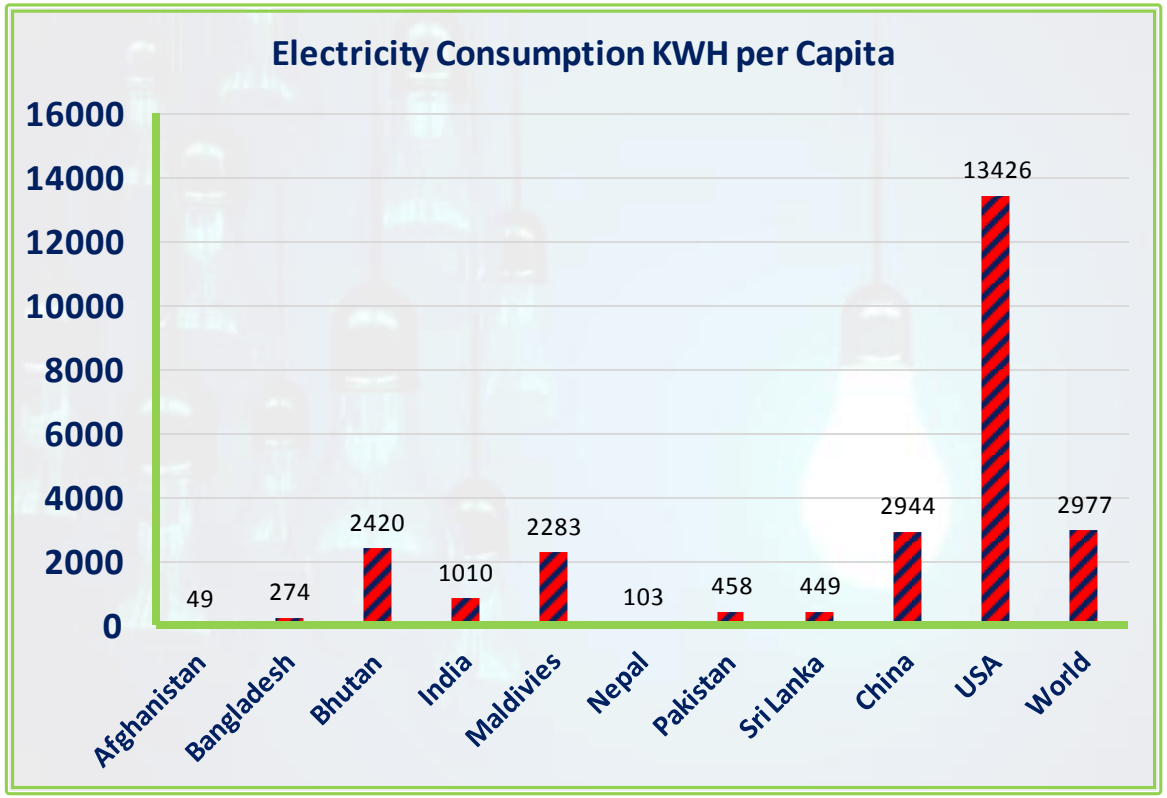
Renewables	Bangladesh	India	Nepal	Bhutan	Pakistan	Sri Lanka
Solar Power (Kwh/sq. m per day)	3.8 - 6.5	4 - 7	3.6 - 6.2	2.5 - 5	5.3	NA
Wind (MW)	Very limited potential	151,918	3,000	4,825	24,000	25,000MW



Per Capita Electricity Consumption

Country/ Region	Electricity Use kWh/capita/yr
SAARC	517
USA	12,914
EU	6,592
BRAZIL	2,206
MALAYASIA	3,614
CHINA	2,631
WORLD	2,803

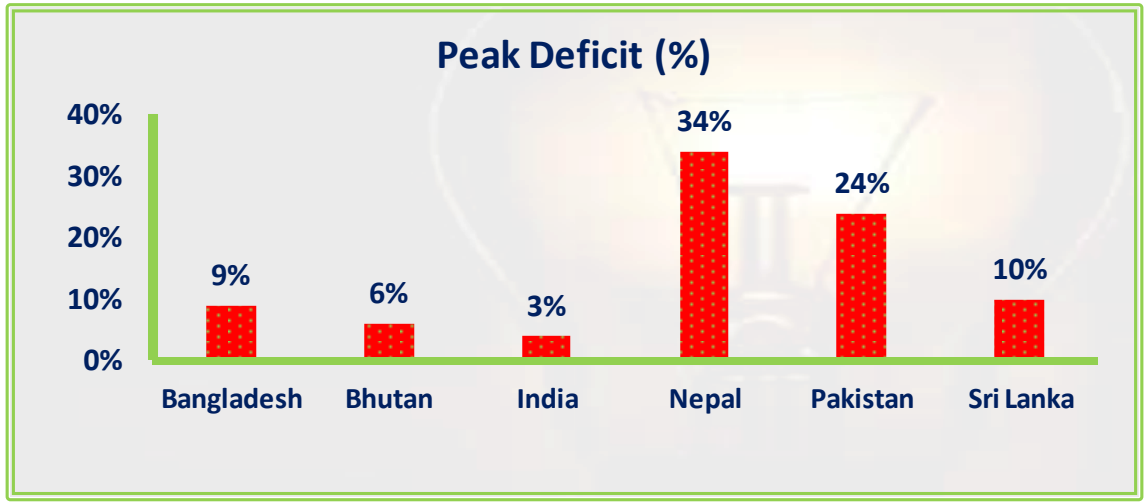
Source:SAARC Energy Centre

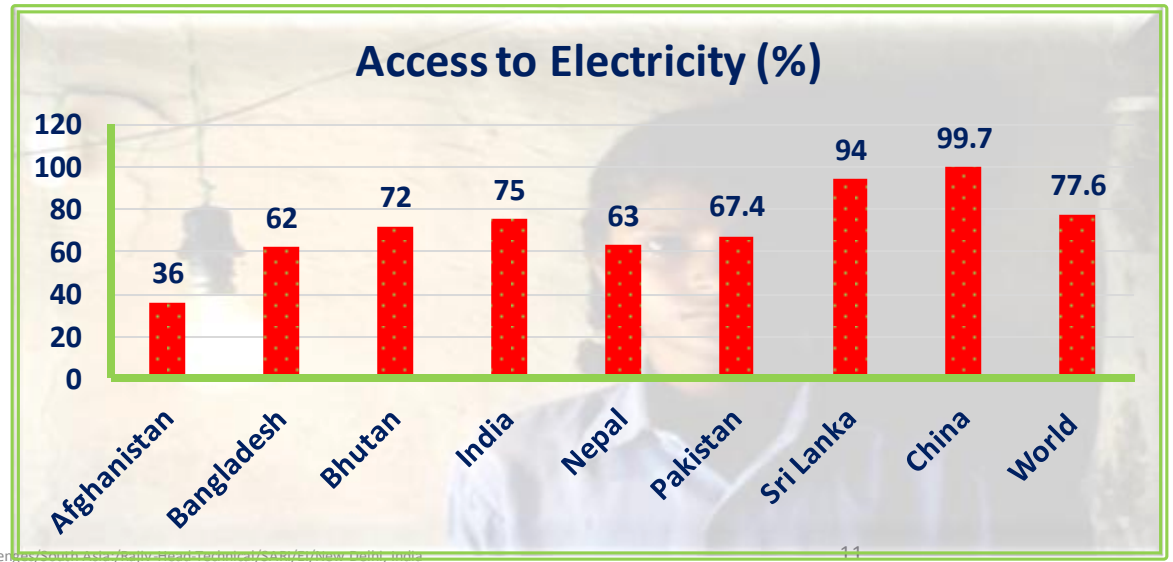


- ✓ Low per capita electricity consumptions.
- ✓ Maldives and Bhutan have high per capita electricity consumption among SA countries.
- ✓ Developed countries are at much higher level of consumption.
- ✓ Need to increase the level of consumption for a decent standard of living.

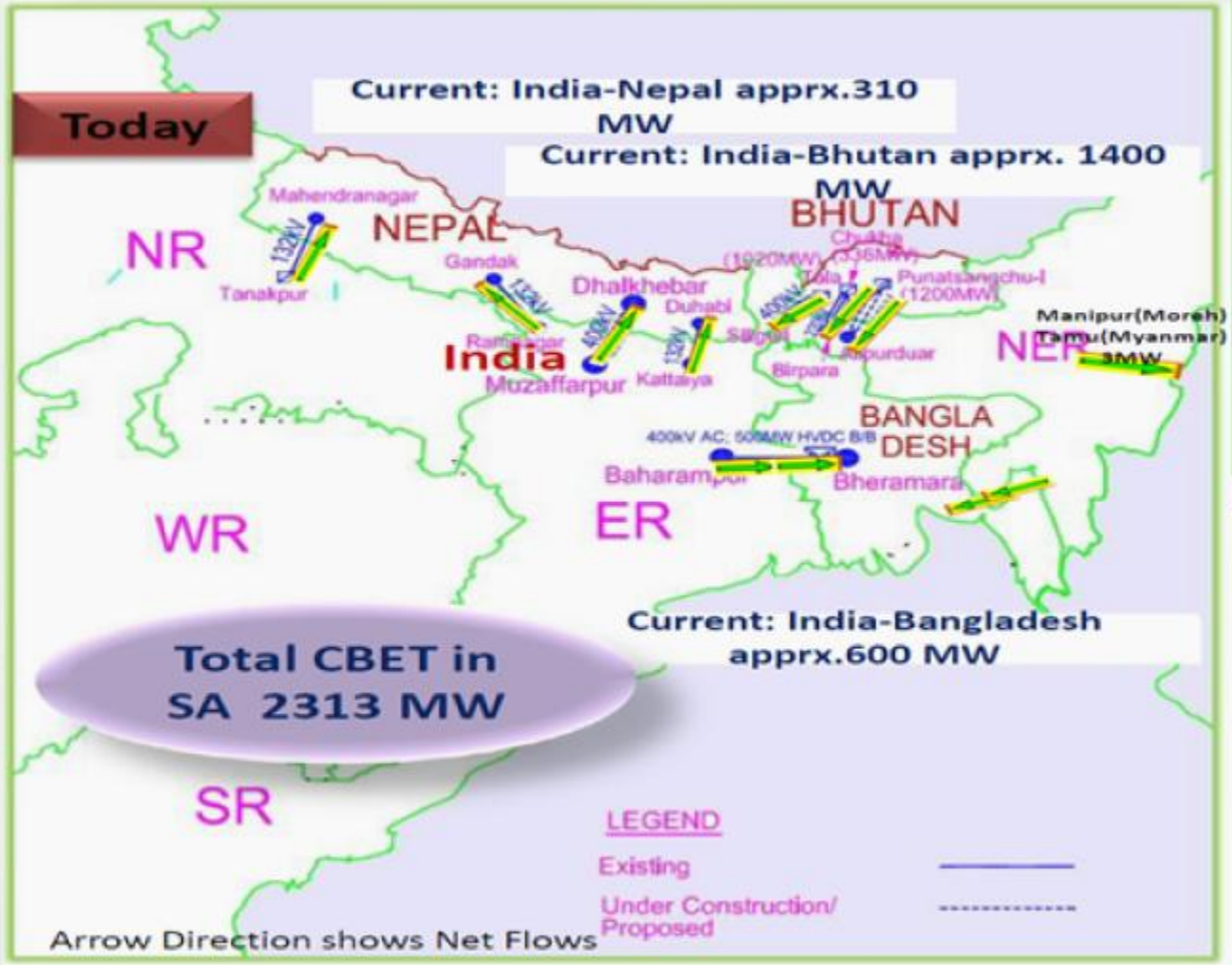
Key Drivers for CBET

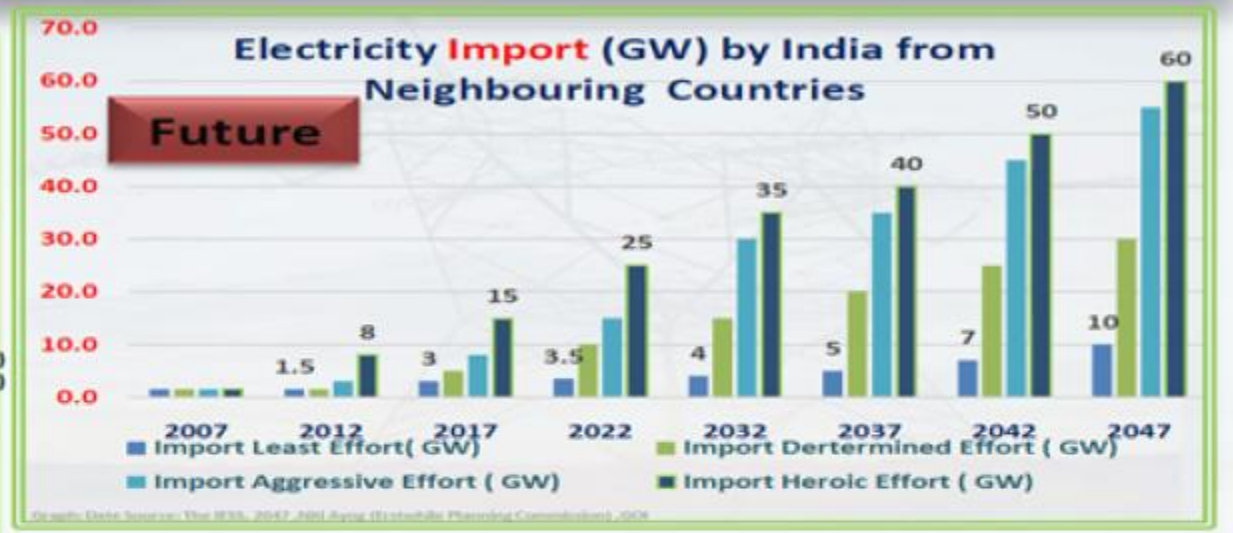
- ✓ Energy and Peak Shortages.
- ✓ Low per Capita electricity consumptions
- ✓ Poor access to electricity.
- ✓ Resource Crunch (In Bangladesh)
- ✓ Optimal utilization of energy resources.
- ✓ Availability of Prices on Market Based.
- ✓ Enhancing Liquidity
- ✓ Economic benefits.

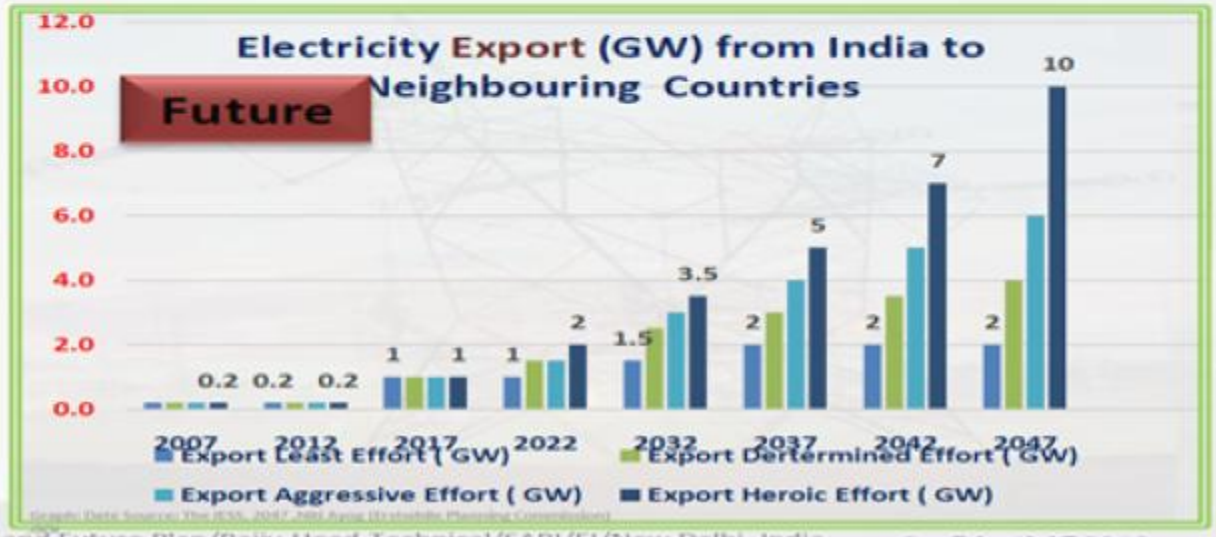




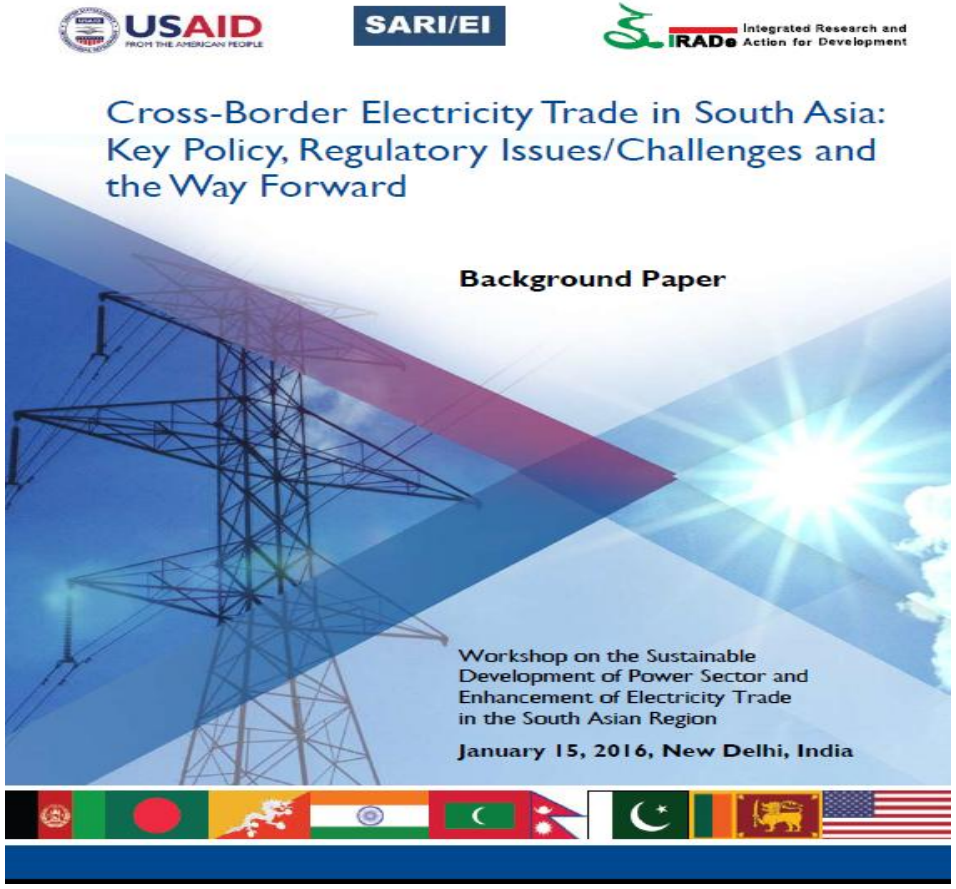
Current Status of CBET and Future Trading

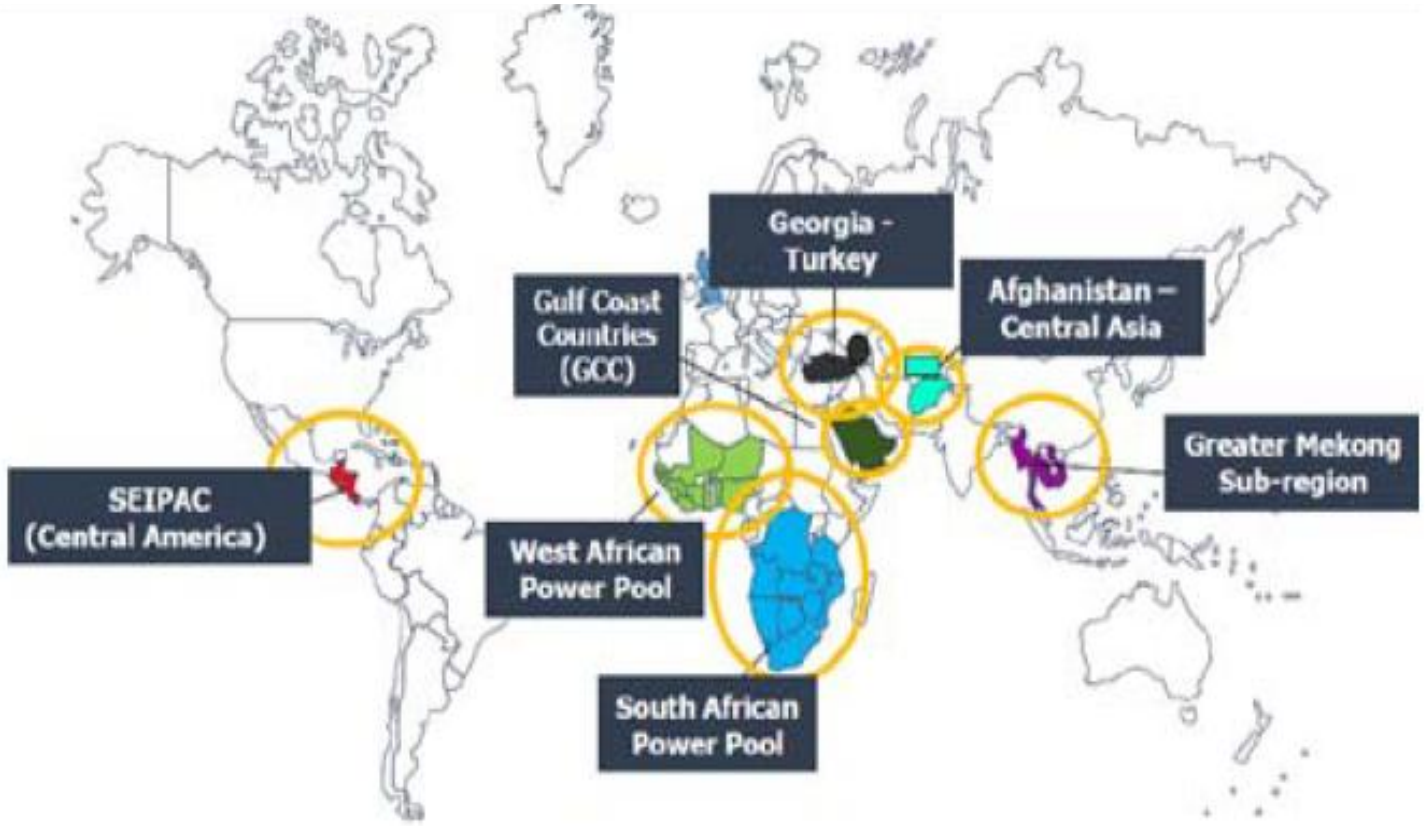






International Experience: Power Market Development





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International Experience: Aspiration behind the Regional integration

West African Power Pool

14 member countries
Trade Volume : ~7 GWh

Optimum Utilization of resources

Economic benefits

Greater Mekong Subregion Power Trade and Interconnection

6 member countries
Trade Volume :

NORD POOL

20 member countries
Trade Volume :489 TWh

Long term security & Enhancing liquidity

Availability of power on market based pricing

SAPP

12 member countries
Trade Volume :1 TWh +

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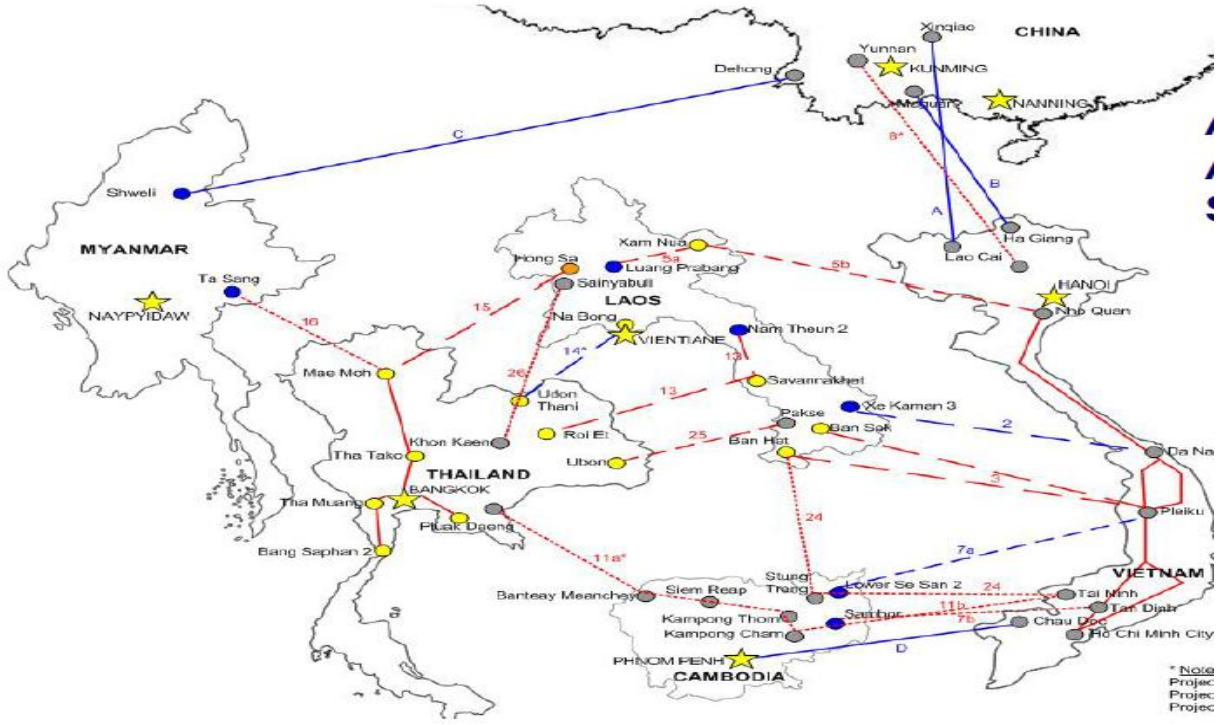
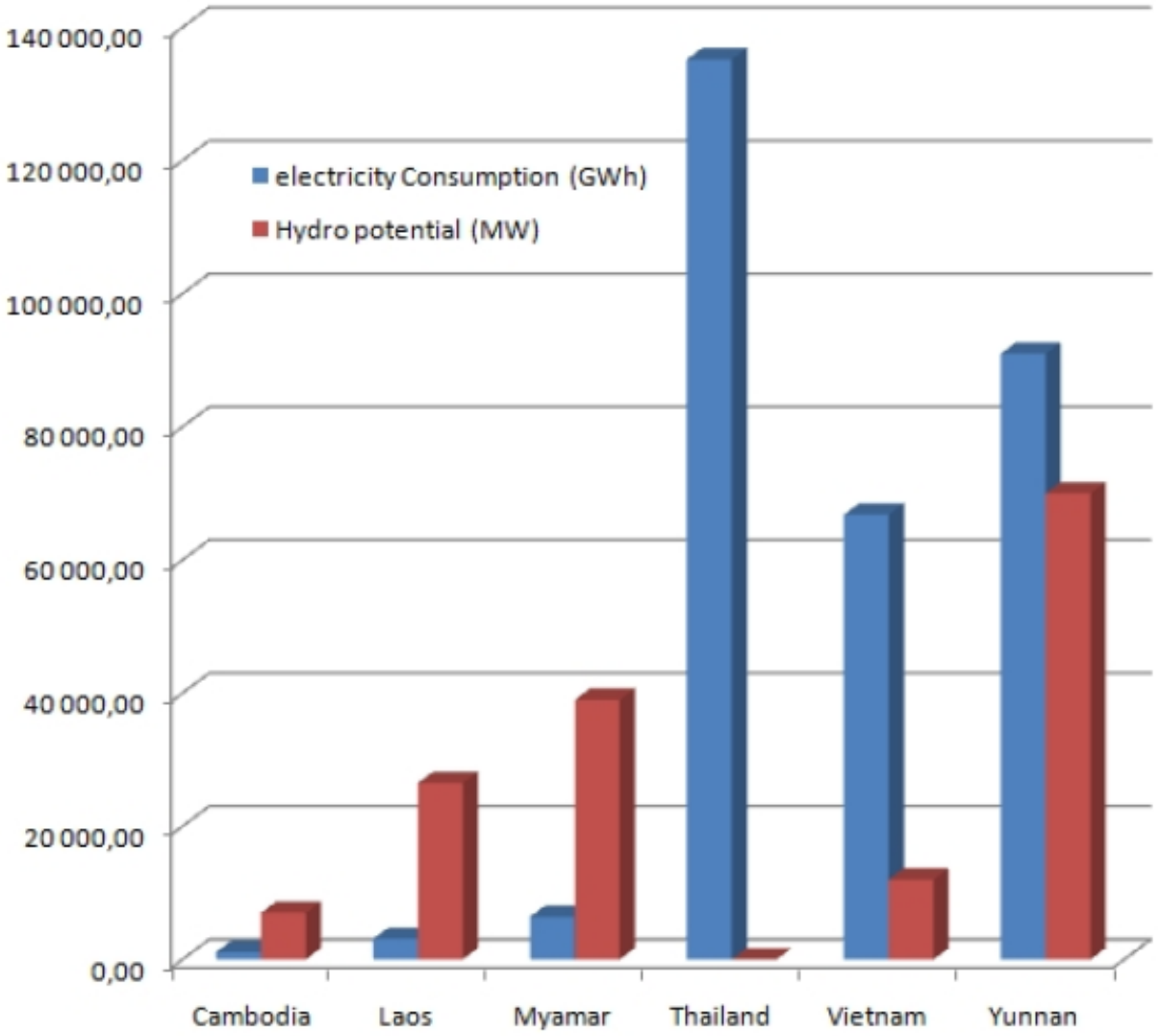
Greater Mekong Subregion

International Experience: Greater Mekong Subregion (GMS)

- Total Six countries: Cambodia, the People's Republic of China (PRC), Lao People's Democratic Republic (Lao PDR), Myanmar, Thailand and Vietnam
- Total Hydro Potential 229 GW , Coal is 28065 MT,
- The demand markets are in China, Thailand and Vietnam





Source: RETA No 6440 - GMS Master Plan Study 2008-2010

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Greater Mekong Subregion : Key Milestone

April 1995:Electric Power Forum created

Jan 2000: GMS ministers endorsed policy statement on Regional Power Trade.

Nov,2002:Inter Governmental Agreement signed to establish RPTCC

July, 2005:MoU on guidelines to implement Regional Power Trade & operating agreement (RPTOA)

March, 2008:MoU for Implementation of road map for GMS CBPT was signed

Greater Mekong Subregion (GMS) :Key Instruments

Inter-Country MOU, Treaties, Agreements	The intergovernmental agreement signed in year 2000, provided a framework to implement the Policy Statement on Regional Energy Trade in the GMS.
MoU on the Overall Framework of Regional Trade	MoU on guidelines for the implementation of the Regional Power Trade Operating Agreement (RPTOA) helped to promote efficient development of power trade to aid economic growth.
PPA Terms and Open Access	Dominated by bilateral negotiated long term contracts Presently Bilateral and open access has been recognized through strategy documents .
Transmission Planning/Infrastructure	The Planning Working Group (PWG) was established to fulfil the functions of the operational and system planning working groups, identified in the draft RPTOA . Master Plan at the regional level.
Interconnection Mechanism	Single Synchronous AC Power Grid. All the countries follow same operating codes (regional grid codes) to ensure system stability.
Commercial Mechanism to Settle Imbalances	Settlement procedure for long term bilateral : governed by such agreements .
Sustainable Development of Energy Trade and Provision for Projects Committed to Trade	The 15th GMS Ministerial Meeting during 2009, adopted a roadmap for expanded cooperation in the energy sector of the GMS taking into account the need for improved energy security, better utilization of Resources in the region.
Dispute Resolution	The concession agreement and the PPA, Experts and International Arbitration.

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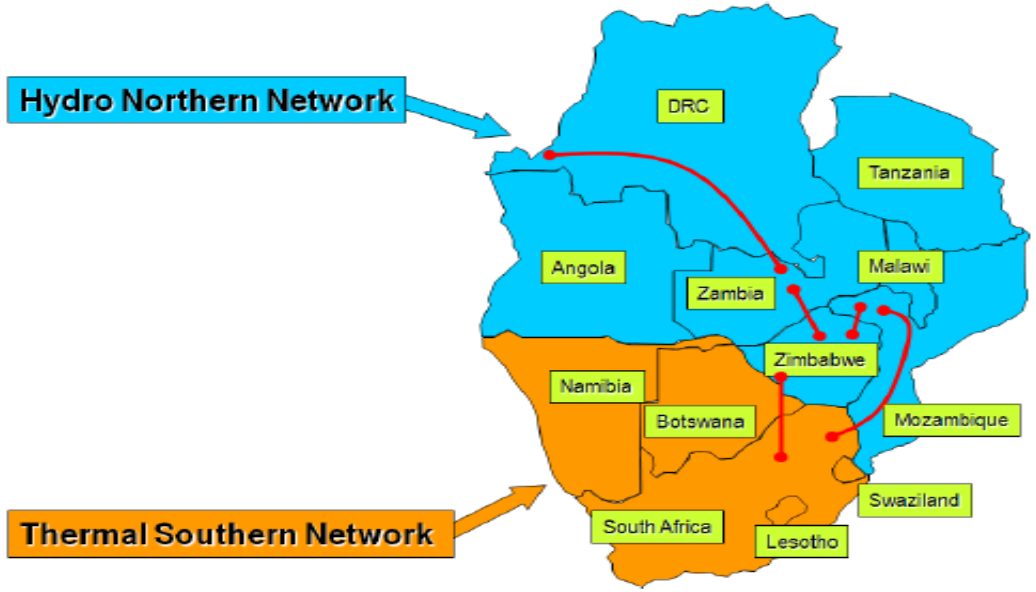
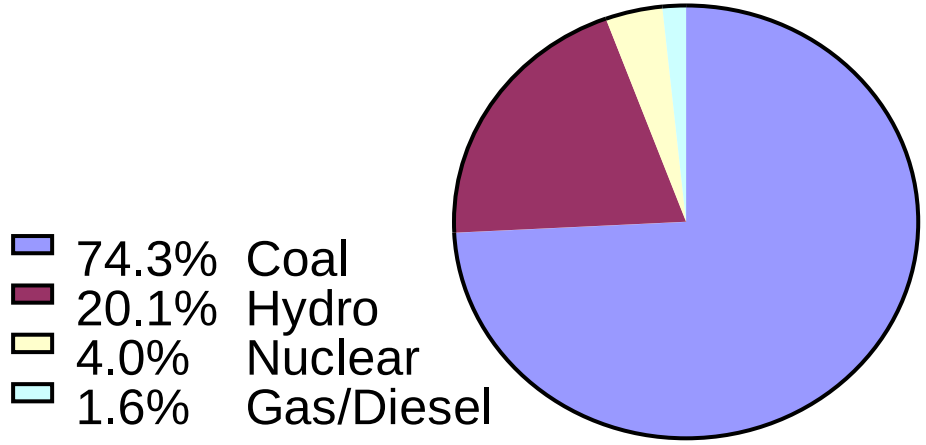
South Africa Power Pool

South African Power Pool (SAPP)- Snap Shot

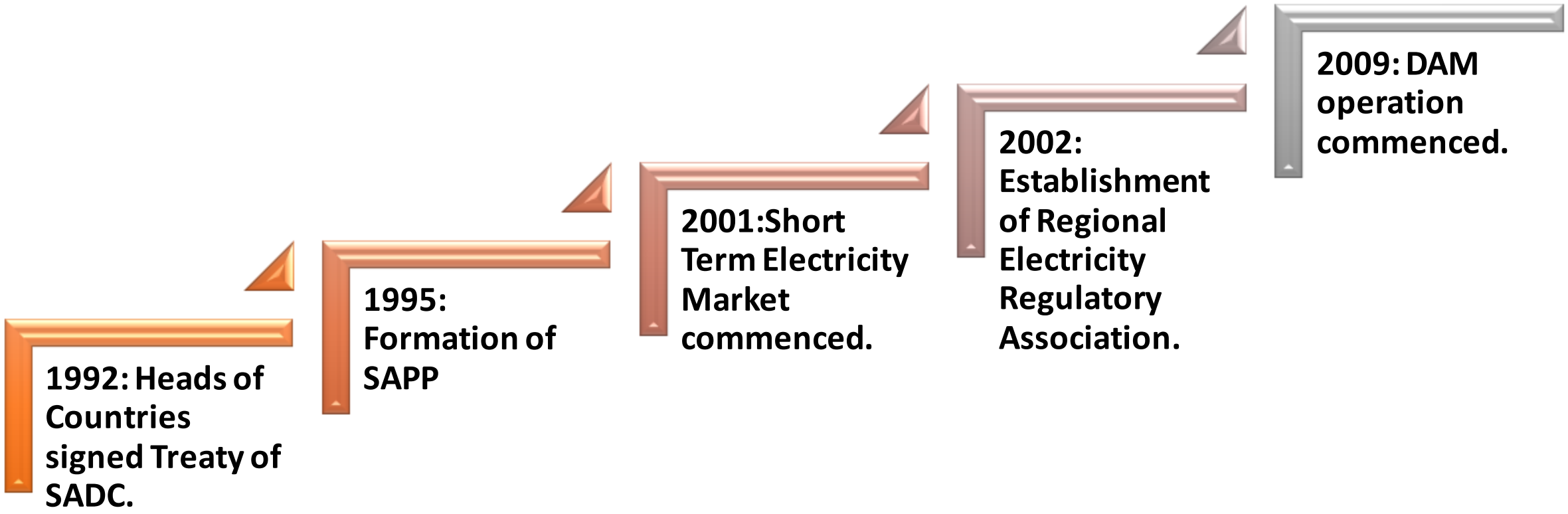
Installed Capacity	58,608 MW
Available Capacity	52,589 MW
Operating Capacity	46,910 MW
Peak Demand	48,216 MW



- 12 Countries :Angola, Botswana, Democratic Republic of Congo (DRC), Lesotho, Madagascar, Mozambique, Namibia, South Africa, Swaziland, Tanzania, Zambia, and Zimbabwe.
- Trade Volume :1 TWh +
- Average Electricity growth rate 3% p.a.
  - ✓ For South Africa demand growth was 4.9% in 2007 and for whole region 4.6%.



South Africa Power Pool : Key Milestone



South African Power Pool (SAPP) : Key Instruments

Inter-Governmental MoU (IGMoU):	Signed in the year 1995 must be interpreted in a manner consistent with the SADC treaty. Initial focus on Trading of ecess generation in the region based on On-going trans. Lines Projects.
Inter-Utility MoU	The MoU signed in Dec'1994 helped to establish an official cooperation for sharing the costs and benefits of energy generation. Revised in 2007. Power Pool operating Principal, organization structure etc.
PPA terms/Power Trade	Currently CBET dominated by Bilateral and Short term through Exchanges.
Transmission Planning	Generation & Transmission projects of regional importance are prioritized and majority of them are developed together with Private Sector. Mainly bilateral projects for Firm, economy and Emergency purchases.
Interconnection Mechanism	Single Synchronous AC Power Grid, Some far places are also connected through HVDC.
Open Access to Network	Yes. Obligation to wheel except where technical problems prohibit.
Commercial imbalance settlement mechanism	Settlement as per long term bilateral trade .Currently based on hourly average power system frequency at different blocks of pool generation cost. Settlement happens in cash.
Regulatory Coordination	Regional Electricity Regulators Association of Southern Africa (RERA) is a formal association of independent electricity regulators to promote cooperation, transparency , efficient and sustainable development of CBET .
Dispute Resolution	Dispute Resolution Tribunal. SAPP agreement must be interpreted in a manner consistent with the SADC treaty which is final and binding .

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West Africa Power Pool

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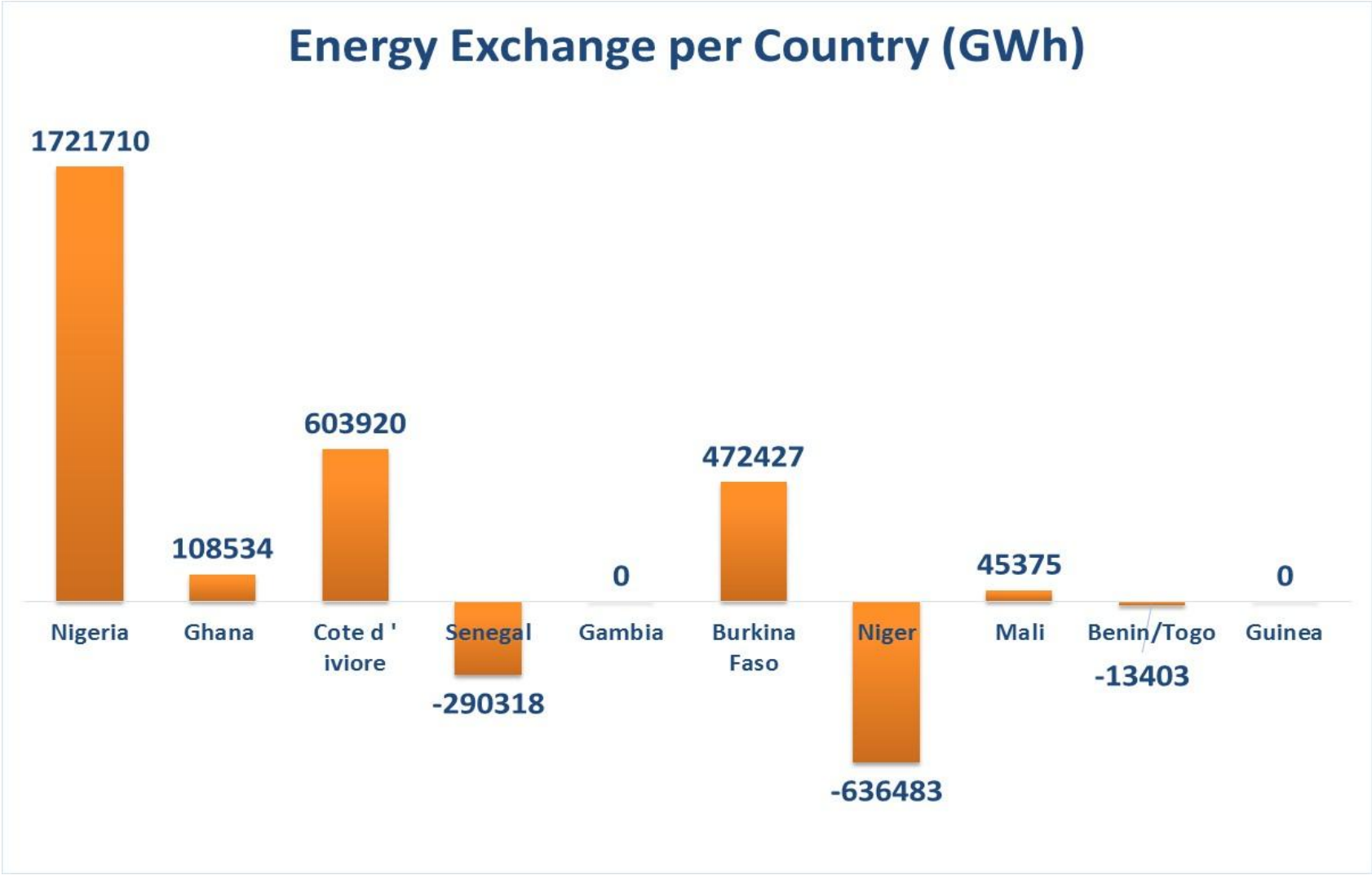
West African Power Pool (WAPP)-Snap Shot

- 15 countries :Benin, Togo, Nigeria, Niger, Mali, Cote d'Ivoire, Ghana, Gambia, Sierra Leone, Liberia, Senegal, Burkina Faso, and Guinea Bissau
- 22 Utilities
- Trade Volume : ~7 GWh
- 10,000MW Total available gene. Capacity



Source: WAPP Website

West African Power Pool : Key Milestone

1975: Treaty on Economic Community of West Africa States (ECOWAS)

2000: Intergovernmental MOU to create WAPP.

2006 :Utilities signed Article of Agreement, covering operating procedures, regulatory affairs, Dispute Resolution etc.

2008: Creation of ECOWAS Regional Electricity Regulatory Authority (ERERA).

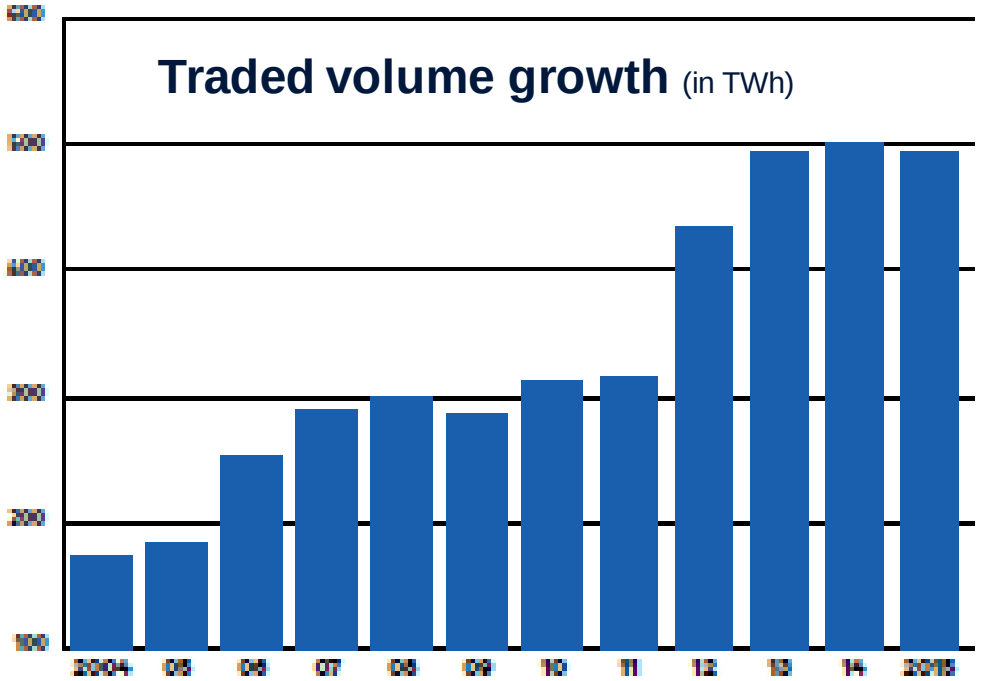
West African Power Pool (WAPP) : Key Instruments

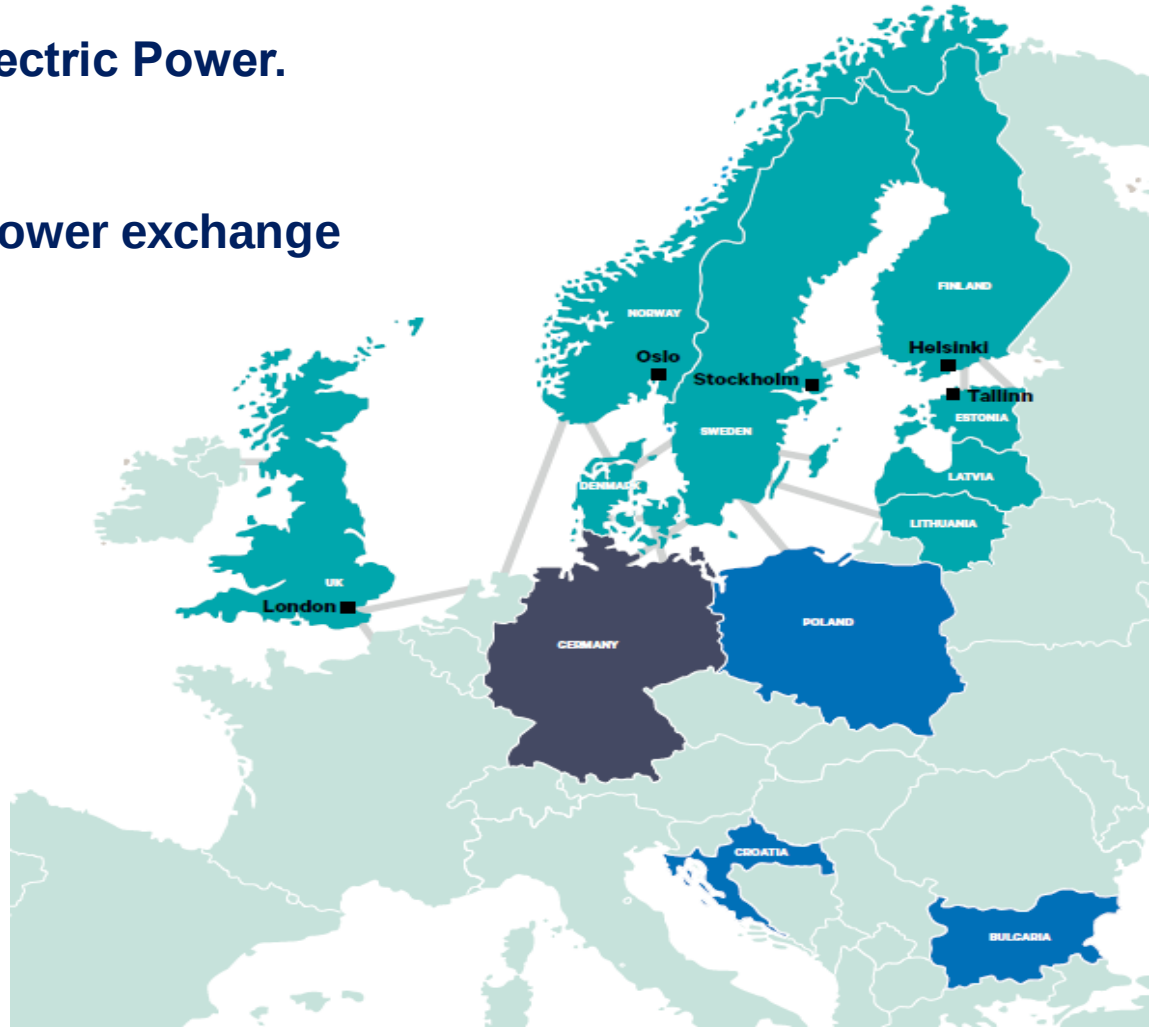
Inter-country MoU, Treaties, Agreements:	ECOWAS Ministers of Energy adopted an inter-governmental MoU on the establishment of WAPP in 2000. The MoU set forth the mutual obligations of the Parties and created an oversight, coordination, and administrative apparatus.
PPA Terms	Long term Bilateral/ Trilateral , since 1970. Many PPAs have been renegotiated or replaced with short term contracts
Interconnection	Single Synchronous AC Power Grid. All countries follow same frequency. Some far away places are also connected by HVDC.
Transmission Planning/Infrastructure:	ECOWAS Master Plan for the Generation and Transmission of Electrical Energy developed in 1999. Focuses on Hydro and Transmission Network .
Open Access to Network :	Yes. The Energy Protocol of ECOWAS has specific provisions related to nondiscriminatory conditions for trade in energy to ensure reliable cross-border energy transit flows.
Regulatory Coordination :	The ECOWAS Regional Electricity Regulatory Authority (ERERA) to ensure regulations and to give support to national regulators.
Dispute Resolution :	Mutual Settlement as per PPA. ERERA also empowered to settle disputes.

Nord Pool

Nordic Pool

- World's First international commodity of exchange for Electric Power.
- Hydro Power covers half of Nordic region needs.
- Total Trade : 489TWh (2015)
- Close to 370 companies from 18 countries trade on the power exchange





Source : Nord Pool Annual Report 2015

Nord Pool : Key Milestone

1990:Power industry liberalization began

1996 : Nord Pool commenced its operation

1998: Nordic TSOs took over the leadership role

2000:NORDEL governance structure transformed – Legally binding agreement among TSOs

Nordic Pool : Key Instruments

Inter-country MOU, Treaties, Agreements	The inter-Nordic Transmission System Operation Agreement (TSOA) signed in the year 2000, defines framework on Security standards, Congestion management etc.
Power Trade/PPA Terms	Physical (spot market) and Financial (Price hedging & risk management)- for future forward options. Physical - Hourly bids, 5 blocks. Intraday – Continuous 24 x7 a week, 1 hour prior to delivery. All Contracts are standardized in confirmative with Nordic OTC and bilateral market rate.
Regulatory Coordination	Nord REG- Nordic Energy Regulator – to promote legal and institutional framework. With deeper energy integration across Europe, ACER was formed in 2009.
Transmission Planning/Infrastructure	Transmission planning is done by Planning Committee; objective is smooth functioning, efficient utilization, consistent with environmental system. Master Plan at regional level .
Mechanism of interconnection .	AC Inter-connection .HVDC link are also in place.
Open Access to Network	Yes. All networks were opened for third-party access.
Transmission Pricing/Wheeling Charges and Transit	The point of Connection Tariff is used. Distance between seller and buyer – no significance.
Commercial Mechanism to Settle Imbalances	Settlement procedure for long term bilateral agreement governed by conditions attached to such markets .Common imbalance settlement is therefore a prerequisite for a common end user market

International Experience : Key Learnings

- ✓ Inter- Governmental Agreement/ Treaties
- ✓ Inter -Utility MOUs.
- ✓ Institutionalizing the Process of CBET such as Creating Forum/Association of Regulators, Forum/Association of Transmission utilities
- ✓ Regional Cooperation on Regulatory and Contractual Aspects
- ✓ Transmission Planning/infrastructure Development
- ✓ Coordinated Grid code and regional Interconnection and operating mechanism
- ✓ Third Party Access/Open Access
- ✓ Transmission Pricing
- ✓ Mechanism of Commercial Framework for Energy exchanges
- ✓ Settlement of Energy Imbalances and Grid Security
- ✓ PPA/Contract Terms
- ✓ Regional Funding/Investment Framework
- ✓ Dispute Resolution

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Experiences and Leanings of South Asia Region

South Asia Region Experience : Key highlights

- ✓ 1985- South Asia Association of Regional Cooperation (SAARC) was created to promote economic growth, welfare of people, social progress and cultural development etc.
- ✓ SAARC comprises of eight member states.
- ✓ 1987 : Secretariat of Association was set up in Kathmandu, Nepal.
- ✓ 1989 :Process of Regional centers were created. SAARC energy Center was created at Islamabad, Pakistan in 2006.
- ✓ 2014:Intergovernmental framework agreement (IGFA) on Energy Cooperation was signed between the member countries.
- ✓ SAARC has proposed to form Council of Energy Experts of Regulators to oversee various articles of IGFA. However Forum /Association/Agency for coordination of regulations yet to established.

South Asia Region Experience : Key highlights

- ✓ Currently Electricity Trade is between Eastern Region of the South Asia viz. between India-Nepal, India-Bhutan, India-Bangladesh.
- ✓ Current form of trade between South Asian countries is Bilateral- Long and Medium term. Multi-lateral and Trade of electricity on Exchanges is yet to commence.
- ✓ Transmission Planning : Jointly/Bilateral.
- ✓ Interconnection Mechanism: AC and HVDC both
- ✓ Open Access: Only in India in Transmission and Distribution
- ✓ Imbalance Settlement Mechanism: Only in India.
- ✓ Dispute Resolution – SAARC arbitration council OR Singapore arbitration.

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South Asia: Power Industry Structure Overview

Vertically Integrated

- Afghanistan (DABS)
- Maldives (FENAKA)
- Nepal (NEA)
- Sri Lanka (CEB)

Partially unbundled

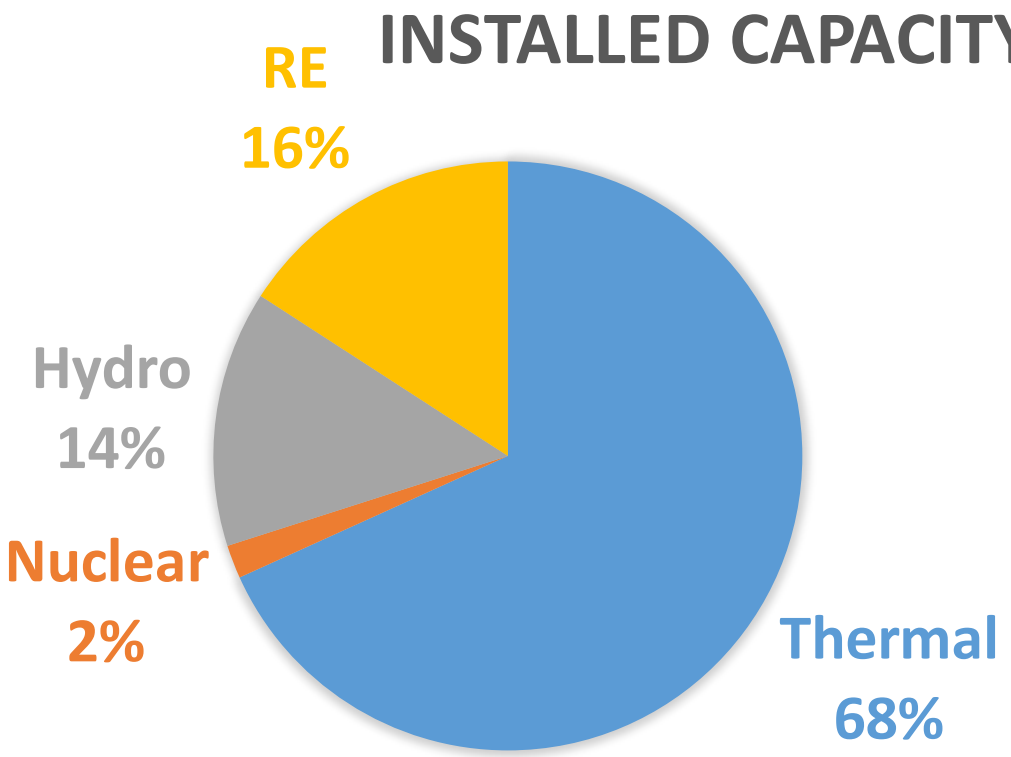
- Bangladesh (separate transmission utility)
- Bhutan (separate generation utility)

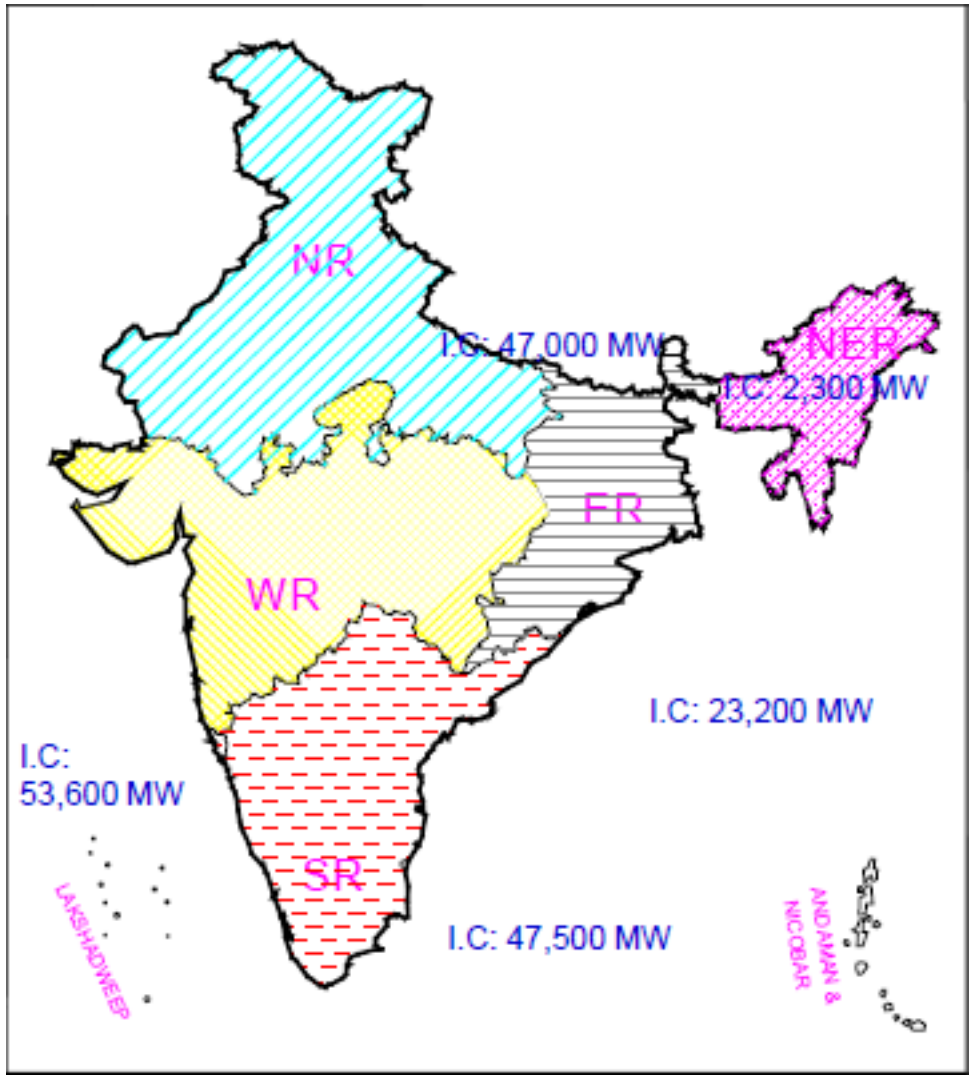
Unbundled

- India (separate G, T, D utilities)
- Pakistan (separate G, T, D utilities)

India Power sector Status

Total Installed Capacity	315426 MW
Thermal	215214 MW
Renewable energy	50018 MW
Nuclear	5780 MW
Hydro	44413 MW





Electricity Industry Structure in India

	CENTRE		STATE	
Policy	Ministry of Power		State Government	
Plan	CEA		State Government	
Regulations	CERC	CAC	SERC	SAC
Generation	CGS, Mega Power Plants , UMPPs		Gencos	IPPs
Transmission	CTU	PTU	STU	PTU
Systems Oprn	NLDC, Regional LDCs (N,E,S,W, NER)		State LDC	
Billing Settlement	Regional P Cs		S P Cs	
Distribution			SEBs, DISCOMs	
Trading	Trading Licensees		Trading Licensees	
Market	Trading Platform - PXs, Bilateral, OTC etc			
Appeal	Appellate Tribunal			

Indian Power Market Development : Key Lessons

Issue	Lesson Learnt
Private Sector Participation	Rapid Capacity Addition-Prior to 2003 - 3 % ,presently - 40%
Unbundling	Generation delicensed ,Trading distinct activity, Independent TSO's
Transmission and Losses	Improved Efficiency – Losses Reduced.
Competitive Bidding	Efficient and Competitive Tariffs
Open Access	In Transmission and distribution
Trading / Merchant Operations	Trading still at 3% – 5% of the Total Market
Distribution Reforms	In some selected cities ,Privatization happened which led to significant reduction in T& D losses and efficiency was improved
Grid Discipline	Entire country is having an uniform Frequency. Deviation settlement mechanism has disciplined
Spot market Platform	Two Power exchanges come up – Day Ahead Market ,Term Ahead Market.

SARI/EI Task Force Approach for Energy Integration for CBET: Key leanings for South Asia

Key leanings

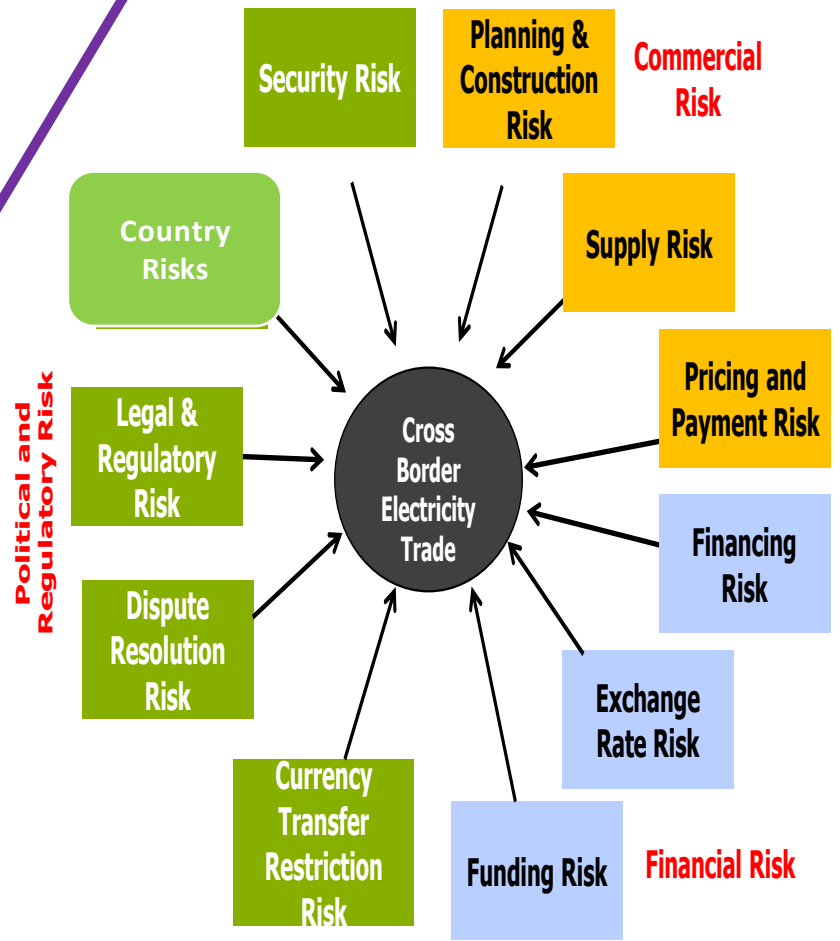
1. Political Conesus : Regional Cooperation and Recognition of CBET/Trade in the National Policy, Law
2. Government Commitment & Policy Coordination
3. Financial Challenges, Investment , Financial Viability

Regional Power System/ at Initial Stages

4. Mechanism of Inter-connection
5. Market form of Trade
6. Regional Cooperation on Regulatory and Contractual Aspects
7. Open Access in Transmission
8. Transmission Charges/Pricing
9. Transmission Plan
10. Commercial Mechanisms to Settle Imbalances
11. Dispute Resolution

Regional Power System at in Transition and Mature Stages

Motivation behind these challenge is to address the typical Risks in Cross-Border Projects. What are the Risk?



Key Impacts Milestone Achieved in South-Asian Region CBET since 2012-13

2012-13	2013-14	2014-15	2015-16	2016-17
India-Bangladesh 500 MW HVDC link commissioned	India- Nepal Power Trade Agreement Signed	SAARC framework agreement on energy (electricity) co-operation signed	Tripura (India)-Comilla (Bangladesh) 400KV transmission interconnection commissioned & 100 MW power is being exported to Bangladesh	GOI issued guidelines for CBET, Created SAARC Council of Experts of Energy Regulators. Trade CBET Increased by 800 MW since 2012.

Major Publications

Way Forward

- *Implementation of Intergovernmental Framework Regional/bilateral Agreement/Treaties.*
- *Institutionalizing the Process of CBET such as Creating Forum/Association of Regulators(SAFER) , Forum/Association of Transmission utilities (SAFTU)*
- *Alignment of Regulations ,Technical Standards, Grid Codes ,Operating Procedures*
- *Regional investor friendly framework.*
- *Multilateral Power Trading and Power exchange, imbalance settlement mechanism*
- *Financial Viability of power sector needs to be improved to sustain CBET in long run*
- *Regional level Generation and Transmission Planning*
- *Transparent Regional Dispute Settlement mechanism .*

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Country	Policy	Regulation	Generation	Transmission	System Operation	Distribution	Trading
Afghanistan	Ministry of Energy and Water (MEW)	Afghanistan Electricity Regulatory Authority (AERA) (Proposed)	DABS	DABS	DABS	DABS	DABS
Bangladesh	Ministry of Power, Energy and Mineral Resources (MPEMR)	Bangladesh Energy Regulatory Commission (BERC)	BPDB, EGCB, APSCL, NWPGC, IPPs, SIPPs, Rental Plants	PGCB	PGCB	BPDB, WZDPC, APSCL, DPDC, DESCO, REB	BPDB
Bhutan	Ministry of Economic Affairs (MEA)	Bhutan Electricity Authority (BEA)	Druk Green Power Corporation (DGPC)	Bhutan Power Corporation (BPC)	BPC (NLDC)	BPC	-
India	Central: Ministry of Power under the Government of India) State: Power/Energy Department under the State Government	Central: CERC State: SERCs/ JERCs	Central: NTPC, NHPC, NPCIL, UMPPs, IPPs, MPPs State: State-owned GenCos, IPPs, CPPs	Central: POWERGRID (CTU), Private/JV Licensees State: STUs, Private/JV Licensees	Central: POSOCO (NLDC & 5 RLDCs) State: SLDCs	Central: Nil State: State-owned Discoms, Private Licensees, Distribution Franchisees	Central: Inter-state Licensees State: Discoms / TradeCos (Include State Holding Cos) / Intra-state Licensees
Maldives	Ministry of Environment and Energy (MOEE)	Maldives Energy Authority (MEA)	STELCO, FENAKA	STELCO, FENAKA	STELCO, FENAKA	STELCO, FENAKA	-
Nepal	Ministry of Energy (MoE)	Electricity Tariff Fixation Commission (ETFC) under Department of Electricity Development (DOED)	Nepal Electricity Authority (NEA), IPPs	NEA	NEA	NEA	NEA
Pakistan	Ministry of Water and Power (MOWP)	National Electric Power Regulatory Authority (NEPRA)	State-owned generating companies formed after restructuring of WAPDA (CPGCL, JPCL, LPGCL, NPGCL) & other IPPs	National Transmission & Despatch Company (NTDC)	NTDC	KESC & Distribution Companies formed after restructuring of WAPDA (total 10 in nos.)	-
Sri Lanka	Ministry of Power and	Public Utilities Commission of Sri Lanka	Ceylon Electricity Board	CEB Transmission	CEB Transmission	CEB Distribution Licensees 1-4	-