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Achieving Sustainable Energy for All in South Asia: Modalities of Cooperation

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Energy Security and Cooperation in South Asia : Pivotal Role of North Eastern States

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Energy Security : Dual Dimensions

South Asian countries : two crucial perspectives
i) sustainable development
ii) security-militaristic

Sustainable development : energy security impinges upon : economic, environmental and social developments.

South Asia : very nature and direction of sources of energy supplies, demand, consumption and distribution and related geo-politics call for a regional approach to energy security

Macro depiction : energy resources distribution and use
Sources : Skewedly distributed

Therefore - no individual nation in South Asia could ensure and endure energy security alone.

Interdependence & sustained cross border exchanges : the only way out

Geo-political Dimensions

Energy security : entangled in the geo-politics of the region.
India's centrality : size and its exclusive geographical location

Shares common border with all
No other two countries (except Afghan-Pak) have common borders.
17 provincial states (out of 29) have international land borders.

Borders – so far symbols of National Security threats
So widespread withdrawal syndrome prevailed
Today borders represent the galore of opportunities

INDIA : AREA AND POPULATION IN THE BORDER REGIONS

No. of States	17
No. of Districts	94
No. of Blocks	350
No. of Villages	19488
Population	37.72 million
Area	2,40,475.47 sq. kms.
Length of Border	15,106.7 kms.

India has 15106.7 Km of land border running through 94 districts in 17 States. These States in the country have one or more international borders and can be regarded as frontline States from the point of view of border management.

Various cooperation / integration ventures
(various energy related ideas, projects and linkages)
hindered in the past
by narrow politico-strategic interpretations of these borders.

Cooperation implies :
sharing of resources, geographical locations and even physical and social infrastructures

This also means sharing of national control over them.
Abandoning of national control :
imply loss of national sovereignty.

Brings an element of reluctance and
introduces withdrawal syndrome
from regional cooperation process.

Examples : gas from Bangladesh
Hydel power projects like Karnali, Pancheswar and Rapti in Nepal.
Tackling of this perception : likely loss of national sovereignty is a major issue

Equally true of India :

Tripartite Agreement between India-Myanmar-Bangladesh to import pipeline gas from Myanmar via Bangladesh – Jan 2005
India : a major policy shift :
i) Bilateral to trilateral
ii) Given the negotiation to Ministry of Petroleum
Ministry of External Affairs will be consulted

India did not agree to Bangladeshi conditions :

i) Trade corridor to Nepal and Bhutan,

ii) Direct power import from Bhutan and management of trade deficit

These were reasonable demands in the context of steady liberalization and economic integration initiatives in the region

India had to bear a very heavy cost

Pipeline proposal has been shelved

In the process it has forgone opportunity to make substantive geo-strategic and socio-economic gains in the long run including transit corridor to its North East region.

Therefore from both conceptual perspectives of

i) sustainable development
ii) security-militaristic angle

Critical essentiality of rational management of natural resources in the South Asian countries aimed at optimizing socio-economic benefit and minimizing the security-militaristic instabilities are very germane and critical.

Directly implies : choice is singularly limited to cooperation, interdependence & integration

How Situations are fast Changing ?

Eight reinforcing factors that are likely to promote power trading/exchanges

I High potentials yet huge deficit. No other options. Interdependence very crucial. Borders as Opportunities : Fast Emerging

II Increasing realizations among leadership to Expedite process of energy exchange.

Tremendous Public pressure. People are willing to pay

Federal Units like Punjab in Pakistan and Bihar, Bengal, Tripura and Assam in India are becoming more vocal and powerful

For instance : Declarations in various SAARC Summits.

Islamabad Declaration 2004 **: Concept of Energy Ring discussed.**

Dhaka Declaration 2005 **: Establishment of the SAARC Energy Centre to promote development of energy resources and energy trade in the region;**

Colombo Summit 2008 **: Concept of Regional Inter-governmental Framework**

Colombo Meeting of Energy Ministers 2009 : **Pursuing Energy Ring and Formation of Sectoral Expert Groups (e.g. gas, electricity, renewable energy etc.)**

SAARC Energy Centre in Islamabad to prepare an Action Plan on Energy Conservation .

Noted India's proposal to prepare a Roadmap for developing SAARC Market for Electricity (SAME) on a regional basis.

Male Summit – 2011 : **It directed the conclusion of the Inter-governmental Framework Agreement for Energy Cooperation and the Study on the Regional Power Exchange Concept as also the work related to SAARC Market for Electricity.**

Kathmandu Summit- 2014 ; SAARC Framework Agreement for Energy Cooperation signed

India-Nepal PTA (21 October, 2014)

Nepal and India signed an Agreement on Electric Power Trade, Cross-border Transmission Interconnection and Grid Connectivity

i) non-discriminatory access to the cross-border interconnections

ii) speed up interconnection planning and construction

iii) policy harmonization for the realization of cross-border interconnections, grid connectivity and power trade

iv) Joint Working Group Set Up

v) planning and identification of cross-border interconnection

vi) preparation and finalization of operation and maintenance guidelines

III Various levels of sensitisations and preparations for energy trading.

A number of organizations (regional and outside) engaged.
Technical and professional public sector organizations and private sector.
And UNDP, ADB, World Bank, USAID
India : two varieties of exchanges viz.
Inter-state :
Inter-regional

Large number of studies and policy suggestion :
South Asia Network of Econ Research Institutes (SANEI),
Coalition for Action on South Asian Cooperation (CASAC),
BCIM Forum and BBIN

South Asian Centre of Policy Studies (SACEP) ,
Bangladesh Unnayan Parishad (Dhaka),
Centre for Policy Dialogue (Dhaka),
BIISS (Dhaka)
Institute for Integrated Development Studies (Kathmandu),
Centre for Policy Research (New Delhi)
The Energy Research Institute (New Delhi)
Jawaharlal Nehru University (New Delhi)

BUET (Dhaka),
Quad-i-Azam University (Islamabad),
Lahore University of Management Sciences
Tribhuvan University (Kathmandu) and
Colombo University (Sri Lanka).
Several Training programmes and capacity building projects : including by USAID's SARIE project

IV Massive power sector reforms taken place. New Actors are emerging. Power exchanges are gradually emerging.

Cross Border private investment : new practice
Arun – III (900 MW), Tamakoshi – 3 (650 MW), Upper Marsyangdi – 2 (600 MW) and Upper Karnali (900 MW) : SJVN, GMR etc

V Significant level of Transmission Systems are in place.

VI Professional and technical institutions both private and public are now working very closely

VII Financial institutions including multilateral agencies are keen to invest.

China emerging as a new actor.

For instance, in the $ 40 billion China-Pakistan Economic Corridor Project (April 2015) out of the 51 agreements 20 related to energy projects. Ground breaking has been done for 5 projects of 1850 mw.

VIII Extra-regional linkages are fast emerging :

CASA 1000 project : transferring over 3-6 terawatt hours of hydroelectricity during the summer from Kyrgyz Republic and Tajikistan to South Asia.
Complementary TUTAP (Turkmenistan-UzbekistanTajikistan-Afghanistan-Pakistan)
interconnection with Afghanistan

Myanmar : India : Tamnthi Dam
(Chindwin river in western Sagaing region)
with NHPC of India – 1200 MW
– construction began in 2007
80 percent of electricity will go to India

Large number of projects with China including
Seven large dams Ayeyarwardy, Maykha and Malikha rivers in Kachin state (17259 MW)- 2007

Clear Reflections and Manifestations

India- Bangladesh : Four Far reaching Projects underway

i) 250 MW (out of 500 MW) exports from India started in 2013

ii) A grid inter-connection between Bheramara in Bangladesh and Behrampur (West Bengal) in India is completed. ADB loan critical role

iii)1320 MW coal based unit at Rampal (350 kms S-South West of FD=Dhaka by Bangladesh-India Friendship Power Company consisting of BPDB and NTPC costing $1.5 billion by 2017

iv) 100 MW export from Palatana Project in Tripura

Landmark starting projects : first time break a long journey between potential, negotiations and implementations.

These are path breaking projects because :

Shows a new and more realistic and matured relations between India and Bangladesh

New trend of harmonized and coordinated approach among various ministries within a country.

Indicates a generational shift in the bureaucracy of both these countries. Sidelining of unnecessary national prejudices.

Strong commercial and professional elements in the exchanges.

First national grid to National grid connection done

Issues of orthodox variety of national security are for the first time overwhelmed by more serious concerns about non-traditional security threats such as energy insecurity and human insecurity.

Leaders have discarded their traditional positions and showed unprecedented "political will".

Borders are used as opportunities rather than sources of threats

Could lead to several such exchanges

Strong contents of sub-regionalism based on physical contiguity and socio-cultural exchanges. Moving to multilateral projects

Recognises the role of international agencies like ADB, World Bank, UNDP and USAID other private conglomerates.

Acknowledges the critical roles played and substantive contributions made by civil society institutions, universities, think tanks, academics, media and private sector like IPPAI and SAARC regional institutions like SAARC Energy Centre

Prime example of Track II transforming into a Track I diplomacy in a full-fledged manner.

How did we reach here ?

"Conversation" and protracted dialogues on the needs and benefits

Display of concrete projects

Visionary politicians and technocrats

Public pressure

Multiple players including private sector

New Knowledge and Concepts

Sensitisation and capacity building of both local political leadership and bureaucratic echelons

Benefits of Institutional Linkages

Domino Effect : Several arrangements are in the offing including with Pakistan, Afghanistan, Nepal and Sri Lanka and Central Asian countries

ADB's very recent study (2015) on the economic and reliability benefits of six cross-border transmission interconnections with elaborate power system load flow:

(i)Bhutan-India additional grid reinforcement
(ii) India-Nepal 400 kilovolt transmission link under construction,

(iii) India-Sri Lanka proposed high voltage direct current transmission link which includes a submarine cable component,
(iv) Bangladesh-India high voltage director current transmission link (commissioned October 2013)

(v) India-Pakistan 220 kilovolt and 400 kilovolt transmission link
(vi) India-Pakistan 400 kilovolt transmission link coupled with CASA 1000 transmission link.

These have started happening

Findings

Benefits of each of these interconnections range from $ 105 million to $ 1840 million

Benefit to cost ratios : extremely attractive and in the range from 3.7 to 102.

Carbon dioxide reduction due to hydropower generation transferred from Bhutan to India alone would be about 10 million tons in 2016/17 and can be as high as 40 million tons annually by 2020/21.

Total Annual benefit $ 3861-4127 million and

Annualized cost $ 229-243 million (includes capital cost of transmission projects)

North East Region of India Today

Huge Scope for Energy Production and Trading

Started on Geo-political immunisation of energy sector issues

Commercial Practices emerging for the first time

De-securitise public interest

Development and human security Issues are highlighted

State governments are committed

India's Act East Policy makes North East the bridge head

North Eastern Region (NEEPCO) :

Hydel Power potential of about 58971 MW
(40% of the national potential)
However, harnessed 1242 MW (2.1% of total potential)
2810 MW of hydro power (under development)
balance 93% is yet to be harnessed

Natural Gas reserves : 151.68 Billion Cu ft
(could generate 7500 MW for 10 years

Coal : 864.78 Million tones (186 Bil Tons country)
240 MW/day can be generated for a period of 100 years
Emerging Power House of India

STATUS OF HYDRO ELECTRIC POTENTIAL DEVELOPMENT
(Installed capacity - Above 25 MW) – June 2014

New Directions for the NE Region

Palatana 726 MW Combined Cycle Gas Turbine (CCGT) thermal power plant **Gas based –**
ONGC-ILFS and Govt of Tripura
North East Region becomes the Power Generating & Trading Hub
Development dynamics transform into high growth robust economies
Reverse Integration starts taking place as Interdependence Matrices changes

Borders become more friendly and borderlands development injects human security
Institutions become vital and would be linked to outside

NER - Huge Investment Opportunities

Special Category States status since 1969
Excusive Geography based Ministry - MDoNER
Since 1996 Earmarking of at least 10% of the Plan Budget(s) of the Central Ministries/ Departments has been done.
Non-Lapsable Central Pool of Resources (NLCPR since 1997–98)
Exclusive institutions :
North East Development Finance Corporation Ltd. (NEDFi) ;
Special Purpose Vehicle in the power sector :
North Eastern Electric Power Corporation Limited (NEEPCO)
Act East Policy : BBIN and BCIM main instruments

The innovative intervention North East Industrial and Investment Promotion Policy, 2007 (NEIIPP, 2007) :
Japan would be most suitable development partner.

India-China Border

Exactly fits into "develop-the-west" campaign launched in China in 2000 and generation of surplus power in Indian Himalayan States in Sikkim, Arunachal Pradesh, Uttaranchal and Himachal Pradesh

China's western region covers 2/3 rd of the nation's territory, Population 23 percent of the national total.
Nine provinces : Gansu, Guizhou, Ningxia, Qinghai, Shaanxi, Sichuan, Tibet, Xinjiang and Yunnan.
Plenty of land and natural resources

Eastern China's 14000 km long coastlines brought fortunes to China in the last two decades,

Now : western China with 3500 km land frontier lines that will become second golden area of reopening.
Huge demand for power

Therefore Five Models of Cooperation

Core is project based approach : high success rate

I Bilateral : India-Bhutan

Electricity export – over 84% of total generation [1,494 MW]
Internal consumption ~ 1152 MU (Peak load 187.5MW)
Annual export ~ 5922 MU

Electricity Sale revenue US $ 203 million [47% of national revenue].

- **A number of hydro projects under development in Bhutan 10,000 MW by year 2020**

II Sub-regional : Greater Mekong Region

III Regional : Southern African Power Pool

IV Local Integration : Generation-Load Centre Location Based Model

Palatana (Tripura)

V Wheeling Facility

Greater Mekong Sub-region – A Prime Example

5 countries

Cambodia, Lao People's Democratic Republic, Myanmar, Thailand and Vietnam

+ 2 provinces in PRC
Yunnan and Guangxi Zhuang Autonomous Region

Area 2.6 mn km^2

Population >313 mn (~5% of world population)

Generation in Laos, Thailand and Viet Nam (315 MW + 1,931 MW)

Transmission and distribution in Cambodia, Laos, PRC and Viet Nam

Present Power Trade

Bilateral agreements
Hydropower export/import (150 MW Nam Ngum 1, 40 MW Xeset)

Hydropower exports from Laos to Thailand (e.g. 210 MW Theun Hinboun, 150 MW Houay Ho)

Various border power trade between countries (e.g. Malaysia-Thailand, Thailand-Laos, Laos-Viet Nam)

•GMS- Cross Border Power Interconnections

- 500 kV DC Interconnection (PRC – Lao PDR – Thailand)
- 500 kV GMS Power Interconnection (Thailand – Lao PDR – Viet Nam)
- 115 kV Line (Southern Lao PDR to Cambodia):
- GMS Power Transmission Project (Cambodia): ongoing ADB funded project (target completion: 2008)
- 115 kV Line (Viet Nam to Cambodia):

III Power Pool Models

Some Successful Power Pools based examples of energy exchange:

- US-Canada exchange under Columbia River Treaty
- Nordpool (Denmark, Finland, Norway Sweden)
- Nordpool and EU
- UK- France
- Southern African Power Pool (SAPP)
- ASEAN Power Grid

Power Pool

Act East Policy : BBIN and BCIM main instruments

Nepal-India-China Tri Junction Power Pool

India can take the lead in forming an N-I-C tri-junction consortium to help in attracting regional and sub-regional investment partners.

This should in turn work towards creating a N-I-C Tri-junction Power Development Fund (TPDF) with the help of international financial institutions.

IV Local Integration

New Directions for the NE Region

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ONGC-ILFS and Govt of Tripura
North East Region becomes the Power Generating & Trading Hub
Development dynamics transform into high growth robust economies
Reverse Integration starts taking place as Interdependence Matrices changes

Level of confidence high :
10 gigabit per second (GBPS) bandwidth gateway
of internet connectivity for the North Eastern states
has been secured via Bangladesh.
Traditional sources of southern and western India.

V Wheeling Facility


thank you