The 8th Japan-SAARC Energy Symposium
Medium Term Vision For Energy Connectivity in the SAARC Region
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Presentation Outline

1. Energy Situation of the SAARC Region
2. SAARC Energy Ring
3. SAARC Energy Centre (SEC)
4. Energy Connectivity Interventions by SEC
5. Rationale for Regional Energy Connectivity
6. The Way Forward
7. South Asia Perspective Development Plan
8. Approach for a Prosperous South Asia
1. Energy Situation of the SAARC Region

1. 1.6 billion people
2. 500 million earn < $1/day
3. All Member States
   - Oil importing
   - Energy deficit
Strategy

Tackling Energy Issues With Synergy

There's no reason to look back when you have so much to look forward to.
Energy Situation of South Asia
Reserves Horizon

Coal
63,036 Million Tonnes, proved recoverable

Natural Gas
2,308 Billion Cubic Meters, proved recoverable

Oil
785 Million Tonnes, proved recoverable

Hydro Power
4,528,000 GWh/year, gross theoretical capability
2. SAARC Energy Ring

1. **SAARC Energy Ring**: Envisioned by the SAARC Leaders at the 2004 Islamabad Summit

2. Vision being translated into reality by SAARC Energy Centre

3. Four Expert Groups engaged to pursue the concept:
   - Oil and Gas
   - Electricity
   - Renewable Energy
   - Technology Transfer (including Coal & Energy Efficiency)
SAARC Vision

Domestic energy development and bilateral cooperation alone will not solve power and energy crisis of South Asia.

Engagements have to be multi-lateral.
SAARC Energy Ring
Power Grid

- India-Sri Lanka
- Pakistan-India-Nepal
- Nepal-India-Bhutan-Bangladesh
- Kyrgyzstan-Tajikistan-Afghanistan-Pakistan
- Tajikistan-Afghanistan
- Uzbekistan-Afghanistan
- Turkmenistan-Afghanistan
- Iran-Afghanistan
- Iran-Pakistan
- India-Bangladesh
- India-Myanmar
- India-Nepal
SAARC Energy Ring
Gas Grid

- Turkmenistan-Afghanistan-Pakistan-India
- Iran-Pakistan-India
- Qatar-Pakistan-India

Pipelines from the west can further be extended to Nepal and Bangladesh.
1. SAARC Regional Energy Trade Study (SRETS) identified four regional or sub-regional trade options:
   a. Power Market;
   b. Petroleum Refinery;
   c. LNG Terminal; and
   d. Power Plant

2. An ADB funded study on South Asia Regional Power Exchange has identified various opportunities in electricity trade.
### SAARC Energy Ring
Power Interconnection Opportunities

<table>
<thead>
<tr>
<th>Grid Interconnection</th>
<th>Capacity (MW)</th>
<th>Est. Cost (Million USD)</th>
<th>Annual Benefit (Million USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>India-Bhutan</td>
<td>2,100</td>
<td>160</td>
<td>1,840</td>
</tr>
<tr>
<td>India-Nepal</td>
<td>1,000</td>
<td>186</td>
<td>105</td>
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<tr>
<td>India-Sri Lanka</td>
<td>500</td>
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<tr>
<td>India-Bangladesh</td>
<td>500</td>
<td>250</td>
<td>389</td>
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<tr>
<td>India-Pakistan</td>
<td>500</td>
<td>150</td>
<td>491</td>
</tr>
<tr>
<td>CASA 1000</td>
<td>1,000</td>
<td>970</td>
<td>906</td>
</tr>
</tbody>
</table>

- Cost estimates depend on time and specific design options.
3. SAARC Energy Centre

**Establishment**
Year 2006 at Islamabad, Pakistan

**Objective**
Initiate, promote and facilitate cooperation in energy sector of SAARC Member States for the benefit of all

**Funding**
SAARC Member States; supervised by a Governing Board comprising all Member States

**Technical Resources**
Professional staff selected from SAARC Member States
Expert services through outsourcing

**Networking**
ADB, WB, Japan, UNESCAP, ASEAN, US, Germany
Principles of Programme Directions

- Summit
- Energy Ministers’ Forum
- Working Group of Energy and Governing Board
- Four Expert Groups
- Strategic Plan
- Action Plan
Thematic Areas of Programme Activities

- Power and Energy Trade
- Energy, Transport & Environment
- Rural Electricity
- Technology Transfer
- Energy Efficiency & Renewable
Programme Activities

1. Research Studies;
2. Capacity Building through Training Workshops, Seminars and Webinars;
3. Pilot Projects; and
4. Special Projects
4. SEC Program Activities – 2013

Energy Connectivity

1. **Pre-feasibility Study:** Setting up SAARC Regional/Sub-regional Coal Based Power Plant

2. **Study:** Pricing Mechanisms of Electricity in SAARC Member States

3. SAARC Energy Data Book (2001-2010)

4. **Workshop:** Review of Electricity Laws and Regulatory Frameworks of Member States

5. **Seminar:** Role of Private Sector in Regional Power Trade
1. Study: Designing Management & Monitoring Framework for Regulatory Compliance by Power Transmission Utilities of the SAARC Region

2. Study: Development of a Potential Regional Hydro Power Plant

3. SAARC Energy Data Bank (2001-2011)

4. Workshop: Experience Sharing of Construction, Operation and Maintenance of LNG Facilities

6. Webinar: Concept, Establishment & Operation of a Power Exchange for Regional Power Trading

7. Workshop: Cogeneration Opportunities in Sugar and Paper Industries in SAARC Member States

8. Workshop: Power System Studies for Synchronization of Multiple Systems
SEC Program Activities – 2015

Energy Connectivity

1. *Feasibility Study:* Setting-Up SAARC Regional/Sub-regional LNG Terminals

2. SAARC Energy Data Bank (2001-2012)

3. *Study:* 20-Year Perspective Plan for SAARC Power Sector

4. *Study:* Assessment of Renewable Energy Development in South Asia; Achievements and the Way Forward

5. *Study:* Harmonizing Transmission Grid Codes of Member States to Combat Regulatory Challenges for Intra-region Power Interconnections

7. Workshop: Development of a Potential Regional Hydro Power Plant in South Asia

8. Workshop: Experience Sharing on Coal Bed Methane, Underground Coal Gasification


5. Rationale for Energy Connectivity

Electricity

1. **Afghanistan** has extremely poor access to electricity.
2. **Bangladesh** is reliant on gas; rapidly drawing down its gas reserves and yet facing serious power shortages.
3. **Pakistan** is facing power shortages between 4,000 to 6,000 MW at peak demand. Hydro is seasonal, natural gas production is stagnant and oil is expensive.
4. **Sri Lankan** power demand has exceeded the capacity of its viable major hydropower development options. It has embarked on imported coal based thermal power.
5. **India** has a serious balancing act to play between growth, reliable power supply and emissions. Primary fuel supply is already posing great challenges.
6. Nepal and Bhutan have high quality (long term) hydropower potential and very little local demand.
7. Success of power exchanges in India has made a case for maximizing the potential for regional power transfers.
8. Transmission capability within India has improved remarkably over the last decade.
9. In-direct benefits
   • Development of inter-connections would encourage transmission investments in other regions e.g. Central Asia that would benefit Afghanistan.
   • Large scale deployment of RE technologies would bring down their costs making case for further investments.
SAARC Inter-Governmental Framework Agreement (IGFA) for Regional Cooperation in Energy (Electricity) signed in November last year (2014):

- Unrestricted cross-border trade
- Commercial negotiation of Power Purchase Agreements
- Non-discriminatory open access
- Private sector trading
- Participation in power exchanges

SAARC Market for Electricity to be ultimately integrated with CASA Regional Electricity Market (CASAREM) for opening new horizons of peace and prosperity in Asia.
6. Regional Energy Connectivity
The Way Forward

1. Detailed Scenario Analysis on Regional Interconnections
2. SAARC Power Transmission Master Plan
3. Perspective Development Plan for the Power Sector of South Asia
7. SAARC Perspective Development Plan
Could be a Japan-SAARC Joint Effort

1. Demand and supply profiles of all the Member States
2. Complete supply chain from generation to transmission & distribution along with supply-demand scenarios together with investment requirements
3. Execution plan in totality; phase wise implementation scheme

SEC proposes JICA to join hands for undertaking this strategic intervention which would be a huge step towards achieving objective of energy connectivity in South Asia.
3C Approach for a Prosperous South Asia

• Coordination;
• Coherence; and
• Commitment
Thanks For Your Attention
Supporting Slide
Impact of SEC’s Initiatives

SEC is engaged in mitigating Energy Poverty through creation of SAARC Market for Electricity and multilateral energy cooperation within and across SAARC for a better tomorrow.

- Concept of SAARC Energy Ring has found acceptance at technical, policy and political levels
- Regional energy cooperation acknowledged as a “business opportunity” by private sector
- Improved flow of information and experiences across the SAARC Member States
- Development of cross-border power interconnections; Initiation of energy trading among SAARC Member States