Realizing a Central Asia-South Asia Regional Electricity Market: CASA-1000

Conference on Normalizing India-Pakistan Trade
Salman Zaheer, The World Bank
New Delhi, January 22, 2014
Examples of Regional Power Sector Coordination are Widespread
Resources and demand in the region - electricity

**KAZAKHSTAN**
- 20,000 MW
- $8 - $30 per MWh

**KYRGYZSTAN**
- 26,000 MW
- $15 - $40 per MWh

**TAJIKISTAN**
- 40,000 MW

**AFGHANISTAN**
- 25,000 MW
- $40 - $100 per MWh

**INDIA**
- 12,000 - 13,000 MW
- Up to $70 per MWh
- 30,000 MW

**PAKISTAN**
- 4,000-5,000 MW
- Up to $140 per MWh
- 52,000 MW

**IREN**
- 42,000 MW

**Potential Hydro Power Reserves**

**Peak Power Deficit**

**Hydro Production Cost (estimate)**

**Willingness to Pay (estimate)**
Emerging & Planned Grid

**SENERING – 1. Power Grid**

- Nepal-India-Bhutan-Bangladesh
- Pakistan-India-Nepal
- Kyrgyzstan-Tajikistan-Afghanistan-Pakistan
- Tajikistan-Afghanistan
- Uzbekistan-Afghanistan
- Turkmenistan-Afghanistan
- Iran-Afghanistan
- Iran-Pakistan
- India-Sri Lanka
- India-Bangladesh
- India-Myanmar
- India-Nepal
Energy trade is a rational policy choice

- Most countries have varying levels of mismatch between energy demand and supply: seasonal, peak-off peak, etc.
- Diversified energy sources and markets improve national energy security, often at significantly lower costs than through “self-sufficient” or autarchic approaches
- Prospects for shared prosperity improve for all parties:
  - Better utilizing of resources and capital assets
  - Reduced national “reserve” requirements
  - Relief from power shortages – short and longer term
  - Access to wider/deeper pools of finance and institutional capacity
  - Cleaner, more sustainable supply options become possible
CASA-1000: An affordable opportunity to transform relations in the HoA

- 1500 km of transmission lines and related facilities linking Datka (KR) – Sangtuda (Taj) – Kabul (Af) – Peshawar (Pak)
- Contractual + institutional arrangements for fair and sustainable electricity trade
- May-Sept supply: 300 MW (AF); 1000 MW (PK)
- Benefit-sharing w/ local communities along corridor
- “Open Access” for additional countries to participate
- Total Cost: US$1,160 million
CASA-1000 Significance

- The [1.0] TWh contracted by AF and [3.0] by PK can save them around $[50-75]m and $[150-200]m per year in fuel costs respectively and/or relieve shortages (20% of PK summer peak)
- Kyrgyz Republic and Tajikistan, the weakest economies in Central Asia, establish new markets and additional revenue streams
- Helps establish mechanisms for Afghanistan to be a viable transit country
- By depending on existing and projected surplus hydropower, CASA-1000 requires no new generation capacity to develop and test new market arrangements
- Offers transmission capacity for other countries during the off-peak season
- Strengthens institutional arrangements – Inter-Governmental Council, contracts, dispute resolution - build confidence among CASA countries and potential new partners
Genesis and Key Milestones

• **2004**: Central Asia Regional Electricity Potential Study (REEPS) identified South Asia as potential export market for surplus electricity from Central Asia.

• **2006-2009**: 
  - Inter-governmental conferences => Inter-Governmental Agreement (IGA) => establishment of Inter-Governmental Council (IGC) and Secretariat (2007);
  - ADB-funded 2-phase study established Project’s techno-economic feasibility.

• **2010-Present** – Progress in technical preparation, institutional/contractual arrangements, financing:
  - Feasibility study updated to address gaps and changes in market conditions, e.g. surplus power from existing plants, Pakistan demand, project costs.
  - Environmental and social impact studies, security assessment (2012).
  - Project Structure and Commercial Principles approved; Legal, Procurement and Finance Committees established (2013).

• September 2013 IGC meeting (Islamabad) committed to accelerate preparation and close financing gap, start construction by mid-2014, and commission transmission line in 2017.
## Project Costs & Indicative Financing

<table>
<thead>
<tr>
<th>Country</th>
<th>AFG</th>
<th>PK</th>
<th>TJ</th>
<th>KR</th>
<th>Total</th>
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<tbody>
<tr>
<td>Costs &amp; Financing</td>
<td>US$m</td>
<td>US$m</td>
<td>US$m</td>
<td>US$m</td>
<td>US$m</td>
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<tr>
<td>Total Project costs (incl. contingencies, Taxes, IDC)</td>
<td>395</td>
<td>232</td>
<td>300</td>
<td>233</td>
<td>1,160</td>
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<td>IDA Financing</td>
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<td>45</td>
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<td>IsDB Financing</td>
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<td>65</td>
<td>40</td>
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<td>Donors and Trust Funds</td>
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<td>17</td>
<td>15</td>
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<td>Borrower/Implementing Agency</td>
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<td>15</td>
<td>22</td>
<td>33</td>
<td>123</td>
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<tr>
<td>Total Financing Sources</td>
<td>395</td>
<td>232</td>
<td>217</td>
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<td>1,026</td>
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<td>Financing Gap</td>
<td>0</td>
<td>0</td>
<td>83</td>
<td>51</td>
<td>134</td>
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</table>
CASA-1000 – Lessons, Status & Milestones

• Key ingredients for recent acceleration:
  • Sharpened political awareness => Leadership (esp. PK-AF project alignment), stable/capable tech teams, credible financing (for preparation & implementation)
  • Inter-Governmental Council = Secretariat

• Status:
  • Commercial negotiations (Master Agreement, PPAs) advancing
  • Procurement of convertor stations initiated

• Financing: Appraisal in process (WB, IsDB, ACC, US, UK)
  • WB Board to consider project in March-April 2014: $510m
  • Financing gap: $134m for infrastructure in Central Asia; $30m for Community Dev. in CA + PK; $30m for TA + Capacity Bldg
  • WB establishing Multi-Donor Trust Fund

If CASA can can be structured and financed, why not India-Pakistan.....

- India generation – 230,000 MW; PLF 70-75%
- Pakistan shortage of 5000 MW
  - Pakistan-India connectivity would cost $120-140m for 500-1000 MW; only $40m for 200 MW in AC mode
- India Spot trading now around 100 GWh (11% of total). Eq to about 12,000-15,000 MW
- Predominantly coal-based, some hydro and gas; no oil
- More capacity coming on line, increasing role of private sector
- Spot prices seldom more than Rs 5-6 per kWh
Spot market yesterday….max MCP Rs. 4.24/unit
Parting thoughts

• Energy situation in South Asia is a binding constraint to growth, stability and poverty eradication
• The distribution of energy resources, varying levels of institutional & technical capacity, and varying depths of financial and energy markets in the region offer many win-win opportunities
• Realization of even a few opportunities can be potential game changers for stability and the growth trajectory of each country
• Energy trade both drives cooperation and requires it - We are reassured by what is already happening –
  • Uzbekistan-Mazar-Kabul; TJ-AFG
  • Bhutan-India (>1000 MW)
  • India-Bangladesh (500 MW)
  • Construction of Nepal-India transmission (1000 MW)