Regional Energy Opportunities for Pakistan and Afghanistan

Haroon Sharif
Advisor, Regional Economic Cooperation
The World Bank
SDPI Annual Conference, December 10, 2014
Presentation Outline

A. Reducing Energy Shortages through Cooperation
B. CASA-1000
C. Emerging Regional Markets
Power Shortages are having a huge impact on jobs and growth

Severity of Constraints Reported by SAR Benchmark and Expanding Firms
Urban Formal Sector

- Political Instability
- Electricity
- Corruption
- Tax Administration
- Gov Policy Unc
- Macro Instability
- Competit
- Crime Theft Disorder
- Access Land
- Customs
- Inad Educ Labor
- Labor Reg
- Transport
- Bus Licensing
- Courts
- Telecoms

Severity of Constraint
[0=No Obstacle. 4=Very Severe Obstacle]
All SAR countries suffering from severe energy shortages and the situation is becoming worse

Low access and low consumption per capita

High peak shortages are a constraint to growth

- Peak Shortages of 1 GW in Bangladesh, 2-4 GW in Pakistan and 12 GW in India
- 60 percent of Indian firms rely on captive or back-up generation (compared to 20 percent in China)
- In Pakistan, cost of industrial load shedding to the economy has resulted in loss of 400,000 jobs and US$ 1 billion worth of exports
- In Bangladesh, power shortages have accounted for GDP losses of 1-2%
- In Nepal, the load shedding amounts to 16 hours a day and are expected to go up to 19 hours a day in the upcoming dry season
Binding Constraints to Growth in South Asia: electricity tops the list
Kyrgyz Republic and Tajikistan are endowed with vast hydropower potential...

Kazakhstan
- Reserves:
  - Oil: 30 billion bbl
  - Natural Gas: 85 TCF
  - Coal: 31.3 billion tons
  - Hydro Power: 20,000 MW

Uzbekistan
- Reserves:
  - Oil: 594 million bbl
  - Natural Gas: 66 TCF
  - Coal: 3.3 billion tons
  - Hydro Power: 1,700 MW

Turkmenistan
- Reserves:
  - Oil: 600 million bbl
  - Natural Gas: 280 TCF
  - Coal: Modest
  - Hydro Power: Modest

Kyrgyzstan
- Reserves:
  - Oil: 0.04 billion bbl
  - Natural Gas: 0.2 TCF
  - Coal: 0.9 billion tons
  - Hydro Power: 26,000 MW

Tajikistan
- Reserves:
  - Oil: 0.01 billion bbl
  - Natural Gas: 0.2 TCF
  - Coal: 3.6 billion tons
  - Hydro Power: 40,000 MW
The proposed CASA-1000 transmission facilities would:

maximize the use of 1,300 MW renewable summer electricity surplus from existing plants in Central Asia (Kyrgyz Republic & Tajikistan) and provide electricity to consumers in electricity deficient South Asia (Afghanistan & Pakistan)
The CASA-1000 project includes:

- 500 kV line Datka-Khudjand (477 km), with Tajik network transferring Kyrgyz exports to Sangtuda.
- Tajikistan Grid Strengthening.
- 1300 MW AC-DC Convertor Station at Sangtuda.
- 750 km HVDC line Sangtuda-Kabul-Peshawar.
- 300 MW Convertor Station at Kabul (with both import & export capability).
- 1300 MW DC-AC Convertor Station at Peshawar.

Final Report of Feasibility Study Update available at:

CASA1000: Some Project Characteristics

1. Enabling trade of surplus hydro power, initially, from Kyrgyz Republic and Tajikistan to Afghanistan and Pakistan.
   - High Voltage Transmission Infrastructure and Systems linking Kyrgyz Republic, Tajikistan, Afghanistan and Pakistan
   - Brings 1000 MW of clean electricity to Pakistan (300 MW to Afghanistan)

2. Project cost $1.2 Billion; projected completion date 2017-18
   - $200 Million contribution of Pakistan and $300 Million for Afghanistan

3. Benefits
   - Significant revenues for exporting countries; help fund winter shortages in Central Asia
   - Meeting severe power shortages in Pakistan and replace polluting fuel oil based power with clean hydro power
   - Establishes Afghanistan as a viable transit country, enhancing growth prospects

4. Implementation Status
   - 80% Financing approved ($550mn from the World Bank)
   - Commercial agreements signed and Tendering process in place
Possible increases in interconnection capacity

Source: Based on Govinda Timilisina/The World Bank & An Overview of Energy Cooperation in South Asia (2013)/ADB
Emergence of a Regional Electricity Market

1. CASA-1000 has opened doors for other countries to use open access of the transmission line;
2. Pakistan and Afghanistan are looking at wider energy cooperation;
3. Pakistan and Afghanistan looking at leveraging the regional potential;
4. A classic example of South Asia – Central Asia Connectivity;
5. Narrative shifting from security to economic cooperation;
6. Huge demand to fill knowledge gaps and institutional capacity.
Power Transmission
- Existing
- Under Construction
- Projected

Gas Pipeline
- Projected

Installed Transmission Capacity: ~1,500 MW

Projected Additional Trade Capacity:
- Power: ~4,300 MW
- Gas: over 180-210 million mscmd