Central Asia South Asia Regional Electricity Market (CASAREM)
Context, Concept and Current Status

Conference Hosted by
Energy Charter Treaty and Government of Islamic Republic of Afghanistan

Julia Fraser/Sunil Khosla
The World Bank
Kabul, Afghanistan, November 18, 2007
Current Global Conditions
High Energy Prices

NYMEX Crude Oil Futures
Close (Front Month)

$50
$60
$70
$80
$90

$88.60


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Global demand grows by more than half over the next quarter of a century, with coal use rising most in absolute terms.
Current Global Conditions: Huge Investment Needs


Just over half of all investment needs to 2030 are in developing countries, 18% in China alone
Half of the projected increase in emissions comes from new power stations, mainly using coal & mainly located in China & India.
Can the Central Asian and South Asian countries contribute to, and benefit from, the global energy conditions?
Central Asian Republics possess significant energy resources

<table>
<thead>
<tr>
<th>Country</th>
<th>Total Fossil Fuel MTOE</th>
<th>Coal MTOE</th>
<th>Gas MTOE</th>
<th>Crude Oil MTOE</th>
<th>Hydro Potential TWh/year</th>
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<td>Kazakhstan</td>
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<td>82</td>
<td>2,610</td>
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<td>507</td>
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</tbody>
</table>

Legend:
- Total Fossil Fuel MTOE
- Coal MTOE
- Gas MTOE
- Crude Oil MTOE
- Hydro Potential TWh/year
Regional Market Cost-Price Gaps
Private Investor (AES) View

Commonwealth of Independent States - Central Asian States

- $15 to $45 per MWh
- $8 to $30 per MWh
- $30 to $75 per MWh
- $10 to $40 per MWh
- $15 to $40 per MWh
- $25 MWh to $350 MWh
- $65 to $120 per MWh
Central Asian Republics
Power Development and Trade Strategy

Level of Risk

High
Low

Time Frame
Near-Term 1-5 yrs
Medium-Term 3-10 yrs
Long-Term 8-15 yrs

Loss Reduction & Rehab. Programs

Transmission Links: North-South Project

Domestic & Regional Capacity Balance: Bishkek II & Talimardjan I

Power Trading Capacity: Sangtuda

Export Market Negotiation

South Transmission Links Development

Export Capacity PPP: Rogun & Talimardjan II

China?

Pakistan
Afghanistan
Iran
Russia

Central Asian Republics
Power Development and Trade Strategy

April 29, 2002

Loss Reduction & Rehab. Programs

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China?
Specific Generation projects for exports developed—Sangtuda 1 with Russian funds
North South Transmission Line in Taj

Financed by China
Tajikistan Afghanistan
220 kV Transmission Line Project

- Tajikistan:
  construction of 220kV double-circuit transmission from Sangtuda HPP to Sherkhan Bandar

- Afghanistan:
  Sherkhan Bandar to Phul-e-Khumri
- ADB/IsDB fund financing
Central Asian Imports to Afghanistan

Project Management
- USAID
- World Bank
- KfW
- ADB
- India
- Unfunded
- ADB
- Existing Line
- Existing Substation

Sheberghan - Mazar-e-Sharif
142 km, 2 x 250 MVA
2007

Hairatan (no substation)
Hairatan – Mazar-e-Sharif
76 km, 2 x 250 MVA
2006

Naibabad – Pul-e-Khumri
165 km, 2 x 250 MVA
2008

Naibabad
Khulm
Aybak
Baghlan
Pul-e-Khumri
Doshi
Charkar
Chimtal
Kabul N
Kabul NW
Kabul S
Gardeyz
Breshna Kot
Mahipar
Sarobi
Naghlou
Mehtarlam
Jalalabad

To Uzbekistan

To Tajikistan

Andkhoy
Maimana
Sheberghan
Mazar-e-Sharif

To Turkmenistan

To USAID

Pul-e-Khumri

Kunoz

Kundoz

Tajikistan - Pul-e-Khumri
188 km, 2 x 250 MVA
2007

Kabul - Jalalabad
New/ Rehab. 2 x 110 KV
2006
CASA 1000 Transmission Project to transfer 1000-1300 MW to Pakistan and Afghanistan

Transmission Line Length (km)

- **Tajikistan**
  - Nurek to Sangtuda 1: 60 km
  - Sangtuda I to Shekhanbandar: 106 km
- **Afghanistan**
  - Shekhanbandar to Pul-e-Khumri: 154 km
  - Pul-e-Khumri to Kabul: 220 km
  - Kabul to Jalalabad: 90 km
  - Jalalabad to AFG border: 80 km
- **Pakistan**
  - AFG border to Peshawar: 60 km
  - 770 km

Feasibility Studies Phase 1 done:
- Resource Assessment in CA
- Demand Assessment in SA
- Techno-economics of trans. Line
- Institutional
- Financial
- Risk Mitigation
- Legal Framework
Tajikistan launched development of coal resources

- Quality of coal reserves is high – average 7000 kcal/kg
- Developing these resources crucial for meeting:
  - domestic winter demand;
  - year round power demand in export markets

Held an Investor Roundtable in May 2007 in which private investors, IFIs and bilateral donors participated

Decisions reached:
- Integrated development of Mine and power plant
- Fan Yagnob mine would be the first one to be developed
- 1500 MW targeted (1000 MW for exports rest for domestic market)
- Will be developed as a Public private partnership
- Tajik Government will bear all initial development costs
- USTDA willing to help with funding feasibility study
Roghun Hydroelectric Project

- 3600 MW storage hydro upstream of Nurek HPP in Tajikistan
- Circa 30% constructed during Soviet times
  - Government is looking to complete it w/ international investors and financiers
  - In 2004 a deal was reached with RusAl, did not work
  - Currently negotiating a new agreement with Russian Government
  - Government keen on World Bank involvement in structuring and financing this project
  - World Bank agreed to finance feasibility study compliant with Bank Group guidelines
    - Which includes assessment of environmental, social and importantly riparian issues
  - Economic viability depends on exporting majority of production
  - Pakistan keen to import
  - Another interesting large project option for PPP
CASAREM is a set of projects and institutional framework for enabling this trade.
CASAREM – CASA 1000 Road Map

**Phase I:**
- Techno-Economic Study
- Financial and Legal Study

**Phase II:**
- Detailed Financial, Risks and Legal Framework
- Feasibility of ETS

**Phase III:**
- Negotiate Legal Framework
- Bidding for EPC Contract

Start
- Declaration of Intent
- First IG MoU Signed
- Go Decision
- Signature of IGFA

End
- Construction Completion
- March 2012

**Conference Dates:**
- Islamabad Conference: May 8–9, 2006
- Kabul Conference: November 2007
- Bishkek Conference: June 2008
- Final Closure: March 2009

**MCWG Sessions:**
- MCWG 1: Manila
- MCWG 2: Jeddah/Montreal
- MCWG 3
- MCWG 4

**Other Key Dates:**
- Operation
- Construction Completion
- March 2012

**Key Milestones:**
- Formation of SPC and Selection of Investor
There Are Significant Risks

• Projects are justifiable based on exports
  - Which bring its own set of political and security risks
• Project sizes are huge compared to size of economy
  - While export orientation should address this to some extent, sustained domestic reforms are needed
    • These are underway, but at different pace in each country
• Private sector is needed, and there is interest
  - But limited interest
  - Many of them are majority foreign state owned
    • Russia, Iran, China, India
• Governance Issues
  - These are real, but Government has shown willingness to address them
• World Bank Group with other IFI partners, bilateral donors and private sector can address these risks
Partnerships of Partnerships

Inter-Ministerial Council

Afghanistan  Kyrgyz Rep.  Pakistan  Tajikistan

Multi-Country Working Group/Secretariat

International Financial Institutions

Bilateral Donors/Institutions

Interested Private Investors
Regional Cooperation is Imperative

• Necessity for Regional Cooperation
  - Existing dependencies - land locked nature, complementary resource
  - New Opportunities

• Forms of Regional Cooperation
  - Market relationships; transit relationships; Investment relationships; riparian relationships; Knowledge sharing

• Benefits of Regional Cooperation
  - Significant boost to economic growth
  - New Opportunities; Transit revenues
  - Least cost development – sharing hydro resources

• Pre-conditions for Successful Regional Cooperation
  - Win-win for participants; no excessive dependence on one another; diversify dependencies; commercial orientation

• IFIs and bilateral donors can facilitate, and finance
Thank You Very Much