Energy Sector Integration in Eurasia and Central Asia: Trends and Issues

Presentation at the World Bank “State of the Energy Sector” Event
Washington, DC, February 21, 2008

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Overview

- Eurasian economic integration – the opportunity of the 21st Century
- Energy integration in Eurasia and Central Asia
- The future of Eurasian energy: Major players and interests
- Possible scenarios: 2025
- An outstanding example in Central Asia: CAREC
Eurasian economic integration – the opportunity of the 21st Century

The opening up of China and disintegration of Soviet Union → reintegration of a dynamic Eurasia and related infrastructure and institution building needs

- **Energy (oil, gas, power)**
- Trade, transport, communications
- Capital, investment
- Environment
- Migration
- Tourism
- Epidemics, drugs, etc.

J. Linn and D. Tiomkin in *Asia Europe Journal*

*Volume 4, Number 1 / April, 2006*
Central Asia at the heart of Eurasia
Central Asia: Regional cooperation challenges and opportunities

Main areas for regional cooperation:

- **Energy**, water, environment
- Trade, transport and trade facilitation
- Education, health, migration
- Human security (disaster preparedness, drugs)

Benefits from regional cooperation/integration

- double GDP over 10 years

Source: UNDP Central Asia Human Development Report 2005
Energy integration in Eurasia and Central Asia

- Among all areas, energy sector integration most dynamic and difficult
- Great opportunities, great challenges/risks
- Conflicting national interests, but also lots of win-win opportunities
- Regional-wide perspectives and cooperation essential for efficient development
- Focus today on Europe, Russia, Central Asia and South Asia (leaving MENA aside)
Europe-FSU Energy Integration

- High degree of integration of energy transport infrastructure Europe-FSU
- Dominance of Russia in oil transport and gas supplies; penetration of Gasprom in European energy sector (incl. distribution)
- European search for diversification of sources (Southern Corridor)
- Emerging competition with Asia
Oil Transport Routes
Natural Gas Transport Routes
FSU-Asian energy integration prospects

- Currently, FSU-Asia not nearly as integrated as FSU-Europe
- Some projects in progress for FSU-Asia (Russia-Pacific; Kazakhstan-China)
- Major projects on the drawing board (Turkmenistan-China gas; Turkmenistan-S. Asia gas; Central Asia-S. Asia electricity)
- But subject to significant uncertainties, given different interests of key players and significant costs and risks
Selected Oil and Gas Infrastructure in Eastern Eurasia

Source: Energy Information Administration
Major Southern Eurasia energy projects

Source: Worldpress.org
Drivers: Eurasia energy trends

- Slow expansion of European demand
- Rapid expansion of import demand in China, India, slow in Japan; recovery from depressed levels in FSU
- Gas demand growing more rapidly than oil demand
- Rapid growth in electricity demand
- Rapid expansion of FSU energy exports in recent years, but now slowing down and likely to peak in the next 10-15 years
- Russia is the main factor on the supply side
Regional energy demand trends

Total Primary Energy Consumption by Region, 1990-2025


FSU
China
India
South Korea
Japan

OECD
Europe

FSU oil and gas production and exports

Source: P. Thomson, World Bank
The future of Eurasian energy: Major players and interests
Diverging Energy Interests among Key Players

Russia:
exclusive control over supply (and distribution) chain; no transit; multiple market outlets

Central Asia:
control over national resource and transport assets; multiple transit routes and markets

China:
dedicated supplies from diversified sources with direct control over supply chain; serve a transit corridor

W. Europe, India, Japan, Korea:
diversified, secure supplies with limited transit

C. Europe, Turkey:
maintain/develop transit role; diversified, secure supplies
## Matrix of Regional Energy Interests

<table>
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<th>Russia</th>
<th>Central Asia</th>
<th>China</th>
<th>India, Japan, Korea</th>
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Possible scenarios: 2025

- **Full Integration Scenario (preferred):**
  - Major oil/gas pipelines now planned are completed;
  - Additional energy transport projects under preparation (esp. gas);
  - Eurasian electricity grid fully integrated with harmonized regulation
  - Central Asia countries maintain control over their resources in context of regional multilateral institutional framework
  - Over 1/3 of Russia’s energy going to Asia (up from 3% now)

- **Partial Integration Scenario (most likely):**
  - East Asia oil/gas pipelines now planned are partially completed;
  - East Asia relies more on LNG than piped gas
  - Limited access of South Asia to FSU energy, except some electricity
  - Azerbaijan/Kazakhstan retain control over their energy resources, other Central Asian countries have lost control to Russia and/or China

- **Low Integration Scenario (undesirable):**
  - No significant progress on currently planned projects
  - Competition, not cooperation between major players in the region
  - Central Asia/Afghanistan/Pakistan-India are conflict zones
Eurasia energy sector integration: Conclusions

- Major opportunities for integration in Eurasia given dynamic energy demand/supply outlook
- Major challenges for energy development, integration and security
  - Efficiency of energy use/production/transport
  - Investments (+ improvements in O&M)
  - Financing (PPPs)
  - Regulation
  - Security
  - Conflicting and competing interests
  - Use of energy as a political instrument
- A regional perspective and cooperation are critical
Implications for the World Bank Group

- **Background:** lack of a global or regional energy body that brings together Eurasian suppliers and consumers
- **Bank has a special opportunity in providing**
  - overarching analysis with neutral perspective stressing win-win dimensions (annual world energy report?) and offering forum for non-confrontational discourse (annual Eurasia energy forum?)
  - supporting regional bodies with energy focus (CAREC for Central Asia)
  - selective financing of regional infrastructure (CASAREM) and regulatory cooperation (CAREC power regulator forum)
  - support for country-level energy sector reform, investments, efficiency improvements
  - helping smaller countries build technical capacity for analysis and negotiation (Georgia with BTC)
- **To succeed Bank needs to**
  - work across it’s own country, regional, sectoral (energy, environment, etc.) and Bank/IFC boundaries;
  - develop close partnerships with other MIs (RDBs, OECD, EU, etc.), energy bodies, private sector;
  - retain modest expectations and posture
An Outstanding Example:
Central Asia Regional Cooperation Program

- CAREC
  - initiated in 1997 by Central Asian countries with support of the Asian Development Bank
  - First annual ministerial conference in 2002
  - Most recent ministerial conference in Dushanbe, November 2007

- Eight countries:
  - Afghanistan
  - Kyrgyz Republic
  - Azerbaijan
  - Mongolia
  - PR China
  - Tajikistan
  - Kazakhstan
  - Uzbekistan
  - invited: Russia Turkmenistan

- Six multilateral institutions:
  - ADB, EBRD, IMF, IsDB, UNDP, World Bank

- Focus on:
  - transport, trade and trade facilitation
  - Energy, esp. electricity – World Bank in the lead
Elements of CAREC electricity export strategy

Loss Reduction & Rehab. Programs
Transmission Links: North-South Project
Export Market Negotiation
Power Trading Capacity: Sangtuda
South Transmission Links Development
Export Capacity PPP: Rogun & Talimardjan II
Domestic & Regional Capacity Balance: Bishkek II & Talimardjan I

Level of Risk
High
Low

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

Source: World Bank

India?
Pakistan
Afghanistan
Iran?
Russia
Europe?
China?
India?
Pakistan
Afghanistan
Iran?
Russia
Europe?
China?

Source: World Bank
**CASAREM: a set of projects and institutional framework for enabling regional electricity trade**

- **Existing Facilities**
  - Toktogul HPP
  - Nurek HPP

- **Facilities Under Construction**
  - 500 kV OHL South-North
    - Financing: China Exim Bank
  - Sangtuda 1 HPP
    - Financing: Russia
  - Sangtuda 2 HPP
    - Financing: Iran
  - 220 kV OHL SS Sarban – Tajik/Afghan border
    - Financing: ADB/IsDB

- **Perspective Facilities**
  - 220/500 kV Uzbek by pass
  - SS Datka (Kyrgyz) – SS Hojent (Tajik)
  - Cascade of Zarafshan HPPs (Yavan and Oburdon HPP)
    - Annual generation 1680 GWh
  - Rogun HPP
    - Annual generation 13000 GWh
  - Coal TPP
    - Annual generation 3900-6400 GWh
  - 500 kV OHL “CASA 1000”
    - Nurek HPP – Kabul – Peshawar

**Source:** World Bank
Annex: CAREC Strengths and challenges

**Strengths**
- Clear focus on key areas (energy, transport, trade)
- Clear action plan and sectoral strategies
- Track record of country interest and engagement
- Strong MI technical inputs and financing

**Challenges**
- Implementation of plans/strategies
- Organizational capacity
- Visibility, political support at high levels
- Links between national and regional plans
- Links with other regional organizations
- Key players are missing
Vision

- Ensure adequate commercial energy supplies (and services) are available to all in a reliable, affordable, financially sustainable, and environmentally sound manner
- Enhance economic growth through diversified energy market access and trade

Strategic implications

- Respond to skewed energy resource endowments and differing interests of countries (riparian issues)
- Infrastructure dimensioned to cover sub-regions at least cost
- Bring in private investors, if possible
- Special focus on electricity

World Bank has lead role among MIs on energy
Annex: CAREC regional energy projects

- IsDB support for 500-KV Syr Darya-Sogdiana Transmission Line in Uzbekistan ($25 million), and 110-KV Batken-Karabulak Transmission Line in the Kyrgyz Republic ($10 million)

- ADB $56.5 million loan to Afghanistan and Tajikistan for Regional Power Transmission Interconnection Project (2006)

- EBRD and IsDB support for construction of second Kazakhstan North-South 500-kilovolt (KV) Transmission Line Project

- World Bank support for (i) discussion of power sector reforms and regulations, (ii) analyses of region’s electricity export potential and Syr Darya water/energy nexus, (iii) developing concept for water-energy consortium (since 2003)

- CAREC Electricity Regulators’ Forum
Annex: Electricity market cost/price gaps in Central Asia and neighbors

Source: AES-World Bank