

Strengthening regional co-operation in Central Asia for
promoting stable and reliable energy within Eurasia

Regional Energy Market Integration- opportunities

Sunil Khosla, Senior Energy Specialist
Europe and Central Asia, World Bank

Energy Security Conference
Ashgabat, May 4 2010



Overview

- Central Asian countries are endowed with significant energy resources – a potential vehicle for regional energy prosperity.
- Several barriers to realize this Goal.
- Central Asia Energy-Water Development Program
- Central Asia South Asia Regional Electricity Market.



Central Asian Republics Energy Resource Endowment



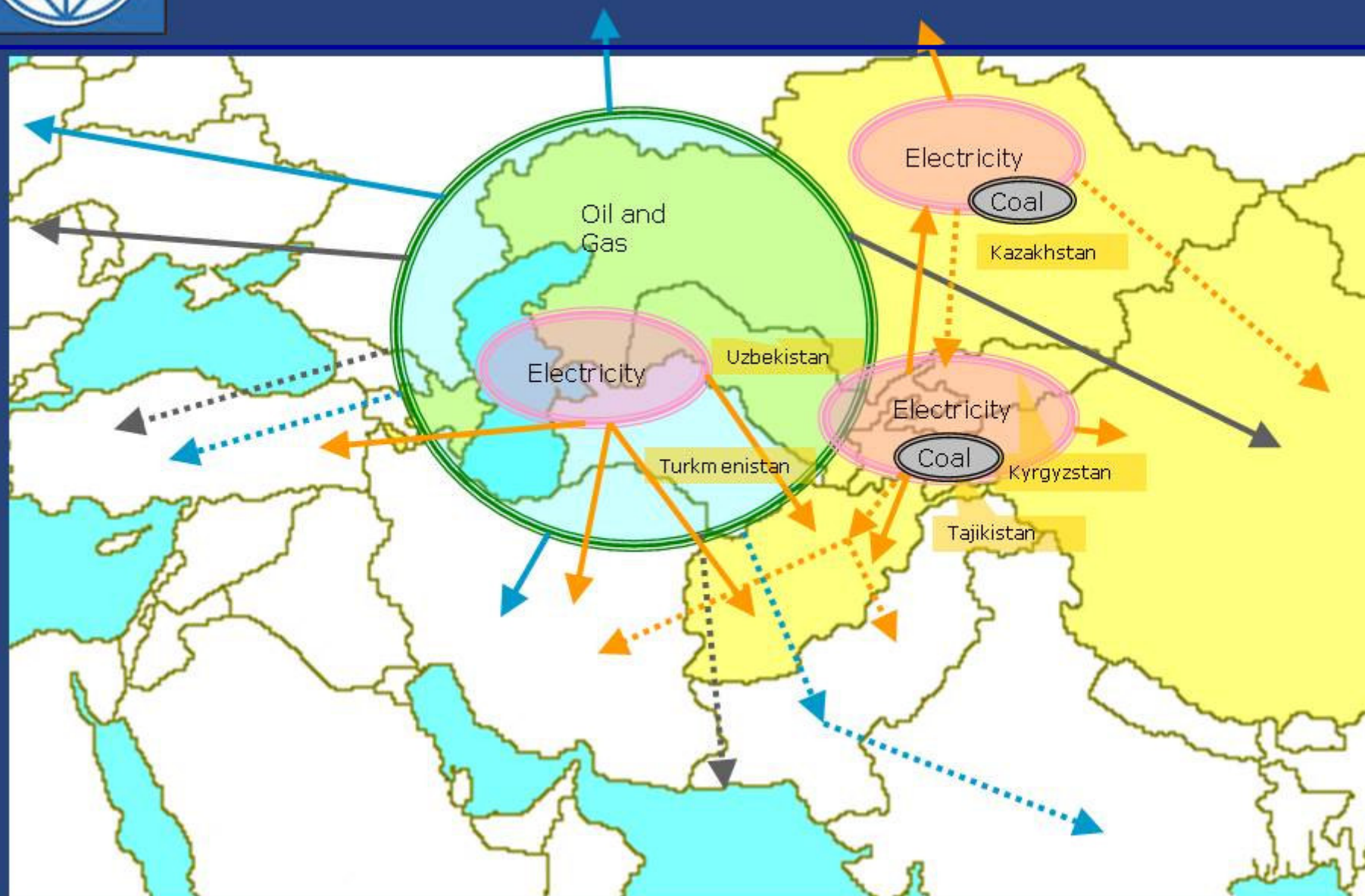


Gas Pipelines in Central Asia





In summary...



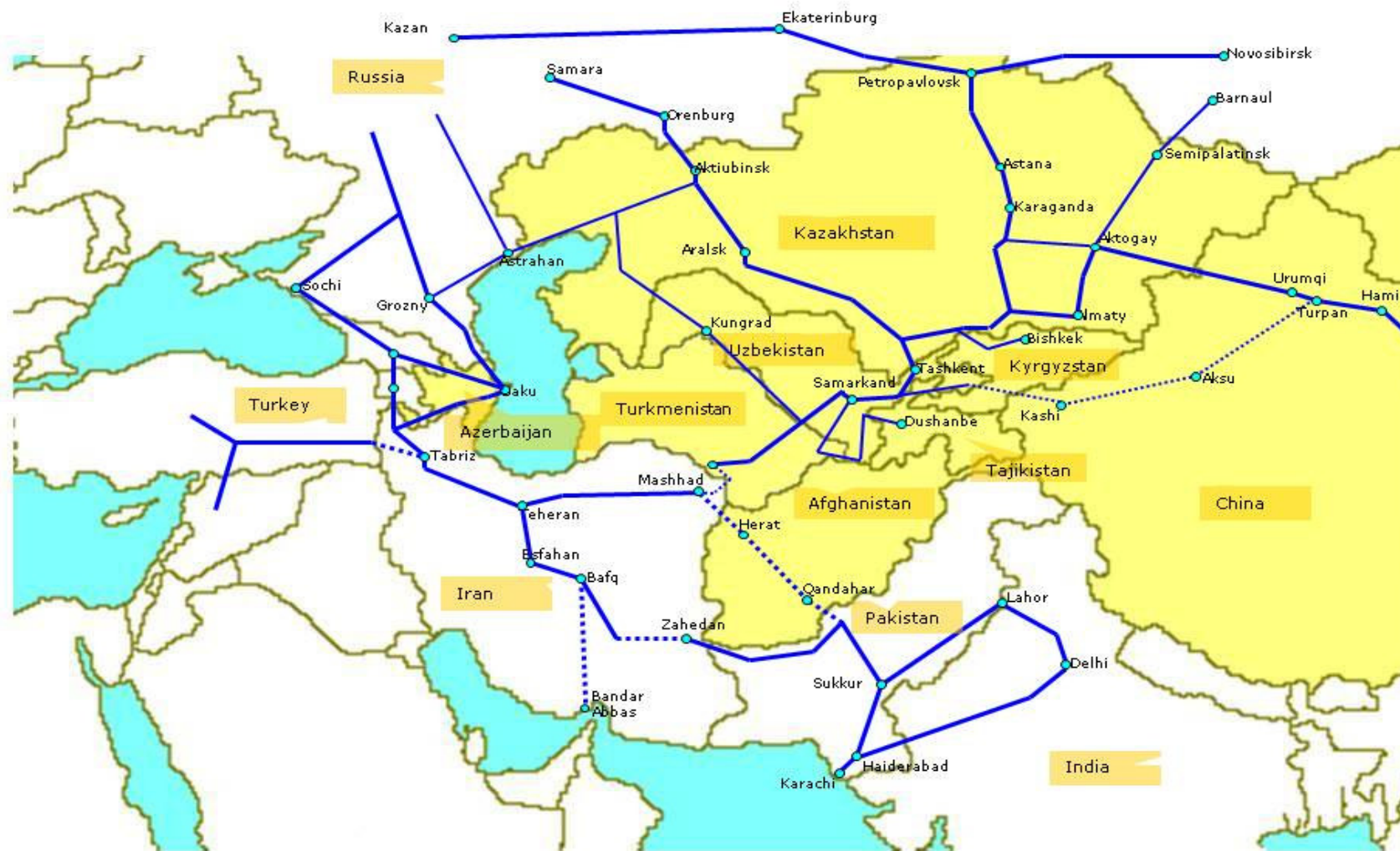


Barriers to Regional Energy Prosperity

- Infrastructure gaps in generation and transmission
- Ineffective balance of national and regional mechanisms for trade and regional operations
- Energy-water discords
- Inefficient resource use (energy and water)
- Weak regional institutions



Railway Links in Central Asia and Neighbors for Coal Exports



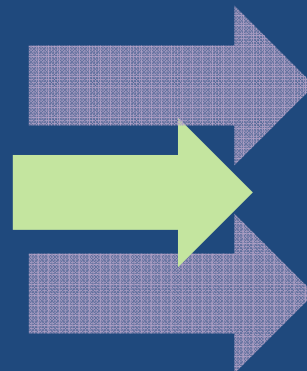


Central Asia Energy-Water Development Program

- A consolidated and comprehensive program emphasizing:
 - (i) Technical **analysis** owned by Central Asian countries
 - (ii) Stronger regional **institutions and policies**
 - (iii) **Integration** across energy and water
 - (iv) Strategic **investments** in energy, transmission and water infrastructure

Lost opportunities

- Rising cost of energy
- Regional tensions
- Minimal export earnings
- Winter heat/power shortages
- Energy-water conflicts



Growth and security

- ✓ Lower cost energy
- ✓ New trade relations
- ✓ More crop per drop
- ✓ More kilowatts per cubic meter
- ✓ Dialogue on joint investments

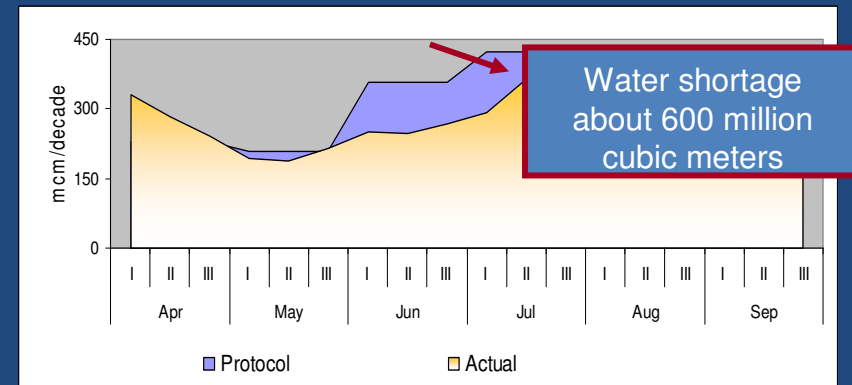


Some Difficult Challenges

- Winter **energy shortages** are pervasive while summer surpluses do not maximize revenue

(typical year)	Winter Peak Capacity Shortages	Winter Energy Shortages
Kazakhstan (does not include new N/S trans. line)	850 MW	3.0 TWh
Kyrgyzstan	100-150 MW	1.0 TWh
Tajikistan	700-850 MW	2.5 - 3.0 TWh
Turkmenistan	Surplus of about 600 MW or more	
Uzbekistan	~ 1000 MW	~ 1.0 TWh

- Water discords** cast a shadow on regional stability and realizing the full value of all energy resources



- Electricity trade** within the region has dropped to 10% of 1990 levels; the capacity of the Central Dispatch Centre does not support full system optimization

➔ **Benefits to regional cooperation are real and identifiable**

- Risk mitigation for energy supply; Lower energy costs; Improved environmental management; More efficient use of water; Energy exports



Three Major Inter-linked Themes

1. Address winter deficits and summer surpluses

- Implement stop-gap measures; identify long term investments in new supply
- Identify least cost energy mix for the region and strengthen regional planning capacity
- Invest in existing generation constraints and export opportunities

→ ENHANCE ENERGY SECURITY

2. Maximize the benefits of the Central Asia Power System for energy trade

- Enhance the capacity of the Coordinating Dispatch Centre (CDC)
- Implement necessary policies and mechanisms for unified operation
- Manage power pools, optimize transmission system operation

→ DEVELOP ENERGY MARKETS ON COMMERCIAL BASIS

3. Integrate energy and water management

- Integrate energy and water in models and data to balance water demands for renewable energy (hydropower) and other uses
- Invest in water productivity in energy and water sectors

→ SUPPORT SUSTAINABLE ENERGY DEVELOPMENT



Established Partnerships with Regional Institutions

1) Energy Sector Coordinating Committee of the Central Asia Regional Economic Commission (CAREC)

- Three themes are reflected in the Action Plan for Central Asia

2) Central Dispatch Centre (CDC)

- Coordination for capacity building and equipment/ infrastructure
- Linkages with National Dispatch Centres

3) International Fund for Saving the Aral Sea (IFAS)

- Partnership established to support energy-water analysis and dialogue
- Support to 3rd Aral Sea Basin Management Plan

4) United Nations Regional Centre for Preventive Diplomacy in Central Asia

- Regional dialogue and international panel of experts

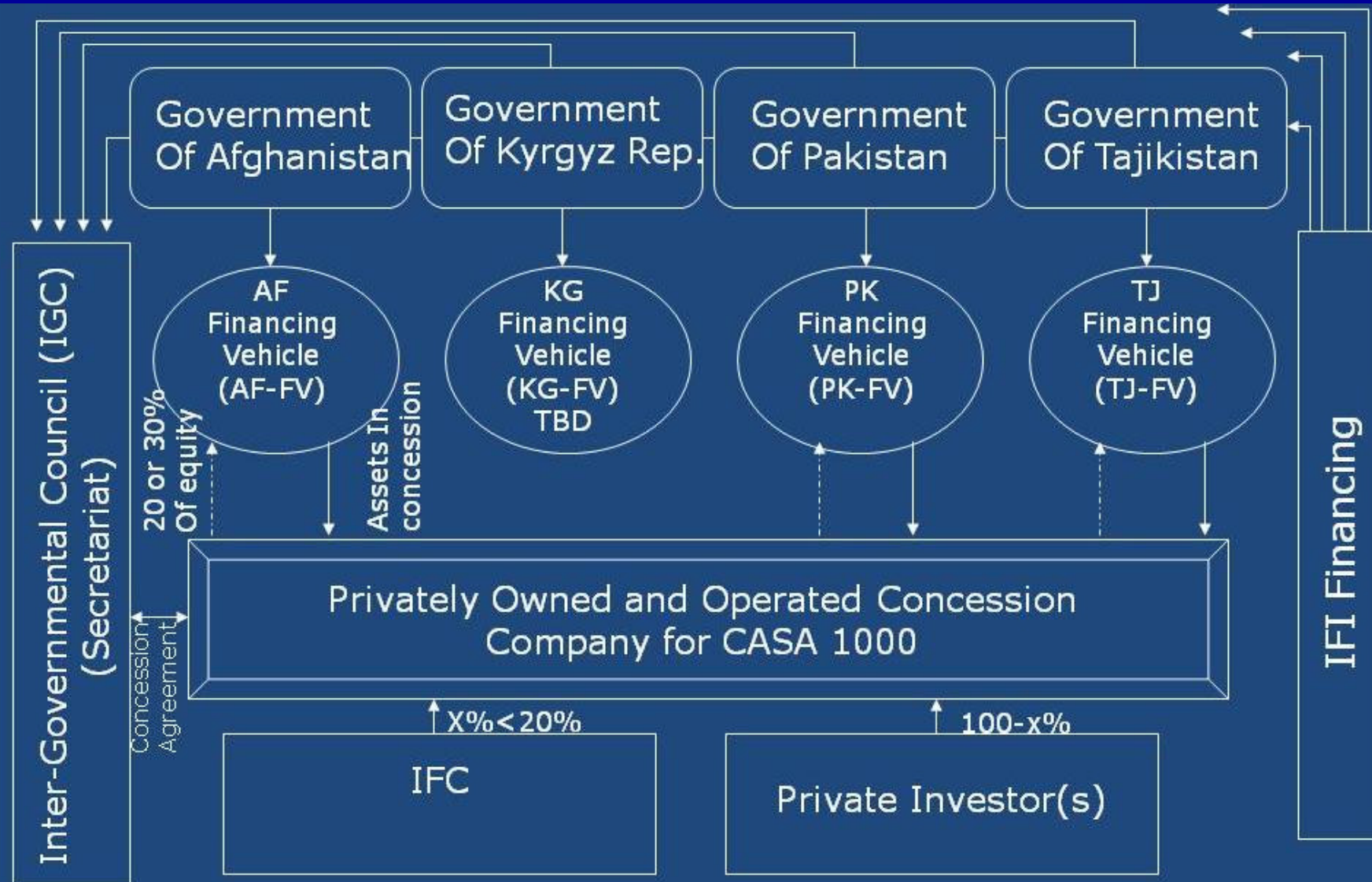


Central Asia South Asia Electricity Trade (CASA-1000)

- Initial assessment studies to assess techno-economic, environmental assessment were completed last year.
- Additional studies have been contracted and some more are planned to complete due diligence.
- Severe shortages in Pakistan and spilling of water in Tajikistan, without generation in summer, could be mitigated by this project.



CASA1000 Institutional Framework for Financing and Operations



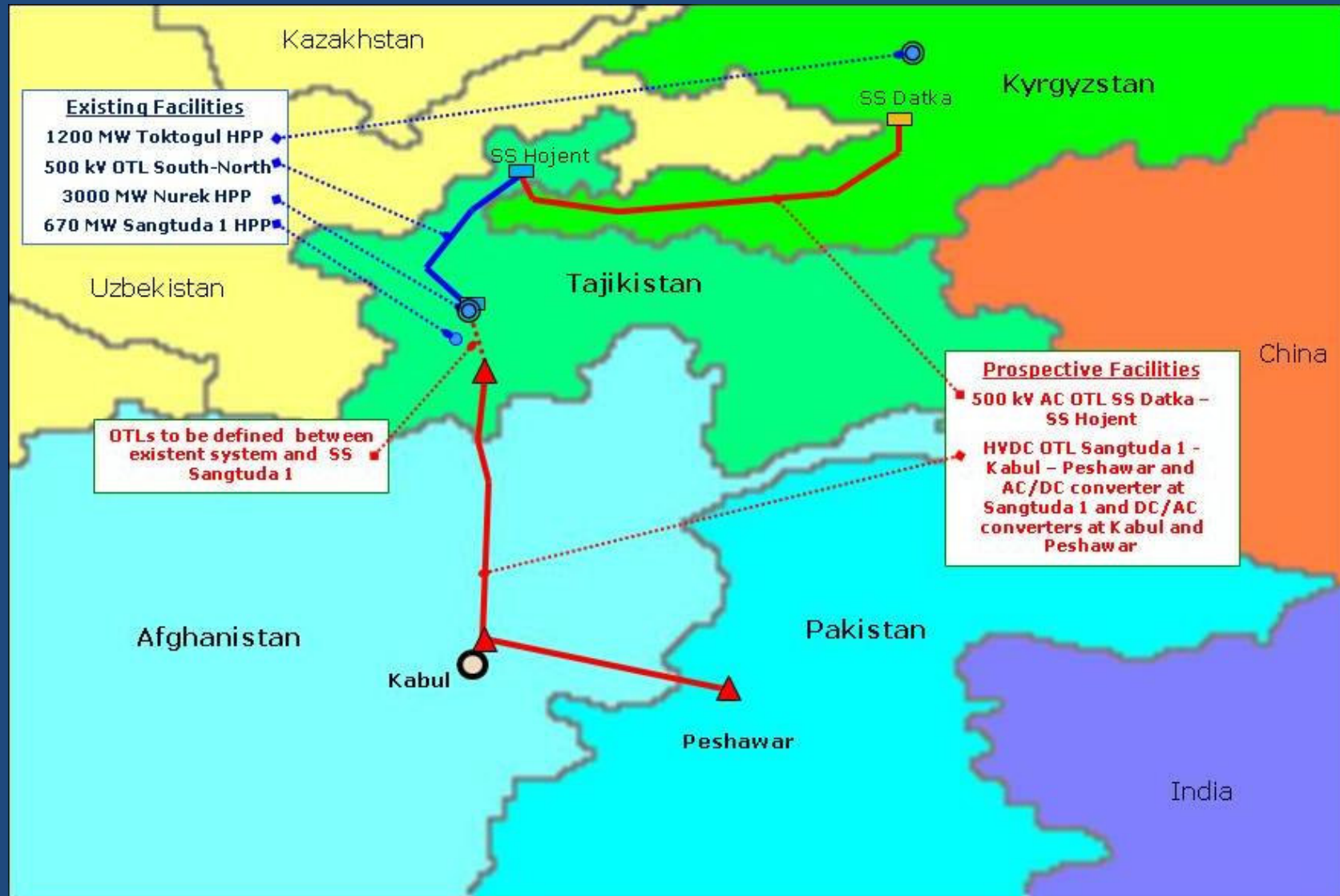


CASA 1000 Transmission Project to transfer 1000 MW to Pakistan and 300 MW to Afghanistan

- **Project Scope:**
 - A 500 kV, 750 km HVDC transmission system between Tajikistan, Afghanistan and Pakistan;
 - Appropriately sized AC to DC Converter Station in Tajikistan, Pakistan and Afghanistan, if recommended as the best solution;
 - A 500 kV transmission link between Kyrgyz Republic and Tajikistan;
 - Institutional, Risk Mitigation and Legal framework to enable the construction and financing of the above
- Being developed as a Public Private Partnership

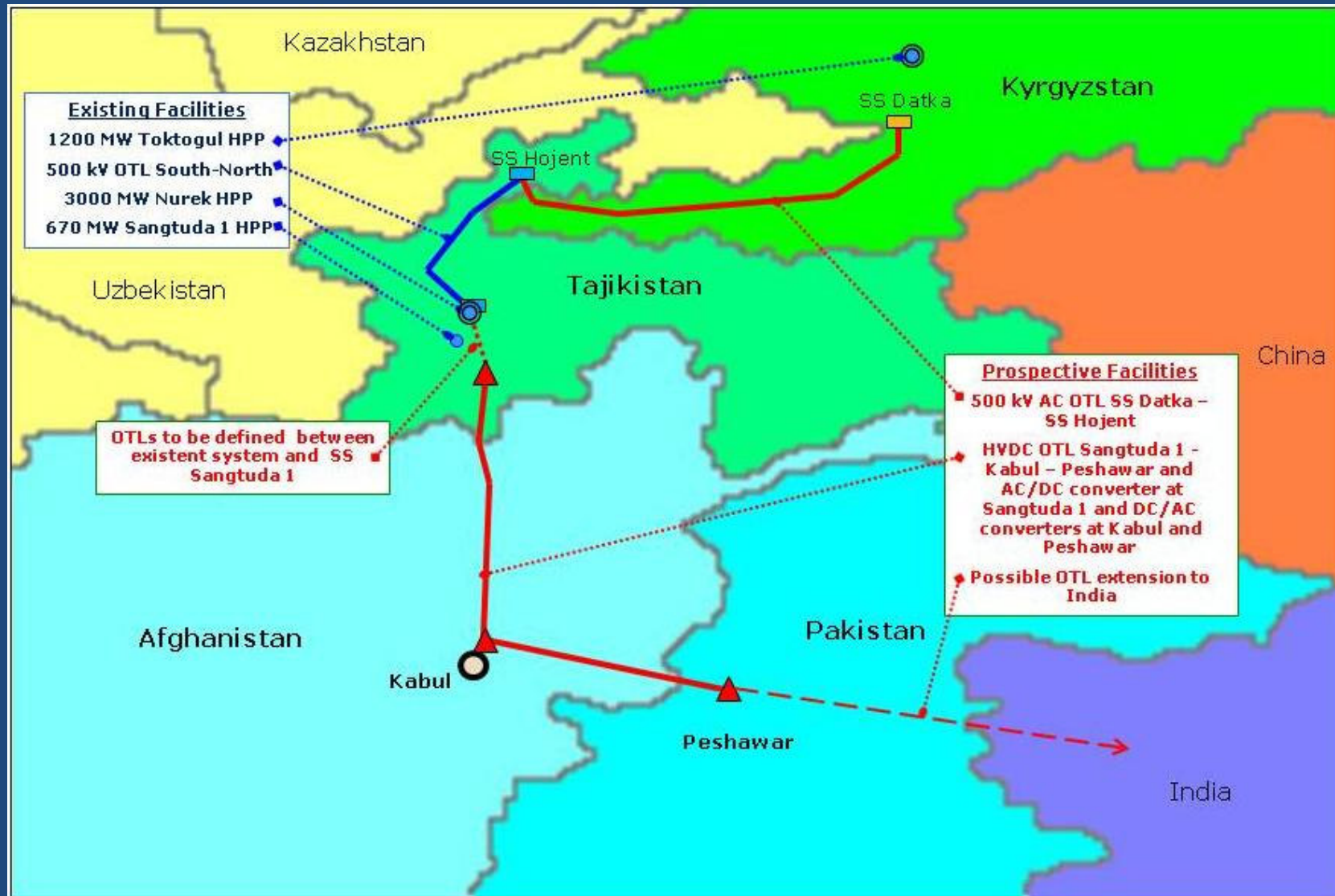


CASA 1000 Transmission Project to transfer 1000 MW to Pakistan





CASA 1000 Transmission Project to transfer 1000 MW to Pakistan



Thank-you

skosla1@worldbank.org