Fostering Regional Electricity Trade in Central Asia

EU-Central Asia Economic Forum
Regional Aspects of Promoting Energy Efficiency and Renewable Energies
Central Asia is a growing region with rich resources, high variance and a strategic location for regional energy trade

- Benefits of regional electricity trade and integration
  - Increased energy security and reliability
  - More efficient and effective use of infrastructure
  - Economies of scale in investments
  - Greater renewable energy penetration
  - Reduced environmental impact (reductions in greenhouse gases)
  - Reduced cost of supply for consumers

- Beyond economic benefits, regional electricity trade and cross-border interconnections (e.g. CASA-1000 Project) can also strengthen:
  - Regional stabilization and peace
  - Community development and poverty reduction

- High potential of regional electricity trade within the region and with South Asia (CASA-1000 Project), Eurasia, and China

- “Energy Rich” Central Asia
  - Hydro in KGZ, TAJ
  - Coal in KAZ
  - Gas in KAZ, TUR, UZB

- “Energy Poor” South Asia
  - High growth rates for demand in Pakistan
  - Limited domestic fossil fuels
Electricity trade is key to support the regional decarbonization agenda and Paris Agreement objectives

- Electricity supply dominated by coal, gas and oil – Kazakhstan, Turkmenistan, Uzbekistan with inefficient power generation
- Heating sector highly dominated by coal, gas and inefficient biomass supply and buildings and heating equipment
- Regional trade could help addressing country level clean energy transition challenges
  - Supporting coal and gas transition leveraging other countries cleaner energy supply
  - Supporting development of long-term integrated energy sector decarbonization pathway at regional level
  - Facilitating the achievement of decarbonization targets in countries NDCs
  - Improving sector financial viability, reducing energy subsidy and promoting market reforms
  - Improving access to financing
  - Creating regional market ecosystem for private sector interventions in energy efficiency and sustainable heating

Data: 2019
Central Asia has substantial renewable energy resources offering high potential to optimize clean energy supply at regional level

- Very good availability of different renewable energy sources in Central Asia
  - Hydro is dominating in Kyrgyzstan and Tajikistan with solar and wind potential exists as complement
  - Solar and Wind are more available in Uzbekistan and Kazakhstan
- The geographical and connectivity conditions offer great potential for reliable and green power supply in the region and potential of hydrogen development
The potential of regional interconnectivity remains today unexploited in Central Asia

- **Regional interconnection and market issues**
  - Existing trade is below interconnection capacity
  - Lack of coordination in generation economic dispatch and regional network management and planning
  - Synchronization has been limited to Kazakhstan, Kyrgyz Republic, and Uzbekistan
  - Very limited connectivity between Central Asia and South Asia
  - Lack of regional market institutional architecture
Enabling trade within Central Asia could bring substantial economic benefits

Economic benefits of electricity trade within Central Asia are estimated up to $6.4 billion* over 2020-2030 and additional $2.6 billion of trade benefits with South Asia.

- Vast majority of the benefits come from capex, fuel cost, and unmet demand cost savings. There is some savings from avoided reserve capacity violation within Central Asia which can be avoided by simply allowing countries to share reserve.

- The fuel cost component is almost entirely attributable to avoided gas-based generation costs with gas generation substituted by hydro.

*Total benefits in discounted terms
Vision for Central Asia regional electricity integration

• **Short to Medium-term (1-5 years): Expand Opportunities for Regional Trades (bottom-up approach)**
  - Expand bilateral and regional electricity trades
  - Synchronize transmission networks
  - Develop priority infrastructure projects to expand cross-border interconnection capacity
  - Build capacity for regional transmission system operation and planning (expand/equip CDC Energia to perform this role)
  - Continue reforming national electricity sectors (subsidy reforms, utilities financial and operational performance, etc.)
  - Operationalize regional task force at ministerial level and sign a regional agreement between central Asia countries to support the establishment/reinforcement of regional entities to facilitate electricity trade and market development

• **Long Term: Development of Regional Electricity Market (top-down approach)**
  - Develop regulatory structure and framework for transmission access and pricing
  - Harmonize technical and reliability standards: Regional Grid Code
  - Establish a regional market platform to identify and facilitate regional electricity trade opportunities (short and medium terms) by working closely with Central Asia countries.
  - Develop regional institutions ensure fair and consistent treatment of all countries in regional power exchange
    - Regional Transmission System Operator (TSO)
    - Regional regulatory body
The World Bank stands ready to provide financing and technical assistance to promote wider regional trade and establishment of common rules and institutional arrangements.

- Explore opportunities for reforms to support market transition and SOE transformation
- Support new financing opportunities to strengthen security of supply, accelerate energy decarbonization and expand regional connectivity
- Scale up programs supporting institutional and market reforms, sector decarbonization and regional energy dialogue
- Maintain collaboration with donors to promote regional market creation and private sector participation in the energy sector
- Strengthen donor coordination in the energy sector development, decarbonization, financing and technical assistance opportunities
- Regional power trade: financing and technical assistance to promote wider regional trade and establishment of common rules and institutional arrangements.

**Kazakhstan**
- Greening Generation Mix While Enhancing Grid Resilience and Flexibility
- Comprehensive Sustainable Heating Reforms and Priority Investments
- Financial Sustainability and Market Development

**Kyrgyzstan**
- Improve the financial viability of the sector
- Expand the generation capacity – hydro along with solar and wind
- Promote energy efficiency on supply and demand side

**Tajikistan**
- Supply security and reliability
- Sustainable sector financials and governance
- Enhanced regional electricity trade

**Uzbekistan**
- Sector Expansion & Decarbonization
- Energy Market and SOE Reforms
- Energy Efficiency and Sustainable Heating
- Regional Connectivity and Trade
Thank you