### USAID CENTRAL ASIA ENERGY VISION FOR 2032

<table>
<thead>
<tr>
<th>2022</th>
<th>2032</th>
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<tbody>
<tr>
<td>Government owned energy companies</td>
<td>Market-oriented and transparent</td>
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<td>High dependence on coal, oil and gas</td>
<td>Diverse private sector participation</td>
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<td>Vulnerable to climate change</td>
<td>Highly-diverse energy sources utilized</td>
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<td>Over-reliance on public financing</td>
<td>Diverse national and international investors</td>
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<td>Limited regional cooperation</td>
<td>Lower greenhouse gas emissions</td>
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<tr>
<td>Limited regional energy trade</td>
<td>Inclusive of women, marginalized groups, and youth</td>
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STRATEGIC PRIORITIES

1. Market Liberalization Reform
2. Clean Energy
3. Regional Connectivity

CROSS CUTTING PRIORITIES

- Train, Educate, and Build Capacity
- Facilitate Private Sector Investment
- Utilize Local Partners
- Include Women, Girls, and Marginalized Groups
Current Grid Snapshot:

Aging: Developed in the 1970s under the Soviet Union

Fossil fuel optimized: Designed to optimize fossil fuels and water resources

Limited trade: Cross-border trading is only 10-20 percent of what it was during the Soviet era
REGIONAL CONNECTIVITY

CASA-1000

- Financed by World Bank, IsDB, and EBRD
- USAID funds the CASA Secretariat
- $1.2 billion, 1,300 MW, 1,330 km High Voltage Transmission System
- Two converter stations in Tajikistan and Pakistan
- Summertime hydroelectricity from Kyrgyz Republic and Tajikistan to Pakistan
- 4.6 billion kWh/yr
CASA-1000 Benefits to Partner Countries

Tajikistan & Kyrgyz Republic
• Major new source of revenue
• Builds new economic/diplomatic ties to South Asia

Afghanistan
• Receives revenue from transit fee
• Establishes Afghanistan as a reliable transit country

Pakistan
• Alleviates critical electricity shortages
• A new source of clean, reliable energy for millions of people
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<th>National Market Liberalization</th>
<th>Clean Energy</th>
<th>Regional Power Market</th>
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<tbody>
<tr>
<td>1</td>
<td>National Energy Strategies updated</td>
<td>Strategies for scaling up clean energy developed</td>
<td>Cross-border commercial trade enabled due to open access to generation and transmission networks</td>
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<tr>
<td></td>
<td>Optimal market design and frameworks developed</td>
<td>Renewable energy and energy efficiency integrated into energy decision making</td>
<td>Regional electricity market model developed</td>
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<tr>
<td></td>
<td>Cost reflective tariff methodologies established</td>
<td>Renewable energy and energy efficiency investment promoted</td>
<td>Harmonized technical and market frameworks developed</td>
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<td>Utilities modernized</td>
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REGIONAL ELECTRICITY MARKET

Central Asia Regional Electricity Market (CAREM)
Introducing a reliable electricity market built on modern, efficient, and secure infrastructure

- Lowering costs for the consumer through open market trading
- Increasing electricity trade and revenue
- Leveraging a diversity of energy sources to ensure least cost electricity
- Improving regulations, governance, and transparency

Private Sector
Investing and introducing advanced technology and knowledge

Central Asia Governments
Providing consistent leadership and knowledge management

International Financial Institutions
Providing financing to rehabilitate and modernize infrastructure; focus on interconnections

United States Government
Harnessing and applying U.S. expertise in sector reforms, regulatory environment, and electricity trade

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RENEWABLE ENERGY AUCTIONS

• Since 2017, USAID has assisted in Kazakhstan to conduct renewable energy auctions:
  – Introduced rules and methodologies
  – Built an IT platform
  – Assisted in analysis for integration to the grid

• Status on RE deployment by 2022:
  – 43 wind, 54 solar, 40 small hydro, 5 biogas
  – Total installed capacity of 2332 MW
  – Generation of 4220 mln kWh in 2021

• Resulting in substantial ceiling price
  – Solar power prices decreased by 57%
  – Wind prices decreased by 29%
  – Hydro prices decreased by 22%

• Benefits: transparency, lower cost, reduced GHG emissions
Kazakhstan

- Improve electricity market functioning and regulation
- Improve the operational performance of utilities and power system resilience
- Advance RE development, procurement, and grid integration
- RE courses for University
- Expand Demand Response Programs and Roof Top Solar
- Support low carbon transition strategies and climate change mitigation
RENEWABLE ENERGY

Tajikistan
• 200 kW solar plant paired with a battery energy storage
• Assisted Sebzor hydropower plant
• Renewable energy zones

Uzbekistan
• Conducted renewable energy system impact studies
• Procured renewable energy laboratory equipment
• Conducted pre-feasibility study on small hydro

Kyrgyzstan
• Supported Kyrgyz Electricity Settlement Center with legal and regulatory guidance

Turkmenistan
• Proposed a Renewable Energy Action Plan
• Proposed improved RE legislation
• Proposed RE pilots
Combined Heat and Power

- Conducted energy efficiency assessments for 8 CHPs in Kazakhstan
- Identified 25 efficiency measures and business plans for bankable projects
- Produced detailed technical and economic analysis
United States Energy Association  USEA

MEETING ENERGY SECURITY PRIORITIES & RENEWABLE ENERGY TARGETS

- Grid Integration of Renewable Energy
- Power Sector Modeling & Planning
- Energy Sector Digitization & Cyber-Security
- Improvement of Transmission Networks
- National Electricity Markets
Energy Regulatory Partnership Program

- Capacity building and the sharing of experience
- Attract investment while protecting consumers’ interests
- Transparent and cost-reflective energy pricing
- Regional engagement and developing common regulatory best practices
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