



**USAID**  
FROM THE AMERICAN PEOPLE

# CENTRAL ASIA REGIONAL ELECTRICITY MARKET

## PROJECT SUMMARY



## CAREM PROJECT AND ITS OBJECTIVES

The Central Asia Regional Electricity Market Project (CAREM), financed by the United States Agency for International Development (USAID) and implemented by Tetra Tech ES, Inc., aims to provide technical assistance and capacity building to countries of Central Asia in their efforts to establish an economically viable and sustainable Regional Electricity Market. In achieving this objective, CAREM will promote an efficient utilization of the region generation capacity through an extensive use of complementarity between different primary sources, making possible an increase in the volume of electricity that can be traded across national borders.

CAREM will help the countries of Central Asia to enhance the security and reliability of supply, increase electricity trade across national borders, attract private investment into their power sectors and achieve greater economic growth.

The Regional Electricity Market is expected to be underpinned by robust high-voltage interconnections between countries, and by upgraded national transmission infrastructure. Once all national power systems become integrated again, their operation will be synchronized and centrally coordinated by CDC-Energia. This will enable larger bi-directional power flows and will allow all grids to be able to share operating reserves and effectively support each other during emergencies. At the same time, an integrated operation will facilitate and encourage large-scale power generation, and the deployment of solar and wind power plants throughout the region.

It is anticipated that CAREM will improve the security of supply in the region, bring substantial benefits to national economies and enhance their growth by attracting private investment into national power sectors. A competitive CAREM will ultimately serve as a platform for an expanded Central Asia - South Asia power market, facilitating commercial power exchange with Afghanistan and Pakistan via CASA-1000 transmission infrastructure.

## PROJECT IMPLEMENTATION

Considering the existing disparities between CA national grids, as well as the uneven distribution of generation resources, the creation of a regional market needs to be reached gradually following a Phased Approach.

**Phase 1** - Initially supporting the countries to improve the condition of national power infrastructure, moving into a coordinated, synchronized operation of their transmission systems. Simultaneously, help the countries to increase the volume of bilateral electricity trades, share balancing energy and support each other during system emergencies.

**Phase 2** - Introduction of a spot market designed like a Day-Ahead Market.

**Phase 3** - Implementation of a Real-Time Market and an Ancillary Services Market.

**Phase 4** - Ultimately, to migrate to a wider competitive regional electricity market.

To ensure that the vision and objectives behind the establishment of the regional market are met, the USAID team in support of CAREM is currently working on the following activities:

- Conducting an initial assessment of the condition of all national transmission systems, focusing on the preparation of traditional power system studies that will result in specific recommendations for the rehabilitation of national power grids. The initial focus is on getting existing interconnections strengthened, national transmission systems upgraded and modernized, and operated synchronously in a coordinated manner to support reliable two-way power flows.

- Addressing the obstacles preventing trade of electricity in larger volumes, including gaps in the legal frameworks to establish commercial relationships, regulatory barriers, commercial issues such as pricing and customs duties, lack of clear procedures to trade, and absence of a coordinated transmission system operation.
- Reviewing national policies, laws, regulations, operating rules and technical standards, in an effort to harmonize them, recommending the necessary amendments and adding provisions that would make possible multilateral cross-border exchanges through a regional trading platform.
- Developing commercial rules and regulations to ensure bilateral contracts will be honored and payments will be provided.
- Preparing practical recommendations for overcoming defined barriers and weaknesses.
- Working with partner countries at the regional level to help them create the necessary conditions for an intra-regional, multilateral electricity trading platform to become operational.
- Seeking agreement at the highest level with Central Asian governments to follow a proposed Roadmap and Action Plan to guide the implementation of CAREM through 2027 when is expected that the market will be fully operational.

To support the implementation of CAREM, in consultation with Central Asian countries, USAID team established three Working Groups: one group focuses on technical issues, the second on legal and regulatory and the third on market-related issues. The members of these groups attend regular workshops and roundtables where project issues are discussed, and they are regularly receiving training on competitive electricity markets structure and operation.

To avoid duplication of efforts and more closely coordinate its activities with the work currently performed by the Donor community and Development and Financial Institutions active in the region, USAID created a framework to collectively support Central Asian countries in their endeavor to achieve a strong integration of their national power systems and create a regional market. The collaborative work of the USAID Project in support of CAREM with the Donors and DFIs is supplemented with consultations with partner countries to determine existing gaps in assistance.

## PROJECT MANAGEMENT

USAID/Central Asia is providing overall project management and technical direction, monitoring the quality and effectiveness of the implementation, and maintaining high-level direct contact with government officials of the five Central Asian countries, as well as with other stakeholders, the donor community and International Development and Financial Institutions.

The CAREM project team includes local full-time personnel based in Almaty, support technical experts from Tetra Tech Arlington office (USA), and several consulting firms: AF Mercados (Spain), EKC (Serbia) and ESR (Kazakhstan).

The implementation of all project activities is directed by:

- **Armen Arzumanyan** - Chief of Party, responsible for overall project management and technical direction of the project team, and for liaising with USAID/Central Asia, the sub-consultants executing several project tasks, and counterparts from partner countries.

- **Oleg Ryaskov** - Deputy Chief of Party and Power System Lead, who is responsible for the technical assessment of national transmission systems condition, the coordination of the different project activities and for maintaining regular contact with the Working Groups.
- **Pedro Robiou** - Power Market Design Lead, responsible for the technical activities to develop the Regional Electricity Market.

This team is supported by a group of external expert consultants:

- **Michael Bekker** – Regional Power Market advisor with extensive experience in wholesale electricity markets operation, market development processes and methodologies, and electric utility operation.
- **Andrey Perevertaev** – Power Market Specialist with extensive experience in electricity market design and liberalization.
- **Vladimir Tsyssin** – Power System Expert responsible for developing the principles of coordinated operation of the national power systems.
- **Olga Terenteva** – Energy Legal and Regulatory Advisor responsible for activities leading to an improved legal and regulatory framework that would enable the integrated operation of national power systems and the functioning of CAREM.

## IMPLEMENTING PARTNERS

The USAID team in support of CAREM is working at three main institutional levels:

1. **Intergovernmental Coordination Council (IGC):** this minister-level coordination body is expected to provide political support for necessary agreements, as well as review/approve/sign decisions that can advance the regional market initiative and all its associated activities.
2. **Joint Working Group (JWG):** this vice/deputy minister-level working group reviews/approves institutional and regulatory decisions presented to them by the staff-level working group. The JWG is also reviews draft agreements between countries.
3. **Staff-level Working Groups:** these three working groups are composed of representatives from each partner country. Their work focuses on technical, legal/regulatory and market issues.

In addition to these regional bodies, the CAREM project is coordinating its work with actors at the national level such as ministries of energy, transmission system operators, CDC-Energia, and the Kazakhstan market operator KOREM.

## PROJECT OFFICE AND REGIONAL SUPPORT

CAREM work is coordinated from an office in Almaty, Kazakhstan. The project has also local technical presence in Uzbekistan, Tajikistan and Kyrgyzstan.

## PROJECT EXPECTED OUTCOMES

Considering the uneven distribution of the primary sources used to generate electricity across Central Asia, the idea of a multilateral power exchange mechanism that would allow countries to sell and buy electricity at competitive prices on a power trading platform, is not only economically desirable but also possible.

To help the countries to create an opportunity to realize the vast economic potential of their power sectors, CAREM has set three overall objectives. Through a number of defined activities, which are being carried out jointly with partner countries, the project seeks to achieve important outcomes that will lead to the creation of a competitive Regional Electricity Market. The objectives and expected outcomes can be summarized as follows.

### **PROVIDE TECHNICAL ASSISTANCE TO INCREASE CROSS-BORDER BILATERAL POWER EXCHANGE.**

- 1.1. With the participation of all Central Asian countries, an Inter-Governmental Council (IGC), which will act as a steering, decision-making body on the regional electricity market (REM) design and implementation, and will be supported by a Technical and Market Working Groups, is created.
- 1.2. The current condition of all national transmission systems is examined with Power System Studies, and recommendations for their expansion, rehabilitation and modernization are presented.
- 1.3. Agreements between national Transmission System Operators to synchronize and operate in parallel their respective power systems are drafted
- 1.4. A market model that could be adopted by all countries in the region and allows the trading of electric energy and regulating capacity as an ancillary service, is developed. The model would facilitate competition and encourage private investments in generating capacity.
- 1.5. The principles of a balancing market using competitive procurement of ancillary services, based on an agreed methodology to price them, is formulated.
- 1.6. The capacity to operate an open and transparent regional platform to trade electricity, is built.

### **HELP COUNTRIES TO IMPLEMENT POWER SECTOR REFORMS.**

- 2.1. Electricity sector regulation, governance and transparency are improved.
- 2.2. Power sector financial viability and sustainability are improved. Without a viable electricity sector, it will not be possible for Central Asian countries to provide adequate and reliable service or expand their generation, transmission and distribution infrastructure in a timely manner to meet growing demand.
- 2.3. Efficiency, transparency and accountability of market stakeholders are enhanced by developing and promoting regional rules for trading electricity.

- 2.4. The poor correlation between prices for electricity generation and end-user tariffs are corrected, and effective safety net programs are established to minimize the effects of potential cost increases on segments of the population that may be most exposed and affected by subsidy reforms.
- 2.5. Market-based cost of wholesale generation and transmission is established, and cost-recovery tariffs are defined.

**SUPPORT THE DEVELOPMENT A REGIONAL ELECTRICITY MARKET.**

- 3.1. Conditions that facilitate increased bilateral trading are improved.
- 3.2. Recommendations to resolve customs and tax issues constraining electricity trades are presented. This should facilitate the proper treatment of transactions associated with selling and buying electricity across the border, as well as inadvertent power flows.
- 3.3. Capacity on how electricity market operate is improved. CAREM's work will focus on: (a) transferring knowledge to build the capacity of government officials on how electricity markets operate; (b) defining the critical parts of the national transmission system that will need to be upgraded and modernized to increase the present level of cross-border trading; (c) assessing the adequacy of the system to supply present and future demand; and (d) on improving the legal and regulatory frameworks that will govern power transactions. This will create the necessary conditions for the adoption of a REM model best suited to the conditions of Central Asian systems.