

Study on Strengthening the Central Asian Power System (CAPS)

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Central Asia Energy-Water Development Program

Program Brief No. 1

Background

The Central Asian Power System (CAPS) was created under the auspices of the Soviet Union in the 1970s and was constituted from the power networks of present-day Uzbekistan, southern Kazakhstan, the Kyrgyz Republic, Tajikistan, and Turkmenistan. The system sought to ensure consumers' energy supply through a jointly operated regional generation and transmission network, thus creating a high level of interconnection and coordination across all of Central Asia's diversified energy resources. Given the role of hydropower in generating energy as well as regulating downstream water flows, water resource management was a key component of CAPS.

The end of the Soviet Union resulted in a progressive decline in a crucial function of CAPS: the joint coordination of the operations of dams, water reservoirs, irrigated lands, and fossil fuel generation. Each country now undertakes energy decision-making independently, eroding established practices (including the physical and technical parameters of the infrastructure). Indeed, Tajikistan's and Turkmenistan's electricity systems are now disconnected from the regional network. Reduced coordination has contributed to numerous system emergencies and exacerbated winter energy shortages, which unfortunately have only further spurred the countries to further focus on independence of their national power systems.

Load Dispatch and Systems Operation Study for CAPS

In order to provide a preliminary assessment of the opportunities in strengthening electricity systems across Central Asia, the World Bank's Central Asia Energy-Water Development Program (CAEWDP) commissioned a study from Mercados, a Spanish energy markets research and consulting firm. Published in October 2010, the study described the status of CAPS; identified the benefits of a joint power system operation and the downsides of losing system coordination; and, using a risk-based analysis, suggested possible low-cost, easily implementable solutions to strengthen integrated power system operation.

Study Findings and Recommendations

- A strong legal and technical basis exists for CAPS: The Parallel Operational Agreement, signed by all member countries in 1998, provides the legal basis for operational network rules. At the same time, there exist a number of problems of technical, economic, legal and regulatory nature that need to be addressed for CAPS to benefit from regional trade.
- Regional cooperation would provide the countries with a higher level of security of supply than do independent national systems and bring substantial financial benefits: The report's modeling indicated that the joint operation of CAPS countries' power systems would save more than 1.6 billion USD in the first three years of operation as negligible capital cost.
- The study recommended measures split in three stages: (I) Address immediate problems that encourage CAPS members to leave the system; (II) Enhance regional power trade by overcoming technical, economic, regulatory and legal barriers; and (III) Optimize regional power trade.

The study outcomes served as a basis for World Bank technical assistance/knowledge sharing support to CAPS countries, including through CAREC energy meetings. As per CAPS countries' request the study is being updated and made more detailed in 2015.

The Central Asia Energy-Water Development Program (CAEWDP) is a knowledge and technical assistance multi-donor trust fund (MDTF) administered by the World Bank. CAEWDP's mission is to build energy and water security for the countries of Central Asia – Kazakhstan, Kyrgyz Republic, Tajikistan, Turkmenistan, and Uzbekistan – through enhanced regional cooperation.

Since its inception in 2010, CAEWDP has received support from bilateral and multilateral donors including the Government of Switzerland's State Secretariat for Economic Affairs (SECO), the European Commission (EC), the United Kingdom's Department for International Development (DFID), the United States Agency for International Development (USAID), and the World Bank Group.

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References

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<http://documents.worldbank.org/curated/en/2015/08/24901339/load-dispatch-system-operation-study-central-asian-power-system>

