

**PROJECT INFORMATION DOCUMENT (PID)  
CONCEPT STAGE**

Report No.: 70560

<b>Project Name</b>	CENTRAL ASIA SOUTH ASIA REGIONAL ELECTRICITY AND TRADE (CASA-1000) PROJECT
<b>Region</b>	EUROPE & CENTRAL ASIA AND SOUTH ASIA
<b>Sector</b>	Power (100%)
<b>Project ID</b>	P110729
<b>Borrower(s)</b>	Islamic Republic of Afghanistan; Kyrgyz Republic; Islamic Republic of Pakistan; Republic of Tajikistan
<b>Implementing Agencies</b>	Power Utilities of Afghanistan; Kyrgyz Republic; Pakistan and Tajikistan
<b>Environment Category</b>	<input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> FI <input type="checkbox"/> TBD (to be determined)
<b>Date PID Prepared</b>	June 19, 2012
<b>Estimated Date of Appraisal Authorization</b>	07/18/2013
<b>Estimated Date of Board Approval</b>	12/03/2013

**1. Key development issues and rationale for Bank involvement**

The Central Asian Republics, with large energy resource potential relative to their domestic needs, have been pursuing energy export-led growth strategies since their independence in 1991. Kazakhstan, with its significant oil and gas resources, has been the most successful followed by Turkmenistan and Uzbekistan with their gas resources, while the hydro-rich Kyrgyz Republic and Tajikistan have not been able to realize their potential. This is in part due to: (a) significant financial resources and capital needed to develop hydropower plants and associated transmission lines; (b) limited regional cooperation; (c) the surplus power available predominantly in summer months; and (d) the lack of clarity, up until recently, on the electricity export market. On the other hand, countries of the neighboring region of South Asia, mainly Afghanistan and Pakistan, are energy deficient and their demands for energy are increasing. The growing deficit between the energy demand and the available domestic supply could potentially be covered, in part, by imports of electricity and gas from the Central Asia region.

The Central Asia-South Asia Regional Electricity Market (CASAREM) is a concept for developing electricity trade among the countries of the two regions through a set of projects and concomitant investments, underpinned by the relevant institutional arrangements and legal agreements. The development of the first phase of CASAREM, which is to establish the necessary transmission and trading infrastructure and systems to enable a trade of about 1,300 megawatts (MW) of summer surplus electricity between the Kyrgyz Republic and Tajikistan in Central Asia and Afghanistan and Pakistan in South Asia, is referred to as "CASA-1000." It is envisaged that other countries may join the initiative as the trade expands.

The proposed Project has several benefits as it would:

- Make efficient use of surplus hydropower that is currently being wasted during the summer months;
- Assist some of the poorest regions in the world including conflict and post-conflict countries (Afghanistan and Tajikistan);

- Enhance trade and regional cooperation in a region where it is sorely needed, underpinning economic growth and creating opportunities for greater cooperation in other sectors such as creating transport and/or telecommunication corridors; and
- Encourage private sector participation in the operation of large multi-regional infrastructure projects.

An updated techno-economic feasibility study for CASA-1000 was prepared in February 2011. The feasibility report confirms the soundness of the considerations that led to the CASAREM initiative of developing a regional market. Those are:

- Sufficient quantities of summer surplus electricity are available in the Central Asian countries (Kyrgyz Republic and Tajikistan) even without any new power generation;
- Significant demand for electricity exists in South Asia (largely in Pakistan); and
- Difference in the cost of electricity between the importing and exporting countries potentially provide a justifiable rationale to undertake investments in transmission networks in order to support electricity trade.

The primary criterion adopted for the study was that only the residual surplus electricity, after serving the domestic demand in the Kyrgyz Republic and Tajikistan, would be available for export. Projections of domestic demand in the exporting countries were based on a wide range of factors including growth rates in Gross Domestic Product (GDP), income elasticity, tariff increases, price elasticity, and technical loss reductions, etc. The base case uses a conservative assumption that no new generation capacity is added to the Kyrgyz and Tajik systems over the life of the CASA-1000 Project. The base case analysis assumes that power flowing through the CASA-1000 transmission system would be supplied by existing power plants only.

However, the hydro-dominant systems in the exporting countries experience winter power deficits in the months when river flow is reduced or stopped due to freezing temperatures. Therefore, it is expected that they will likely need to add some new generation capacity to meet existing winter deficits as well as overall demand growth over the years. Any additional power would then contribute to increased available summer power for exports. Though not required for the successful realization of the CASA-1000 Project, such additional power also could contribute to its increased economic benefits.

The study concludes that by 2016 the available annual surplus will be about 6 Terawatt-hours (TWh) in the Kyrgyz and Tajik systems combined. The available surplus has significant volatility in dry and wet years and will be concentrated in the period from May to September. The exportable surplus will be constrained by the transmission capacity of the Alternate Current (AC) to Direct Current (DC) convertor stations for the CASA-1000 Project, estimated at about 4 TWh in 2016 for a 1,300-megawatt (MW) transmission line.

*Risks and Risk Mitigation.* In view of the multi-country nature of the Project and especially as the proposed route of the transmission line crosses locations that are perceived to be high risk areas, the task of risk mitigation and management is one of the most crucial to the successful realization of the Project. The initial screening identifies the following potential risks: power supply; market risks; counterparty (especially payment) risks; timely completion of construction; operational risks such as technical outages to the line; price and tariff risks; political risks; legal risks; fiscal/macroeconomic risks; regulatory risks; environmental risks; and force majeure. International experience on independent power projects and cross-border energy corridors shows that measures to mitigate these risks can be and would be devised for this Project.

In addition, the Project faces the specific risks of war and civil unrest in some of the Project areas, particularly in Afghanistan and northwestern Pakistan. Project preparation would involve identifying and quantifying the risk and developing robust, internationally acceptable risk mitigation mechanisms. A detailed analysis of the various risks as well as the development of an appropriate mitigation strategy during construction phase and the operations phase is being carried out for the Project. Solutions are likely to include a combination of social measures (including consultation-based community benefit-sharing schemes); technical/operational measures (including dedicated repair crews and security personnel); and financial measures (including a special fund that may be established to compensate for loss of revenue possibly bolstered by third-party guarantees).

## **2. Proposed objective(s)**

The objective of the Project is to promote clean hydroelectricity exports from Tajikistan and the Kyrgyz Republic to Afghanistan and Pakistan. The project outcome will be measured by the amount of electricity (in Gigawatt-hours) exported via the transmission system to be constructed under the Project.

## **3. Preliminary description**

The CASA-1000 Project would comprise of:

- (a) around 750 km High Voltage Direct Current (DC) transmission system between Tajikistan and Pakistan via Afghanistan;
- (b) a DC to Alternate Current (AC) converter station in Kabul to supply Kabul area;
- (c) an AC transmission link between the Kyrgyz Republic and Tajikistan to supply the Kyrgyz electricity to South Asia via Tajikistan; and
- (d) the concomitant institutional and legal framework to enable such electricity trade.

## **4. Safeguard policies that might apply**

The World Bank policy on Environmental Assessment (OP4.01) is triggered and the proposed Project is designated as Category A for the purposes of OP4.01<sup>1</sup>. Policies on Involuntary Resettlement (OP4.12) and on Physical Cultural Resources (OP4.11) are also expected to be triggered in view of the land acquisition needs of the Project as well as the rich cultural history of the areas through which the transmission line will pass, although it is not envisaged that significant land acquisition will take place. An assessment will be made on the applicability of the policies on Natural Habitats (OP 4.04) and Forests (OP4.36) during the preparation of the Project.

## **5. Tentative financing**

**Source:**

**(US\$ million)**

To be determined

Approximately 950

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<sup>1</sup> Electricity Transmission Projects are normally Category B projects for the purposes of OP4.01. However, since Afghanistan may not have an environmental assessment policy of its own, it was decided to make this a Category A project and undertake a full environmental assessment.

## **6. Contact point**

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