

PROJECT INFORMATION DOCUMENT (PID) CONCEPT STAGE

Report No.: PIDC23265

Project Name	Nurek Hydropower Rehabilitation Project Phase I (P150816)
Region	EUROPE AND CENTRAL ASIA
Country	Tajikistan
Sector(s)	Hydropower (60%), General energy sector (10%), Flood protection (30%)
Theme(s)	Export development and competitiveness (30%), Rural services and infrastructure (20%), Water resource management (30%), Infrastructure re services for private sector development (20%)
Lending Instrument	Investment Project Financing
Project ID	P150816
Borrower(s)	Ministry of Finance, Tajikistan
Implementing Agency	Ministry of Energy and Water Resources, Tajikistan, OJSHC Barqi Tojik
Environmental Category	B-Partial Assessment
Date PID Prepared/ Updated	28-Apr-2016
Date PID Approved/ Disclosed	29-Apr-2016
Estimated Date of Appraisal Completion	15-Feb-2017
Estimated Date of Board Approval	28-Apr-2017
Concept Review Decision	Track II - The review did authorize the preparation to continue

I. Introduction and Context

Country Context

Tajikistan, a landlocked country, is located in southeast Central Asia and borders Uzbekistan to the west, Kyrgyz Republic to the north, China to the east and Afghanistan to the south. Mountains cover 94 percent of the country's surface area and six percent of them are covered by glaciers. Endowed with abundant water resources, Tajikistan's hydropower potential, including for export, is substantial. With a population of 8.4 million and a GNI per capita of \$1,080 in 2014, Tajikistan is the poorest country in the Europe and Central Asia (ECA) Region. Following the end of the civil war in 1997, the economy grew strongly for 15 years, at 7.9 percent on average per annum driven by the rapid increase of remittances and the subsequent expansion of services, public investments, and construction. In 2015, real GDP growth slowed to 6 percent from 6.7 percent one year earlier due to weak global prices for key export commodities, and low expansion of services and agriculture.

In 2015, workers' remittances dropped by 33 percent (year-on-year) in US dollar terms (16 percent in Tajik TJS terms). This translated into lower incomes of the population and subsequently in lower domestic demand and slower growth in services. As a result, the IMF (Regional Economic Outlook, October 2015) has projected that the growth rate in Tajikistan will slow down to 3.4 percent in 2016 whereas the World Bank expects a growth rate of 4.8 percent. Both capital investments and services, previously the largest drivers of economic growth, have suffered from the current crisis.

Looking ahead, the Government of Tajikistan has set ambitious goals for 2020, including doubling GDP, reducing poverty to 20 percent, and expanding the middle class, which will be difficult to achieve given the country's weakening economic situation. The continued reduction in labor migration coupled with the expected return of many migrants, will increase the number of job seekers, putting additional pressure on local labor markets, poorer households in Tajikistan, and the country's social protection measures.

Sectoral and Institutional Context

Overview

Access to electricity is nearly universal in Tajikistan and electricity tariffs are among the lowest in the world. Large cities have district heating systems, which, due to lack of maintenance and fuel are dysfunctional. The use of inefficient and polluting solid fuel stoves (coal, wood, dung, and cotton stalks) for heating and cooking is common throughout Tajikistan and the World Health Organization (WHO) lists Tajikistan among the 20 worst affected countries for diseases that result from indoor air pollution. The household use of solid fuels disproportionately affects women and children who collect the fuel, spend many hours each day near the stove, and are more susceptible to respiratory diseases. Solid fuel burning also contributes to negative environmental impacts.

Barqi Tojik (BT), a vertically integrated state-owned enterprise, is the major service provider in the sector covering all functions from generation and transmission to distribution and supply. Hydroelectric plants with an installed capacity of 4,730 MW account for more than 90 percent of generation. The largest plants are Nurek (3,000 MW), Baipaza (600 MW), Golovnaya (240 MW) and Kairakum (126 MW). BT purchases electricity from two hydro Independent Power Producers (IPPs), Sangtuda-1 (670 MW) and Sangtuda-2 (110 MW), and has recently constructed a 100 MW combined heat and power (CHP) plant. BT is also responsible for importing and exporting electricity.

Key Challenges for the Sustainability of the Power Sector

Several studies of Tajikistan's energy sector have been conducted over the last years. The challenges can be summarized in four categories:

- Energy security
- Financial viability of the sector
- Governance, transparency and accountability
- Market structure and regulation

Rationale for the Bank's Engagement

First, the project directly contributes to improving energy security by rehabilitating the existing power generation assets at Nurek and improving power trade opportunities. Without the project, Nurek HPP's output would continue to decline, energy shortages would worsen, and eventually the plant would cease operating. The project will increase Nurek's available generation capacity from its current 2,320 MW to 2,725 MW, extend its life, and improve the safety of the dam (at 300 meters it is the second highest dam in the world). The increase in the available generation capacity will enable BT to take advantage of trade opportunities, including through the CASA-1000 project, and energy exports will bring revenues that can be used to alleviate Tajikistan's acute winter energy shortages.

Second, the project contributes to enhancing the financial viability of the sector because the modernization of Nurek HPP will reduce BT's operating and maintenance costs for the rehabilitated units and help monetize its largest hydro resource. Revenue from electricity exports from Nurek HPP has the potential to become a major driver for economic growth and foreign exchange earnings. This revenue would help moderate future electricity price increases, allow the company to improve its operations, and service its debts.

Third, the project builds on the Bank's ongoing engagement on energy sector policy, security, and transparency. In addition to the various initiatives discussed above, the Bank has supported a large number of knowledge products to inform Government policy and sector development. The flagship study, "Tajikistan's Winter Energy Crisis: Electricity Supply and Demand Alternatives," completed in 2013, recommended the rehabilitation of existing hydropower assets as a matter of priority to increase domestic supply and exports.

Relationship to CAS

The Country Partnership Strategy (CPS) for FY2015-18 (Report No. 86372-TJ) supports the development objectives in the Government's 10-year National Development Strategy (NDS) 2006-15: to promote sustainable growth, improve public administration, and develop human resources. The Government's goals include doubling GDP, reducing poverty to 20 percent by 2020, expanding the middle class, and ensuring energy security. The project supports Pillar 1 of the CPS, "Strengthening the role of the private sector," and is aligned with the World Bank Group Energy Sector Directions Paper and the Sustainable Development Goal 7.

The project also supports the Climate Change priorities identified in the CPS. Tajikistan is the most vulnerable country in ECA to the impacts of climate change. As detailed in Tajikistan's Second National Communication to the UNFCCC, the country's hydropower plants are highly vulnerable to the projected impacts of climate change as they depend upon river basins fed by glacial melt and snow melt. Many climate models predict significant changes in the dynamics of Tajik glaciers, snow melt, and precipitation as the climate warms. The International Commission on Large Dams (ICOLD) has already emphasized the urgent need to adapt older dams to cope with the new climate conditions.

The project will contribute to climate change mitigation and adaptation by increasing power generation from hydropower and strengthening flood management capabilities. Based on the Bank's Greenhouse Gas (GHG) emission guidelines, rehabilitation of the Nurek HPP will reduce Tajikistan's overall GHG emissions. The improvement of Nurek's flood handling capacity will help both Tajikistan and the downstream countries to cope with the higher expected incidence of flooding in the future. The project therefore contributes to Tajikistan's international commitment

under the United Nations Climate Change Convention (ratified in 1992) and its Kyoto Protocol (ratified in 2008).

II. Proposed Development Objective(s)

Proposed Development Objective(s) (From PCN)

The project development objective is to increase the generation capacity of the Nurek HPP and strengthen dam safety.

Key Results (From PCN)

The results will be measured by the following indicators:

PDO Indicators:

- Generation capacity of hydropower rehabilitated under the project (MW) (Core Indicator). Capacity will increase from 2,320 MW to 2,725 MW.
- The dam's flood handling capacity increased (from 10,000-year return period flood to about the 100,000-year return period flood).
- Direct project beneficiaries (number), of which female (%) (Core Indicator).

The proposed indicators will be refined and annual targets determined during project preparation.

III. Preliminary Description

Concept Description

The project is the first phase of the rehabilitation of the Nurek HPP, comprising the rehabilitation of three of the nine existing generating units and upgrading of dam safety systems. Given the significant cost of rehabilitating the entire plant (\$566-650 million) and the limited volume of financing that would likely be available for Tajikistan, the Government and the Bank have agreed that a phased approach is needed. The first phase includes the three generating units, associated auxiliary systems, and critical dam safety measures; the second phase may include the remaining six units and the remaining auxiliary systems and could start with an appropriate overlap with the first phase of the project when additional financing becomes available. This phased approach would ensure an early start to the rehabilitation and reduce the financing required to initiate the works.

Implementation Period:

The implementation period for the first phase is about five years and includes three stages: procurement; design and manufacturing; and installation. The procurement stage has already started with the selection of the Project Management Consultant ongoing. Detailed design and manufacturing would take 18 months. Installation would then start in early 2019 and be completed three years later in 2022 as the refurbishment of the generating units would take about one year each. Work on the dam safety measures would take place concurrently with the refurbishment of the units.

Cost and Financing:

The cost estimate of the first phase is \$250 - 300 million. A more precise estimate will be available

at the end of CY2016 after the Project Management Consultant has confirmed the scope of the project, including needed dam safety works. The project would be financed through Investment Project Financing (IPF), supported by an IDA financing of about \$70 million, including a Project Preparation Advance of \$5 million. Co-financing is expected from other multilateral and bilateral institutions.

Components:

Component 1: Power Plant Rehabilitation

This component will finance the replacement and refurbishment of mechanical, electrical, and electromechanical equipment and works required for the rehabilitation of the Nurek HPP.

Component 2: Dam Safety

This component will finance activities designed to improve the safety of the operation of the Nurek HPP. The scope will be defined during Preparation based on the results of ongoing and planned studies.

Component 3: Project Management, Technical Assistance, Environment and Social

This component will strengthen the project's management and implementation arrangements as well as support beneficiary feedback mechanisms.

IV. Safeguard Policies that might apply

Safeguard Policies Triggered by the Project	Yes	No	TBD
Environmental Assessment OP/BP 4.01	x		
Natural Habitats OP/BP 4.04		x	
Forests OP/BP 4.36		x	
Pest Management OP 4.09		x	
Physical Cultural Resources OP/BP 4.11		x	
Indigenous Peoples OP/BP 4.10		x	
Involuntary Resettlement OP/BP 4.12		x	
Safety of Dams OP/BP 4.37	x		
Projects on International Waterways OP/BP 7.50	x		
Projects in Disputed Areas OP/BP 7.60		x	

V. Financing (in USD Million)

Total Project Cost:	250.00	Total Bank Financing:	70.00
Financing Gap:	175.00		
Financing Source			Amount
BORROWER/RECIPIENT			5.00
International Development Association (IDA)			70.00
Total			75.00

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