

Tajikistan: Nurek Hydropower Rehabilitation, Phase I

1. Project Information

Project ID:	P000018	Instrument ID:	L0018A
Member:	Tajikistan	Region:	Central Asia
Sector:	Energy	Sub-sector:	Renewable energy generation-hydropower
Instrument type:	<input checked="" type="checkbox"/> Loan:60.00 US Dollar million <input type="checkbox"/> Guarantee	Co-financier(s):	World Bank
ES category:	B	Borrowing Entity:	Ministry of Finance, Tajikistan
Implementing Entity:	Open Stock Holding Company "Barqi Tojik"		
Project Team Leader:	Emil Zalinyan		
Responsible DG:	Supee Teravaninthorn		
Responsible Department:	INF2		
Project Team Members:	Liu Yang, Project Counsel; Yunlong Liu, OSD - Procurement Specialist; Shodi Nazarov, OSD - Financial Management Specialist; Georgi Georgiev Dzhartov, OSD - Social Development Specialist; Chongwu Sun, OSD - Environment Specialist; Komron Rajabiyon, Back-up PTL; Yuyou Guo, Project admin		
Completed Site Visits by AIIB:	Mar, 2019		
Planned Site Visits by AIIB:	Possibility of site visits will be considered subject to COVID19 development, however, the project team has regular calls with the project team of the World Bank, as the lead financier, to review the project progress and any implementation issues. In addition, the Client's project implementation support consultant prepares and submits monthly progress reports in the first week of every month.		
Current Red Flags Assigned:	1		
Current Monitoring Regime:	Regular Monitoring		
Previous Red Flags Assigned:	1		
Previous Red Flags Assigned Date:	2021/09		

2. Project Summary and Objectives

The objectives of the Project are to rehabilitate and restore the generating capacity of three units of the Nurek hydropower plant, improve their efficiency, and strengthen the safety of the Nurek dam.

Components: 1) Power Plant Rehabilitation Component, 2) Dam Safety Component.

Total Project Cost (Phase I): US\$350 million

Financing plan: IDA US\$225.7 million and AIIB US\$60 million (joint co-financing); EaDB US\$40 million (parallel co-financing).

Project beneficiaries: The beneficiaries of the Project are all electricity consumers in the country and BT. In

particular, the project will preclude loss of electricity supply from Nurek HPP, which accounts for 70 percent of winter generation during the time period of October-March when demand is the highest. Thus, the entire 8.5 million population of the country (including 4.2 million females) will benefit from the project. Moreover, 53,680 legal entities connected to the electricity network will also benefit because the project will help to meet their demand in a reliable manner. Rehabilitation of Nurek HPP will also allow BT to reduce revenue loss due to equipment failures caused by dilapidation and obsolescence. Those equipment failures lead to electricity under-supply from the power plant, which creates a financial loss for BT. In case of disconnection of Nurek HPP from the power supply network due to failure of equipment or infrastructural components, the power plant does not supply electricity until the technical issues are fixed.

3. Key Dates

Approval:	Jun. 15, 2017	Signing:	Aug. 01, 2017
Effective:	Apr. 30, 2018	Restructured (if any):	
Orig. Closing:	Dec. 31, 2023	Rev. Closing (if any):	

4. Disbursement Summary (USD million)

Contract Awarded:		Cancellation (if any):	0.00
Disbursed:	25.85	Most recent disbursement (amount/date):	0.03/Jun. 16, 2022
Undisbursed:	34.15	Disbursement Ratio (%): ¹	43.08

5. Project Implementation Update

The process of rehabilitation and installation works for the Unit 1 generating equipment is at the completion stage and production of design documents for the autotransformers and rehabilitation of the hydromechanical equipment are ongoing. Specifically, Unit 1 has undergone wet testing and has demonstrated performance. The major dam safety activities on rehabilitation of the spillway tunnels and gates, upgrade of monitoring instruments and management system and preparation of the Emergency Preparedness Plan, Operation and Maintenance Plan, Instrumentation Plan and installation of a flood forecasting system are ongoing.

Monthly progress reports are prepared and have so far been submitted in time by the Client's project implementation support consultant in the first week of every month.

Components	Physical Progress	Environmental & Social Compliance	Procurement
Component 1: Power Plant Rehabilitation (design, model testing and installation of turbines) (US\$45)	\$25.85m	No major non-conformities were observed on all visited construction sites.	Component 1.1 Replacement and refurbishment of mechanical, electrical, and electromechanical equipment.

¹ Disbursement Ratio is defined as the volume (e.g. the dollar amount) of total disbursed amount as a percentage of the net committed volume.

M)			<p>Subcomponent – Electrical equipment. Power Plant Equipment Contract was awarded to ANDRITZ HYDRO GMBH (Germany and Austria)/ANDRITZ HYDRO CORPORATION (USA) and signed on July 21, 2018.</p> <p>Subcomponent – Hydromechanical equipment. The contract was awarded to Sinohydro (China) and signed in March 2020.</p> <p>Component 1.2. Replacement of six autotransformers: 100% financed by the Eurasian Development Bank. The contract was awarded to Tojigidroelektromontaj and currently is under preparation.</p>
Component 2: Dam Safety (civil works) (US\$15 M)	0	No issue	<p>Dam Safety Component consists of the following parts:</p> <p>1) Dam monitoring instrumentation, geodetic instrumentation and geotechnical investigations. Tojigidroelektromontaj (TGEM) and Barqi Tojik signed the contract on 10/03/2020.</p> <p>2) Miscellaneous civil works for the improvement of dam safety (rehabilitation of spillway tunnels, spillway outlet works, slope stability of the left bank, replacement of Nurek Bridge, etc.). The scope of miscellaneous civil works for dam safety improvement to be procured is expected to be finalized by mid-July 2022.</p>

Financial Management:

The IFR for Q1 of 2022 was prepared and submitted in a timely manner.

6. Status of the Grievance Redress Mechanism (GRM)

A grievance redress commission (GRC) including representatives at central and local levels, nominated by Nurek HPP, Stucky, site PIU, local authority, jamoat Dukoni and jamoat Puli Sangin, is fully functional. Contractor Andritz / TajikSGEM has relevant complaint forms in place for workers to apply. HSE specialist of TGEM-TT and TGEM also has complaints logbooks. No complaints were recorded since the previous PIMR. To date, 36 questions/issues/complaints have been received and resolved/addressed.

7. Results Monitoring

Detailed implementation progress by indicator is presented below.

Project Objective Indicators #1

Indicator #1: Generation capacity of energy constructed or rehabilitated under the Project (MW)

Year	Target	Actual	Comments, if any
Dec. 31, 2018	0	0	
Dec. 31, 2019	0	0	
Dec. 31, 2020	0	0	
Dec. 31, 2021	335	0	
Dec. 31, 2022	670	112	Expected as of July 15, 2022. Rehabilitation of the hydro and electromechanical equipment of the Unit 1 documents with internal tests and verifications have been completed, and Unit 1 is expected to be commissioned in July 2022.
Dec. 31, 2023	1,005	n/a	

Project Objective Indicators #2

Indicator #2: Estimated annual electricity generation of three units included in the scope of the Project (GWh)

Year	Target	Actual	Comments, if any
Dec. 31, 2018	At least 3,750GWh	3,750	
Dec. 31, 2019	At least 3,750GWh	3,716GWh	The decrease was due to unfavorable hydrology year
Dec. 31, 2020	At least 2,500GWh	3,510GWh	
Dec. 31, 2021	At least 2,511GWh	2,996GWh	The decrease was due to an unfavorable hydrology year.
Dec. 31, 2022	At least 2,522GWh	n/a	
Dec. 31, 2023	At least 3,783GWh	n/a	

Project Objective Indicators #3

Indicator #3: Estimated increase of winter electricity generation of rehabilitated units due to efficiency improvements

Year	Target	Actual	Comments, if any
Dec. 31, 2018	0	0	
Dec. 31, 2019	0	0	
Dec. 31, 2020	0	0	

Dec. 31, 2021	at least 11GWh	0	
Dec. 31, 2022	at least 22GWh	3.6	As of June 27, 2022. The efficiency of rehabilitated unit 1 to be commissioned in July 2022 will increase significantly.
Dec. 31, 2023	at least 33GWh	n/a	

Project Objective Indicators #4

Indicator #4: Improved dam safety against hydrological and geological risks

Year	Target	Actual	Comments, if any
Dec. 31, 2018	No	No	
Dec. 31, 2019	No	No	
Dec. 31, 2020	No	No	
Dec. 31, 2021	No	No	
Dec. 31, 2022	Yes	Yes	As of June 27, 2022. Dam safety activities are progressing well, particularly with respect to rehabilitation of dam instrumentation and geotechnical investigations and rehabilitation of weirs and inverted pendulum at the intake tower.
Dec. 31, 2023	Yes	n/a	

Project Objective Indicators #5

Indicator #5: People provided with improved electricity service

Year	Target	Actual	Comments, if any
Dec. 31, 2018	0	0	
Dec. 31, 2019	0	0	
Dec. 31, 2020	0	0	
Dec. 31, 2021	8,276,000	0	
Dec. 31, 2022	8,276,000	8,617,000	As of June 27, 2022
Dec. 31, 2023	8,276,000	n/a	

Project Objective Indicators #6

Female beneficiaries

Year	Target	Actual	Comments, if any
Dec. 31, 2018	0%	0%	
Dec. 31, 2019	0%	0%	
Dec. 31, 2020	0%	0%	
Dec. 31, 2021	49.3%	0%	
Dec. 31, 2022	49.3%	15%	As of June 27, 2022
Dec. 31, 2023	49.3%	n/a	

Intermediate Result Indicators #1

Indicator #1: Cumulative number of generating units rehabilitated

Year	Target	Actual	Comments, if any
Dec. 31, 2018	Contract for rehabilitation is signed and effective	Since physical project implementation has not started yet and some contracts are still under procurement stage, no result has been generated.	
Dec. 31, 2019	Turbine hydraulic model test is completed	Contract signed, model testing started.	
Dec. 31, 2020	Design for generating units is completed and manufacturing commenced	Completed	
Dec. 31, 2021	1	Rehabilitation on generating unit 1 is still in progress.	
Dec. 31, 2022	2	1	As of June 2022. Unit 1 is completely rehabilitated and to be commissioned in July 2022
Dec. 31, 2023	3	n/a	

Intermediate Result Indicators #2

Indicator #2: Cumulative number of auto-transformers replaced

Year	Target	Actual	Comments, if any
Dec. 31, 2018	Bidding document is issued and evaluation of bids is completed	n/a	
Dec. 31, 2019	Contract for replacement of autotransformers is signed and effective	n/a	
Dec. 31, 2020	The supply of autotransformers is underway	0	
Dec. 31, 2021	Installation of autotransformers is underway	Preparation of design documents continued. Delays encountered due to civil issues (underground voids due to quality of soil)	
Dec. 31, 2022	6	n/a	As of June 2022, due to the soil subsidence and settlements observed in the switchyard area requiring additional investigations to design appropriate mitigation measures, it is likely that the layout of the autotransformers will need to be modified and there will be some delays with the completion of this activity.
Dec. 31, 2023	6	n/a	

Intermediate Result Indicators #3

Indicator #3: Enhanced hydrological safety

Year	Target	Actual	Comments, if any
Dec. 31, 2018	Once in 10,000 years flood	Once in 10,000 years flood	
Dec. 31, 2019	Once in 10,000 years flood	Once in 10,000 years flood	
Dec. 31, 2020	Once in 10,000 years flood	Once in 10,000 years flood	
Dec. 31, 2021	Once in 10,000 years flood	Once in 10,000 years flood	
Dec. 31, 2022	Once in 10,000 years flood	n/a	
Dec. 31, 2023	Once in 100,000 years flood	n/a	

Intermediate Result Indicators #4

Indicator #4: Upgrade of the dam monitoring instrumentation completed

Year	Target	Actual	Comments, if any
Dec. 31, 2018	Bidding document is issued	n/a	
Dec. 31, 2019	Contract for upgrade of dam instrumentation is signed and effective	n/a	
Dec. 31, 2020	The supply and installation of the dam monitoring instrumentation commenced	The contract is under implementation	
Dec. 31, 2021	The dam monitoring instrumentation is partly operational	Foreseen completion of the dam monitoring system is postponed as it was required to update the design of the geodetic network to local geological constraints and partial update of the dam monitoring system.	
Dec. 31, 2022	The dam monitoring instrumentation is fully operational	n/a	

Intermediate Result Indicators #5

Indicator #5: Civil, electrical and mechanical works for improvement of the dam safety completed

Year	Target	Actual	Comments, if any
Dec. 31, 2018	Bidding document is issued	n/a	
Dec. 31, 2019	Contract for procurement of the dam safety improvement works is signed and effective	n/a	
Dec. 31, 2020	The dam safety improvement works are in progress	The bidding documents to be finalized in Oct 2021 once geotechnical investigations are completed. The delay is caused by delays in exploratory drilling works on left bank caused by COVID-19.	
Dec. 31, 2021	The dam safety improvement works are in progress	The bidding documents to be finalized in March 2022 once geotechnical investigations are completed.	
Dec. 31, 2022	Rehabilitation of the spillway tunnel, gates and hoisting system is completed	n/a	The bidding documents to be finalized in July 2022 with delays due to additional scope added delaying the completion of the geotechnical investigations.

Intermediate Result Indicators #6

Indicator #6: Update of Emergency Preparedness Plan (EPP) and preparation of O&M plans completed

Year	Target	Actual	Comments, if any
Dec. 31, 2018	Draft updated EPP and O&M plans are reviewed by BT and other relevant state agencies	n/a	
Dec. 31, 2019	Draft updated EPP and O&M plans are reviewed by BT and other relevant state agencies	n/a	
Dec. 31, 2020	Final updated EPP and O&M plans are effective and implemented	The preparation of the Vakhsh Cascade level EPP is progressing and with the finalization of the EPP, this intermediate result indicator will be updated accordingly.	

Intermediate Result Indicators #7

Indicator #7: Percent of registered Project-related grievances (disaggregated by gender) responded to within stipulated service standards for response times

Year	Target	Actual	Comments, if any
Dec. 31, 2018	100%	100%	
Dec. 31, 2019	100%	100%	
Dec. 31, 2020	100%	100%	
Dec. 31, 2021	100%	100%	
Dec. 31, 2022	100%	n/a	
Dec. 31, 2023	100%	n/a	

Remarks:

Regardless of delays in the project's physical progress, no data collection delays are foreseen.