Pakistan : Tarbela 5 Hydropower Extension

1. Project Information

Project ID:	P000005	Instrument ID:	L0005A
Member:	Pakistan	Region:	Southern Asia
Sector:	Energy	Sub-sector:	Renewable energy generation-hydropower
Instrument type:	☒Loan:300.00 US Dollar million ☐Guarantee	Lead Co-financier (s):	World Bank
ES category:	A	Borrowing Entity:	Ministry of Finance, Pakistan
Implementing Entity:	Pakistan Water And Power Development Authority; National Grid Company, Pakistan		
Project Team Leader:	Edzwan Redza bin Anwar		
Responsible DG:	Xiaohong Yang		
Responsible Department:	PSC2		
Project Team Members:	Yi Geng, Financial Management Specialist; Jingting Zhao, IO Core Team Member; Liu Yang, Project Lawyer; Shonell Robinson, Financial Management Specialist; Mudassar Hassan, Environment Specialist; Natan Jere, Procurement Specialist; Xiaojun Zhou, Social Development Specialist; Jianshi Yao, Back-up PTL; Yanyang Shi, Project admin		
Completed Site Visits by AIIB:	Nov, 2017 May, 2019 Visits by WB Jun, 2022 Aug, 2023 AIIB team visited project site together with WB Jul, 2024 AIIB team visited project site. Aug, 2025 AIIB Mission was conducted at WB office. Sep, 2025 World Bank Mission was conducted in September 2025.		
Planned Site Visits by AIIB:	Mar, 2026 Planned mission in March 2026		
Current Red Flags	0		

Assigned:	
Current Monitoring Regime:	Regular Monitoring
Previous Red Flags Assigned:	0
Previous Red Flags Assigned Date:	2025/05

2. Project Summary and Objectives

The Project is a key national initiative aimed at expanding Pakistan's low-cost, renewable energy generation capacity. The Project builds upon the successful implementation of the Tarbela 4th Extension Hydropower Project (T4HP), capitalizing on existing infrastructure and technical expertise to optimize the Tarbela Dam's hydropower potential.

The total project cost was USD 823.5 million, and it is jointly co-financed by the WB (USD 390 million), Asian Infrastructure Investment Bank (AIIB) (USD 300 million), and the remaining through contributions from the Water and Power Development Authority (WAPDA) and the National Grid Company (NGC, previously known as National Transmission and Dispatch Company (NTDC)). The AIIB Board approved the financing for Project on September 27, 2016, and the Loan became effective on August 11, 2017. The WB and AIIB are overseeing the project implementation and supervision with the support and coordination by the Government of Pakistan (GoP).

At completion, the Project will add 1,410 MW of installed capacity and generate over 1,800 GWh of clean electricity annually during the high-demand summer season. This expansion will enhance Pakistan's energy security, reduce dependence on imported fuels, and contribute to the country's long-term sustainable growth. The Project scope includes the following, where AIIB is co-financing the first two components with the WB:

a. The construction of a powerhouse and modification of the existing Tunnel 5 to house the power plant
b. The installation of power units and ancillary equipment
c. The provision of technical assistance to support implementation of a social action plan, environmental and social management plan, and dam safety monitoring surveillance program
d. The provision of technical assistance to carry out construction supervision, monitoring and evaluation of project progress, quality, and impacts as well as independent supervision of the social action plan and environmental and social management plan
e. The project management with strengthen capacity to plan, develop and manage the hydropower infrastructure in the long term

The project preparation was facilitated by the WB under the T4HP framework, leveraging lessons learned and shared resources such as transmission infrastructure. Recognizing the proven implementation capacity demonstrated under T4HP, the GoP and the WB agreed to expand the Tarbela program through this follow-on Project, with AIIB's participation, reinforcing the strategic co-financing partnership and ensuring timely implementation.

3. Key Dates

Approval:	Sep. 27, 2016	Signing:	Jan. 18, 2017
Effective:	Aug. 11, 2017	Restructured (if any):	
Orig. Closing:	Jun. 30, 2022	Rev. Closing (if any):	Jun. 30, 2028; Jun. 30, 2025;

4. Disbursement Summary (USD million)

Contract Awarded:	570,061,792.62	Cancellation (if any):	0.00
Disbursed:	211.77	Latest disbursement (amount/date):	3.72/Oct. 24, 2025
Undisbursed:	88.23	Disbursement Ratio (%)[1]:	70.59

5. Project Implementation Update

The physical works in the Tarbela Fifth Extension Hydropower Project (T5HP) are carried out under two main contracts: (i) civil works contract for construction of powerhouse connection to tunnel and intakes; and (ii) Electro-mechanical (EM) contract for supply and installation of EM equipment and substation.

Background

Despite the initial project delays in hiring of the engineering supervision engineer; selection of the contractors; and handover of construction site, considerable progress has been made after the appointment of engineering and construction supervision consultant (Tarbela 5 Project Implementation Consultants (T5PIC)) in 2019. Two more major milestones achieved when two large contracts were awarded in 2021, i.e. civil works, USD354.6 million (Power Construction Corporation of China (PCCCL)) and E&M works, USD241.12 million (Harbin Electric International Company – Harbin Electric Machinery Company (HEI-HEC). Following GoP request, AIIB has extended the closing period of the Loan Agreement twice (Original loan closing date – June 30, 2022, 1st extension - June 30, 2025, and 2nd extension- June 30, 2028) to cover the project implementation delays. The section below summarizes the contract status under the Project.

Civil Works Progress (financed by WB and AIIB)

As of November 8, 2025, the overall civil works for the Tarbela Fifth Extension Hydropower Project (T5HP) have reached 53% completion, which is notably behind the planned progress of 76.6%. This performance variance is reflected across all major sub-components: the Intake stands at 47.4% (against 52.7% planned), the Connection Tunnel is at 20% (against 40.7% planned), and the Penstock is at 32.5% (against 50.5% planned). Similarly, the Powerhouse has achieved 55.7% completion versus a target of 74.4%, the Tailrace Culvert is at 80.8% (against 91.1% planned), and the Switchyard is at 61.3% against a more ambitious target of 91.2%. The Tailrace Canal is the only area nearly on schedule, at 54.8% against a 55.2% plan. This comprehensive data indicates a widespread delay in the civil works schedule that requires focused mitigation efforts.

E&M Works Progress (financed by WB and AIIB)

As of November 8, 2025, the overall progress for the Electro-Mechanical (E&M) works stands at 57.6%, which is behind the planned milestone of 75.8%. This delay is consistent across all critical sub-activities: Engineering is at 47.4% completion (against 52.7% planned), Procurement has reached only 20% (against a 40.7% target), and

[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.

Manufacturing and Fabrication is at 32.5% (compared to the 50.5% planned). This indicates a systemic lag in the E&M supply chain and execution timeline that requires immediate attention to prevent further impact on the overall project schedule. Currently, the planned delivery of the E&M equipment to the site as follows i.e. Unit-18: September 21, 2026, Unit-19: November 15, 2026, and Unit-20: December 15, 2026. WAPDA has been reminded to mitigate the risk of affecting the supply schedule because of delays in civil works by providing warehouse facilities.

Coordinated Construction Schedule (CCS)

It is observed that the civil works construction progress and resource mobilization by the contractor were delayed and impacting other corresponding activities. WAPDA and its senior management are monitoring the CCS progress of works and regularly convening review meetings with staff, contractors and consultants. Several key issues in relevant sections of the construction activities (both civil works and E&M) have been identified with several proposed recommendations and action bound timeline to be included in the forthcoming updated PC-1 (PC-1 form provides a comprehensive framework for development projects in Pakistan's in any sectors. It addresses technical and fundamental issues, financial resources, project cost, budgeting and planning, risk and mitigation, land survey and map, summary of the ESIA and proposed ESMP, proposed engineering and construction solution, and operational cost estimates. The form aims to enhance project efficiency by detailing implementation schedules, capital cost analysis, demand-supply evaluations, and projected project benefits, thereby contributing positively to the planning and execution of each project.).

The Result Monitoring Framework (RMF) was updated following design adjustment by WAPDA to reduce the plant factor based on the expected head loss. Key updates include the following:

Generation capacity of hydropower constructed under the project has been increased from 1,410 MW to 1,530 MW.
Annual electricity supply from renewable energy has been reduced from 19,000 GWh to 18,903 GWh.
Availability of generation capacity during summer months has increased from 6,298 MW to 6,448 MW.

The above adjustment has been confirmed and supported by the WB.

Components	Physical Progress	Environmental & Social Compliance	Procurement
Component A: Powerhouse and Tunnel Works	As of October 31, 2025, the actual cumulative physical progress for the powerhouse and tunnel works stands at 55.7% and 20.3%, respectively, compared to the planned progress of 74.4% and 40.7%.	An Environmental and Social Assessment (ESA) of the project has been prepared jointly by WAPDA and National Transmission and Dispatch Company (NTDC). The Resettlement Action Plan (RAP) for the transmission line has been prepared and approved. The contractors have prepared Contractor's ESMPs that have been approved by PMU. The	Civil works contract (approximately valued at USD 368.87 million) was signed in May 2021. The revised Contract Price is about USD 389 million equivalent. The increased contract prices are from the variations agreed between both parties (employer and contractor) and determined

		implementation of these site specific ESMPs is being carried out by the contractors at site and is monitored by the supervision consultants and PMU.	by the Engineer.
Component B1: Turbines generators and related equipment	As of October 31, 2025, the overall progress stands at 57.6% actual compared to 75.8% planned. Design of all major equipment like turbine has been approved. Manufacturing is in progress. Key equipment such as generator step up transformers have been arrived at site.	An Environmental and Social Assessment (ESA) of the project has been prepared jointly by WAPDA and NTDC. The Resettlement Action Plan (RAP) for the transmission line has been prepared and approved. The contractors have prepared Contractor's ESMPs that have been approved by PMU. The implementation of these site specific ESMPs is being carried out by the contractors at site and is monitored by the supervision consultants and PMU.	EM works contract (approximately valued at USD 210.19 million) was signed in June 2021.
Component B2: Transformers, switchyard electrical connection	The installation of primary equipment, including transformers, disconnector switches, etc. is completed. Installation of panels, i.e., AC/DC, control/protection and metering etc., has been completed. Interconnection work between T5 and T(1-4) switchyard is in progress.	An Environmental and Social Assessment (ESA) of the project has been prepared jointly by WAPDA and NTDC. The Resettlement Action Plan (RAP) for the transmission line has been prepared and approved. The contractors have prepared Contractor's ESMPs that have been approved by PMU. The implementation of these site specific ESMPs is being carried out by the contractors at site and is monitored by the supervision consultants and PMU.	EM works contract (approximately valued at USD 210.19 million) was signed in June 2021.

Financial Management:

The FY 2023–2024 audit report was submitted to the WB on time, on December 31, 2024, and was deemed acceptable. The Auditor General of Pakistan issued an unqualified opinion, confirming that the project financial statements fairly represent all material aspects and the financial position of the Project as of June 30, 2024. The statements were also found to reconcile with the Bank's historical records. Additionally, the auditor confirmed that the PIU complied with all financial management and procurement requirements outlined in the financing agreements, and no internal control weaknesses were identified.

6. Status of the Grievance Redress Mechanism (GRM)

Project-specific Grievance Redress Mechanism has been established. A tripartite Grievance Redress Committee to address the grievances of labor and project affected community has been operational during Tarbela 4 Hydropower Project and continues to address labor/community complaints and employment issues under T5HP. Since the functioning of the GRM, a total of 255 grievances have been registered until October 2025, out of which 191 have been resolved, while 64 are under process, which are related to payment and allowances for workers and other labor issues, such as the non-provision of uniforms Remaining complaints are being closely reviewed.

7. Results Monitoring

N/A

Project Objective:

Project Objective Indicators

Monitoring end year：2028

Indicator Name	Unit of Measure	Baseline	Actual (Previous)	Actual (Current)	Current Target	End Target
Generation Capacity of Hydropower Constructed Under the Project	MW	0	0	0	1,530	1,530
Electricity supply of renewable energy annually	GWh	14175	17375	14175	18903	18903
Availability of generation capacity during summer months	MW	3,478	3,478	3478	6,418	6,418
Preparation of hydropower project, completion of pilot solar project and capacity building program	Percentage	0	90	90	100	100
Greenhouse Gas emission reduction (tCO2eq/year)	tCO_2e/year					

Comments:

Intermediate Result Indicators

Monitoring end year：2027

Indicator Name	Unit of Measure	Baseline	Actual (Previous)	Actual (Current)	Current Target	End Target
Component A. Construction of T5 power house and connection to	Percentage	0	PH= 32.8 CT= 12.7	PH=55.7; CT=20.3	PH=74; CT=40.7	100

Tunnel 5						
Component A. Construction of intake modification for Tunnel 5	Percentage	0	34.5	47.4	100	100
Component B. Installation of number of power units on Tunnel 5	Number	0	0	0	3	3
Component B. Construction of T5 Switchyard	%	0	51.7	61.3	100	100
Component B. Transmission line for power evacuation	%	0	71.72	85.58	100	100

Comments:

Remarks:

Progress is now actively monitored and measured against the updated, baseline work plan to ensure accountability and track results.