



**ASIAN INFRASTRUCTURE
INVESTMENT BANK**

PD000339-PAK

July 15, 2021

**Project Document
of the Asian Infrastructure Investment Bank
Sovereign-backed Financing**

**Islamic Republic of Pakistan
Balakot Hydropower Development Project**

Currency Equivalents
(As on June 21, 2021, State Bank of Pakistan)

Currency Unit
PKR1.00 = USD0.00635
USD1.00 = PKR157.5104

Borrower's Fiscal year
July 1 - June 30 (following year)

Abbreviations

ADB	Asian Development Bank
CIA	Cumulative Impact Assessment
CPPA	Central Power Purchasing Agency
DISCO	Distribution Companies
DSP	Dam Safety Panel
EAD	Economic Affairs Division
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
EIA	Environmental Impact Assessment
EPD	Energy and Power Department of Khyber Pakhtunkhwa
EPRP	Emergency Preparedness and Response Plan
ES	Environmental and Social
ESP	AIIB's Environmental and Social Policy
FIRR	Financial Internal Rate of Return
FM	Financial management
GAP	Gender Action Plan
GENCO	Generation Companies
GDP	Gross Domestic Product
GW	gigawatts
GWh	Gigawatt-hour
IAM	Independent Accountability Mechanism
IFRS	International Financial Reporting Standards
IPSAS	International Public Sector Accounting Standards
kWh	Kilowatt-hour
KPK	Khyber Pakhtunkhwa province of Pakistan
LARP	Land Acquisition and Resettlement Plan
MDB	Multilateral Development Bank
MW	megawatts
NEPRA	National Electric Power Regulatory Authority
NPV	Net present value
O&M	Operations and Maintenance
PAM	Project Administration Manual
PAP	Project-affected People
PEDO	Pakhtunkhwa Energy Development Organization
PESCO	Peshawar Electric Supply Company
PMC	Project management consultant
PMU	Project Management Unit
PPM	AIIB's Project-affected People's Mechanism
SPS	ADB's Safeguard Policy Statement
WTP	Willingness to Pay

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1. Summary Sheet

Islamic Republic of Pakistan Balakot Hydropower Development Project

Project No.	000339-PAK
Borrower	Islamic Republic of Pakistan
Project Implementation Entity	Energy and Power Department, Khyber Pakhtunkhwa Province (KPK) Pakhtunkhwa Energy Development Organization (PEDO)
Sector/Subsector	Energy / hydropower
Project Objective	The objective of the Project is to enhance energy security and promote renewable energy by developing a 300-megawatt (MW) run-of-river hydro power plant in KPK, Pakistan.
Project Description	<p>The proposed Project will comprise construction of a 300-MW run-of-river hydropower plant located on the Kunhar River in Mansehra District, KPK, Pakistan.</p> <p>Upon completion, the Project will (i) improve energy security by increasing the clean energy share in the country's energy mix currently dominated by thermal power generation, (ii) boost the provincial economy and promote revenue generating investments in the hydro abundant KPK, and (iii) build capacity and awareness of climate change impacts, adaptation, and mitigation measures. The Project also includes training and livelihood skill development activities for local communities, particularly women, in the surrounding areas and promotion of gender mainstreaming.</p>
Implementation Period	Start Date: September 1, 2021 End Date: March 31, 2028
Expected Loan Closing Date	September 2028
Cost and Financing Plan	Project cost: USD 755.3 million <u>Financing Plan:</u> ADB loan: USD300 million AIIB loan: USD250 million Government of Pakistan: USD205.3 million
Size and Terms of AIIB Loan	USD 250 million, with a final maturity of 27 years, including a grace period of 7 years.
Cofinancing (Size and Terms)	ADB: USD 300 million, with a final maturity of 27 years, including a grace period of 7 years, at AIIB's variable spread interest rate applicable to sovereign-backed loans with the corresponding weighted average maturity.
Environmental and Social Category	As per ADB's Safeguard Policy Statement (SPS), Category A for Environment, Category A for Resettlement, and Category C for Indigenous Peoples (equivalent to Category

	A if AIIB's Environmental and Social Policy (ESP) were applicable)
Risk (Low/Medium/High)	High
Conditions for Effectiveness	<ul style="list-style-type: none"> • Cross-effectiveness with ADB Loan Agreement. • Signing of Co-lenders' Agreement with ADB.
Key Covenants/Conditions for Disbursement	<p>Borrower shall cause KPK and PEDO to ensure that:</p> <ul style="list-style-type: none"> • The Environmental Impact Assessment (EIA) approval by relevant authorities is obtained before the commencement of construction activities. • Necessary budgetary and human resources are made available to implement the Project, including the measures included in the approved EIA / Environment Management Plan (EMP), and Land Acquisition and Resettlement Plan (LARP). • The land acquisition and involuntary resettlement is implemented in accordance with the agreed schedule and standards stipulated in the LARP. • Collaboration mechanism(s) with relevant institutional and commercial third parties for the implementation of the Biodiversity Action Plan (BAP) and EMP is established. • A Project level Grievance Redress Mechanism (GRM) is established and functional during the whole construction period.
Retroactive Financing (Loan % and dates)	20% of the loan amount for eligible expenditure incurred and paid up to 12 months prior to the date of loan signing.
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that the Bank is in compliance with the policies applicable to the Project.

President	Jin Liqun
Vice President, IO-Region2	Konstantin Limitovskiy
Director General, IO-INF2	Supee Teravaninthorn
Manager	Gregory Liu
Team Leader	Hongliang Yang, Principal Investment Operations Specialist
Team Members	<p>Christopher Damandl, Senior Legal Consultant Emil Zalinyan, Infrastructure Sector Economist Georgi Georgiev Dzhartov, Social Specialist Giacomo Ottolini, Senior Procurement Consultant Henri Boullier de Branche, Senior Environment Specialist</p>

	<p>Md. Omar Khalid, Environment Specialist (Consultant) Mengmeng He, Finance Associate Pedro Ferraz, Environment Specialist Shonell Robinson, Financial Management Specialist Jiasi Liu, Project Assistant</p>
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2. Project Description and Rationale

A. Rationale

1. **Country Priority.** Pakistan, a lower middle-income country home to more than 217 million people¹, is at a crossroad of dealing with its recent macroeconomic crises and the ongoing COVID-19 pandemic. While growth rates for fiscal-year (FY)2016-2017 and FY2017-2018 were 5.2% and 5.5%, respectively², GDP growth in 2018-2019 was declined to 1.9%. In July 2019, Pakistan entered a 39-month Extended Fund Facility arrangement with the International Monetary Fund. Prior to the COVID-19 pandemic, Pakistan's growth was expected to be around 2.4% in FY2020. However, the COVID-19 pandemic has resulted in an adverse health impact and strong economic headwinds, causing the economy to shrink by 0.4% in FY2020. The disruption in supply chains due to the lockdown contributed significantly to the economic loss. The agriculture sector faced a major blow as Pakistan was affected by the worst locust infestation in over 10 years. Industrial output, led by declines in the mining and large-scale manufacturing sectors prior to the crisis, contracted in FY2020. The immediate challenge for the Government of Pakistan (the Government) is to contain the COVID-19 pandemic, while minimizing economic losses and protecting the poor. In the medium and long term, the Government should remain focused on promoting sustainable infrastructure investment to boost the economy. With its rich natural resources, fertile land and a young population, Pakistan will have a strong development prospect.

2. **Sector Context.** Poor and unreliable power supply has been one of the main constraints to the economic growth and the quality of life in Pakistan, which is now exacerbated by the COVID-19 pandemic. Annual power consumption per capita in Pakistan is currently one of the lowest in the world, only about 500 kWh, far below the world average of more than 3,100 kWh, and its electricity access rate is estimated to be around 70%. Moreover, even those who have access to electricity do not have reliable supply. In 2019 Pakistan was ranked 111th out of 141 countries on electricity access and 99th on the quality of electricity supply.³ According to the Government, poor electricity supply has shaved off Pakistan's annual GDP growth by at least 2%.⁴ Pakistan's Vision 2025 set out its power sector development goal, aiming to provide a higher living standard for its citizens by 2025, by doubling electricity generation to over 45,000 megawatt (MW), and electricity access rate to over 90% by 2025.⁵

3. Reliable, clean, and cost-effective electricity supply is indispensable to the economic growth and sustainable development of Pakistan.⁶ Factors causing current

¹ Its GDP per capita was only USD1,285 in 2019. World Bank. GDP per capita (current USD). <https://data.worldbank.org/indicator/NY.GDP.PCAP.CD>

² Pakistan Bureau of Statistics. https://www.pbs.gov.pk/sites/default/files/tables/rename-as-per-table-type/Table_1.pdf.

³ World Economic Forum, 2019. The Global Competitiveness Report 2017-2018.

⁴ Government of Pakistan, 2017. Pakistan Economic Survey 2016-17. Islamabad.

⁵ Government of Pakistan, 2014. Pakistan 2025: One Nation, One Vision (Vision 2025). Islamabad, Pakistan.

⁶ Pakistan's Intended Nationally Determined Contribution (INDC) under the 2015 Paris Climate Conference (also known as COP21) has been fully incorporated in the Vision 2025.

power supply issues may be multifold, such as circular debt and weak financial performance of sector entities, liquidity crunch, falling gas production, low exploitation of domestic resources, high dependence on imported oil and gas, and low efficiency of power generation. Pakistan's generation mix is dominated by thermal power generation based on imported furnace oil, which includes 64% oil and gas, 30% hydro, 3% nuclear, and 3% for wind, solar, and coal combined. The import of relatively expensive furnace oil has resulted in the high electricity tariff for consumers and the depletion of the foreign exchange reserves, resulting in low competitiveness of local manufacturing and exacerbating the macroeconomic stability of the country. Therefore, it is imperative for Pakistan to tap into its domestic resources, such as hydro, wind, solar, biomass and waste to energy, to the maximum extent possible. Pakistan is rich in hydropower resources. Despite its 60 gigawatts (GW) identified hydropower potential, of which 30 GW are in the province of Khyber Pakhtunkhwa (KPK), only 9,861 MW (16%) has been harnessed. Pakistan added 2.5 GW of hydropower to its energy mix in 2018. However, considering its huge hydropower potential and serious power supply shortage, more hydropower should be developed.

4. The Ministry of Energy (Power Division) is currently the federal level governmental organ to set policies, issue development plans and approve major investment projects in power sector. The National Electric Power Regulatory Authority (NEPRA) determines tariffs, issues licenses, regulates and ensures the long-term sector sustainability. The Central Power Purchasing Agency (CPPA), the single buyer of the power system, is currently performing the functions of the market operator. The National Transmission and Despatch Company (NTDC) is responsible for the operation & maintenance (O&M), planning, design, and expansion of the power transmission system at 220 kV and above voltage levels. To facilitate power sector development, the Government has granted more investment decision making authority to the provincial governments in the last decade. Pakhtunkhwa Energy Development Organization (PEDO), a fully state-owned entity, is currently facilitating hydropower development in the KPK.

5. **KPK's Hydropower Development.** PEDO has identified several sites and is implementing a strategy to maximize exploitation of hydro potential in the KPK using both public and private financing. With the support from the Asian Development Bank (ADB), PEDO developed a 10-year road map for the KPK energy sector, which identifies the need to restructure PEDO into a more independent corporate entity and also includes an investment plan to develop 21 run-of-river hydropower projects with a total funding requirement of USD11 billion. PEDO's strategy is to commercialize the proposed projects, encourage private sector participation, provide financial incentives, and simplify approval procedures. For projects with low interests to the private sector, PEDO will seek financing support from the public sector, including financing from development partners such as ADB, AIIB, World Bank, and provincial funds. The proposed Project is among the priority list of PEDO's investment plan. Upon completion, the proposed Project will be able to add 300 MW clean hydropower into the system.

6. **Climate change.** Pakistan is among the countries most vulnerable to climate change, with water resources and energy supply particularly at risk from expected increases in the magnitude and frequency of extreme weather events, such as floods,

droughts, and high temperatures.⁷ Under the Paris Agreement, Pakistan committed to reduce by 2030 its annual greenhouse gas emissions by 20% relative to the business-as-usual level, subject to availability of international financial, technological, and capacity building support.⁸ Scaling up large-scale hydropower stations, building climate-resilient water-related infrastructure, and enhancing water resource management are among the country's climate-action priorities.⁹ Upon completion, the proposed Project will add 1,143 GWh of clean power annually to the grid, with an estimated CO₂ emissions reduction of 572,643 tons per year. This will help Pakistan achieve its climate change target.

7. **Strategic fit for AIIB.** The proposed Project is aligned with the Bank's Corporate Strategy in terms of constructing Green Infrastructure. The Project is aligned with AIIB's Energy Sector Strategy in terms of promoting energy access and security by improving the reliability of electricity supply, reducing the carbon intensity of energy supply by utilizing clean and sustainable hydropower, and managing local and regional pollution by limiting emissions of fossil fuel-based power generation. The proposed Project will support Pakistan's endeavor to meet its climate change commitment under the Paris Agreement.

8. **Value addition by AIIB.** AIIB's involvement will add substantial value in project preparation and implementation. First, AIIB's long-term financing support will help the borrower close the Project's financing gap and move the Project forward more quickly. Second, AIIB's inputs during project preparation has enhanced the quality of the Project's economic and financial analyses and ensured the updating and selected enhancements of the environmental and social preparatory works. In addition, AIIB will promote the use of remote sensing technologies during supervision. This provides a higher level of assurance on the Project's economic and environmental sustainability. Last, due to AIIB's participation, universal procurement principle will apply to the contract jointly financed by ADB and AIIB. This will lead to a more cost-effective result.

9. **Value addition to AIIB.** AIIB has successfully demonstrated its capability in financing renewable energy projects in its members in the past few years. Through the proposed Project, the Bank will strengthen its image of being a green bank in supporting renewable energy; in the meantime, the Bank will continue to accumulate its institutional capacity and knowledge on hydropower. Furthermore, the proposed Project provides another opportunity to cement the co-financing relationship with ADB.

10. **Lessons learned from previous projects.** Most of development partners are supporting hydropower investments in Pakistan, of which the World Bank has the largest portfolio of more than USD 2.0 billion. AIIB approved a loan of USD300 million for the joint co-financing with the World Bank for the Tarbela 5 Hydropower Extension Project in 2016, which is currently under implementation but behind original schedule, mainly due to delays in procurement of engineering-procurement-construction (EPC) contractor and project supervision consultant. The lessons learned from the Tarbela 5

⁷ ADB. 2017. Climate Change Profile of Pakistan. Manila.

⁸ Government of Pakistan, 2016. Pakistan's Intended Nationally Determined Contribution. UNFCCC.

⁹ Government of Pakistan. 2016. *Pakistan's Intended Nationally Determined Contribution (PAK-INDC)*. Islamabad

Hydropower Extension Project have been analyzed and incorporated into the Project design. By March 2021, both the EPC contractor and project supervision consultant had been selected and contracted by PEDO under ADB's supervision, and this will greatly reduce the risk of implementation delay of the proposed Project.

B. Project Objective and Expected Results

11. **Project Objective.** The Project objective is to enhance energy security and promote renewable energy by developing a 300 MW run-of-river hydro power plant in KPK.

12. **Expected Results.** Upon completion, the Project is expected to deliver the following results by 2028:

- Average daily load shedding in Peshawar Electric Supply Company (PESCO) reduced to 2.0 hours (2017 baseline:3.2).
- Net CO₂ reduction annually (2020 baseline: 0 tons).
- 300 MW hydropower added to the grid (2020 baseline: 0).

13. **Expected Beneficiaries.** In Pakistan, a large population, particularly women, are working in informal sector and are largely associated with small and medium enterprises, often under working conditions that are unhealthy and hazardous.¹⁰ Unreliable electricity and longer hours of power outages adversely affect their productivity and livelihood. Due to geographic location and hard terrain, northern districts of KPK are isolated with relatively low socio-economic indicators compared to the rest of the province and country. This, combined with worse power supply condition, further marginalizes local people's opportunities to participate in the economic activities. Improved electricity supply will provide more economic opportunities for the remote communities of KPK, particularly women. In addition, during the construction and operation period, the Project will create temporary and permanent job opportunities. The Project is estimated to provide during the construction period more than 1,200 jobs for workers, including skilled and unskilled labor, men and women, of which around 40% are anticipated to be sourced from the local area. This will help uplift their living standards.

C. Description and Components

14. The proposed Project will construct a 300 MW hydropower plant near Balakot City in the KPK. Upon completion, the Project will (i) improve energy security by increasing the clean energy share in the country's energy mix currently dominated by thermal power generation, (ii) boost provincial economy and promote revenue generating investments in the KPK, and (iii) build capacity and awareness on climate change impacts, adaptation and mitigation measures.

15. The Project has the following two components:

¹⁰ Government of Pakistan, 2010. Labour Policy 2010.

Component 1: A 300-MW climate-resilient hydropower plant. The Project will improve the energy mix by adding 1,143 GWh of clean power annually into the grid and enhance the reliability of power supply in the region. Its design will incorporate seismic strengthening and climate-resilient features.

Component 2: Capacity development programs. It will focus on three areas: (i) climate change risk management. PEDO staff will be trained to incorporate climate change risk guidelines into hydropower plant operation. Also, climate change awareness enhancement activities will be provided to the local communities with specific training for women and youth groups to serve as “Climate Change Leaders.” (ii) PEDO’s revenue enhancement. A power purchase agreement will be developed. This will enhance PEDO’s revenue and ringfence its liquidity risks. (iii) income-earning skills of local communities. Training and livelihood skill development activities will be implemented to cater to the needs of the affected and other surrounding communities in the Project area, particularly to women, who previously had rare economic opportunities in the region.

D. Project Cost and Financing Plan

16. The Project’s cost estimate is about USD755.3 million. Table 1 shows the Project’s cost estimate and financing plan.

Table 1. Project Cost and Financing Plan

Item	AIIB		ADB		Government		Total
	Amount	%	Amount	%	Amount	%	
A. Base Costs							
1. Civil works and equipment	227.1	42	233.7	43	83.1	15	543.9
2. ES mitigation and land acquisition					23.2	100	23.2
3. Consulting services			17.9	85	3.1	15	21.0
4. Project management					5.1	100	5.1
5. Taxes and duties					52.6	100	52.6
B. Contingencies	22.3	42	22.8	43	7.9	15	53.0
C. Financing Charges During Construction	0.6	1	25.6	45	30.3	54	56.5
Total (A+B+C)	250	33	300	40	205.3	27	755.3

17. The Government has requested a loan not exceeding USD250 million from AIIB to help finance the Project. The loan is proposed to have a final maturity of 27 years, including a grace period of 7 years, at AIIB’s standard interest rate for sovereign-backed variable spread loans with the corresponding weighted average maturity.

18. The Project will be jointly co-financed with ADB. ADB will provide a loan of USD300 million from its ordinary capital resources. ADB’s loan will have a final maturity of 27 years, including a grace period of 7 years, and an annual interest rate determined in accordance with ADB’s lending policy.

19. Both AIIB and ADB loans will be used to finance the expenditures related to civil work and equipment under Component one of the Project, contingencies, and financing charges during construction. Consulting services under Component two will

be financed by ADB loan and Government's funds. Both AIIB loan and ADB loan will be made to the Islamic Republic of Pakistan. The proceeds of both loans will be on-lent to the provincial government of KPK, and through the provincial government be made available to PEDO for the purpose of the Project.

20. The Government will provide counterpart funding to cover the costs related to taxes and duties, land acquisition, environmental and social mitigation measures, project management, and a part of civil works and equipment. If there are any cost overruns, the Government is required to provide funds to close the gap.

E. Implementation Arrangements

21. The Energy and Power Department (EPD), the government of KPK, and PEDO will be the implementation entities, which will be responsible for procurement and project implementation. A dedicated project management unit (PMU), established by PEDO, will be responsible for the daily implementation activities of the Project, with support from the project management consultant (PMC) engaged. The Project will be implemented in a period of 7 years, including testing and commissioning. The implementation arrangements are summarized in Table 2.

Table 2: Implementation Arrangements

Aspects	Arrangements
Project implementation period	September 2021– March 2028
Expected completion date	31 March 2028
Loan closing date	30 September 2028
Project Management	
(i) Oversight body	Government of KPK
(ii) Implementation entity	EPD / PEDO
(iii) Project Management Unit (PMU)	Established in PEDO and headed by a project director with offices in Peshawar and near the dam site
Procurement: goods and works	International open competitive tendering for the turnkey EPC contract co-financed by AIIB and ADB.
Retroactive financing and advance contracting	Retroactive financing, up to 20% of the loan amount, may be considered for eligible expenditures incurred not earlier than 12 months before the signing of the loan agreement, subject to preparedness of the Project and availability of counterpart funds.
Disbursement	AIIB's loan proceeds will be disbursed in accordance with the detailed arrangements agreed between Pakistan and AIIB/ADB.

22. **Procurement.** Works will be carried out by a turnkey EPC contractor. All procurement to be financed and all consultant services to be recruited under the ADB and AIIB loans will be carried out in accordance with the ADB's Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB's Borrowers (2017, as amended from time to time), which are materially consistent with

the AIIB's Procurement Policy and associated Procurement Instructions for Recipients. The EPC contract will be jointly cofinanced by ADB and AIIB. Universal procurement applies to the EPC contract.

23. **Financial management (FM).** PEDO has experience in implementing ADB financed projects. The PMU will include a dedicated Project Accountant who will have the overall FM responsibility of the Project. The PMU will maintain, separate books and records by finance sources and report on Project transactions in accordance with the cash-basis of accounting. The maintenance of project accounts will follow the government's accounting laws and regulations which are consistent with International Public Sector Accounting Standards (IPSAS). The Project accounts will be reported to the Finance Department for inclusion in the corporate level accounts. The Project accounts will be audited annually by the Office of the Auditor General of Pakistan, in accordance with the International Standards of Supreme Audit Institutions (ISSAI). The accounting and reporting processes however need to be strengthened through the implementation of an automated accounting system, enabling the PMU to accurately account and report on the Project.

24. **Disbursement.** The Project will primarily use direct payment and special commitment procedures for the EPC contract. Reimbursement method may be used when necessary. All invoices will be financed by AIIB, ADB and the Government on a cost sharing basis determined by the ratio/share agreed. The PMU in PEDO, assisted by the PMC, will prepare disbursement projections; and prepare and send withdrawal applications to ADB as determined in the co-lenders agreement between ADB and AIIB. Upon ADB's processing of the application, ADB will inform AIIB of its respective portion to be disbursed under the Project. The Project envisages advance contracting for the EPC contract. Retroactive financing of up to 20% of the AIIB loan amount for eligible expenditures incurred and paid up to 12 months prior to the date of loan signing will be considered subject to prior approval of AIIB and ADB. The government of KPK, through EPD, will ensure that the necessary budgetary allocations are made for counterpart funds. The PMU will receive and process the invoices from the EPC contractor and consultants. All Project documentation and reference documents will be archived properly in compliance with domestic requirements.

3. Project Assessment

A. Technical

25. The Project was initially proposed in 1995, followed by a Project feasibility study conducted in 2013. ADB provided a Transactional Technical Assistance in 2017, which revealed major concerns on the layout and location of the hydropower plant, which is prone to earthquakes and floods. ADB's Technical Assistance updated the Project Feasibility Study prepared in 2013 with consideration of multiple parameters, such as earthquake, landslides, extreme weather, flood, and stability of the selected

design.¹¹ As per the updated Project Feasibility Study, a 58-meter-tall gravity concrete dam is proposed, which is significantly smaller but with similar generating capacity. The revised design is considered as the most cost-effective solution available today. More technical details are in Annex 2.

26. **Geological studies.** Geological studies included field investigation works in the proposed dam location, in the headrace tunnel alignment, in the powerhouse and in the tailrace alignment. Geological mapping of the dam and headrace areas was also carried out, as well as of the reservoir area. Per the site investigation data, no faults and shears were identified at the dam site. The analysis and interpretation of dam-site boreholes rock mass data supported the definition of the foundation design parameters. An analysis of the impact in the reservoir of a large-scale landslide was performed, which assumed an event with an earthquake of more than 7 magnitude and heavy rains for prolonged periods. Subsequent stability calculations show that the dam remains stable under such conditions.

27. **Hydromechanical, electromechanical, and electrical equipment and design.** The hydromechanical equipment mainly encompasses the racks, gates and stoplogs. The electromechanical equipment includes the turbines, cranes, lifting beams, turbidity/sediment measurement installations and the powerhouse auxiliary mechanical equipment. The Francis Reaction Type turbines are proposed after an analysis of the hydraulic variables (gross head, the maximum and minimum net head and the foreseen outflow) and the calculation of the base turbine speed and other parameters for the given installed capacity based upon the hydropower optimization studies. The automation and remote-control requirements are also presented, covering both local and remote control, as well as the integration with other plants in the Kunhar River cascade.

28. **Grid interconnection.** The grid interconnection study considers the installed capacity of three generating units, where two will be at 500 kV and one unit will be at 132 kV to supply the local grid of the Balakot area. Steady state analysis by load flows, short circuit and stability criterion reveals that the proposed scheme is adequate to export 300 MW output from the plant under normal and contingency conditions. The dynamic stability analysis of the proposed scheme of interconnection has been carried out and the system is deemed stable for all the tested fault conditions. The proposed technical solutions do not depart from the systems generally used in hydropower stations in Pakistan and is in accordance with the best modern practice in terms of factors of safety. The proposed interconnection scheme between the plant, NTDC, and the Peshawar Electric Supply Company networks fulfils the planning/design criteria as required by NEPRA Grid Code. The technical specifications for the design, manufacture, installation, and commissioning of the electro-mechanical equipment are well defined.

29. **Project Implementation Period.** The updated Project Feasibility Study anticipates a period of 56 months for completion of all components, including design

¹¹ The Project Feasibility Study was prepared by the consortium Mirza Associates Engineering Services Ltd., ILF Beratende Ingenieure ZT GmbH (ILF), and Berkeley Associates (BA) in December 2013.

during EPC stage, plus a period of 9 months for testing and commissioning of the hydropower plant. Considering the complexity of the Project and the possible delays caused by the ongoing COVID-19 pandemic, the Project implementation period is planned to be 7 years, including testing and commissioning period, much longer than that anticipated in the updated Project Feasibility Study.

B. Economic and Financial Analysis

30. **Economic Analysis.** The economic analysis was done based on the incremental benefits and costs of the Project, and the Project's economic viability was determined through the assessment of the expected economic return for the Project, evaluated in terms of the net present value (NPV) and economic internal rate of return (EIRR) over a period of 40 years, with a 7-year implementation period. The economic costs and benefits of the Project were calculated based on real economic prices, exclusive of taxes and duties that are applicable to the Project. The main economic benefits of the Project are: (a) reduction in avoided cost of generation from backup diesel generators used by consumers to ensure uninterrupted power supply, (b) incremental supply of electricity to meet the growing electricity demand, and (c) reduction of CO₂ emissions valued at the social cost of carbon. It is estimated that the Project will replace the existing diesel-based generation (non-incremental supply) and generate additional supply of electricity (incremental supply). The Project costs include EPC costs for hydromechanical and electromechanical equipment, transmission system and civil works, land acquisition, project management costs, and incremental operation and maintenance (O&M) costs. The economic analysis of the Project yielded an economic NPV of USD545.2 million and EIRR of 12.1% exclusive of the social cost of avoided GHG emissions and an economic NPV of USD952.7 million and EIRR of 15.3% inclusive of the social cost of avoided GHG emissions. A sensitivity analysis was conducted to ascertain the robustness of the analysis. The results of the sensitivity analysis suggest that the Project is economically robust in case of substantial variation of main variables that affect its economic viability. Details of the economic analysis is in Annex 3.

31. **Financial Analysis.** The financial analysis was conducted in 2019 constant prices by estimating the financial costs and benefits associated with the Project over a period of 40 years, with a 7-year implementation period. Taxes and duties are applied accordingly. The Project is expected to generate revenues from the sales of electricity at the tariff for the Balakot hydropower plant calculated following the methodology established by NEPRA. The streams of financial costs and benefits were discounted at the Project's weighted average cost of capital of 1.28%, which is estimated based on indicative terms of ADB and AIIB loans. The financial analysis of the Project yielded a financial internal rate of return of 5.5%, which is higher than the Project's weighted average cost of capital of 1.28%, supporting the viability of the Project. A sensitivity analysis was conducted to assess the robustness of the Project's financial returns to changes in the main evaluation variables. The results of the sensitivity analysis suggest that the Project is financially robust even in case of substantial variation of main variables that affect its viability. Details of the financial analysis is in Annex 3.

C. Fiduciary and Governance

32. **Procurement.** Procurement of all goods, works, non-consulting and consulting services financed under the proposed Project will be conducted in accordance with applicable ADB procurement policies and regulations. Universal procurement will apply for the contract co-financed by ADB and AIIB. PEDO has experience in implementing projects financed by ADB, and is well conversant with ADB's procurement policies, methods, procedures, and standard bidding documents. The ADB Procurement Policies are materially consistent with the AIIB's Procurement Policy and associated Procurement Instructions for Recipients. As provided for under the existing ADB-AIIB framework agreement, a specific co-lenders' agreement for this Project will be agreed to clearly define the respective roles and responsibilities through the Project implementation period. ADB has conducted a comprehensive due diligence through their procurement assessment and the findings were included in the Project Administration Manual, a document setting out the detailed implementation arrangements, including procurement. This was prepared by the ADB team and the team of consultants supporting preparation and agreed with PEDO. The AIIB's project team has reviewed the findings of both documents during the due diligence and preparation phase and found the overall arrangements acceptable.

33. PEDO has previously implemented projects funded by MDBs, and a dedicated PMU has been established to lead the Project implementation activities including procurement. The PMU will be supported by a team of international consultants to mitigate the risks associated given complexity of the Project. The Project entails the procurement of an EPC contract for design, supply, installation, testing and commissioning of the 300MW hydropower plant including associated civil works, to be co-financed by AIIB that will be procured following international open competitive method, single-stage-two-envelops, using ADB procurement documents. ADB will finance the Project management consulting contract, which has been procured using open international competitive method. Furthermore, the ADB will finance three consultancy contracts for Community Development, External Environmental Monitoring and External Resettlement Monitoring. All contracts will be subject to prior review and will be open to eligible participants from any country. The overall procurement risk level has been determined as medium.

34. Advance contracting will apply up to contract award for the (i) EPC contract for the hydropower plant, including the related civil works from river diversion up to transmission point, and (ii) recruitment of the PMC. All advance contracting and retroactive financing will be undertaken following the agreed implementation arrangements. The borrower, EPD of KPK, and PEDO have been advised that approval of advance contracting and retroactive financing does not commit ADB and AIIB to finance the Project.

35. **FM.** The FM assessment concluded that while PEDO's financial management framework needs to be strengthened, the proposed arrangements for the Project are adequate. The key Project specific risk identified is the inaccurate or incomplete accounting of project transactions, that could result in the delayed submission of timely and accurate financial information on implementation. Such risk is associated with the lack of an integrated automated accounting system and low financial management

capacity. PEDO's current accounting and reporting system is fragmented and a mixture of manual book-keeping and separate electronic spreadsheets used for the preparation of statements. To improve the financial management function, PEDO has prioritized the automation of its accounts by piloting Enterprise Resource Planning (ERP) and a Management Information System (MIS). In addition, the risk is being mitigated through the hiring of a dedicated Project Accountant, review and support provided by the implementation consultants, as well as the oversight of PEDO's Finance Department.

36. PEDO has been implementing MDB financed projects using the cash-basis of IPSAS and has well established cash operation procedures and controls in place. There is clear segregation of duties, proper review, and authorization of transactions. Bank and cash accounts are reconciled monthly, and all unusual items on the bank reconciliation are reviewed and approved by the CEO and the CFO. The Accounting and Finance Division maintains up-to date cashbooks and general ledger by recording receipts, payments, and other accounting transactions daily. A separate excel-based project account will be maintained, capturing transactions by sources of finance, project components, categories, and activities, enabling the provision of timely and reliable financial information. The quarterly Project progress reports to be provided to AIIB and ADB will also include financial progress of implementation. The annual Project audit report comprises the audited financial statements and management letter, which will be submitted to AIIB and ADB within 6 months from the end of the fiscal year. The audit report will cover whether (i) the Project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) the proceeds of the loan were used only for the purpose(s) of the Project; and (iii) borrower or PEDO was in compliance with the financial covenants contained in the legal agreements.

37. As PEDO aims to comply with its private sector development mandate, PEDO will be transitioning from cash-basis of IPSAS to accrual basis of IFRS. Therefore, part of its capacity enhancement measures being implemented, includes the recruitment of additional qualified financial management and accounting staffs, to support the accounting and reporting transition. In addition, the capacity development program under the Project and other ADB loans will seek to strengthen PEDO's internal audit and compliance control system.

38. **Governance and Anti-corruption.** ADB's Anticorruption Policy (1998, as amended to date) has been provided to the Government and PEDO and included in the Project Administration Manual. Implementation will be monitored rigorously and regularly by ADB. The AIIB's Prohibited Practices Policy will apply to the Project in the areas which are not covered by the ADB's Anticorruption Policy, such as 'Misuse of Resources' and 'Theft'. AIIB will reserve the right to investigate—directly or indirectly through its agents—any alleged corrupt, fraudulent, collusive or coercive practices related to the proposed Project and require the Borrower to take necessary measures to prevent and redress any issues in a timely manner, as appropriate.

D. Environmental and Social

39. **Environmental and Social Policy.** The Project will be co-financed with ADB as lead co-financier, and the Project's environmental and social (ES) risks and impacts have been assessed in accordance with the ADB's Safeguard Policy Statement (SPS) 2009. To ensure a harmonized approach to addressing the ES risks and impacts of the Project, and as permitted under AIIB's Environmental and Social Policy (ESP), ADB's SPS will apply to the Project in lieu of AIIB's ESP. AIIB has reviewed the ADB's SPS and is satisfied that: (i) it is consistent with AIIB's Articles of Agreement and materially consistent with the provisions of AIIB's ESP and the relevant ES Standards (ESS), and (ii) the monitoring procedures that are in place are appropriate for the Project. The ADB Project Team has conducted extensive due diligence prior to the COVID-19 pandemic through the preparation of the ES instruments. AIIB has conducted due diligence both in person and remotely, following the start of the COVID-19 pandemic and related travel restrictions. This has included virtual engagements with PEDO and a visit in February 2021 by a local consultant to assess the changes in design, evaluation of the socio-economic context to supplement the existing ES instruments and engage with PEDO and relevant authorities responsible for the implementation of the relevant management plans. In the context of expected ongoing travel restrictions, AIIB will continue to rely on field visits by local consultants, close collaboration with ADB and PEDO, remote assessment using high resolution satellite imagery and socially distanced stakeholder engagement approaches.

40. **Categorization.** ADB has categorized the ES risks of the Project as Category A for environment, Category A for involuntary resettlement, and Category C for Indigenous Peoples (which is equivalent to Category A if AIIB's ESP were applicable).

41. **ES Instruments.** An Environmental Impact Assessment (EIA) accompanied by an Environmental Management Plan (EMP) has been prepared for the Project to meet requirements of ADB's SPS. In addition, a preliminary Land Acquisition and Resettlement Plan (LARP) has also been prepared to address the land acquisition and involuntary resettlement impacts of the Project, in accordance with the ADB's SPS. The Client is currently undertaking a field-based census to update the LARP, which is expected to be finalized in Q3 2021. The EIA includes an Emergency Response Plan capturing the possible impacts due of a dam failure extensively studied in the Updated Feasibility Study. The power evacuation line (PEL) – estimated to be of a length below 800m and considered an associated facility and requiring an EIA to the same standards, has not been assessed to date and will be conducted by responsible transmission company once the detailed design is determined. Other associated facilities such as the quarrying locations for gravel and sand, locations for disposal of excavation material and potential lay-down areas have not yet been identified and thus will need to be assessed at a later stage. The EMP of the Project has identified and defined a set of management measures to be taken in the contractual arrangement with the National Transmission and Dispatch Company.

42. **Environmental and Social Capacity and Resources.** PEDO has an established collaboration with the World Bank, and benefits from funding to strengthen its capacity and enhance its corporate resources in the ES fields. Funding has been secured to establish a dedicated project management office within PEDO to oversee

all the hydropower and renewable energy development activities, which will include an Environmental and Social Unit that will comprise several environmental and social specialists (e.g., directors, four deputy directors and eight assistant directors). Fourteen persons have been mobilized at the PMU level, while the Project Management Consultants have been mobilized since September 2020. Additional recruitment for the PMU is ongoing. These resources will be in addition to the PIU dedicated to the Balakot Project which comprises a Deputy Director, Environment and Gender along with two Assistant Directors. Furthermore, PEDO will hire an Occupational Health and Safety (OHS) expert at Deputy Director level. In addition, the Project Management Consultant (PMC) has adequate ES resources, and the EPC is contractually required to establish adequate ES systems and employ sufficient resources for their implementation.

43. **Environmental Aspects.** The key adverse impacts of the Project include loss of riverine ecosystem due to inundation by reservoir, degradation of the river ecosystem in the low flow segment downstream of the dam – including fish breeding grounds, disruption of the water supply for mountain spring users due to alterations of natural passage of springs caused by blasting for tunnels, and earthworks resulting in stockpiling of earth and stone from tunneling activities, exposed reservoir banks that may lead to increased erosion and sediment load entering river and regular release of silt and sediments, thus impacting water quality. While no “Critically Endangered” or Endangered species as per the International Union for Conservation of Nature (IUCN) were observed, the critical habitat assessment conducted as per the IFC Performance 6¹² in the EIA has determined that the Project would affect a Critical Habitat, assessed as such due to the presence of two endemic and restricted range fish species within the Aquatic Study Area¹³.

44. Other adverse environmental impacts principally taking place during construction include loss of natural vegetation and trees due to land clearing under project footprints; generation of construction waste including hazardous waste, solid waste from worker’s campsites and offices and significant volumes of waste material from tunneling; wastewater discharges from the construction camps, sites, and batching plants; soil pollution by construction works; increased traffic on the local roads and associated safety hazards; air and noise pollution from construction – including blasting, batching plants, vehicular traffic and construction equipment exhausts, and traffic; sourcing of aggregate material for concrete works; impacts from increased human activities on flora and fauna; risk of damage to houses by blasting activities (through fly rock and vibration); workers’ health and safety risks mainly due to risks involved with instream construction, underground construction, and freezing winter conditions.

¹² Biodiversity Conservation and Sustainable Management of Living Natural Resources, Performance Standard 6, International Finance Corporation, 2012.

¹³ Baseline studies identified the presence of Alwan Snow Trout, a long-distance migratory fish species categorized as Vulnerable as per IUCN, and five migratory bird species, with two of them being congregators.

45. The Project is part of a cascade of planned, under construction and operating hydropower stations¹⁴ located on the Kunhar River, and as such contributes to cumulative impacts. Recent socio-economic developments, including the resettling of households displaced by the Suki Kinari Hydropower Plant in the Project area and other inward migration have increased traffic flow, emissions to air, waste generation and discharge and consumption of natural resources, including sand mining from the Kunhar riverbed, since the completion of the environmental baseline studies in 2017-2018.

46. Mitigation and management measures are defined in the EIA and residual impacts are further assessed and determined to be in compliance with the applicable safeguard requirements. Initial investment and recurring costs associated with the implementation of these mitigation measures have been estimated and included in the EMP. A standalone Biodiversity Action Plan (BAP) has been prepared to ensure that impacts on Critical Habitat are mitigated and 'net gain' is achieved, so that 'additional conservation outcomes can be achieved for the biodiversity values for which the critical habitat was designated'¹⁵. The BAP implementation requires institutional arrangements across PEDO and multiple governmental agencies, as well as collaboration among hydropower operators on the Kunhar River (and wider Jehlum Basin). While PEDO's technical contribution is defined and budgeted in the BAP, successful implementation will rest on receiving support from the Khyber Pakhtunkhwa Government, in particular the KPK's Environmental Protection Agency and Fisheries Department, and successfully engaging with and committing external stakeholders. Interviews with the Fisheries Department responsible for implementing key conservation measures as part of the BAP indicate that it has relevant experience and track record.

47. **Natural Disasters, and Climate Change Risks and Opportunities.** Based on the climate change assessment, the Project's climate risk classification is high. The Project area has high risks of landslide, flood, change in rainfall pattern and change in the melting rate of the glaciers feeding the Kunhar River. The key climate change risks for the Project include general potential increase in annual precipitation associated with increase in summer Monsoon precipitation, decrease in winter and spring precipitation, and likely increase in the Probable Maximum Flood. These risks will be mitigated by: i) disaster-resilient dam design and construction; ii) slope stabilization measures in the reservoir rim; iii) climate resilient cascade operation and management of the hydropower schemes; iv) implementation of a climate monitoring and coordination framework; and v) updating of the Project climate modelling. These climate adaptation measures have been estimated by ADB to sum up to USD 7 million. As part of the Project, PEDO staff will be trained in climate change mitigation in

¹⁴ The EIA refers to 5 hydropower plants – including the proposed Balakot HPP – that comprise 1 HPP in operation downstream of the Project, 1 HPP under construction and 2 additional planned HPP upstream of the Project.

¹⁵ Although the operating of the Project in peak mode increases the impacts on biodiversity and induces a need for a more significant ecological flow (Eflow), the assessment has determined that the Project Eflow of 6.1m³ per second combined with implementation of an extensive set of mitigation and management measures (the 'High Protection Scenario' defined in the BAP) should result in net biodiversity gain over the baseline conditions and their foreseeable deterioration in a business-as-usual scenario

operations. Furthermore, the community development program will develop and implement awareness-raising programs on climate change and natural disasters. The Project will also have a significant contribution to climate mitigation with the production of 1,143 GWh per year of renewable energy, contributing to Greenhouse Gas (GHG) emissions reduction of 572,643¹⁶tCO_{2e}/year contributing to achieving the Nationally Determined Contribution (NDC) of Pakistan established in the scope of the Paris Agreement. AIIB's USD 280 million financing of the Project is eligible as climate mitigation finance.

48. **Social Aspects.** The Project will have significant adverse impacts on cultivated and uncultivated land, residential structures, commercial structures, fruit trees, timber/wood trees, schools, basic health units/dispensaries, common property resources and utilities used by the affected communities. The livelihoods of people engaged in local industries relying on the river flow, such as sediment mining and tourism, will also be negatively affected.

49. The Client's preliminary estimate of the land footprint for the reservoir, dam, temporary and permanent workers accommodations and access roads, based on a feasibility study and undertaken in 2018 was approximately 81 acres (32.8 hectares). This assessment was used for a resettlement field census which accounted for anticipated impacts on private and community land, structures, livelihoods, trees, and common property resources. In total 165 households with 887 Project-affected people (PAPs) were expected to be impacted, along with approximately 8000 trees, four schools, one madrasa and three graveyards. The last day of the survey, 3 July 2018, was announced as a cut-off date. The census results and stakeholder consultations with all affected households were used to prepare a comprehensive draft LARP including an Entitlement matrix for title and non-titled holders, detailed timeline, and budget. This draft LARP was disclosed on the webpages of PEDO¹⁷ and ADB¹⁸. Due to time constraints, lack of detailed design and the unavailability of updated land records, PEDO planned to subsequently update the LARP.

50. Over the past two years, the Project area experienced a significant influx of people who were not included in the draft LARP. In addition to this, the Project land requirements were refined which enabled KPK and PEDO to establish ownership status and complete the land demarcation. A new census was initiated in December 2020 in line with the Land Acquisition Act (1894). The owners of 223.8 acres (90.6 hectares) have been notified by the Office of the Deputy Commissioner that their lands are likely to be needed for the Project. The day of this notification, 11th December 2020 serves as the new cut-off date for the Project. The census will cover everyone occupying the project site prior to the announcement of the new cut-off date, which is estimated to total approximately 2700 PAPs (a significant increase compared to the

¹⁶ Different studies may assign different grid emissions factors to a country. As per the Guidelines for Estimating Greenhouse Gas Emissions of Asian Development Bank Projects (2017), Pakistan's grid emissions factor used for hydro is 501 tCO₂/GWh. Differently, as per IFI's Dataset of Default Grid Factors (v.2.0), the corresponding grid emissions factors is 453 tCO₂/GWh. Since ADB is the leading financier for the proposed Project, ADB's grid emissions factor is adopted.

¹⁷ <http://pedo.pk/Main/downloads>

¹⁸ <https://www.adb.org/projects/49055-007/main>

initial census). The survey is ongoing in line with ADB and Government's COVID-19 prevention measures and is expected to be completed in Q3 2021, subject to approval by ADB, AIIB and PEDO.

51. The update of the LARP is taking into consideration the market increase of land rates since 2017-2018 according to the composite schedule rates published by the KP Communication and Works Department. It will also include an evaluation of the adverse livelihood impacts, vulnerability assessment of PAPs, compensation payments at full replacement cost (including transaction costs), livelihood restoration activities and additional inclusive stakeholder consultations. The field investigation by AIIB's ES consultant confirmed that PAPs are particularly sensitive to timely compensation according to market rates. To avoid delays in payments for land acquisition, the implementation of the finalized LARP prior to initiation of construction works is included as Key Covenants/Conditions for Disbursement.

52. The updated LARP, which is expected in Q3 2021, will also evaluate the potential adverse project impacts on people who were resettled because of the upstream Suki Kinari project and those affected by the 2005 earthquake and their vulnerability. The construction and operation of the Project along with other planned hydropower plants are expected to have a detrimental impact on the aesthetics of the area and on activities such as recreational fishing, thus negatively affecting the local tourism industry. The implementation of the BAP/BMPs, capacity building for KPEA and Fisheries Department and livelihood restoration trainings for PAPs will be put in place to mitigate cumulative impacts. Project activities, such as blasting, tunneling, and drilling will be evaluated for their impacts on remaining water sources that may have been impacted by the 2005 earthquake. Potential opportunities for improving water availability are being appraised during the LARP update, which is expected to be completed in Q3 2021.

53. In line with the recommendations of the Gender Analysis undertaken in 2019, compensation for the assets of women will be provided to the women directly and employment quotas will be set for local women. Gender-disaggregated data will be collected and used to evaluate and monitor different impacts on women. The preparation of the updated LARP will contain gender and culturally sensitive stakeholder engagement activities and materials to enable meaningful consultations with both men and women. This is in line with the activities defined in the Gender Action Plan (GAP).

54. The LARP will also include a field-based (re)survey of cultural resources that are expected to be impacted, such as graveyards/graves, madrasa, and mosques. Preliminary assessment shows that private land is available in nearby areas which would allow relocation in a culturally sensitive way, as advised by the community. Use of Chance Find Procedures for archaeological, historical, and spiritual sites will also be implemented.

55. Security at site will be provided by a private security contractor to be hired and managed by the EPC, while PEDO has contracted support from the local police force to enhance its presence in the Project area and provide security to its personnel and visitors, including representative of the Lenders, during their travels to site. Security

risks in KP are deemed high as per the AIIB Security Team. PEDO has developed a Code of Conduct applicable to the EPC's use of security forces and regulating all Project Workers' contacts with community members. Field visits by the team will be implemented in line with the relevant security measures. The existing and potential restrictions related to the ongoing COVID-19 Pandemic will be taken into consideration in Project implementation.

56. **Working conditions and community health and safety.** The Project construction is planned to last over six years and is expected to create temporary positions for 1200 skilled, semi-skilled and unskilled workers during peak construction. The Project has committed to creating 500 jobs for local community members and will support capacity building in the community to achieve this objective. The General Conditions of Contract with the EPC comprise provisions to manage working conditions, including employment conditions, housing, occupational health and safety management, prevention of forced labor and harmful child labor, and protection of the health and safety of adjacent communities from physical hazards and/or the presence of the Project's workforce. Such requirements are also applicable to the EPC's subcontractors. The surge of employment requirements during the construction period poses risks and opportunities for the local communities. As most of the working-age population are without any gainful employment, the existing expectations for preferential treatment in the recruitment process is already high. To manage these community expectations in a sustainable way, vocational institutions and training centers will be set in the project area to develop the skill sets of the local community. New temporary and permanent employment opportunities are likely to lead to improved nutritional status, better housing, access to education and improvement in overall well-being of PAPs. Poverty cycles in poor families could be broken if children in the families become better educated and have more livelihood options than their parents had. The significant impacts, in particular on women and children, induced by the inevitable influx of job seekers, long-term and substantial scale of the Project construction and cumulative impact of the Suki Kinari project shall be managed to avoid unsustainable pressure on existing social infrastructure, services, and potential labor disputes in the project area through comprehensive and dedicated communication outreach.

57. An Emergency Preparedness and Response Plan (EPRP) will be developed to guide PEDO and its contractors how to mitigate and manage emergency risks. It will be closely aligned with the following plans that will also be prepared Spill Prevention and Response Plan, Waste Management Plan, Blasting and Explosives Control Plan, Stakeholder Engagement Plan (SEP), Dam Safety Review Procedure, Site Security Plan and Occupational Health and Safety (OHS) Plan¹⁹. Measures to address potential pandemics and other public health emergencies will be included in the EPRP. The SEP and the GAP will be updated to include provisions, budget, and timeline for implementation of awareness-raising campaigns for communities and project workers. This will include gender and culturally sensitive messaging and trainings that will be tailor-made for the specific audiences, e.g., women, boys, girls, etc.

¹⁹ Prepared as per IFC's General EHS Guidelines on Occupational Health and Safety.

58. **Gender Aspects.** A draft GAP has been prepared and disclosed on ADB's website, outlining key project areas for gender-mainstreaming activities - communities' mobilization strategy, land acquisition and resettlement, livelihood restoration and skills development, inclusive consultations, awareness raising and capacity building for PEDO staff. The GAP will be updated with the finalization of the LARP to include provisions for reducing risks related to gender-based violence, sexual exploitation, and abuse. Relevant provisions to reduce GBV/SEAH risks will also be included in the worker's Code of conduct. Sections of the GAP will be mainstreamed in the final LARP and a dedicated non-governmental organization will be hired by PEDO to implement the GAP. A Gender/Community Mobilization Expert is included as a key expert in the PMC.

59. **Dam Safety.** The dam safety analysis considered three distinct scenarios, including two covering a dam failure of the proposed Balakot dam only, and a third considering a dam cascade rupture of both Suki Kinari and Balakot dams. The population at risk ranges from approximately 665 to 7404 people, classifying the dam as having a potential impact category of "High", due to the population-at-risk and the likely damage to the existing infrastructure being major or catastrophic. As such, the dam design incorporates features which aim to prevent a catastrophic failure from occurring, including adoption of high design standards within the dam building industry. Furthermore, an Emergency Action Plan will be prepared taking the analysis into account to mitigate eventual effects of such incidence. The Dam Break Analysis of the Project was checked by an independent Dam Safety Panel (DSP) engaged by ADB during the review of the Feasibility Studies carried by ADB. A DSP engaged by PEDO will review the detailed Project design once it is prepared by the EPC contractor. As per actions agreed under the ADB loan, a DSP will be hired to review the detailed design once it is available. The DSP recruitment will be carried out by PEDO once the detailed design is close to completion by the EPC contractor.

60. **Cumulative Impact Assessment (CIA).** A CIA of the Kunhar River basin was undertaken to evaluate the contribution of the Balakot hydropower plant to cumulative impacts in the basin and to promote cooperative management of important basin resources. There are 4 proposed and 1 operational hydropower projects along the Kunhar River, totaling 1,454 MW planned capacity and 147 MW operational capacity on the 116km of river between the Lulusar Lake and the confluence with the Jhelum River. The development of these projects will affect 78.9km or 69% of the river with reduced dry season flows and 15% by peaking flows, significantly impacting fish fauna. Furthermore, they will also induce impacts on tourism, fishing, sediment mining from the riverbed, access to river water and spring water, and influx of workers and employment seekers that may lead to inflation, security concerns, increase in transmissible diseases and pressure on social infrastructure.

61. The CIA concluded that aquatic biodiversity is likely to be significantly affected by cumulative impacts. This conclusion is based on the results of eFlow modelling, which evaluates multiple stressors on aquatic habitat and categorizes the resulting habitat condition using ecosystem integrity categories ranging from Unmodified (A) to Critically/Extremely Modified (F). The CIA proposes mitigation and monitoring measures to be incorporated into the Project's ES management and monitoring plan, in particular in the BAP, to mitigate the Project's contribution to environmental

cumulative impacts. The implementation of the Enhanced Management Scenario necessary to comply with the applicable standards will require involvement of private sector investors in the existing and proposed HPPs alongside PEDO to be coordinated through the Private Power Infrastructure Board (PPIB) agency under the Ministry of Energy's Power Division and supervised and implemented by the EPA, Fisheries Department, and other governmental agencies. Through such arrangements, PEDO will strive to enhance coordination at the river basin level for integrated management of environmental and social impacts.

62. Stakeholder Engagement, Consultation, and Information Disclosure. Preliminary stakeholder consultations were carried out in Q2 2017 and Q3 2018 separately during the preparation of the EIA and the draft LARP. The consultation process was designed to be consistent with the relevant national legislation and ADB's SPS. A total of 27 group discussions and consultation sessions were held with 17 groups of men and 11 groups of women, wherein a total 229 persons (134 men and 95 women) participated. The overall sentiment towards the Project is positive, though PAPs are hesitant about whether they will receive fair compensation for their land, which will be addressed during the finalization of the LARP. The SEP, which is part of the EIA was disclosed in July 2019. Consultations for the LARP update are ongoing and expected to conclude in Q3 2021.

63. The SEP establishes Public Coordination Unit, Stakeholder Engagement Committee, Coordination Focal Points, who along with PEDO's Community liaison officer will continue community engagement activities throughout Project activities. Staff from the PEDO's Social and Environment Unit will visit affected communities at least every three months, depending on travel restrictions. PEDO has undertaken four stakeholder engagements so far in 2021, in line with COVID-19 restrictions.

64. The draft EIA and LARP in English and their executive summaries in English and Urdu are disclosed online (on the websites of the Client, ADB and AIIB²⁰). The updated versions will be disclosed accordingly online and made widely available in hard copy in the Project area. A background information document in English has been disclosed online and will be made available in English and Urdu and appropriately communicated to semi-literate affected persons. Door to door individual household consultations and group discussion are being used to widely disseminate non-technical information about the Project. Female staff are engaging with women to include particular concerns, requests and priorities they may have. Specific protocols for disclosure, stakeholder engagement and consultations within the context of COVID-19 pandemic will be implemented.

65. Project Level Grievance Redress Mechanism. A two-tier village- and project-level grievance redressal mechanism (GRM) for the PAPs will be set up consisting of members from PEDO, Revenue Department and the communities. The village-level GRC will be established to engage village-level community members/leaders to

²⁰ <http://pedo.pk/Main/downloads>, <https://www.adb.org/projects/49055-007/main> and <https://www.aiib.org/en/projects/details/2020/proposed/Pakistan-Balakot-Hydropower-Development-Project.html>

participate in the decision-making processes and assist aggrieved PAPs in the grievance redress procedures. Cases which are not satisfactorily resolved will then be forwarded to the Project-level GRC. Additional analysis will be provided during the finalization of the LARP on local traditional grievance redress mechanisms, community dynamics and decision-making system that may affect its implementation. GRM for PEDO workers and its subcontractors will also be established.

66. **Independent Accountability Mechanism.** As noted above, ADB's SPS will apply to the Project instead of AIIB's ESP. Pursuant to AIIB's agreement with the ADB, AIIB will rely on ADB's independent accountability mechanism, the Accountability Mechanism, to handle complaints relating to ES issues that may arise under the Project. Consequently, in accordance with AIIB's Policy on the Project-affected People's Mechanism (PPM), submissions to the PPM under this Project will not be eligible for consideration by the PPM. Information on ADB's Accountability Mechanism is available at: <https://www.adb.org/site/accountability-mechanism/main>.

67. **Monitoring and Supervision Arrangements.** AIIB is working closely with ADB and PEDO to support the timely updating of the LARP. AIIB will coordinate with ADB and include in the loan documentation contractual ES covenants, which will include the following undertakings: (i) necessary budgetary and human resources are made available to implement the Project, including all measures and requirements set forth in the EIA (including EMP), LARP, other ES plans and, any corrective or preventative actions set forth in ES monitoring reports; (ii) the land acquisition and involuntary resettlement is implemented in accordance with the agreed schedule and standards stipulated in the LARP; (iii) collaboration mechanisms with relevant institutional and commercial third parties are established for the implementation of the BAP; (iv) baseline environmental studies are prepared and updated timely; (v) all bidding documents and contracts contain provisions that require contractors to comply with the measures set forth in the EIA, EMP and LARP, other ES plans, and any corrective or preventative actions required; and (vi) a Project level GRM is established and functional during the whole construction period.

68. On-going monitoring will be conducted by the PMC during construction, while PEDO will supervise the implementation of all ES management and mitigation measures and report semi-annually to AIIB and ADB the ES implementation progress and issues identified. A panel of experts, including experts on environmental, social and dam safety issues, will be hired by PEDO to review and advise on the implementation of the Project against the applicable requirements and good international sector practice. While ADB, the lead co-financier, is responsible for the Project's ES supervision and monitoring, AIIB will provide supplementary efforts, including using remote sensing, remote interviews, and documentary review of field visits by the Bank's local consultants, and travel to site by AIIB's specialists as feasible, given the restrictions due to the COVID-19 pandemic.

E. Risks and Mitigation Measures

69. The Project's Risk Rating is "high". Assessment and mitigating measures for key risks identified are presented in Table 3.

Table 3: Summary of Risks and Mitigating Measures

Risk Description	Assessment Ratings (High, Medium, Low)	Mitigation Measures
Technical		
Complexities in detailed project design and weak technical capacity of PEDO	High	Recommendations and requirements for design is defined in project feasibility study and bill of quantities section of bidding document including supplemental geological and geotechnical investigations, physical modelling, and 3-D modelling. A review of detailed design by independent Panel of Experts is requested prior to PEDO's approval of design.
Major earthquake or floods during project construction	Medium	Government and PEDO to require the contractor to follow international safety standards and methods during construction phase for handling impacts of such disasters including preparation of an emergency action plan for the site as well as communities downstream of the dam site and staff awareness programs.
Potential dam safety impact	High	The dam design incorporates features to prevent a catastrophic failure from occurring. Government will ensure a Dam Emergency Action Plan including a warning system in the downstream valley, and a shared information system for dams on the Kunhar River is in place and effective before the commission of the Project. The system will include instruments with modelling for automatic weather stations in catchment, stream gauges, and coordinated reservoir operations.
Financial		
Financial sustainability of PEDO	Medium	Covenant to ensure cost recovery tariff and payment discipline is included in the loan agreement. ²¹

²¹ The Borrower shall cause KPK to ensure that PEDO will achieve (a) a debt service coverage ratio of not less than 1.2:1, (b) a ratio of long-term debt to equity ratio of not more than 3:1, (c) a current ratio of at least 1:1, and (d) an operating ratio of less than 1, during the term of the Loan Agreement commencing with the Financial Year ending 30 June 2021.

Risk Description	Assessment Ratings (High, Medium, Low)	Mitigation Measures
Inaccurate and incomplete accounting and reporting of project transactions.	High	<p>IFRS compliant accounting system will be established and maintained for the project to minimize risk.</p> <p>IT systems diagnostics will be carried out by international consultants to identify the weaknesses and design mitigation plan, including upgrading accounting system and introduction of Enterprise Resource Planning (ERP) and integrated Management Information System (MIS).</p> <p>Experienced Financial Management Expert will also be hired to support the PMU.</p>
Environmental and Social		
Inadequate implementation of EMP and LARP.	High	<p>Adequate ES instruments, including extensive mitigation and management measures and the corresponding budgetary estimates, have been prepared for the Project. Safeguard instruments are included in the tender documents and terms of reference for supervision consultants and contractors. Independent audits will be conducted periodically to review and report on implementation of safeguard plans. Additional capacity building activities have been included in the Project. ADB and AIIB ES specialists will provide support to PEDO for monitoring the EIA/EMP and LARP implementation.</p>
Inability to visit project site due to security and/or COVID-19 related restrictions.	High	<p>Remote sensing options to evaluate ES risks and progress in implementation of the EIA (including EMP) and LARP will be employed as much as possible.</p> <p>Additionally, ES consultants already based in Pakistan for on-going support will be mobilized to conduct a site visit as soon as travel is deemed safe, followed by site visits by AIIB ES staff.</p>
Overall Rating	High	

Annex 1: Results Monitoring Framework

Project Objective:		The objective of the Project is to enhance energy security and promote renewable energy by developing a 300 MW run-of-river hydro power plant in KPK.											
Indicator Name	Unit of measure	Baseline	Cumulative Target Values							2028	Frequency	Responsibility	
			2021	2022	2023	2024	2025	2026	2027				
Project Objective Indicators:													
Average daily load shedding in PESCO reduced	hours	3.2 (2017)	n/a							2.0	Yearly	Government /PEDO	
Net CO ₂ reduction annually	tCO ₂ e	0 (2020)	0	0	0	0	0	0	0	572,643 ²²	Yearly	Government /PEDO	
Intermediate Results Indicators:													
300 MW hydropower added to the grid	MW	0 (2020)	0	0	0	0	0	0	0	300	300	Yearly	Government /PEDO

²² Different studies may assign different grid emissions factors to a country. As per the Guidelines for Estimating Greenhouse Gas Emissions of Asian Development Bank Projects (2017), Pakistan's grid emissions factor used for hydro is 501 tCO₂/GWh. Differently, as per IFI's Dataset of Default Grid Factors (v.2.0), the corresponding grid emissions factors is 453 tCO₂/GWh. Since ADB is the leading financier for the proposed Project, ADB's grid emissions factor is adopted.

Annex 2: Detailed Project Description

1. The Project will provide financing to construct a 300-megawatt (MW) run-of-river hydro power plant located on the Kunhar River in Mansehra District, Khyber Pakhtunkhwa (KPK) province of Pakistan. Upon completion, the Project will (i) improve energy security by increasing the clean energy share in the country's energy mix currently dominated by thermal power generation, (ii) boost the provincial economy and promote revenue generating investments in the hydro abundant province of KPK, and (iii) build capacity and awareness on climate change impacts, adaptation and mitigation measures.²³

2. **Project description.** The proposed Project is to be constructed on the Kunhar River in Kaghan Valley, between Balakot and Kaghan, Manshera District of Khyber Pakhtunkhwa (KPK), Pakistan. A Project feasibility study was conducted in 2013 and later updated in 2019. Key features of the Project are summarized below.

- i. 3 generating units of 100 MW each, with an annual output of 1,143 GWh and a plant factor of around 43.5%.
- ii. A 58-meter-tall gravity-concrete dam. The dam has a curved axis in plane and a radius of 187 meters. The elevation of dam crest is 1292.00 meters above sea level and the crest length is approximately 130 meters. A crest width of 8.5 meters is proposed to ensure adequate access for vehicles, cranes, and other maintenance equipment. The dam will create a 2.2 km long reservoir, with a gross storage of 3.6 million m³ at the normal operation level (NOL) 1288.00 meters above sea level. The hydro-mechanical equipment mainly encompasses the racks, gates and stop logs.
- iii. 650 meters long sediment by-pass/diversion tunnel.
- iv. 9.1 km long concrete lined headrace tunnel with 8 meters internal diameter.
- v. 122 meters high surge shaft within 14.5 meters inner diameter.
- vi. 5.6 meters diameter steel lined pressure shaft and penstock.
- vii. The proposed underground powerhouse is composed of two conventional cavern structures for three identical 100 MW Francis units with vertical axis and for the power transformers and grid interconnection equipment. The anticipated dimensions of the powerhouse main cavern (machine hall) are as follows: 20 meters width, 71 meters length and 34 meters height. The turbine axis is defined at elevation 1054.00 meters above sea level, according to the estimated requirements to prevent cavitation of the turbines. The single-phase transformers are arranged in a smaller cavern next to the main powerhouse cavern. The transformer cavern is approximately 14 meters wide, 20 meters

²³ The Asian Development Bank (ADB) provided transactional technical assistance to develop the proposed Balakot Hydropower Development Project (TA9185).

- high and 88 meters long. The caverns' cover depth is circa 230 meters above sea levels.
- viii. Two units will be connected to 500 kV grid and one unit will be connected to 132 kV grid to supply the local grid of the Balakot area.
 - ix. 244 m high downstream surge shaft with 3 meters internal diameter.
 - x. 1.6 km long tailrace tunnel.
3. The Project has the following components:

Component 1: A 300 MW climate-resilient hydropower plant. The Project will improve the energy mix by adding 1,143 GWh of clean power annually into the grid and enhance the reliability of power supply in the region. Its design will incorporate seismic strengthening and climate-resilient features.

Component 2: Capacity development programs. It will focus on three outputs: (i) climate change risk management. PEDO staff will be trained to incorporate climate change risk guidelines into hydropower plant operation. Also, climate change awareness enhancement activities will be provided to the local communities with specific training for women and youth groups to serve as "Climate Change Leaders." (ii) PEDO's revenue enhancement. A power purchase agreement will be developed and signed between PEDO and the Central Power Purchasing Agency Guarantee Limited. This will substantially enhance PEDO's revenue and ringfence its liquidity risks. (iii) income-earning skills of local communities. Training and livelihood skill development activities will be implemented to cater to the socio-economic needs of the affected and other surrounding communities in the Project area, particularly to women, who previously had rare economic opportunities in the region.

4. The Project is located on the Kunhar River. The Kunhar River (which flows entirely in Pakistan) is a tributary of the Jhelum River (which originates in India) and is therefore an international waterway within the meaning of AIIB's Operational Policy on International Relations. Consequently, AIIB's Operational Policy on International Relations applies to this Project. In light of the proposed Project's design and location, the Project should have minimal or no effect on other riparian water user.

Annex 3: Economic and Financial Analysis

I. Project Economic Analysis

A. Methodology

1. The economic analysis was done based on the incremental benefits and costs of the Project, and the Project's economic viability was determined through the assessment of the expected economic return for the Project, evaluated in terms of the net present value (NPV) and economic internal rate of return (EIRR) over a period of 40 years, with a 7-year implementation period. The economic costs and benefits of the Project were calculated based on real economic prices and exclusive of taxes and duties that might be applicable to the Project. The economic prices were expressed in US dollars at the border price level using a shadow exchange rate factor of 1.07 and a conversion factor of 0.77 for the unskilled labor portion of local currency costs. A sensitivity analysis was conducted to ascertain the robustness of the analysis.

B. Electricity Sector Overview

2. Pakistan has been going through acute power deficits for almost a decade. As of June 30, 2020, the country's total installed power generating capacity is 38,719 MW with an operating capacity of 27,780 MW and peak demand of 26,252 MW. The country's power network is constrained and inefficient with total system losses estimated at 20.3% including distribution losses varying from 8.7% to 38.7%. The inadequacy and lack of reliability of the existing supply and overloading in the system during high demand resulted in routine load shedding of up to 12 hours in rural areas and provinces.

3. The power generation plants of Pakistan comprise of hydropower plants, thermal power plants, nuclear power plants, renewables including wind, solar and bagasse/biomass power plants. Besides local generation, Pakistan also imports electric power from Iran. Thermal generation represents 64% of total installed capacity operating on different fuels, including gas, fuel oil, liquefied natural gas, and coal.

4. Development of hydropower generation is slow. With a potential to generate up to 60,000 MW (30,000 MW of which is located in KPK province), Pakistan has only been able to install 9,861 MW and its share in electricity generation mix as of June 2020 was 32%.

5. To address the challenges of increasing demand, which is projected to grow by 4.2% annually during 2020-2030, high system losses and lack of reliability, the federal and provincial governments have been working towards improving reliability of electricity supply and diversifying the energy mix by investing in cleaner sources of energy including small and medium hydro generation. A comprehensive package of financial and fiscal incentives is approved by the federal government for the development of hydropower generation under the Power Policy (2002) and Renewable Energy Policy (2006). After the 18th amendment in the Constitution of Pakistan, the provincial governments are delegated with full authority to develop projects of any capacity through private and public investments and adjustments in the regulatory framework. Guided by the KPK Hydropower Policy (2016), PEDO is responsible for hydro power generation development in the region and attracting investments in clean

energy. The total financing requirement for KPK’s hydropower development program is estimated USD11 billion providing additional generation capacity of 4,903 MW over the period of 2020-2035.

6. The power generation capacity in the KPK province is 4,707 MW. In 2019, the provincial consumption was 10,846 GWh or 10% of national consumption. At present, PEDO’s hydropower generation capacity is 161 MW with annual energy output of 611 GWh, contributing to 6% of the total consumption in the KPK province. The remaining demand is supplied by the national grid. Over the past 5 years the reported transmission and distribution losses in the KPK province varied between 32% and 35% versus the regulator’s benchmark of 26%.²⁴ The greatest demand for power in the KPK province comes from residential customers at 60% of total power consumption, followed by industrial at 22%, commercial sector at 7%.

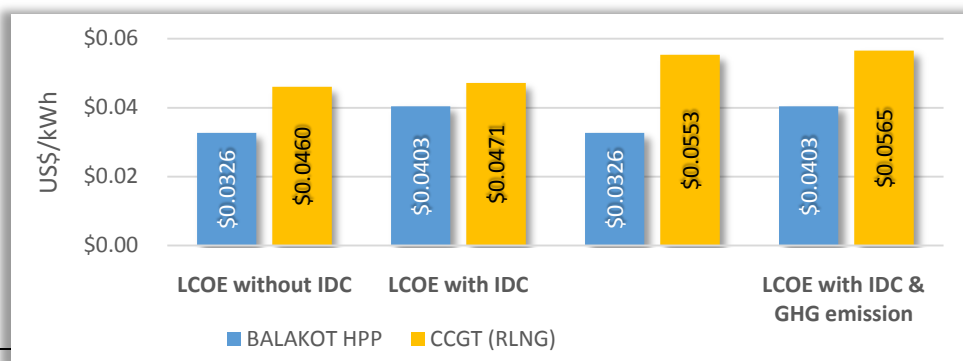
C. Least-cost analysis

7. As natural gas-based power generation is the most prevalent source of energy in Pakistan, the least cost analysis compares the cost of power generation of the Balakot HPP with a combine cycle gas turbine (CCGT) power plant, the most efficient technology for natural gas-based power generation. Economic costs including capital cost, fuel cost, operation and maintenance (O&M) cost, and the social cost of carbon dioxide (CO₂) during the economic life of the CCGT plant of equal capacity were compared to that of the HPP. Analysis showed that the levelized cost of the Balakot HPP is the least cost based on both with and without consideration of the social cost of CO₂ emissions from the CCGT plant.

Table A3.1: Assumptions for levelized cost computation

300MW CCGT plant			Balakot HPP		
Generation capacity	MW	300	Generation capacity	MW	300
Construction period	# of years	2	Construction period	# of years	7
Plant life	# of years	30	Plant life	# of years	80
Plant factor	%	85%	Plant factor	%	45%
Heat rate	MMBtu/MWh	6.2	CAPEX	\$/kW	1,936
CAPEX	USD/kW	1,000	O&M	% of CAPEX	2.5%
Fixed O&M	USD/kW	12.87	Discount rate	%	6.2%
Variable O&M	USD/MWh	2.94			
Fuel cost (RLNG)	USD/MMBtu	5.8508			
Emission factor		53.06			
Discount rate		6.2%			

Figure A3.1: Levelized costs of Balakot HPP and a 300MW CCGT plant



²⁴ NEPRA, State of Industry Report 2020

D. Project costs

8. The Project's costs include: (i) project capital costs for hydromechanical and electromechanical equipment, transmission system and civil works, (ii) land acquisition, (iii) project management costs, and (iv) O&M costs. The costs do not include interest during construction or any contingencies for the expected price inflation.

9. Incremental O&M costs are estimated at 2.5% of the total capital cost of the Project. It is assumed that in order to maintain the generation capacity, a major overhaul is planned in every 6th year after commercial operations estimated at 2.5% of the project cost.

E. Project benefits

10. The main economic benefits of the Project are: (a) reduction in avoided cost of generation from backup diesel generators used by consumers to ensure uninterrupted power supply, (b) incremental supply of electricity to meet the growing electricity demand, and (c) reduction of CO₂ emissions valued at the social cost of carbon.

11. Balakot HPP's net output after own electricity consumptions of 1.76% of gross output and transmission and distribution losses of 32.94%²⁵ is estimated at 779 GWh/year. It is estimated that the Project will replace the existing diesel-based generation (non-incremental supply) and generate additional supply of electricity (incremental supply). The shares of incremental²⁶ and non-incremental²⁷ supply were approximated based on the estimated price elasticity of electricity demand and the price elasticity²⁸ of supply for Pakistan. It was estimated that 59% of the Project output would result in incremental supply.

12. Non-incremental benefits were valued as resource cost savings from replacement of diesel-based self-generation, estimated at PKR 29/kWh or USD0.18/kWh, by the lower cost generation of Balakot HPP. Incremental benefits were valued based on the consumers' willingness-to-pay (WTP) for electricity. WTP for three consumer categories (residential, commercial, and industrial) was estimated as the average of end-user tariff and resource cost savings. The estimated WTP for residential consumers was PKR 21.0/kWh (USD0.13/kWh), PKR 27.5/kWh (USD0.17/kWh) for commercial consumers, and PKR 23.5/kWh (USD0.15/kWh) for industrial consumers. A weighted WTP of PKR 22.2/kWh (USD0.14/kWh) was used to calculate the value of incremental electricity supply for the country.

Table A3.2: Inputs for the calculation of the cost of diesel generation

Price of diesel generator	PKR 170,000
Max AC output	5.0kW
Fuel tank capacity	28 liters
Continuous operating time with a full tank	10 hours
Diesel price (without sale tax and other	PKR 50.2/liter

²⁵ Average of the past 5 years.

²⁶ $Share_{incremental} = -\varepsilon_d / (-\varepsilon_d + \varepsilon_s)$

²⁷ $Share_{non-incremental} = \varepsilon_s / (-\varepsilon_d + \varepsilon_s)$

²⁸ $\varepsilon_d = -0.81; \varepsilon_s = 0.56$

levies)	
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13. The Project is estimated to lead to reduction of 572,643 ton of CO₂ emission with an annual reduction of 2% to account for improvement in grid emission during the economic life of the Project. Environmental benefits are valued at the mid-point²⁹ of high and low estimates of the social cost of carbon as per World Bank's Guidance note on shadow price of carbon in economic analysis.³⁰

14. The stream of economic costs and benefits was discounted at the social opportunity cost of the capital, which was assumed to equal to 6.2%³¹. The choice of the discount rate is driven by the conservative assumption that the average real GDP per capita will grow at an average annual rate of 3.1% during the useful economic life of the Project and the assumed elasticity of marginal utility of consumption of 2.

15. **Results.** The economic analysis of the Project yielded an economic NPV of USD545.2 million and EIRR of 12.1% exclusive of the social cost of avoided GHG emissions and an economic NPV of USD952.7 million and EIRR of 15.3% inclusive of the social cost of avoided GHG emissions.

16. **Sensitivity analysis.** Sensitivity analysis was conducted to assess the robustness of the project economic returns to changes in the main evaluation variables, presented in the Table A3.3. The results of the sensitivity analysis suggest that the project is economically robust even in case of substantial variation of main variables that affect its economic viability.

Table A3.3: Sensitivity analysis for the economic evaluation of the Project

Scenarios	NPV without the social cost of emissions (USD million)	NPV with the social cost of emissions (USD million)	EIRR without the social cost of emissions (USD million)	EIRR with the social cost of emissions (USD million)
Base case	545.2	952.7	12.1%	15.3%
(a) 20% higher investment cost	452.0	859.5	10.5%	13.5%
(b) 20% less electricity output	311.0	718.5	9.8%	13.5%
(c) 1-year delay in construction	480.3	870.3	11.1%	14.0%
(d) 20% lower WTP	422.1	829.6	10.9%	14.4%

Table A3.4: Project economic costs and benefits

Year	Costs		Benefits			Net benefits
	Capital	O&M	Avoided cost of electricity supply from diesel generators	Incremental supply	CO ₂ emission reduction	
	USD million	USD million	USD million	USD million	USD million	USD million
2021	151.00	-	-	-	-	(151.00)

²⁹ Starting at USD60 per ton of CO₂ with an annual increase of 2.25%.

³⁰ [Guidance note on shadow price of carbon in economic analysis](#), The World Bank, Nov 12, 2017.

³¹ Using the Ramsey formula for the discount rate.

Year	Costs		Benefits			Net benefits
	Capital	O&M	Avoided cost of electricity supply from diesel generators	Incremental supply	CO2 emission reduction	
	USD million	USD million	USD million	USD million	USD million	
2022	34.85	-	-	-	-	(34.85)
2023	58.08	-	-	-	-	(58.08)
2024	69.70	-	-	-	-	(69.70)
2025	133.58	-	-	-	-	(133.58)
2026	69.70	-	-	-	-	(69.70)
2027	63.89	-	-	-	-	(63.89)
2028	-	14.52	57.47	63.67	41.07	147.69
2029	-	14.52	57.47	63.67	41.16	147.77
2030	-	14.52	57.47	63.67	41.25	147.86
2031	-	14.52	57.47	63.67	41.33	147.95
2032	-	14.52	57.47	63.67	41.42	148.03
2033	-	29.04	57.47	63.67	41.51	133.60
2034	-	14.52	57.47	63.67	41.60	148.21
2035	-	14.52	57.47	63.67	41.69	148.30
2036	-	14.52	57.47	63.67	41.77	148.38
2037	-	14.52	57.47	63.67	41.86	148.47
2038	-	14.52	57.47	63.67	41.95	148.56
2039	-	29.04	57.47	63.67	42.04	134.13
2040	-	14.52	57.47	63.67	42.13	148.74
2041	-	14.52	57.47	63.67	42.22	148.83
2042	-	14.52	57.47	63.67	42.31	148.92
2043	-	14.52	57.47	63.67	42.40	149.01
2044	-	14.52	57.47	63.67	42.49	149.10
2045	-	29.04	57.47	63.67	42.57	134.67
2046	-	14.52	57.47	63.67	42.66	149.28
2047	-	14.52	57.47	63.67	42.76	149.37
2048	-	14.52	57.47	63.67	42.85	149.46
2049	-	14.52	57.47	63.67	42.94	149.55
2050	-	14.52	57.47	63.67	43.03	149.64
2051	-	29.04	57.47	63.67	43.12	135.21
2052	-	14.52	57.47	63.67	43.21	149.82
2053	-	14.52	57.47	63.67	43.30	149.91
2054	-	14.52	57.47	63.67	43.39	150.00
2055	-	14.52	57.47	63.67	43.48	150.09
2056	-	14.52	57.47	63.67	43.58	150.19
2057	-	29.04	57.47	63.67	43.67	135.76
2058	-	14.52	57.47	63.67	43.76	150.37
2059	-	14.52	57.47	63.67	43.85	150.46
2060	-	14.52	57.47	63.67	43.95	150.56
2061	-	14.52	57.47	63.67	44.04	150.65
2062	-	14.52	57.47	63.67	44.13	150.74
2063	-	29.04	57.47	63.67	44.22	136.32
2064	-	14.52	57.47	63.67	44.32	150.93
2065	-	14.52	57.47	63.67	44.41	151.02
2066	-	14.52	57.47	63.67	44.51	151.12
2067	-	14.52	57.47	63.67	44.60	151.21

II. Project Financial Analysis

A. Methodology

17. The financial analysis was conducted in 2019 constant prices by estimating the financial costs and benefits associated with the project over a period of 40 years, with a 7-year implementation period. Taxes and duties are applied accordingly.

B. Financial costs

18. The financial costs of the Project includes: (i) EPC costs for hydromechanical and electromechanical equipment, transmission system and civil works, (ii) land acquisition, (iii) project management costs, (iv) O&M costs, and (v) water use charges under Water Use Agreement with KPK provincial government. The costs include interest during construction and other financial charges.

C. Financial benefits

19. Financial benefits of the Project are the revenue from the sales of electricity at the tariff for Balakot HPP calculated following the methodology established by NEPRA. The average tariff during and after the debt service period were estimated at PKR11.3 (\$0.070/kWh) and PKR7.2(\$0.045/kWh) with a levelized tariff of PKR10.8 (\$0.067/kWh).

D. Weighted average cost of capital (WACC)

20. The streams of financial costs and benefits were discounted at the project's weighted average cost of capital of 1.28% estimated based on indicative terms of ADB and AIIB loans. ADB loan is from ordinary capital resources (OCR) at 6-month LIBOR plus a contractual spread of 50 basis points and a maturity premium of 20 basis points for a 27-year maturity, including a 7-year grace period. The AIIB loan is a 22-year loan with a 7-year grace period priced at 6-month LIBOR plus a contractual spread of 50 basis points and a maturity premium of 50 basis. To approximate the cost of ADB and AIIB loans over the life of the project, 30-year LIBOR swap rate was used. Table A3.5 summarizes the cost of funding respectively weighted, and adjusted for inflation, according to the standard WACC derivation method.

21. **Results.** The financial analysis of the project yielded a financial NPV of \$628.1 million and FIRR of 5.5%, which is higher than the project WACC of 1.28%, supporting the viability of the project.

22. **Sensitivity analysis.** Sensitivity analysis was conducted to assess the robustness of the estimated Project's financial returns to changes in the main evaluation variables, presented in Table A3.6. The results of the sensitivity analysis suggest that the Project is financially robust even in case of substantial variation of main variables that affect its viability.

Table A3.5: Calculation of real weighted average cost of capital

		Financial component		
		ADB OCR Loan	AIIB Loan	PEDO Equity
1	Weight	39.7%	37.1%	23.2%
2	Nominal cost	2.08%	2.38%	17.4% ³²

³² Pakistan Investment Bond (PIB) rate for 20-year maturity is 10.75% as per latest auction held on 20th February 2019 (same is used as PEDO Cost of Equity) (<https://www.sbp.org.pk/ecodata/Auction-Investment.pdf>). Rate of Cash development loan by Federal government to Provincial government is assumed as Project Risk of 6.62% (http://www.finance.gov.pk/circulars/circular_25012019.pdf)

		Financial component		
		ADB OCR Loan	AIIB Loan	PEDO Equity
3	Corporate tax rate	29.0%	29.0%	0%
4	Tax adjusted nominal rate	1.48%	1.69%	17.4%
5	Inflation rate	1.76%	1.76%	10.58%
6	Real cost	-0.28%	-0.07%	6.14%
	WACC (real)			1.28%

Table A3.6: Sensitivity analysis for the Project financial appraisal

Scenarios	NPV (USD million)	FIRR (USD million)
Base case	628.1	5.5%
(a) 20% higher investment cost	491.7	4.2%
(b) 20% less revenue	258.1	3.2%
(c) 1-year delay in construction	567.2	4.9%

Table A3.7: Project financial costs and benefits

Year	Capital expenditure	Operating outflows	Revenue	Net benefits
	USD million	USD million	USD million	USD million
2021	136.20	-	-	(136.20)
2022	75.60	-	-	(75.60)
2023	96.70	-	-	(96.70)
2024	85.70	-	-	(85.70)
2025	163.50	-	-	(163.50)
2026	77.20	-	-	(77.20)
2027	90.80	-	-	(90.80)
2028	-	19.81	89.11	69.30
2029	-	19.81	88.76	68.95
2030	-	19.81	88.41	68.60
2031	-	19.81	88.06	68.25
2032	-	19.81	87.71	67.90
2033	-	36.54	87.36	50.82
2034	-	19.81	87.01	67.20
2035	-	19.81	86.66	66.85
2036	-	19.81	86.31	66.50
2037	-	19.81	85.96	66.15
2038	-	19.81	85.61	65.80
2039	-	36.54	85.26	48.73
2040	-	19.81	84.91	65.11
2041	-	19.81	84.56	64.76
2042	-	19.81	84.21	64.41
2043	-	19.81	66.67	46.87
2044	-	19.81	66.54	46.73
2045	-	36.54	66.40	29.87
2046	-	19.81	66.27	46.46
2047	-	19.81	66.13	46.33
2048	-	19.81	51.81	32.00
2049	-	19.81	51.81	32.00
2050	-	19.81	51.81	32.00
2051	-	36.54	51.81	15.27
2052	-	19.81	51.81	32.00
2053	-	19.81	51.81	32.00
2054	-	19.81	51.81	32.00
2055	-	19.81	51.81	32.00
2056	-	19.81	51.81	32.00
2057	-	36.54	51.81	15.27

Year	Capital expenditure	Operating outflows	Revenue	Net benefits
	USD million	USD million	USD million	USD million
2058	-	19.81	51.81	32.00
2059	-	19.81	51.81	32.00
2060	-	19.81	51.81	32.00
2061	-	19.81	51.81	32.00
2062	-	19.81	51.81	32.00
2063	-	36.54	51.81	15.27
2064	-	19.81	51.81	32.00
2065	-	19.81	51.81	32.00
2066	-	19.81	51.81	32.00
2067	-	19.81	51.81	32.00

Annex 4: Sovereign Credit Fact Sheet

A. Recent Economic Development

1. Pakistan is a lower-middle-income country with GDP per capita at USD 1,285 and a population of 217 million in 2019.³³ Pakistan's growth steadily increased from 4.1 percent in FY2014 to 5.5 percent in FY2018.³⁴ However, the growth was largely driven by consumption and imports, resulting in a sharp increase in macroeconomic vulnerabilities. In July 2019, the IMF approved a 39-month extended arrangement under the Extended Fund Facility (EFF) for Pakistan for USD 6 billion to help Pakistan undertake fiscal consolidation, achieve market-determined exchange rate, rebuild official reserves and eliminate quasi-fiscal losses in the energy sector. Growth decelerated sharply to 1.9 percent in FY2019, reflecting weaker consumption and investment due to macroeconomic imbalances and policy. Prior to the pandemic, Pakistan's growth was expected to be around 2.4 percent in FY2020. However, the COVID-19 pandemic has resulted in an adverse health impact and strong economic headwinds, causing the economy to shrink by 0.4 percent in FY2020. The disruption in supply chains due to the lockdown contributed significantly to the economic loss. The agriculture sector faced a major blow as Pakistan was affected by the worst locust infestation in over 10 years. Industrial output, led by declines in the mining and large-scale manufacturing sectors prior to the crisis, contracted in FY2020.

2. Despite monetary tightening, inflation increased in FY2020 due to hikes in domestic utility prices, recently introduced taxes, the knock-on impact of currency devaluation, and a rise in food prices. Inflation declined in the fourth quarter of FY2020 due to subdued demand and a sharp decline in oil prices. The central bank reduced its policy rate by a cumulative 625 basis points from March to June 2020 to 7.0% and introduced other measures to support economic recovery including concessional loans for businesses, relaxation of conditions limiting subsidized credit schemes for exporters, and a higher ceiling on banks' lending to SMEs.

3. Fiscal deficit narrowed to around 8 percent of GDP in FY2020, due to gains from fiscal consolidation in the first 9 months of the fiscal year, prior to the COVID-19 crisis. However, the fall in revenue caused by declining economic activity amidst the

³³ The income group classification for fiscal year 2019 is based on World Bank criteria.

³⁴ Data is based on fiscal years. Fiscal year 2018 (FY2018) began on 1 July 2017 and ends on 30 June 2018.

lockdown and increase in fiscal spending to offset the economic impact of COVID-19 pandemic dampened the gains. Pakistan's relief package, worth about 2.5 percent of the GDP in the form of cash transfers, duty exemption, electricity bill payments relief, accelerated procurement of staples, and relief in fuel prices, has dented the fiscal balance. On the revenue side, the government was able to offset the reduction in import duties by reintroducing levies in petroleum products and telecommunication services. Public debt is expected to increase to 87.2 percent of GDP.

5. The current account deficit improved significantly in FY2020, compared to the previous year as the COVID-19 pandemic and currency depreciation curbed imports. Furthermore, low oil prices also helped reduce the import bill. The COVID-19 pandemic also led to exports declining as it impacted external demand. The depreciation of the currency did not help exports to pick up given the slump in global demand. Despite low oil prices, remittances from overseas workers remained healthy, growing by 6.3 percent in FY2020. In April 2020, Pakistan obtained USD 1.386 billion under the IMF's Rapid Financing Instrument to meet the urgent balance of payment needs stemming from the COVID-19 pandemic.

B. Economic Indicators

Selected Macroeconomic Indicators (FY2016-FY2021)

Economic Indicators [#]	FY 2016	FY 2017	FY 2018	FY 2019	FY 2020*	FY 2021*
Real GDP growth	4.6	5.2	5.5	1.9	-0.4	1.0
CPI Inflation (% change, average)	2.9	4.1	3.9	6.7	10.7	8.8
Current account balance (% of GDP)	-1.7	-4.1	-6.3	-4.9	-1.1	-2.5
General government overall balance (% of GDP)	-4.4	-5.8	-6.4	-9.0	-8.0	-6.7
Nominal gross public debt (% of GDP)	67.6	70.0	75.2	85.6	87.2	86.0
Public gross financing needs (% of GDP) ¹	28.5	28.0	33.7	40.0	31.3	29.4
External debt (% of GDP) ¹	26.2	27.4	30.3	37.6	41.3	42.5
Gross external financing need (% of GDP) ¹	4.1	7.1	9.7	9.0	9.3	10.6
Foreign Direct Investment (% of GDP)	0.8	0.9	1.1	0.6	-	-
Gross official reserves (Billions of USD)	18.1	16.1	9.8	7.3	12.1	-
Exchange rate (PKR/USD, EOP)**	104.4	110.4	138.6	158.7	163.2	160.2

Note: # Data based on fiscal years. FY2021 began on 1 July 2020 and will end on 30 June 2021;

*denotes projections. ** FX data from State Bank of Pakistan as of October 29, 2020.

¹ For FY 2021, AIIB Staff Estimates based on IMF data.

Source: IMF Country Report No.18/78, 19/380 and 20/114; IMF World Economic Outlook Oct 2020.

C. Economic Outlook and Risks

6. The economy is expected to recover in FY2021 as effects of depreciation pass through the economy, agriculture output increase, and fiscal stimulus yield result. By the start of FY2021, Pakistan had already re-opened much of the economy and by September 2020, most restrictions including lockdowns of shopping malls, gyms, and restaurants, had been lifted. Similarly, education institutions have also reopened. The lifting of such restrictions is expected to aid the economic rebound. Growth would also

strongly depend on the performance of the service sector, as it accounts for more than half of Pakistan's GDP.

7. Inflation is expected to moderate in FY2021 as the impact of currency devaluation as well as food prices recede. However, the increase in oil prices in late June could reverse the process. Increase in electricity tariff, which is currently under consideration, could also worsen inflation. In addition, locust infestations, like the one seen in FY2020, might also lead to food price shocks.

8. Fiscal balance is projected to improve in FY2021 as effects of COVID-19 are expected to subside. The government has set revenue-mobilization targets on the basis of tax exemption withdrawal, tax concession rationalization and tax base broadening. However, with no new taxes being introduced for FY2021 in the budget, the government's commitment to reduce the fiscal balance, seems ambitious. Going forward, fiscal consolidation efforts could experience a longer aberration as COVID-19 situation demands more government support and dents public revenue. The IMF-supported reform program was bringing Pakistan on track to significantly reduce the fiscal and quasi-fiscal deficit through a multi-year revenue mobilization effort, but the pandemic has delayed the progress and it has now been "paused".

9. Pakistan's debt is assessed to sustainable despite the pandemic, although risks have increased. The increase in borrowing to mitigate the effects of the pandemic is estimated to have driven the general government debt to 87.2 percent of GDP in FY2020 from 85.6 percent in FY2019. Debt is expected to start declining in FY2021 and fall below 70 percent of GDP by FY2025. Key assumption under debt sustainability are that the pandemic shock is temporary, and that the government will remain committed to fiscal prudence, as laid out in the IMF program, and resume consolidation after the crisis has subsided. The authorities are said to be "closely engaged" with the IMF on redesigning the program targets and the steps needed to resume it.

10. The current account deficit is likely to stabilize around 2 percent in FY2021. Exports are expected to rise in FY2021 aided by pickup in global economic activity and increase in competitiveness of Pakistan's exports due to measures taken by the government. An increase in oil prices and domestic economic recovery would propel import growth. Remittances would continue to contain the current account deficit but to a lesser extent than in FY2020 due to layoff of overseas' workers, particularly in the Middle East.

Annex 5: Project Implementation Arrangement

A. Roles and Responsibilities

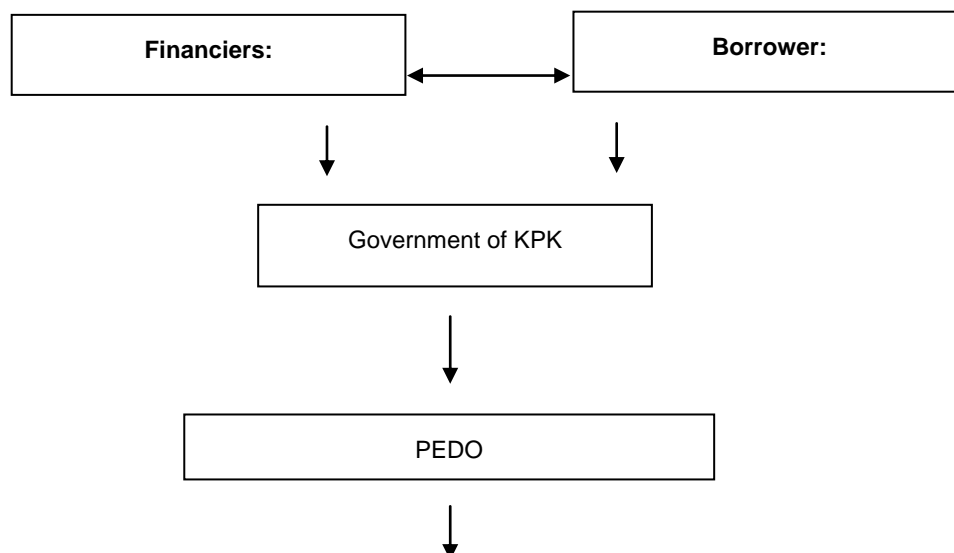
1. The Implementation Entities of the Project are the Energy and Power Department (EPD) of the government of KPK and PEDO. The Roles and Responsibilities during the Project Implementation are summarized below.

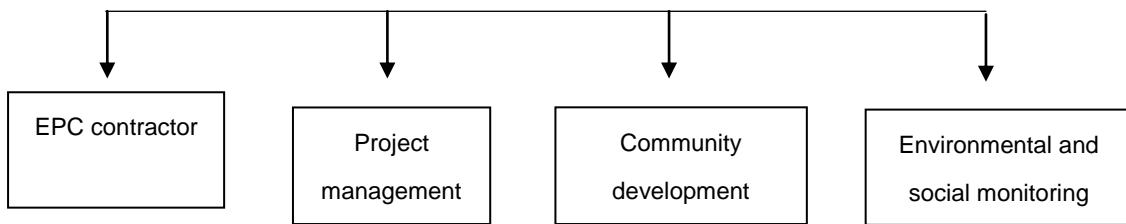
Table A5.1: Project Implementation Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Economic Affairs Division, Ministry of Finance	Borrower
Government of KPK	Sector development and project implementation oversight
Implementation entity – EPD / PEDO	Responsible for project implementation, procurement, contract management, financial management, design approval, monitoring and reporting, submission of withdrawal applications, progress reports, and audit reports to ADB/AIIB.
Project Management Unit (PMU) in PEDO	Responsible for daily Project implementation activities, including procuring and supervising implementation of the EPC contract for the hydropower plant, with assistance from the PMC. The PMU will be headed by a Project Director with offices in Peshawar and near dam site.
Asian Development Bank Asian Infrastructure Investment Bank	Financiers, providing financing and implementation support when necessary

EPC = engineering, procurement, and construction; PMU = project management unit.

B. Project Organization





C. Disbursement

(a) Allocation and Withdrawal of Loan Proceeds – AIIB Portion

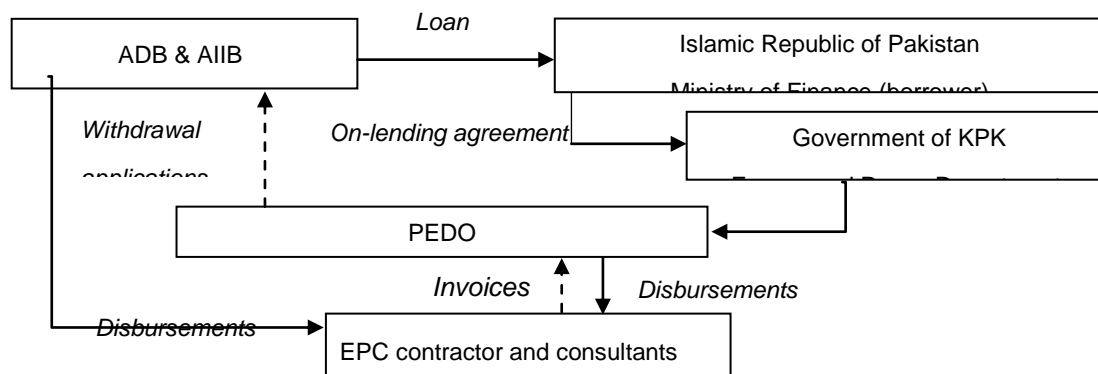
No.	Category Item	Total Amount Allocated for AIIB Financing	AIIB Financing Basis
			Percentage of AIIB Financing from the Loan Account
1	Goods, Works, and Services for the Project ^a	USD249,375,000	100% of AIIB portion due*
2	Front-end Fee	USD625,000	
	Total	USD250,000,000	

*Exclusive of taxes and duties imposed within the territory of the Borrower.

a For category 1, which will be jointly financed by ADB and AIIB, the indicated percentage and basis for withdrawal from the ADB loan account is based on the fact that both loans will not be made effective at the same time. During the time when only ADB loan is effective, ADB will finance 100% (exclusive of taxes and duties) of this category. Once AIIB loan has been declared effective, the respective percentages for ADB and AIIB financing will be revised, based on the remaining amounts to be financed for these two categories at the date of effectiveness of AIIB loan.

Source: ADB and AIIB Estimate.

(b) Fund Flow Diagram



Note: Consultants include for project management, external resettlement monitoring, and community development nongovernment organization.

Source: ADB and AIIB.

(c) Disbursement Arrangement

2. Loan proceeds will be disbursed following AIIB's Loan Disbursement Guideline, and detailed arrangements agreed upon between the government, ADB and AIIB. Online training on disbursement policies and procedures will be provided. The PMU is encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

3. The Project will primarily use direct payment and commitment procedures for the EPC contract. Reimbursement method may be used when necessary. All invoices will be financed by ADB, AIIB and EPD on a pro-rata basis determined by the ratio in the loan agreements. The PMU in PEDO, assisted by the PMC, will prepare disbursement projections; and prepare and send withdrawal applications to ADB for the ADB-financed portions, and AIIB for the AIIB-financed portions or as determined in the co-financing agreement between ADB and AIIB.

4. Before submitting the first withdrawal application, the Economic Affairs Division should submit to ADB and AIIB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government (borrower), together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is stipulated in ADB's Loan Disbursement Handbook (2017, as amended from time to time). Individual payments below such amount should be paid by PEDO and subsequently claimed to ADB and AIIB through reimbursement, unless otherwise accepted by ADB and AIIB. The borrower should ensure sufficient category and contract balances before requesting disbursements.

5. AIIB funds will be partially administered by ADB, and the arrangements for submission of withdrawal application will be finalized during the co-lenders agreement negotiations.

6. For the EPC Contract, which will be jointly financed by ADB and AIIB, the indicated percentage and basis for withdrawal from the ADB loan account is based on the fact that both loans will not be made effective at the same time. During the time

when only ADB loan is effective, ADB will finance 100% (exclusive of taxes and duties) of this category. Once AIIB loan has been declared effective, the respective percentages for ADB and AIIB financing will be revised, based on the remaining amounts to be financed for these two categories at the date of effectiveness of AIIB loan.

(d) Disbursement Arrangements for Counterpart Fund

7. No withdrawals shall be made from the loan account for the turnkey contract until a loan agreement between AIIB and the borrower, and a related on-lending agreement between the borrower and KPK, both for the purposes of the Project and in form and substance satisfactory to ADB and AIIB, shall have been duly executed and become effective in accordance with their terms.

8. KPK (via EPD) will ensure necessary budgetary allocations for their counterpart funds to be disbursed by PEDO. The PMU will receive and process the invoices from the EPC contractor and consultants. Before making payments, PEDO as withholding agent, will deduct the applicable tax following sections 151 and 153 of the Income Tax Ordinance (2001, as amended from time to time), and deposit the tax to the government treasury. The applicable tax rates in Pakistan are 10% for services, and 4% for goods.

D. Monitoring

9. **Project performance monitoring.** PEDO, with the PMU, will review overall project performance against the Project outcome and output indicators in the results framework, as well as financial and physical progress (including contract awards and disbursements). PEDO will submit quarterly progress reports to EPD and ADB/AIIB by 20 April, 20 July, 20 October, and 20 January every year during project implementation.

11. **Covenant compliance monitoring.** Loan covenants—policy, financial, economic, environmental, and others—will be monitored through the semi-annual progress reports due by 20 July and 20 January every year, and Project review missions.

12. **Safeguards monitoring.** The PMU, with the PMC's support, will oversee the EMP implementation. They will submit semi-annual environmental monitoring reports to ADB and AIIB within 1 month of the reporting period during construction. Likewise, the PMU will submit semi-annual internal and external resettlement monitoring reports to ADB and follow up on issues and recommendations.

13. **Gender and social dimensions monitoring.** The progress in GAP implementation will be included in the quarterly progress reports with the PMC's support. A social and gender Specialist at the PMU level will report on progress against the GAP indicators, monitor interventions carried out under the community development program, and document the social and gender good practices and impacts.

E. Implementation Support

14. **Inception mission.** ADB and AIIB will field an inception mission before loan effectiveness to: (i) re-establish the working relationship with EPD of KPK and PEDO; (ii) reconfirm the Project implementation schedule, and contract award and disbursement projections; and (iii) finalize the detailed disbursement arrangements.

15. **Review missions.** ADB and AIIB will field semi-annual review missions to check overall project implementation, including the progress status against the Project monitoring indicators, covenant compliance, safeguards, gender and social dimensions, and utilization of both loans and government counterpart funds. The Project implementation schedule will be updated together with PEDO when necessary.

16. **Midterm review mission.** ADB and AIIB will field a midterm review mission within 3 years after loan effectiveness to primarily assess whether the Project objective is still likely to be achieved, as well as the contract execution and disbursement projections.

17. **Project completion review mission.** EPD of KPK will submit its Project Completion Report to ADB and AIIB within six months of physical completion of the Project. AIIB will prepare its own project completion report if needed.

F. Reporting

18. PEDO will provide ADB, AIIB and EPD of KPK with the (i) quarterly progress reports in a format covering all indicators agreed; (ii) consolidated annual progress reports (in lieu of the quarterly progress reports), covering (a) progress achieved, (b) key implementation issues and solutions, (c) updated procurement plan, and (d) updated implementation plan for the next 12 months; (iii) semi-annual progress reports, including compliance with loan covenants, financial management action plan implementation, and ES safeguard monitoring reports; and (iv) project completion report. Project accounts and Audited Project Financial Statement together with auditor's report, should be submitted to ADB and AIIB timely and reviewed properly.