



Report and Recommendation of the President to the Board of Directors

Project Number: 47024-004
November 2016

Proposed Loan Islamic Republic of Pakistan: Pehur High Level Canal Extension Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 13 October 2016)

Currency unit	–	Pakistan rupee/s (PRe/PRs)
PRe1.00	=	\$0.00956
\$1.00	=	PRs104.57

ABBREVIATIONS

ADB	–	Asian Development Bank
CDS	–	Comprehensive Development Strategy
EIA	–	environmental impact assessment
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
FFS	–	farmer field school
IAA	–	Indus Ambar area
IBIS	–	Indus Basin irrigation system
JBMA	–	Janda Boka–Malikabad area
KPAD	–	Khyber Pakhtunkhwa Agriculture Department
KPID	–	Khyber Pakhtunkhwa Irrigation Department
KPP	–	Khyber Pakhtunkhwa Province
LARP	–	land acquisition and resettlement plan
M&E	–	monitoring and evaluation
O&M	–	operation and maintenance
PAM	–	project administration manual
PHLC	–	Pehur High Level Canal
PHLCE	–	Pehur High Level Canal Extension
PIC	–	project implementation consultant
PMO	–	project management office
TA	–	technical assistance
WUA	–	water users' association

WEIGHTS AND MEASURES

ha	–	hectare
km	–	kilometer
m ³	–	cubic meter
t	–	ton

NOTES

- (i) The fiscal year (FY) of the Government of Pakistan ends on 30 June. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g. FY2017 ends on 30 June 2017.
- (ii) In this report, "\$" refers to US dollars.

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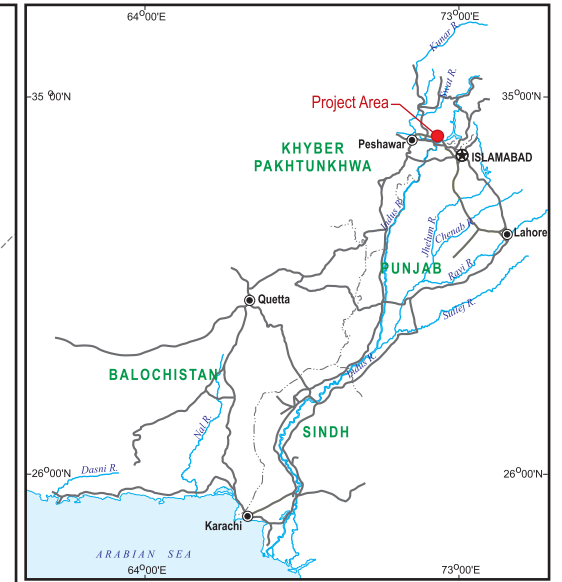
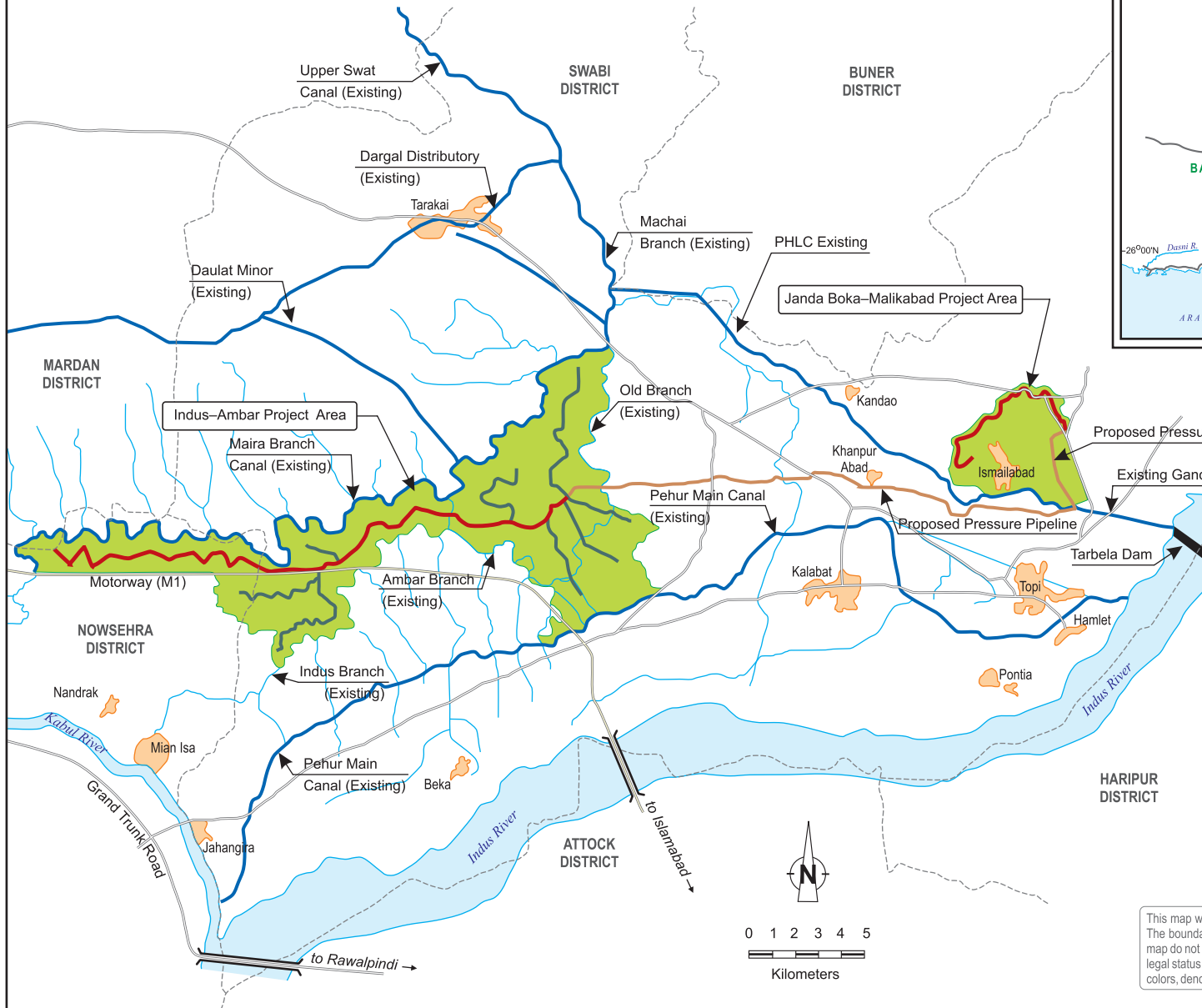
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PROJECT AT A GLANCE

1. Basic Data		Project Number: 47024-004	
Project Name	Pehur High Level Canal Extension Project (formerly Khyber Pakhtunkhwa Water Resources Project)	Department /Division	CWRD/CWER
Country Borrower	Pakistan Ministry of Finance	Executing Agency	Khyber Pakhtunkhwa Irrigation Department
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Agriculture, natural resources and rural development	Agricultural production Irrigation		7.78 78.63
		Total	86.41
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG) Environmentally sustainable growth (ESG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive Global and regional transboundary environmental concerns	Adaptation (\$ million) Climate Change impact on the Project	3.57 High
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Institutional development	Some gender elements (SGE)	✓
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting Household Targeting SDG Targeting SDG Goals	Yes No Yes SDG2, SDG6, SDG8	Rural	High
6. Risk Categorization:	Complex		
7. Safeguard Categorization	Environment: A Involuntary Resettlement: A Indigenous Peoples: C		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		86.41	
Sovereign Sector loan: Ordinary capital resources		86.41	
Cofinancing		0.00	
None		0.00	
Counterpart		10.20	
Government		10.20	
Total		96.61	
9. Effective Development Cooperation			
Use of country procurement systems		No	
Use of country public financial management systems		Yes	

PAKISTAN PEHUR HIGH-LEVEL CANAL EXTENSION PROJECT



- National Capital
 - Provincial Capital
 - City/Town
 - Town/Villages
 - Command Area under PHLCE
 - Bridge
 - Road
 - River
 - Proposed Canal
 - Proposed Distributory and Minors
 - Proposed Pressure Pipeline
 - Existing Main Canal
 - Existing Minors
 - District Boundary
- Boundaries are not necessarily authoritative.
PHLCE = Pehur High-Level Canal Extension

This map was produced by the cartography unit of the Asian Development Bank. The boundaries, colors, denominations, and any other information shown on this map do not imply, on the part of the Asian Development Bank, any judgment on the legal status of any territory, or any endorsement or acceptance of such boundaries, colors, denominations, or information.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to the Islamic Republic of Pakistan for the Pehur High Level Canal Extension (PHLCE) Project.¹

2. The proposed project will develop a new irrigated area of over 8,727 hectares (ha) in Swabi and Nowshera districts located in the Khyber Pakhtunkhwa Province (KPP). Water for agriculture in the project area currently depends on rainfall. As a result, cropping intensity and crop yields are low. The project will finance the extension of Pehur High Level Canal (PHLC) irrigation system, which will become a part of the Indus Basin irrigation system (IBIS). This will increase agriculture production by increasing availability of water, improving water-use efficiency and farm management capacity in the project area. The population of the project area is about 75,000.²

II. THE PROJECT

A. Rationale

3. **Sector overview.** Improved water management and agricultural productivity are fundamental to continued economic growth in KPP. Over 37% of people are engaged in the agriculture sector, which contributes 18% to provincial gross domestic product.³ Livestock and agriculture together provide livelihoods to 83% of the people living in the rural areas.⁴ While the country's poverty level has declined significantly, the proportion of population earning less than \$2.0 per day was still 51% in 2011.⁵ The poverty in KPP is more serious than at the national level. The poverty headcount ratio in KPP was 29% in fiscal year (FY) 2006; 7% higher than the national average. However, the Government of KPP's own estimate for FY2009 was far higher at 39%.⁶ Food security is a continuous concern in KPP. Of the 24 districts, four districts are classified as in *crisis* and 10 districts are classified as *stressed* as of May 2015.⁷

4. To reduce poverty, ensure food security, and for the gross national product to reach its target of 7%–8% annual rate of growth, agriculture sector needs to grow at least 5% per annum.⁸ The agriculture sector, however, has been performing below its potential. Average annual growth rate over the 2003–2013 period was 3.3%.

5. IBIS is the lifeline of Pakistan's agriculture. Crop water demand in IBIS has increased dramatically as a result of higher cropping intensity and cultivation of high water-consuming crops. Key constraints in agriculture in IBIS include insufficient water availability, inefficient use

¹ The design and monitoring framework is in Appendix 1.

² The Asian Development Bank (ADB) provided project preparatory technical assistance (TA) for Khyber Pakhtunkhwa Water Resources Sector Project (TA 8448-PAK). The PHLCE project, which was identified as one of co-subprojects under the TA was unbundled to process as a stand-alone project.

³ Government of KPP, Bureau of Statistics, Planning & Development Department. 2015. *Socio-Economic Indicators of Khyber Pakhtunkhwa*. Peshawar.

⁴ Government of KPP. 2014. *Integrated Development Strategy (2014–2018)*. Peshawar.

⁵ World Bank. 2014. *World Development Indicators*. <http://data.worldbank.org/data-catalog/world-development-indicators>.

⁶ United Nations Development Programme. 2011. *Khyber Pakhtunkhwa Millennium Development Goals*. Peshawar. The estimate is based on the official poverty line, consistent with the attainment of 2,350 calories per adult equivalent per day. Official poverty estimates by province have not been released since FY2006. The Ministry of Finance estimated the national average poverty at 12.4% in FY2011 in its Economic Survey 2013–2014.

⁷ World Food Programme. *Pakistan Food Security Bulletin in May 2015*. Islamabad. The result is based on its developed Integrated Food Security Phase Classification.

⁸ Ministry of National Food Security and Research. Agriculture and Food Security Policy. Islamabad (draft). The Government of KPP also aims to achieve real agricultural growth rate of 5% per year over the next decade according to the Government of KPP's Comprehensive Development Strategy 2010–2017.

of irrigation water, fragmentation of holdings, low crop productivity, post-harvest losses, limited institutional capacity particularly for extension and research, poor condition of irrigation and drainage systems with deficient operation and maintenance (O&M) mainly due to low cost recovery and limited budgetary allocations.

6. About 20% of the country's cultivable land of more than 22.0 million ha is outside IBIS, and approximately 3.24 million ha are rain-fed areas.⁹ The irrigated area in KPP only amounts to about 1.15 million ha of the total cultivable land of 5.73 million ha as of 2013–2014. Large part of cultivable land is rain-fed, exposing a significant proportion of the rural population to weather-induced risks. Without a secure source of water, farming in rain-fed areas often results in low productivity.

7. The cropping pattern in the planned project area constitutes wheat and maize coupled with some pulses and oilseeds under rain-fed conditions. The annual effective rainfall is 680 millimeters. The annual cropping intensity of 52% and crop yields (e.g., 1.38 t/ha for wheat, 1.06 t/ha for maize, and 1.44 t/ha for oilseeds) are much lower than those in PHLC irrigated area (annual cropping intensity of 162%, 2.29 t/ha for wheat, 2.35 t/ha for maize, and 2.0 t/ha for oilseeds).¹⁰ There are a total of 8,630 farms in the project area with an average size of 1.01 ha. Over 84% of the farms are less than 2 ha in size and occupy 52% of the cultivable farmland.¹¹

8. In KPP, opportunities exist to bring an additional 8.3 million ha of arable land under irrigation and improve the water and land productivity by 50%–100%. Construction of small dams and extension of existing irrigation systems in rain-fed areas can develop irrigated agriculture and increase crop yield.¹²

9. **Pehur High Level Canal.** The PHLC project started in 1993 with Asian Development Bank (ADB) financing.¹³ The project realized the full agricultural potential of about 40,300 ha by (i) doubling irrigation supplies to about 35,800 ha; (ii) reclaiming about 8,000 ha of waterlogged land; and (iii) developing irrigation in about 4,310 ha of mainly rain-fed land. Water allocation for a potential extension of the irrigation system for the future was planned at the design stage of the project. The project was successfully completed in 2003.¹⁴

10. **Climate change impacts.** The climate change projections for KPP show that there is likely to be an average increase in precipitation of about 5% to 10%. Similarly, temperatures are also expected to rise by about 3°C on average up to the year 2050. Monsoon rainfall is likely to increase, while in other months (e.g., April–May) rainfall is likely to be less and temperatures will be higher. These changes will adversely affect the rain-fed agriculture. In 10 years, kharif season irrigation supplies could increase as climate change melts glaciers of the upper Indus River basin.¹⁵ However, after approximately 50 years, although it will be beyond the lifespan of

⁹ Government of Pakistan, Bureau of Statistics. 2013. *Agriculture Statistics 2011–2012*. Islamabad.

¹⁰ Department of Agriculture of KPP. 2014. *Crop Statistics Khyber Pakhtunkhwa 2009–2013*. Peshawar; and project preparatory TA consultant's field survey.

¹¹ Pakistan Census Organization. 2010. *Census of Agriculture in 2010(KPP)*. Lahore.

¹² Due to diversion capacity constraint, KPP cannot use its entire allocated share of Indus River flow. The average water withdrawals by KPP from 1999 to 2013 was 6.8 billion cubic meters (m³), which is 0.23 billion m³ less than the allocation.

¹³ ADB. 1993. *Report and Recommendation of the President to the Board of Directors: Proposed Modality(ies) to the Islamic Republic of Pakistan for the Pehur High Level Canal Project*. Manila.

¹⁴ ADB. 2005. *Project Completion Report: Pehur High Level Canal Project in Pakistan*. Manila. The project was rated *relevant, efficacious, efficient, and less likely sustainable* despite delays of project completion and reduced economic returns mainly because of delays in achieving full agricultural development.

¹⁵ *Kharif* is the summer crop-growing season from about April to September. *Rabi* is the winter crop-growing season from about October to March.

the investment assets of the proposed project, shortages will become more severe as the glaciers are depleted and higher temperatures result in increased evaporation from the storage reservoirs and due to significantly higher crop water requirements.¹⁶

11. The proposed project is consistent with ADB's country partnership strategy for Pakistan, 2015–2019, which prioritizes the promotion of better water resource management and irrigation to improve agricultural productivity, increase farm incomes, and ensure food security.¹⁷ The proposed project is included in ADB's country operations business plan for Pakistan, 2016–2018.¹⁸ The KPP's Comprehensive Development Strategy (CDS), 2010–2017 targets new cultivable land of 70,000 ha to meet the food demand of KPP's growing population and suggests various measures in both water-supply and water-use to address issues in the agriculture sector.¹⁹

12. The poor security situation in KPP is a serious problem and risk for project implementation. One of ADB-financed projects in KPP faced unusually harsh security problems.²⁰ Security concerns of this project have been addressed during its preparation. About 96% of the project areas are located in the Swabi district which has a lower security risk.²¹

13. The proposed project reflects the lessons learned from the PHLC project: (i) insufficient consultant inputs hampered smooth project implementation; and (ii) complicated implementation arrangements caused delays in the delivery of project physical outputs and resulted in major gaps in ownership and operations of the project causing unnecessary cost overruns and further delays at loan closing.

14. Irrigation water in the PHLCE system will be released from the existing Gandaf Tunnel at Tarbela Dam. It will then be carried to farmlands through two pressure pipelines, leading to two main canals, distributary canals, minors, and watercourses.

B. Impacts and Outcome

15. The project impacts, which are aligned with CDS (footnote 19) will be the following: (i) increased irrigated area, and (ii) ensured food security for 2010–2020. The outcome will be increased agricultural production in the project areas.

C. Outputs

16. **Output 1: Available agricultural water in project areas increased.** This includes the following components: (i) construction of the irrigation system in the Janda Boka–Malikabad area (JBMA), (ii) construction of the irrigation system in the Indus Ambar area (IAA), and (iii) developments of efficient monitoring and evaluation (M&E) system and sustainable PHLCE O&M plan and its guidelines.

¹⁶ Climate Change Risk Vulnerability and Adaptation Assessment Report (accessible from the list of linked documents in Appendix 2).

¹⁷ ADB. 2015. *Country Partnership Strategy: Pakistan, 2015–2019*. Manila.

¹⁸ ADB. 2015. *Country Operations Business Plan: Pakistan, 2016–2018*. Manila.

¹⁹ Government of KPP. 2009. *Comprehensive Development Strategy 2010–2017*. Peshawar.

²⁰ ADB. 2010. *Project Completion Report: North-West Frontier Province Barani Area Development Project, Phase II in Pakistan*. Manila. It reports that project offices were blasted; staff members were killed, injured, and kidnapped; and project vehicles and resources were looted.

²¹ As of October 2015, nine districts were rated *very high* or *high security risk* areas according to the United Nations Travel Modality. Swabi is not one of them.

17. The first component will supply gravity irrigation water to 1,316 ha in JBMA, and the second to 7,411 ha in IAA, to transform those areas from rain-fed to irrigated agriculture. These comprise (i) connection with the existing Gandaf Tunnel at Tarbela Dam by constructing two outlets (one for JBMA and another for IAA); (ii) construction of two pressure pipelines (approximately 4 kilometers [km] for JBMA and 24 km for IAA) and associated structures; (iii) construction of two main canals (approximately 11 km for JBMA and 27 km for IAA) with associated structures (e.g., outlets, syphons, drainage crossings, aqueducts, drainage culverts, super passages,²² and bridges); and (iv) construction of one minor and 20 outlets for JBMA,²³ and one distributary, seven minors, and 87 outlets for IAA.

18. The PHLCE's estimated overall irrigation efficiency will be about 65% with a field efficiency of about 75%. The capacity of IAA canals will ensure flexibility to extend the irrigated area of around 1,400 ha in the future, and sufficient canal capacity has been confirmed against the climate change risks anticipated during 2015–2065. The design capacity of drainage channels incorporate the risk of the increase in flood events predicted due to climate change.

19. The third component will develop the M&E system using satellite remote sensing technology to assess irrigation efficiency.²⁴ The staff of the Khyber Pakhtunkhwa Irrigation Department (KPID) and the Khyber Pakhtunkhwa Agriculture Department (KPAD) will be trained to use the system. The system will also help KPAD assess crop-growing, and KPID assess water productivity and abiana with expected collection from farmers more than the average rate of 50%–60% in KPP.²⁵ A guideline and sustainable plan of PHLCE O&M with KPP's committed budget allocation (para.41) will also be developed.

20. **Output 2: Water-use skill and farm management capacity improved in project areas.** This output will further improve agricultural benefits resulting from output 1 and (i) construct watercourses, (ii) form and build capacity of water users' associations (WUAs), and (iii) train farmers for more profitable farming systems and efficient water use skills through demonstration activities and farmer field schools (FFSs).

21. The first component will construct around 106 watercourses (20 in JBMA and 86 in IAA) in cooperation with beneficiaries who will provide land and unskilled labor. The second component will form and train one WUA for each watercourse. A manual will be developed to outline WUA formation and functions, and efficient watercourse O&M.

22. The third component will demonstrate high-efficiency irrigation system and more profitable irrigated farming system. In the first year of its activity, 50 plots will demonstrate more profitable farming system. In the second year, another 50 plots will demonstrate efficient water use skills, such as (i) improved field channel layout and operation at the watercourse level, (ii) practices for improved water application efficiency (e.g., drip irrigation, and laser land levelling), (iii) scheduling irrigation according to crop water requirements, and (iv) other management techniques to optimize water productivity. FFSs will replicate the showcase activities developed in these plots by inviting 2,500 farm households. The potential application of high-efficiency

²² Super passage is hydraulic structure in which the drainage is passing over the irrigation canal.

²³ Minor is the tertiary canal connecting watercourse.

²⁴ The M&E system will be pilot-tested in the Pehur High Level Canal system under the project.

²⁵ Abiana is the irrigation service fee and its assessment is based on expected crop production. The CDS reported the average collection rate and a total KPP abiana-assessment value of PRs340 million in 2007–2008. Collected abiana are to be transferred to the Revenue Department of KPP and all collected revenues from various sectors are redistributed to required expenditures, including O&M budget allocation for KPP irrigation systems.

irrigation systems in some areas with sandy loamy soil will be studied to address potential low water retention capacity in these areas.

D. Investment and Financing Plans

23. The project is estimated to cost \$96.603 million (Table 1).

Table 1: Project Investment Plan

Item	Amount (\$ million) ^a
A. Base Cost^b	
1. Available water for agriculture use increased in project areas	69.283
2. Water-use skill and farm management capacity increased in project areas	6.683
Subtotal (A)	75.966
B. Contingencies^c	13.673
C. Financing Charges During Implementation^d	6.964
Total (A+B+C)	96.603

^a Includes taxes and duties of \$8.992 million to be financed from government resources as a cash contribution. The Asian Development Bank (ADB) will finance taxes and duties for small expenditures. In addition, farmers' contribution is estimated at \$0.353 million under output 2.

^b In end-2015 prices.

^c Physical contingencies computed at 5% for all expenditure accounts given the detailed technical due diligence. Price contingencies computed at 3.9% on foreign exchange costs and 15.4% on local currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest during construction. Interest during construction for the ADB loan has been computed at 5-year United States dollar London interbank offered rate (LIBOR) fixed swap rate corresponding to the implementation period plus an effective contractual spread of 0.5%. Commitment charges for ADB loans are 0.15% per year to be charged on the undisbursed loan amount.

Source: Asian Development Bank estimates.

24. The Government of Pakistan has requested a loan of \$86.405 million from ADB's ordinary capital resources to help finance the project. The loan will have a 25-year term, including a grace period of 5 years, a custom-tailored repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions as set forth in the draft loan and project agreements. Based on this, the average loan maturity is 15.97 years and the maturity premium payable to ADB is 0.10% per annum.

25. The government will contribute \$8.992 million for taxes and duties in the form of cash and \$1.206 million for part of the land acquisition and resettlement costs. The beneficiaries will provide in-kind contribution equivalent to \$0.353 million by providing unskilled labor for the construction of watercourses and for developing and operating demonstration plots. The financing plan is in Table 2 and further detailed in the project administration manual (PAM).²⁶

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (loan)	86.405	89.44
Government	10.198	10.56
Total	96.603	100.00

Note: In addition, farmers' contribution is estimated at \$0.353 million.

Source: Asian Development Bank estimates.

²⁶ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

E. Implementation Arrangements

26. KPID will be the executing agency. It will establish the project management office (PMO) for project implementation. PMO will have direct responsibility for output 1 under the guidance of the project coordinator. KPAD will establish the project implementation office that will be responsible for implementing output 2 under PMO's supervision. Since 2006, KPID has had no experience of implementing a project financed by multilateral financing institutions. Therefore, ADB on behalf of KPID will select the project implementation consultant (PIC) to support PMO with its expected mobilization in the first quarter 2017.²⁷ All funds will be channeled through PMO. A project steering committee will further assist timely implementation. The implementation arrangements are summarized in Table 3 and described in detail in PAM.

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	January 2017–December 2022		
Estimated completion date	December 2022 (physical completion) (loan closing date of June 2023)		
Management			
(i) Oversight body	Project Steering Committee: Chair: Additional Chief secretary of the Planning and Development Department Members: Secretaries of KPID and KPAD, P&DD officials, member of Board of Revenue, project coordinator, project director, one member of district administration, one representative from Swabi district, and team leader of the consultant		
(ii) Executing agency	KPID		
(iii) Implementing agency	KPAD		
(iv) Project management office	21 staff in the Swabi district		
(v) Project implementation office	16 staff in the Swabi district		
Procurement	ICB (works)	1 contract	\$45.45 million
	NCB	4 contracts	\$5.31 million
	Shopping	Multiple	\$0.324 million
Consulting services	QCBS	18 person-months international 796 person-months national	\$5.24 million
Retroactive financing and/or advance contracting	Advance contracting will be used and retroactive financing has been requested for the engagement of the project implementation consultant.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2015, as amended from time to time), and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, ICB = international competitive bidding, KPAD = Khyber Pakhtunkhwa Agriculture Department, KPID = Khyber Pakhtunkhwa Irrigation Department, NCB = national competitive bidding, P&DD = Planning and Development Department, QCBS = quality- and cost-based selection.

Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

27. The project areas were carefully chosen and the pressure pipelines were appropriately designed so that irrigation water can be supplied with gravity to minimize O&M requirement. The project was found to be at high risk because of anticipated climate change impacts. The climate risk and vulnerability were assessed based on the climate change risk simulation using the result of global circulation models. Adaptation measures were incorporated into the project design to reduce the risks resulting from increased flood events.

²⁷ The KPID has been advised that the KPID retains the responsibility for negotiating and signing the contract with the consultant, issuing the notice to proceed, and supervising the consultant's services.

B. Economic and Financial

28. The project is expected to be economically viable in that the overall calculated economic internal rate of return (EIRR) is 16.1% and the economic net present value of the investment is PRs1,602 million at a discount rate of 12%. These robust economic results are expected due to the substantial size of the economic benefit stream resulting from the prudent project design and high agricultural production potential in the project area.²⁸

29. A number of risk variables have been used to conduct a sensitivity analysis. Based on the analysis, the project viability is most sensitive to benefits being delayed by 2 years, by which EIRR would fall to 12.8% just marginally above the benchmark of 12%. The level of decrease at which EIRR would fall below the acceptable 12% level is only 6 years. Therefore, it is essential that the project is implemented as scheduled, and technical and agricultural extension support is provided to project beneficiaries to ensure project benefits are realized on schedule. It is also important to stress that system O&M needs to be carried out appropriately to ensure that the benefits can materialize as estimated.

30. According to CDS, the minimum maintenance requirements of the KPP irrigation systems ranged between PRs600 million and PRs900 million per year from 2003/04 to 2008/09 while the budget allocation in the same period ranged between PRs160 million and PRs300 million only. During financial sustainability assessment in 2016, annual PHLCE O&M requirement was estimated at \$630,000 (PRs66 million). The Government of KPP has assured to allocate adequate resources to fully implement O&M plan to be developed under output 1 after completion of physical works. During the development of O&M plan, adequacy of O&M requirement will be reassessed and reconfirmed.²⁹

C. Governance

31. Weaknesses and risks were identified in using the country's public financial management system in internal control, accounting, procurement management, financial recording and reporting, and external scrutiny and audit. While the financial management risk is rated *medium*, it will be mitigated by various measures, including engagement of accountants in PMO and provision of training on financial reporting and auditing. While the overall project procurement risk is rated *high*, it will be moderate to low after the mitigation measures are in place. KPID's insufficient experience in international competitive bidding and procurement capacity to follow ADB procurement guidelines will remain a challenge. However, only one international competitive bidding will be required which PMO will manage. The PMO's project management capacity, including procurement and financial management, will be strengthened by PIC. In addition, ADB procurement consultant will assist PMO and PIC in timely, efficient and transparent procurement. ADB's Anticorruption Policy (1998, as amended to date) was explained and discussed with the government, KPID, and KPAD. The specific policy requirements and supplementary measures are described in PAM (footnote 26).

²⁸ Economic and Financial Analysis (accessible from the list of linked documents in Appendix 2).

²⁹ O&M fund allocation for the original PHLC system was estimated at PRs31 million; however, it was confirmed during project preparation that the O&M of the system was carried out in a reasonable manner despite only PRs8.6 million being allocated for O&M in 2015. A reasonable O&M was realized with limited funds mainly because the canal design required less O&M and considerably less sediment load along canals, as the source of water is the Tarbela Dam, compared with other systems where water is drawn from rivers.

D. Poverty, Social, and Gender

32. Classified as general intervention, the project will indirectly contribute towards poverty reduction and economic growth for about 75,000 people in the project area. The project will largely benefit the small and poor farmers (para. 7). The PHLCE construction will have significant economic benefits, with increased agricultural productivity, farm incomes, and employment opportunities. The project will give preference to the engagement of local labor in construction work through instructions in contracts and bidding documents. To further maximize the benefits, the project will organize local farmers through WUAs and ensure that there is a mechanism in place for equitable and efficient distribution of water. Farmers' capacity in profitable farming systems will be improved through demonstration activities and FFSs.

33. Based on findings of the gender analysis, women have limited scope to participate as active players in the project. The project is, therefore, classified as *having some gender elements*, which will require gender actions and measures in the project implementation and design. A gender action plan has been prepared to ensure that (i) women's concerns are addressed during the design and construction of the irrigation canals through separate consultations; (ii) provisions are made for the skills development of women farmers in agriculture techniques and efficient on-farm practices; and (iii) gender-responsive resettlement, land acquisition, and compensation mechanisms are in place to facilitate affected women. These activities will be monitored through the project's M&E system.

E. Safeguards

34. **Environment (category A).** The project will draw on available water resources from the Tarbela reservoir and within the existing project water use permits for PHLC, and will have an insignificant impact on overall water resource availability in the project area and in the Tarbela reservoir. The environmental impacts will be restricted to the construction phase and can be managed through environmental mitigation measures provided in the environmental impact assessment (EIA) and the environmental management plan (EMP). Two rounds of community consultations were held during the EIA process. To address community concerns about environmental impacts, a grievance redress mechanism will be established with community focal persons. Due to the large scale of project activities, and since it is a new irrigation scheme, the project is classified as *category A* for environment. EIA has been disclosed on the ADB website on 9 March 2016. PMO will have an environment and social unit and one full-time environment specialist. PIC will have one part-time international, and one full-time national environment specialist, and provide capacity support to PMO. PMO will ensure that the design and construction are carried out in accordance with ADB's Safeguard Policy Statement (2009), the applicable environmental laws and regulations of Pakistan, and EIA and its EMP. KPID will ensure that potential adverse environmental impacts arising from the project are minimized by implementing all the mitigation measures in EMP. Should any change in scope take place, KPID will inform ADB and a due diligence on the environment will be carried out, following ADB's Safeguard Policy Statement. Any unanticipated environmental impacts will be reviewed and a corrective action plan prepared by the contractor for implementation under the PMO's supervision with PIC's assistance.

35. **Involuntary resettlement (category A).** The project is classified as *category A* for involuntary resettlement because approximately 125 households will either be physically displaced or lose 10% or more of their productive assets. Approximately, 219 ha of land will be

acquired under the project.³⁰ More than 400 households are likely to lose land and/or other assets. KPID has endorsed a draft land acquisition and resettlement plan (LARP) prepared by the project preparatory TA consultants based on a preliminary alignment of the irrigation system and consultations with potentially displaced households following ADB's Safeguard Policy Statement. The draft LARP was disclosed on ADB's website on 20 June 2016. Information brochures on the draft LARP in the local language will be disseminated to potential displaced persons. KPID, with support from PIC, will update LARP based on the approved design and alignment after proper notification under Section 4 of the Land Acquisition Act of 1894.

36. Land acquisition and resettlement activities will be managed and implemented by KPID, through PMO, in coordination with the Board of Revenue. Given KPID's limited experience in handling resettlement issues in externally financed projects, the PIC's social safeguard management team will support PMO in developing and maintaining a land acquisition and resettlement database and management information system. The team will also update and implement LARP, including facilitation of possible land swapping and land consolidation. A functioning grievance redress mechanism will be established. Internal monitoring reports will be prepared by PMO and PIC on a semiannual basis. A qualified and experienced external monitoring agency, acceptable to ADB, will verify these internal monitoring reports, identify issues, and recommend corrective measures if needed. All monitoring reports will be disclosed on the ADB website. ADB will also help KPID and PMO conduct the external monitoring of safeguards compliance by recruiting the individual consultants as necessary.

37. **Indigenous peoples (category C).** There are no indigenous peoples in the project area as defined by ADB's Safeguard Policy Statement. No indigenous communities will be affected by the project and, accordingly, no indigenous peoples planning document is required.

F. Risks and Mitigating Measures

38. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.³¹ The integrated benefits and impacts of the project are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Internal control for non-salary expenditure is less effective, internal audit is not effective, and there is a need to strengthen the use of professional audit methods and compliance with International Standards for the Professional Practice in Internal Audit.	Capacity building will be provided to improve internal control. A well-staffed and resourced internal control system will be established in PMO to strengthen internal controls and internal audit environment.
Lack of experience of agency in international competitive bidding contracts.	Capacity building and enhancement through the hiring of consultants to assist PMO in timely, efficient, and transparent procurement.
No dedicated procurement unit and insufficient staff, and no fully functional PMO	Dedicated procurement unit/section with an appropriate number of qualified staff will be set up in PMO.
Increases in agricultural water demand and flood risk due to climate change impact were identified.	Canals were designed with flexibility for further demand and sufficient capacity has been confirmed against the climate change risks. The drainage capacity incorporated the flood risk predicted due to climate change.

PMO = project management office.
Source: Asian Development Bank.

³⁰ Includes 193.51 ha of agricultural land, 5.67 ha of residential land, 11.42 ha barren land, 3.98 ha of hilly area, 2.52 ha village land, and 1.78 ha government land.

³¹ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

IV. ASSURANCES AND CONDITIONS

39. The Government of KPP has assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in PAM and loan documents.

40. The Government of KPP has agreed with ADB on certain covenants for the project, which are set forth in the loan agreement and project agreement.

41. The Government of KPP has assured ADB that, each fiscal year after the construction of PHLCE irrigation system, it will allocate adequate O&M budget, as satisfactory to ADB (including routine and emergency maintenance, but excluding rehabilitation and construction).

V. RECOMMENDATION

42. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of \$86,405,000 to the Islamic Republic of Pakistan for the Pehur High Level Canal Extension Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board.

Takehiko Nakao
President

3 November 2016

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with:			
Irrigated agriculture area increased in KPP, and food security ensured for the decade 2010–2020 in KPP. ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
Outcome Increased agricultural production in the project areas	By December 2023: a. Cropping intensities increased to 151% (2014 baseline: 52%) in total project area of over 8,727 ha b. Crop yield increased by 222% (maize), 139% (oilseeds), 145% (rapes and mustard), and 166% (wheat) (2014 baseline) ^b in total command area	a.–b. KPAD district agricultural statistics through PMO complemented by M&E systems	Increases in agricultural water demand and flood risk due to climate change impact.
Outputs 1. Available agricultural water in project areas increased	By December 2022: 1a. Water availability in IAA (7,411 ha) increased to 119 million m ³ per year (2014 baseline: 51 million m ³) ^c 1b. Water availability in the JBMA (1,316 ha) increased to 20 million m ³ per year (2014 baseline: 9 million m ³) ^c 1c. M&E system using satellite remote-sensing technology to assess irrigation efficiency, crop growing, water productivity, and abiana fully operational (2014 baseline: 0) 1d. A guideline and sustainable plan for PHLCE O&M fully operational (2014 baseline: 0)	1a.–c. PMO and KPID data	Internal control for non-salary expenditure is less effective, internal audit is not effective, and lack of use of professional audit methods and compliance with international standards for internal audit. Lack of experience of agency in international competitive bidding contracts.
2. Water-use skill and farm management capacity improved in project areas	By December 2022, 2a. 100% of project areas fully irrigated (2014 baseline: 0%) 2b. 100% of on-farm irrigation canals fully operated and maintained by WUAs (2014 baseline: 0%)	2a.–d. Project implementation office through PMO and KPAD data	No dedicated procurement unit and insufficient staff, and no fully functional PMO.

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
	<p>2c. Over 4,000 households (about 50% of total estimated number of beneficial households) trained in improved water-use skills (2014 baseline: 0)</p> <p>2d. Over 2,500 households (about 30% of total estimated number of beneficial households) trained in profitable farming system with at least 10% women beneficiaries (2014 baseline: 0)</p>		
<p>Key Activities with Milestones</p> <p>1. Available agricultural water project areas increased</p> <p>1.1 Construct JBMA irrigation system (Q1 2018–Q3 2019).</p> <p>1.2 Construct IAA irrigation system (Q1 2018–Q4 2020).</p> <p>1.3 Develop M&E system for JBMA and IAA irrigation system (Q2 2021).</p> <p>1.4 Complete training of KPID and KPAD staff on the use of the M&E system (Q4 2021).</p> <p>1.5 Complete PHLCE asset inventory (Q4 2020).</p> <p>1.6 Develop a guideline and sustainable plan for PHLCE O&M (Q2 2021).</p> <p>1.7 Complete training to KPID on the use of the rule and O&M plan (Q4 2022).</p> <p>2. Water-use skill and farm management capacity improved in project areas</p> <p>2.1 Establish 20 WUAs in JBMA (Q1 2018–Q1 2019).</p> <p>2.2 Establish 86 WUAs in IAA (Q1 2019–Q3 2020).</p> <p>2.3 Construct 20 watercourses with farmers' participation in JBMA (Q4 2018–Q3 2019).</p> <p>2.4 Construct 86 watercourses with farmers' participation in IAA (Q1 2019–Q4 2020).</p> <p>2.5 Undertake WUAs training for efficient O&M and their organizations (Q1 2018–Q4 2022).</p> <p>2.6 Establish 100 demonstration plots (Q3 2019–Q4 2020).</p> <p>2.7 Conduct farmer field schools and farmers' training in demonstration plots (Q3 2019–Q4 2022).</p> <p>Procurement management</p> <p>3.1 Mobilization of the project implementation consultant (Q1 2017).</p> <p>3.2 Complete detailed engineering design for the major civil works contract (Q3 2017).</p> <p>3.3 Initiation of the bid process of the major civil works contract (Q3 2017).</p> <p>3.4 Contracts for the major civil works contract (Q1 2018).</p>			
<p>Inputs</p> <p>ADB: \$86.405 million (ordinary capital resources loan)</p> <p>Government: \$10.198 million</p> <p>Beneficiaries: \$0.353 million (in-kind)</p>			
<p>Assumptions for Partner Financing not applicable</p>			

ha = hectare, IAA = Indus and Ambar area, JBMA = Janda Boka–Malikabad area, KPAD = Khyber Pakhtunkhwa Agriculture Department, KPID = Khyber Pakhtunkhwa Irrigation Department, M&E = monitoring and evaluation, m³ = cubic meter, O&M = operation and maintenance, PHLCE = Pehur High Level Canal Extension, PMO = project management office, Q = quarter, t = ton, WUA = water users' association.

^a Government of KPP. 2009. *Comprehensive Development Strategy 2010–2017*. Peshawar.

^b Wheat (1.384 t/ha), maize (1.058 t/ha), oilseeds: karif season (1.436 t/ha), and rapeseed and mustard (0.768 t/ha) in 2014.

^c Baseline data include effective rainfall only.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=47024-004-3>

1. Loan Agreement
2. Project Agreement
3. Sector Assessment (Summary): Agriculture, Natural Resources, and Rural Development
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Economic and Financial Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Gender Action Plan
11. Environmental Impact Assessment
12. Land Acquisition and Resettlement Plan
13. Risk Assessment and Risk Management Plan

Supplementary Documents

14. Financial Management Assessment
15. Procurement Risk Assessment
16. Climate Change Risk Vulnerability and Adaptation Assessment Report
17. Detailed Economic and Financial Analysis