

Validation Report
December 2019

Pakistan: Punjab Irrigated Agriculture Investment Program - (Tranches 1 and 4)

Reference Number: PVR-642
Project Numbers: 37231-013
Loan Number: 2299, 2300, and 3351



Raising development impact through evaluation

ABBREVIATIONS

ADB	–	Asian Development Bank
AWB	–	area water board
DMF	–	design and monitoring network
EIRR	–	economic internal rate of return
GDP	–	gross domestic product
LBDC	–	Lower Bari Doab Canal
MFF	–	multitranche financing facility
OFWM	–	on farm water management
PCR	–	project completion report
PIAIP	–	Punjab Irrigated Agriculture Investment Program
PIAPPF	–	Punjab Irrigated Agriculture Project Preparation Facility
PID	–	Punjab Irrigation Department
PIDA	–	Punjab Irrigation and Drainage Authority
PMO	–	project management office
PVR	–	PCR validation report
R&U	–	rehabilitation and upgrading

NOTE

In this report, “\$” refers to United States dollars.

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PROJECT BASIC DATA

Project Number	37231-013	PCR Circulation Date	1 October 2018	
Loan Numbers	2299, 2300, and 3351	PCR Validation Date	Dec 2019	
Project Name	Punjab Irrigated Agriculture Investment Project (Tranches 1 and 4)			
Sector and subsector	Agriculture, Natural Resources and Rural Development	Irrigation		
Strategic agenda	Environmentally sustainable growth Inclusive economic growth			
Safeguard categories	Environment		B	
	Involuntary Resettlement		B	
	Indigenous Peoples		C	
Country	Islamic Republic of Pakistan		Approved (\$ million)	Actual (\$ million)
ADB Financing (\$ million)	ADF: 10.00	Total Project Costs	281.40	280.73
	OCR: 217.80	Loan	227.80	238.64
		Borrower	53.60	42.09
		Beneficiaries		
		Others		
Cofinancier		Total Cofinancing		
Approval Date		Effectiveness Date		
L2299 and 2300 L3351	18 Dec 2006 8 Dec 2015	L2299 and 2300 L3351	20 Sep 2007 13 Mar 2016	24 Aug 2007 11 Jan 2016
Signing Date		Closing Date		
L2299 and 2300 L3351	22 Jun 2007 14 Dec 2015	L2299 and 2300 L3351	30 Sep 2013 30 Jun 2017	30 Sep 2017 30 Sep 2017
Project Officers	B. Panela A. Ali R. Farrukh D. Walton A. Zafar	Location ADB Headquarters ADB Headquarters PRM PRM PRM	From Dec 2006 Mar 2010 Mar 2012 Dec 2013 Oct 2014	To Feb 2010 Feb 2017 Dec 2013 Oct 2014 Sept 2017
IED Review Director Team Leader	N. Subramaniam, IED, Sector and Project Division L.N. Guevara, Senior Evaluation Officer, IESP*			

ADB = Asian Development Bank, ADF = Asian Development Fund, IED = Independent Evaluation Department, OCR=ordinary capital resources, PCR = project completion report, PRM = Pakistan Resident Mission.

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I. PROJECT DESCRIPTION

A. Rationale

1. At project appraisal, irrigated agriculture in the Punjab Province of Pakistan accounted for 28% of the province's gross domestic product (GDP) and employed 54% of its labor force.

Punjab's agricultural GDP was 66% of the nation's agricultural GDP. The Punjab Irrigation Department (PID)¹ is responsible for operation and maintenance (O&M) and management of Punjab's surface irrigation. PID's infrastructure had an estimated replacement value of \$20 billion as of 2006.² Since then, however, that infrastructure had seriously deteriorated due to age, lack of asset management planning, chronic underfunding and ineffective implementation of O&M.³

2. In December 2006, the Asian Development Bank (ADB) approved a \$900 million equivalent multi-tranche financing facility (MFF) for the Punjab Irrigated Agriculture Investment Program (PIAIP) to finance improvements to Punjab's irrigation sector.⁴ At the same time, two loans for tranche 1 totaling \$227.8 million equivalent were approved — \$217.8 million equivalent (¥25.6 billion) from ADB's ordinary capital resources (loan 2299) and \$10 million equivalent from ADB's special fund resources (loan 2300). Loan 2299 was denominated in Japanese yen. The loan amount increased in 2011 because of yen appreciation. As a result, and upon the government's request, surplus loan proceeds were cancelled. By September 2015, the loan amount equivalent was reduced further due to loan currency depreciation, rendering the loan insufficient to complete the project. To meet the cost overruns in civil works and offset the reduction of the loan amount due to currency fluctuations, the government requested for additional financing. ADB, in December 2015, approved the additional financing (tranche 4)⁵ of \$26.6 million (loan 3351) for project 1. It consisted of two main components, the Lower Bari Doab Canal Improvement Project (LBDCIP) aiming to rehabilitate and upgrade the Lower Bari Doab Canal (LBDC) network, and the Punjab Irrigated Agriculture Project Preparation Facility (PIAPPF) aiming to fund the preparation of subsequent projects to be financed under the PIAIP MFF and project implementation management of the tranche 1 project.⁶

B. Expected Impact, Outcome, and Outputs

3. The project's intended impact was to increase agricultural production and farm income in the LBDC command area. This was to be measured by increases in cropping intensity and average farm income of the 275,000 farming families by 10% by 2021. Its outcome was for the LBDC command area to receive a sustainably improved delivery of water services and management. The outcome had two target indicators: first, all 3,500 outlets receive design water supply throughout the year by 2016; and second, design discharges diverted to the distributary and minor canals throughout the year by 2016. There were five outputs: (i) a groundwater management plan and conjunctive use strategy for LBDC to be operational; (ii) an area water board (AWB) and farmer organizations (FOs) to take responsibility for operations of canal systems; (iii) the Balloki Barrage as well as the LBDC and distribution system was to be rehabilitated on a revised time schedule and within budget based on the detail design and model studies; (iv) due diligence of subsequent tranches; and (v) farmers use improved on-farm water management (OFWM) practices.⁷

¹ Previously the Punjab Irrigation and Power Department (PIPD).

² More recently in 2017, the replacement value was estimated at \$15.2 million. Government of Punjab. 2017. *Annual Development Program 2017-2018*. Lahore.

³ ADB. 2006. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranchise Financing Facility Punjab Irrigated Agriculture Investment Program*. Manila.

⁴ On December 15, 2011, ADB approved an amendment to the MFF for the PIAIP which reduced the facility amount to \$700 million equivalent because of currency fluctuations.

⁵ Tranche 2 was used for financing project 2 (the New Khanki Barrage construction) for \$270 million and Tranche 3 was used for project 3 (the Pakpattan Canal and Suleimanki Barrage Improvement) for \$73 million.

⁶ ADB. 2018. *Completion Report. Punjab Irrigated Agriculture Investment Program in Pakistan-Tranches 1 and 4 (Loans 2299, 2300 and 3351)*. Manila.

⁷ Footnote 6, Appendix 1. At appraisal, project 1 did not have a separate DMF.

C. Provision of Inputs

4. Loans 2299 and 2300 (tranche 1) were approved in December 2006, became effective in August 2007 and were closed in September 2017. The loan 3351 (tranche 4) was approved in December 2015, became effective in January 2016 and closed in September 2017.

5. Total project cost was estimated at \$281.4 million—\$271.1 million for the LBDCIP and \$10.3 million for the PIAPPF. ADB was to finance 77.4% and the Government of Pakistan 22.6%. During the Midterm Review in 2011, it was observed that the original loan amount of \$217.8 million which was denominated in yen had appreciated to nearly \$315.0 million. The surplus loan proceeds were cancelled, reducing the loan amount to \$258 million (para. 2). However, subsequent depreciation of the yen reduced the loan equivalent amount by \$50 million and the government requested the additional tranche 4 funding and converted the remaining loan proceeds to dollars to better manage currency fluctuations. At completion, the actual project cost was \$280.7 million, with 85%⁸ by ADB and the balance funded by the government.

6. The rehabilitation and upgrading (R&U) of the Balloki Barrage and the LBDC canal and distribution system both had increased costs compared to appraisal estimates. This was due to higher actual costs compared to initial cost estimates, procurement delays and price escalation. The PIAPPF component of the project also incurred higher cost due to a larger number of other projects being prepared for future implementation. However, these cost increases could be financed from contingency allowances, cost savings in other components as a result of reductions in their scope, and government budget funds instead of using project funds.

7. A total of 2,576 person-months of consultants was estimated at appraisal – 512 for international consultants and 2,064 for national consultants. At closing, 4,380 person-months of consultants had been engaged – 324 for international consultants and 4,056 for national consultants. Subsequent to loan closing, there was a requirement to engage consultants for civil works completion and defect liability period management. This resulted in increased national consultant inputs due to extended period of design and construction supervision.

8. The project was rated category B for environment, B for involuntary resettlement and C for indigenous peoples. Tranche 1 was originally categorized to have “some gender elements”, but with the additional financing, the project was re-categorized to “no gender elements.” A gender strategy was envisaged to be developed in the first year of the project,⁹ to ensure the implementation of gender-sensitive activities to be delivered through the on-farm water management and agriculture component. However, no gender strategy was prepared. Despite this, some specific gender issues were identified by the project. Some of the local women’s concerns addressed included the safety of women and children in and around the construction sites, and the employment of male members of their households in construction activities. The project also facilitated the formation of 11 rural women’s groups in three districts which held 48 trainings for more than 1,000 women on vegetable growing, seed grading (wheat), clean cotton picking, livestock management, and storage of produce.

9. There was no attached technical assistance (TA) to the loans for project 1. The PIAPPF component of the project was to provide assistance in the preparation of additional projects to be funded under the MFF and overall management of project 1. A project preparatory technical

⁸ \$228.6 million OCR financed and \$10.1 million Asian Development Fund financed.

⁹ Footnote 3, Appendix 9.

assistance (PPTA) was approved by ADB in September 2005 for \$1.5 million.¹⁰ The PPTA closed in November 2007, with 76% utilization. The PPTA only provided feasibility study design for project 1 and not the detailed design required during implementation. Another TA supported the finalization of the preparation and sequencing of the periodic financing requests (PFRs) for Islam, Khanki, Sulemanki and Trimmu Barrages under the PIAIP.¹¹ The TA was approved in December 2009 for \$225,000 and was closed in December 2012.

D. Implementation Arrangements

10. The implementation arrangements were complex as the project had multiple components. At appraisal, the PID was assigned to be the executing agency for overall project implementation for the LBDCIP, through a dedicated project management unit (PMU) supported by a project management office (PMO) for component 1 (R&U of the Balloki Barrage Complex); and three divisional project implementation units (PIU) at different geographic locations within the LBDC's command area for component 2 (R&U of LBDC canal network); a groundwater cell in the PMU for component 3 (groundwater management); a PMO in the Department of OFWM for component 4 (OFWM); as well as another PMO in the Punjab Irrigation and Drainage Authority (PIDA) for component 5 (institutional strengthening and operation modernization). For the PIPFPA, a program planning and management unit was established within the PID to oversee implementation and subsequent investment packages.

11. However, the government and ADB agreed to changes to these implementation arrangements to expedite progress during project implementation. Among the changes were first, reassignment of the Balloki Barrage Complex component to the PMU to resolve reporting line issues. Second, implementation of the OFWM component through the Agriculture Department. Third, establishment of institutional strengthening and operation modernization initially under the PMU and then the PIDA in 2013, and fourth, shifting of the PIAPPF administration several times before it moved to the PMU in 2015 until project completion. A project steering committee was established for the implementation of the PPTA, the MFF and the project, but the committee met only twice during the project implementation period.

12. At completion, out of the 116 loan covenants, 96 were complied with, eight were complied with delays (89.7% compliance), six were partly complied with, five were not complied with and one was deemed to be not due at the time of completion. The key areas of non-compliance or only partial compliance with covenants which had its effect on the project's progress were related to staffing and resourcing of the PMO, FO and irrigation management units (IMUs) staffing and resourcing. The Government of Punjab sought a waiver with respect to the covenant requiring FOs in the project command area to be independent of the PIDA Act of July 1997, since it was concerned this would lead to non-uniformity within the province. The PCR agreed to the waiver.¹² The covenants relating to the reporting and financial management of the project were complied with. The covenant that was deemed not due was the O&M of the plants, equipment and other property which is to be reckoned after completion.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

¹⁰ ADB. 2005. Technical Assistance to the Islamic Republic of Pakistan for Preparing the Punjab Irrigated Agriculture Development Sector Project. (TA 4642-PAK)

¹¹ ADB. 2009. Ensure Due Diligence and Prepare PFRs for Islam, Khanki, Sulemanki, and Trimmu Barrages of MFF 2299/2300-PAK: Punjab Irrigated Agriculture Investment Program. (TA 7412-PAK)

¹² Footnote 3, para. 47.

13. The PCR rated the project relevant. At appraisal, the project was aligned with ADB, government and major partners' strategies and sector programs. ADB's country strategy 2004–2006 sought province-focused projects on conservation, drought mitigation, rehabilitation of the irrigation infrastructure and strengthening institutional capacities.¹³ Following the earlier passing of the Punjab Irrigation and Drainage Authority Act in 1997, the 2006 Punjab Medium Term Irrigation Sector Reform Program had introduced reforms to the sector and the PID had started identifying priority projects for R&U. The project remained relevant throughout project implementation and at project completion. ADB's country partnership strategies for Pakistan 2009–2013¹⁴ and 2015–2019.¹⁵ R&U of irrigation infrastructure and agriculture productivity investments remained key components. The Government of Punjab's Medium-Term Development Framework, 2012–2015, aimed to modernize irrigation infrastructure; and the Punjab Growth Strategy 2018 regarded the project as one of the key investments in improving irrigation infrastructure.¹⁶

14. This PVR observes that the project was consistent with ADB and government strategies and programs. The MFF modality for the second component, the PIAIP, was deemed appropriate and relevant since it provided a long-term relationship between the borrower and ADB, and funding continuity for high priority projects to achieve increased agricultural production and farm incomes for a large section of the Punjab province. This PVR notes that the project did not have a separate design and monitoring framework (DMF) for tranche 1 when the MFF program and the tranche 1 loans were approved as this was not required at the time of approval. A DMF, however, was prepared for the approval of the tranche 4 additional financing.¹⁷ This PVR views that the DMF is consistent with the original envisaged intention of the MFF program for the first tranche. On this basis and the consistency of the project with the ADB and government strategies and programs, this PVR assesses the project relevant.

B. Effectiveness in Achieving Project Outcome and Outputs

15. The PCR rated the project effective. At the output level, although delayed in their implementation, the PCR noted that water delivery capacity of the upgraded LBDC was improved to the sanctioned discharge. It said that water delivery outcome measures at barrage, canal and distributary system level was enhanced and sustained.¹⁸ This is amid contradicting statements¹⁹ in the PCR that seem to imply that the target outcome indicators have not yet been fully achieved at completion. The major components of the project – the R&U of the Balloki Barrage complex and the LBDC canal network – were completed within the adjusted timeframe.

¹³ ADB. 2003. *Country Strategy and Program Update: Pakistan, 2004-2006*. Manila.

¹⁴ ADB. 2009. *Country Partnership Strategy: Pakistan, 2009-2013*. Manila.

¹⁵ ADB. 2015. *Country Partnership Strategy: Pakistan, 2015-2019*. Manila.

¹⁶ Government of Punjab. 2015. *Punjab Growth Strategy 2018: Accelerating Economic Growth and Improving Social Outcomes*. Lahore.

¹⁷ The 2006 Staff Instructions on the Use of the Multitranchise Financing Facility (MFF) stipulates that "A DMF will be prepared for the overall MFF. A DMF will be prepared for the investments financed under one financing tranche to show how they relate to the overall DMF for the MFF." The Operations Manual (OM) Section D14/OP in 2008 clarified that "A design and monitoring framework (DMF) must be prepared for the overall MFF, and for each tranche." This follows the Guidelines for Preparing a Design and Monitoring Framework. Manila (Section III.G.6) that was approved in 2007, which was after the Tranche 1 and the MFF program for the Punjab Irrigated Agriculture Investment Program was approved.

¹⁸ Footnote 3, para. 24.

¹⁹ The PCR noted that "Individual channel and outlet water delivery performance assessment has been initiated" and "it is likely that the outcome related to water delivery at outlets will be achieved with continued support and monitoring." Footnote 6, para. 34.

16. For outputs, the groundwater management plan was prepared with a knowledge and research base in the command area, a groundwater geographic information system database, strengthened groundwater resource management capacities of government staff, drillers, suppliers and farmers. The 2006 groundwater regulation was not enforced. However, the PID drafted a new Punjab Groundwater (Protection, Regulation and Development) Act hoping it will be enacted in 2019. The indicators for the AWB and FOs were achieved with some slight overachievements. One AWB, 53 FOs (target: 52) and 3,779 water use associations (target: 3,000) were established. However, outlets discharge measurement is still not fully institutionalized at the FO level. The Balloki Barrage was remodeled to reliably deliver the sanction discharge of 278 cubic meter per second (m³/s). The Barrage's safe flood capacity increased from 6,371 m³/sec in 2009 to 10,760 m³/sec in 2017 against a target of 10,700 m³/sec in 2016.

17. The PIAPPF component of the project achieved three outputs. The tranche 2 (New Khanki Barrage) project and the tranche 3 (Sulemanki Barrage and Pakpattan Canal Improvement Project) were delivered. Three more projects (the Trimmu and Panjnad Barrages Improvement Project, the Pakpattan Canal Distribution System Project and the Thal Canal and Distribution System Project) were prepared. Feasibility studies for 5 additional projects were done. The number of subprojects prepared totaled to 10 against a target of 7 subprojects. This component also covered the formation and capacity building of IMUs and FOs but was only partly achieved as delays in civil works and the limited tenure of FOs meant trainings to these groups was 30%-40% short of the planned target. Other capacity building items could not be completed during the project implementation period.

18. The OFWM component achieved its target of more than 50 field demonstration center plots totaling 2,000 hectares (ha). FOs have been formed and supported to some extent. The rehabilitated main canal and distribution system measured a total of 2,230 kilometers (km) (201 km and 2,029 km respectively) or 91% of the target 2,450 km during appraisal while 3,443 (1,109 structures and 2,334 outlet structures) of the target 3,500 appurtenant structures (98%) were constructed or rehabilitated.

19. The Project Safeguard Assessment concludes that the project was correctly classified as B for Environment and Involuntary Resettlement, and category C for Indigenous Peoples. The assessment rated ADB's safeguard work quality satisfactory both at project screening, preparation and appraisal, and at project supervision. No gender action plan was prepared for the project but the PCR noted that 11 rural women's groups were formed as part of the OFWM and agriculture component.²⁰

20. This PVR notes that the project has achieved its envisaged targets with some overachievements at the output level. The shortcomings with some of the lower cost components of the project were deemed relatively minor. Based on the foregoing, this PVR assesses the project effective with most significant components contributed to the targeted outputs within budget.

C. Efficiency of Resource Use

21. The PCR rated the project efficient. The re-evaluated economic internal rate of return (EIRR) for both the R&U of the LBDC Canal and distribution system and Balloki Barrage complex (i.e. components 1 and 2 of the project) at project completion was 23.0%, as compared to 19.1% at appraisal. For the LBDC Canal and distribution R&U, the revised EIRR was 17.4% and 28.6%

²⁰ Footnote 3, para. 12.

for the Balloki Barrage complex.²¹ The cropping intensities were increased at a faster rate than estimated at appraisal and this has more than offset the effects of the longer construction period; hence the higher overall EIRR at project completion. Sensitivity testing shows that the R&U of the LBDC Canal and distribution system component remains above 12% for up to 40% decrease in component benefits. Unfortunately, the PCR did not show the same sensitivity testing for the R&U of the Balloki Barrage complex or for the two R&U components combined.²² The re-evaluation of the EIRRs for the two R&U components of the project did not include any of the costs associated with the other three project components – i.e. those relating to groundwater management, OFWM and project management. These components would have partly contributed the project benefits measured for the R&U components economic analysis. The revised EIRRs perhaps overstated as at least some of the costs of these other components should have been included in the reanalysis of the EIRRs. However, these components have comparatively low cost and overstatement of the revised EIRRs will not be significant.

22. The implementation of tranche 1 faced multiple difficulties, including significant delays in design and procurement, variance in estimated final design of civil works, currency fluctuations, loan surplus and cost overruns.²³ The planned closing date for tranche 1 loans was September 2013 and there were four extensions requested and granted by ADB and it closed with a 4-year delay. Tranche 4 was also closed in September 2017 after one extension and delay of 3 months. Reasons for the delay were several, such as poor project readiness at appraisal, requiring longer preparatory work in consultant recruitment, project design and procurement. Slow civil works construction, and the completion of studies and design for additional projects under the PIAPPF also led to delays. On the whole, the cost incurred due to the delay was similar to expected cost at appraisal. As the extent and impact of the delays on the project were already considered in the economic analysis, this PVR considers the project efficient on the basis of the high EIRRs recalculated at project completion for the two most significant project components.

D. Preliminary Assessment of Sustainability

23. The PCR rated the project likely sustainable. It outlined increases in PID O&M and repair budgets in recent years that better align with the requirements to gradually reduce the deferred maintenance backlog. Moreover, the capital expenditure of the project has enhanced and sustained water diversions and conveyance capacity, reducing maintenance requirements in the short to medium-term. However, the PCR also noted that during 2011–2017, only 47% of the average annual assessed fees (*abiana*)²⁴ was collected and this was well short of the required funds necessary for maintaining the distributaries and minor and sub-minor canals under the devolved responsibility of FOs. Incidences of water theft continues and recovery of *abiana* is declining. To address these, the government and funding partners are working on a series of

²¹ The RRP economic analysis appendix did not include separate EIRR estimates for each of the R&U of the LBDC Canal and distribution system and the Balloki Barrage complex. It is likely these were contained within the RRP economic analysis supplementary appendix. However, this could not be located for this PVR. This highlights the value of appropriately archiving supplementary appendices of reports so that they can be used if required in future.

²² The PCR stated that this was because the main parameters affecting project benefits were treated as random variables and consequently the variability was captured within the risk analysis. Footnote 3, para. 35. This PVR is of the view that standard sensitivity would have been more informative to most readers.

²³ ADB. 2015. Punjab Irrigated Agriculture Investment Program (Tranche 4). Periodic Financing Request Report. Manila., para. 11.

²⁴ Irrigation service fees charged to farmers.

initiatives including improvements in assessing *abiana* liability, tracking *abiana* collection rates, recovery of *abiana*, and transparency in water entitlements and distribution.²⁵

24. On the basis of the sufficiency of PID O&M budget allocations for the major upstream irrigation and flood control system assets; and recent and planned improvements towards greater financial self-sufficiency for the distributaries and minor and sub-minor canals, this PVR assesses the project likely sustainable.

III. OTHER PERFORMANCE ASSESSMENTS

A. Preliminary Assessment of Development Impact

25. The PCR rated the project's development impact satisfactory. The project had significant developmental impact in terms of improved irrigation services, drainage and flood management on 700,000 ha in the LBDC command area and 1,250,000 ha in the area served by the Balloki Barrage.²⁶ Cropping intensities in the LBDC command area have increased from 162.4% in 2006 to 171.5% in 2017 and are expected to continue to increase. Had the project not been extended, the target increase in cropping intensity would not have been achieved by the original target date of 2017. However, given the current rate of increase, the target 10% increase in cropping intensity is now likely to be achieved by the revised achievement year of 2021. Average farm incomes in 2017 have already increased by 37%, which is more than triple of the original target.²⁷ The risks and extent of flood damage to crops, houses and other structures were reduced. Without the project, the structures rehabilitated and upgraded under the project were expected to fall into further disrepair reducing cropping intensities and farm incomes and increasing the risk and extent of flood damage.²⁸ Project beneficiaries include farmers with limited income from small landholdings and subsistence farmers. Nearly 90% of farms within the project area are owned by about 295,000 families (nearly 2 million people) with individual landholdings of less than 5 ha. These farms comprise about 58% of the command area. The PVR assesses the preliminary assessment of development impact satisfactory.

B. Performance of the Borrower and Executing Agency

26. The PCR rated the performance of the borrower (government) and executing agency (PID) satisfactory. The government provided sufficient counterpart funds and has shown a commitment to, and ownership of, the project by resolving to complete project works utilizing their own funds after the closure of the loans. Compliance with covenants was adequate with partial and non-compliance for a few covenants. There were some weaknesses of the executing agency. It did not fully utilize the project as an opportunity to establish a well-resourced and capable network of FOs within the project's command area. Poor coordination of PID field units delayed civil works. Not filling staff vacancies in a timely manner was a problem. Given the large, complex project with a wide range of components, these weaknesses did not duly compromise the project's impact, outcomes and outputs. This PVR assesses the performance of the borrower and executing agency satisfactory.

C. Performance of the Asian Development Bank

²⁵ ADB. 2016. *Institutional Transformation of the Punjab irrigation Department to a Water Resources Department*. Manila; World Bank. 2017. *Strengthening Markets for Agriculture and Rural Transformation Punjab Program*. Pakistan; and Government of Punjab, PID. 2016-2017. *Annual Performance Report*. Lahore.

²⁶ Through the Balloki-Sulemanki Link Canal and the flood-prone area adjacent to right bank of the Balloki Barrage.

²⁷ Footnote 3, Appendix 1, DMF.

²⁸ Footnote 3, Appendix 10, para 9.

27. The PCR rated the performance of ADB satisfactory. ADB and other development partners, streamlined institutional reforms on irrigated agriculture during implementation and in addressing project issues. It cancelled parts of the loan to avoid commitment charges after currency appreciation. Loan currency was changed to protect against a declining loan value. Additional funding (tranche 4) was ensured for project completion. ADB assisted with the resolution of project implementation issues that arose. It modified consulting services enabling the preparation of further projects worth \$1.7 billion, as compared to the MFF's envelope of \$700 million, thereby improving the government's future project readiness. Issues that came up with ADB were the frequent changes in project officers and inadequate follow-up on the lack of progress on institutional changes, which the project was intended to help implement. The government's PCR²⁹ was generally positive about the performance of the ADB but identified some shortcomings. It said, detailed design of project 1 should have been completed as part of the PPTA prior to loan agreement and that the initial implementation schedule was too optimistic. The proposed devolving of responsibilities to the FOs in loan covenants was also too optimistic as the FOs were not sufficiently capable. However, in the context of the total project, these issues were minor and this PVR assesses the performance of ADB satisfactory.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

28. Overall, this validation rates the project successful as it was relevant, effective, efficient, and likely sustainable. The table summarizes these ratings.

Overall Ratings

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Effective	Effective	
Efficiency	Efficient	Efficient	
Sustainability	Likely sustainable	Likely sustainable	
Overall Assessment	Successful	Successful	
Preliminary Assessment of Impact	Satisfactory	Satisfactory	
Borrower and executing agency	Satisfactory	Satisfactory	
Performance of ADB	Satisfactory	Satisfactory	
Quality of PCR		Satisfactory	Para. 34.

ADB = Asian Development Bank, IED = Independent Evaluation Department, PCR = Project completion report.
Source: ADB Independent Evaluation Department.

B. Lessons

29. The PCR identified several **project-level lessons**. The institutional strengthening and operation modernization design at appraisal was ambitious and proved difficult to implement as part of a project with other significant components. The project implementation arrangements design

²⁹ Government of Punjab Irrigation Department. 2018. *Lower Bari Doab Canal Improvement Project (ADB Loan No. 2299-Pak and 3351-Pak) Project Completion Report*. Lahore.

was too complex initially and needed to be rationalized during project implementation – this should have been addressed preferably at appraisal. Consultant recruitment and detailed engineering design took longer than anticipated at appraisal. Contract package size affects project implementation – combining the Balloki Barrage contracts into one large contract and dividing the LBDC contract into three separate contracts were appropriate but distribution system contract packages were too large and covered wide geographic areas to be appropriately managed. PID's divisional staff were initially not part of the PMUs and PIUs but joined in 2015, improving project progress, oversight, increased ownership and readiness for taking over project operation.

30. This validation identified five **project-level lessons**. For projects involving significant civil works but prepared only to a feasibility study level, a realistic timeframe needs to be identified at appraisal for the recruitment of consultants and the preparation of detailed design prior to start of construction. Consideration has been given to protecting against currency fluctuations immediately after loan effectiveness. For complex projects with a number of different components, activities addressing institutional reform may need to be ring-fenced from other project activities to prevent institutional reform not receiving the dedicated attention it requires. Consideration might have been given to breaking out some of the smaller project components (e.g. the groundwater and OFWM components and even the PIPPFA activities) into separate projects under the PIAIP MFF rather than attempting to managing them together with significant civil works components. Target indicators outcomes need to be well designed and specified to ensure clarity of achievements.

C. Recommendations for Follow-Up

31. The PCR had five recommendations: (i) complete unfinished works including commissioning the Balloki Barrage gate control electrification system and construction of farmer organization facilities prior to the next elections; (ii) implement gauging and discharge data calibration for rehabilitated structures and channels; (iii) strengthen water measurement at system outlets; (iv) administer and close contracts during the defects liability periods; and (v) continually repair outlets that have been damaged or tampered with.

32. The PCR's sector-wide recommendations included less ambitious and complex institutional reform measures in future irrigation sector projects with third-party comprehensive evaluation and dialogue initiation between government and development partners. The PCR noted that ADB's ongoing assistance with respect to the formulation of the Punjab Water Policy and Punjab Groundwater Act is timely (para. 17). The PCR also recommended improvement in asset management, particularly addressing the backlog of deferred maintenance through future projects. Also, strong support to provincial government to better enforce rules and regulations pertaining to abiana recovery, prevention of water thefts and outlet tampering, fine imposition, and collection and monitoring of channel discharges is recommended.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Reporting

33. The reporting on the compliance with the loan covenants was comprehensive and provided transparent information on the status of each covenant. The regular reports submitted were also noted to have been of acceptable quality and were generally received on time. For monitoring, this PVR notes that a project monitoring and management information system was developed under the project and was used for the subsequent tranches.

B. Comments on Project Completion Report Quality

34. On the whole, the PCR is of high quality with detailed reporting on the project rationale, relevance, outputs and achievements, scheduling, financing, implementation arrangements, safeguards and evaluation of performance. The project was broad and complex which made it difficult to prepare a PCR with sufficient detail but at the same time clear to readers unfamiliar with the technical aspects of the project. The PCR preparation was likely aided by a detailed government PCR prepared for the project. The quality of the PCR is assessed satisfactory.

C. Data Sources for Validation

35. Data sources for this validation are the PCR, the RRP, back-to-office reports and aide memoires relating to loan review missions, the project's safeguard assessment, the government's development plans and its PCR.

D. Recommendation for Independent Evaluation Department Follow-Up

36. The PCR recommended the conduct of a project performance evaluation in 2020. This will enable another chance to evaluate the achievements of the outcome and some of the pending covenants at a later time. This PVR has a similar view that a PPER should be undertaken, not for the tranche, but for the MFF program as a whole, after 2020 to allow for the latest data and information on the impact and outcome indicators to be more readily available.