



Report and Recommendation of the President to the Board of Directors

Project Number: 49056-002
November 2016

Proposed Results-Based Loan and Technical Assistance Grant Islamic Republic of Pakistan: Access to Clean Energy Investment Program

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 15 September 2016)

Currency unit	–	Pakistan rupee/s (PRe/PRs)
PRe1.00	=	\$0.0096
\$1.00	=	PRs104.4050

ABBREVIATIONS

ADB	–	Asian Development Bank
DLI	–	disbursement-linked indicator
EDP	–	Energy Department of Punjab
IVA	–	independent verification agent or agency
M&E	–	monitoring and evaluation
MHP	–	micro-hydropower plant
MW	–	megawatt
NGO	–	nongovernment organization
PAP	–	program action plan
PEDO	–	Pakhtunkhwa Energy Development Organization
PHF	–	primary health care facility
RBL	–	results-based lending
TA	–	technical assistance

NOTES

- (i) In this report, “\$” refers to US dollars.
- (ii) 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.

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PROGRAM AT A GLANCE

1. Basic Data		Project Number: 49056-002	
Project Name	Access to Clean Energy Investment Program	Department /Division	CWRD/CWEN
Country	Pakistan	Executing Agency	Energy Department, Government of Punjab, Energy and Power Department, Government of Khyber Paktunkhwa
Borrower	Islamic Republic of Pakistan		
2. Sector	Subsector(s)	ADB Financing (\$ million)	
✓ Energy	Energy efficiency and conservation		6.80
	Renewable energy generation - small hydro		244.55
	Renewable energy generation - solar		74.40
	Total		325.75
3. Strategic Agenda	Subcomponents	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 2: Access to economic opportunities, including jobs, made more inclusive	Adaptation (\$ million)	16.00
Environmentally sustainable growth (ESG)	Eco-efficiency	Mitigation (\$ million)	247.00
	Global and regional transboundary environmental concerns	CO ₂ reduction (tons per annum)	75
		Climate Change impact on the Project	High
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Governance and capacity development (GCD)	Civil society participation	Effective gender mainstreaming (EGM)	✓
Knowledge solutions (KNS)	Institutional development		
	Application and use of new knowledge solutions in key operational areas		
	Pilot-testing innovation and learning		
Partnerships (PAR)	Bilateral institutions (not client government)		
	Civil society organizations		
	Implementation		
	Official cofinancing		
Private sector development (PSD)	Promotion of private sector investment		
5. Poverty and SDG Targeting		Location Impact	
Geographic Targeting	Yes	Rural	High
Household Targeting	No		
SDG Targeting	Yes		
SDG Goals	SDG7		
6. Risk Categorization:	Complex		
7. Safeguard Categorization	Environment: B Involuntary Resettlement: B Indigenous Peoples: B		
8. Financing			
Modality and Sources		Amount (\$ million)	
ADB		325.75	
Sovereign Results Based Lending: Ordinary capital resources		325.00	
Sovereign Capacity development technical assistance: Technical Assistance Special Fund		0.75	
Cofinancing		0.00	
None		0.00	
Counterpart		50.70	
Beneficiaries		9.90	
Government		40.80	
Total		376.45	
9. Effective Development Cooperation			
Use of country procurement systems		Yes	
Use of country public financial management systems		Yes	

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 Access to Clean Energy Investment Program. The report also describes proposed technical assistance (TA) for capacity development and performance monitoring for the program, and if the Board approves the proposed loan, I, acting under the authority delegated to me by the Board, approve the TA.¹

2. The proposed Asian Development Bank (ADB) assistance will contribute to Pakistan's national goal of enhanced energy security. The program will be implemented over 5 years and will support the governments of Khyber Pakhtunkhwa Province (KPP) and Punjab province to achieve increased access to sustainable and more reliable electricity services, particularly for vulnerable communities in KPP and Punjab.²

II. THE PROGRAM

A. Strategic Context

3. **Country context.** Pakistan's economic growth declined significantly in FY2010–FY2014, largely as a result of increasingly intense energy shortages, rising food prices, security challenges, and natural disasters.³ In 2014, 29.5% of the population of 180 million was living below the national poverty line, with substantial disparity in the poverty rate between urban (18.2%) and rural (35.6%) areas.⁴ Energy access and affordability plays a critical role in economic growth and poverty reduction. Although Pakistan has abundant renewable and nonrenewable energy resources, public and private investment in energy infrastructure has remained inadequate and the system suffers heavily from the low efficiency of generation, transmission, and distribution networks. Although the timing of outages has become predictable, the 5–gigawatt demand–supply gap combined with the stressed transmission and distribution system result in significant load shedding—10 hours per day in rural areas and 4 hours in urban areas. Overreliance on imported conventional fuel-based generation, high consumer receivables, and insufficient tariffs have resulted in persistent circular debt.⁵ Pakistan's potential renewable energy resources total more than 65,000 megawatts (MW), but current installed generation capacity from these sources is only 7,100 MW (35% of total generation). The national electrification rate is only 67%,⁶ and it is even lower (57%) in rural areas.

4. **Provincial context.** The focus on renewable energy development in KPP and Punjab supports the Government of Pakistan's strategy of lowering stress on the national grid, decreasing load shedding, and increasing access to electricity using the least-cost option, which

¹ The design and monitoring framework is in Appendix 1.

² In 2015, ADB provided program preparatory TA for Access to Clean Energy Investment (TA 9047-PAK).

³ Average annual economic growth during FY2010–FY2014 was 3.5%, down from 5.1% in FY2005–FY2009. ADB. 2015. *Key Indicators for Asia and the Pacific 2015*. Manila.

⁴ Recalculation by the Planning Commission using a new poverty line based on the Household Integrated Economic Survey, 2013–14 by the Pakistan Bureau of Statistics. As reported in the Pakistan Economic Survey 2015–16, http://www.finance.gov.pk/survey/chapters_16/Overview_of_the_Economy.pdf.

⁵ The difference between the electricity cost and the tariff-derived revenues accumulates into circular debt. ADB. 2015. *Report and Recommendation of the President to the Board of Directors: Proposed Policy-Based Loans for Subprogram 2 to the Islamic Republic of Pakistan for the Sustainable Energy Sector Reform Program Sector Assessment (Summary)*: Energy (accessible from the list of linked documents in Appendix 2). Manila.

⁶ Government of Pakistan. Ministry of Planning, Development & Reform. 2014. *Pakistan Vision 2025: One Nation–One Vision*. Islamabad (Executive Summary).

will reduce circular debt. KPP, with a population of 28.3 million, is one of the poorest provinces in Pakistan, and the most unequal, with 38% of its rural population living in households in the poorest quintile.⁷ In some districts, the electrification rate is below 20% (it is just 2.9% in Kohistan and 15% in Shangla). Geographic constraints make extending the national grid to such remote areas costly and technically difficult. In these areas, the least-cost option is off-grid renewable energy sources. Punjab has the largest population of Pakistan's provinces and consumes around 68% of the country's electricity and gas. The economy is based largely on agriculture and industry, and depends heavily on a reliable electricity supply. In Punjab, service delivery can be improved and the transmission and distribution system stress reduced by shifting some demand to off-grid/self-generation using solar power. In view of the overstretched national grid, the 2017–2026 provincial energy sector master plans of the KPP and Punjab provincial governments have prioritized renewable resources,⁸ with a view to expanding electrification and reliable energy in line with the national strategy, and with an emphasis on providing an uninterrupted electricity supply for schools and primary health care facilities (PHFs).⁹ In KPP, the installation of up to 1,000 kilowatts of micro-hydropower plants (MHPs)¹⁰ could supply off-grid communities with basic electricity services.

5. **Social and gender context.** An estimated 38% of KPP's population lives below the national poverty line,¹¹ while 49% of the population in KPP and 31% in Punjab live in multidimensional poverty.¹² The most deprived communities—such as Kohistan, with a multidimensional poverty incidence of 96%—were selected for off-grid electrification. About 20% of schools in KPP and 10% in Punjab are not connected to the electricity grid. PHFs in rural areas are subject to long hours of load shedding, making it difficult to provide effective services, and keep lifesaving drugs and vaccines for diseases such as polio refrigerated.

6. The availability of electricity in schools improves the learning environment, and contributes to student enrollment. Women and girls benefit from access to electricity through time savings associated with firewood or water collection activities, and the use of appliances (e.g., washing machines, cell phones, refrigerators, fans, and irons). Electric appliances improve indoor air quality. Providing solar power to PHFs that provide antenatal care, delivery, and child health benefits rural women in particular. Over 2.7 million women in KPP and 48.2 million in Punjab could benefit from improved electricity access at PHFs.¹³

B. Program Rationale

7. **Fit with national priorities.** Pakistan's overall national goal for 2025 is to achieve inclusive and dynamic economic growth, with energy security as a supporting pillar (footnote 6). The energy sector goal is to ensure uninterrupted access to affordable and clean energy for all Pakistanis, with quantitative targets for (i) increasing electricity access from 67% to over 90% by 2025, (ii) eliminating the current electricity supply–demand gap by 2018,¹⁴ and (iii) adding

⁷ Government of Pakistan. 2015. *Household Integrated Economic Survey, 2013–14*. Islamabad.

⁸ C. Ratnayake. 2016. *Power Sector Master Plan Province of Khyber Pakhtunkhwa, Pakistan and Power Sector Road Map for the Province of Punjab, Pakistan*. Lahore (prepared with ADB support).

⁹ In Pakistan, PHFs include basic health units and rural health centers.

¹⁰ MHPs produce hydroelectric power using natural water flows. MHPs are typically sized for smaller communities, single families, or small enterprises. The KPP government uses the term micro-hydro for plants with a capacity of 5–1,000 kilowatts.

¹¹ Government of Khyber Pakhtunkhwa. 2014. *Integrated Development Strategy, 2014–2018*. Peshawar.

¹² United Nations Development Programme. 2016. *Multidimensional Poverty in Pakistan*. Islamabad.

¹³ Poverty and Social Analysis Report (accessible from the list of linked documents in Appendix 2).

¹⁴ The average gap is 5,000 MW. ADB. 2015. *Country Partnership Strategy: Pakistan, 2015–2019*. Manila.

25,000 MW of generation capacity by 2025 (24,000 MW installed as of 2015). These national targets cannot be achieved without increasing the share of renewable energy in the energy mix.¹⁵ This is the context in which the government has requested ADB support to increase access to sustainable and reliable electricity services.

8. **Provincial priorities.** The results-based lending (RBL) program will help address the energy shortage and low electrification rate in KPP and Punjab by supporting the installation of MHPs (small run-of-the stream or canal plants) in off-grid communities, and solar facilities in schools and PHFs. The KPP and Punjab development strategies emphasize inclusive and pro-poor economic growth, which requires access to reliable electricity. The relevant provincial targets include (i) by 2026, expanding solar power generation capacity by 42 MW in KPP and 2,330 MW in Punjab, and adding 5,204 MW of hydropower generation capacity in KPP; (ii) providing electricity to more than 1.5 million people from MHPs in KPP; and (iii) achieving savings from energy efficiency in Punjab. The two provinces have requested ADB support to finance and build capacity. In KPP, ADB helped develop the electrification road map and institutional strengthening plan, which will serve as the foundation for the program.

9. **Fit with ADB's strategic priorities.** The program is in line with (i) the ADB Strategy 2020 midterm review,¹⁶ which emphasizes inclusive economic growth, infrastructure development, and engagement in middle-income countries; and (ii) the ADB country partnership strategy, 2015–2019 for Pakistan.¹⁷ The provision of energy to poor, remote rural areas outside the national grid (i) is a priority in ADB's Energy Policy;¹⁸ (ii) will expand energy access and contribute to the achievement of Sustainable Development Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all; and (iii) with its renewable energy outputs, will contribute to ADB climate financing. The program has strong linkages with other ADB projects, as it will provide relief to stressed national transmission and distribution systems, and balance the energy mix, which are the basis for key ADB interventions.

10. **Results-based lending.** RBL is the most suitable modality because (i) the program's business model, which is community-driven from design to operation and maintenance, requires nongovernment organizations (NGOs)—and the private sector for the MHPs—to lead the contractor team and be responsible for community mobilization and sustainability; the NGOs success and eligibility for further projects are measured by the results achieved, which fits RBL rather than investment projects; (ii) by monitoring results, RBL reduces transaction costs compared with investment projects, which would have extremely difficult to control inputs to thousands of schools, health facilities, and communities; (iii) RBL foster government and local ownership on a large decentralized scale and leverage system improvements at provincial, district, and local levels, without which provincial targets for electrification from decentralized renewable sources cannot be achieved; (iv) by focusing on achieving results, which requires greater engagement and attitudinal changes from all stakeholders, the targeted indicators will ensure greater benefits for vulnerable communities and women, and enhance coordination among the program's diverse stakeholders; (v) both provinces, having managed and implemented ADB as well as other donor funded projects before, have adequate capacity for the RBL program; and (vi) ADB's vast experience and knowledge of the energy sector in Pakistan lays a technically sound and robust basis for the first energy RBL for the country.

¹⁵ Government of Pakistan, 2006. *Policy for Development of Renewable Energy for Power Generation*. Islamabad. Under the policy, the Government of Pakistan aims to generate at least 9,700 MW of renewable energy by 2030.

¹⁶ ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.

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

¹⁸ ADB. 2009. *Energy Policy*. Manila.

11. ADB-supported interventions will add value by (i) strengthening the systems and institutional capacity of provincial governments; (ii) complementing infrastructure support for renewable energy facilities with enhanced support for off-grid electrification; (iii) improving program design to enhance sustainability, inclusive growth, and women's empowerment; (iv) supporting innovations such as business models for off-grid electrification and net-zero emission building models, which can then be replicated beyond the life of the program; and (v) developing and implementing a monitoring system that will ensure sustainability and results mapping.

C. Program Scope

12. The RBL program will support two broader KPP and Punjab provincial government programs for providing uninterrupted access to affordable and clean energy, as set out in their respective power sector master plans (footnote 8). The RBL program will support each of these two provincial programs, notably those portions that cover community-based renewable energy initiatives and public sector energy efficiency (Table 1). Under the RBL program, the MHPs will provide electricity to around 1.5 million people in rural areas of KPP, and solar plants installed at schools will provide electricity to more than 2.6 million students, including 1.2 million girls. The MHP program will be implemented with the assistance of NGOs, hired through a competitive procurement process serving as the lead partner of the contractor, and responsible for site selection, feasibility study and community mobilization. The contractor will be responsible for the construction of the plant and the training of the community team on operation and maintenance. The community organizations will be responsible for the operation and maintenance of the plant and collection of the cost recovery tariff to ensure sustainability. The RBL program will exclude activities that would be classified as *category A* under the ADB Safeguard Policy Statement (2009), and those that would involve the procurement of works, goods, or services under contracts whose estimated value exceeds specified monetary amounts.¹⁹

Table 1: Program Scope

Item	Broader Government Program	Results-Based Lending Program
Outcome	Uninterrupted access to affordable and clean energy for all population groups	Increased access to sustainable and more reliable electricity services, particularly for vulnerable communities in KPP and Punjab
Key outputs	(i) Expanded generation capacity, (ii) increased electrification rates, (iii) increased renewable energy generation, and (iv) increased private sector investment in energy sector development	(i) Renewable energy-based power plants installed, (ii) Opportunity for women and girls to obtain energy services and benefits increased, (iii) Institutional capacity to foster sustainability enhanced, and (iv) promotion of public sector energy efficiency.
Activity types	(i) Development of renewable and thermal energy resources, (ii) development and enforcement of policies and regulations, (iii) provision of reliable electricity to all, and (iv) demand-side management and energy efficiency initiatives	(i) Installation of micro-hydropower plants in rural KPP, (ii) introduction of sustainable business models for off-grid power, (iii) implementation of off-grid decentralized solar solutions for education and primary health care facilities in KPP and Punjab, and (iv) Public sector energy efficiency promoted in Punjab.
Program expenditure	\$26 billion: \$10 billion for KPP \$16 billion for Punjab	\$454.3 million \$330.3 million for KPP \$124.0 million for Punjab
Main financiers and respective	Provincial government: \$25.3 billion Community: \$30 million	Provincial government: \$40.8 million (9.0%) Community: \$9.9 million (2.2%)

¹⁹ The amounts are currently \$50 million for works, turnkey and supply, and installation contracts; \$30 million for goods; \$20 million for information technology systems and nonconsulting services; and \$15 million for consulting services. ADB. 2013. *Piloting Results-Based Lending for Programs*. Manila (para. 66).

Item	Broader Government Program	Results-Based Lending Program
financing amounts	ADB: \$325 million AFD: \$78.6 million	ADB: \$325 million (71.5%), OCR funding AFD: \$78.6 million (17.3%)
Geographic coverage	KPP and Punjab	KPP and Punjab
Implementation period	2017–2021	2017–2021

ADB = Asian Development Bank, AFD = Agence Française de Développement, KPP = Khyber Pakhtunkhwa Province, OCR = ordinary capital resources.

Sources: Asian Development Bank and energy departments of Punjab and Khyber Pakhtunkhwa provinces.

D. Program Results

13. **Impact and outcome.** The RBL program's impact is aligned with the national goal (footnote 14) of inclusive economic growth through sustainable energy access. The outcome will be increased access to sustainable and more reliable electricity services, particularly for vulnerable communities in KPP and Punjab. This will be achieved through four outputs:

- (i) **Output 1: Renewable energy-based power plants installed.** This output will support the installation of 1,000 MHPs in off-grid areas of KPP. MHPs will be developed based on reliable business models and sustainable tariff structures.²⁰ The output will also support the provision and installation of rooftop solar plants for 23,000 schools and 2,587 PHFs in the two provinces and a university in Bahawalpur, Punjab. Facilities without any electricity and those receiving only a few hours of electricity per day will be prioritized.
- (ii) **Output 2: Opportunity for women and girls to obtain energy services and benefits increased.** This output will facilitate providing basic services that can contribute to women's empowerment and well-being, and gender mainstreaming. Girls' schools in both provinces will be prioritized for the provision of electricity. In KPP, the program will identify and prioritize households headed by women, which are usually the poorest and most marginalized, by providing electricity from MHPs. Women will benefit from the time saved and the improved living standards, and have increased access to training and enhanced livelihood opportunities. The program will ensure round-the-clock electricity to PHFs.
- (iii) **Output 3: Institutional capacity to foster sustainability enhanced.** This component will address capacity challenges that constrain program sustainability. The output will ensure institutional strengthening of critical systems (e.g., for monitoring, procurement, and internal audit). A web-based program performance monitoring system will be established under the program.
- (iv) **Output 4: Public sector energy efficiency promoted.** This output will support energy efficiency audits in Punjab, and develop a methodology for follow-up on audit recommendations. It will also support to develop standards and the design for a net-zero energy building, based on the results achieved from the construction of a model building for the energy department.

14. **Eight disbursement-linked indicators selected.** Each disbursement-linked indicator (DLI) meets the criteria of being specific, measurable, achievable, relevant, and time-bound.

²⁰ AF-Mercados EMI. 2016. *Due Diligence Report, Khyber Pakhtunkhwa Province, Peshawar* (prepared under the project preparatory TA for Access to Clean Energy Investment Project). The report suggests multiple business models with Pakhtunkhwa Electricity Development Organization (PEDO), community or private sector ownership; operations and maintenance by private or community. Determined of which model to apply will be dependent on site and size of plant. In all cases, PEDO will procure the contractor.

The outcome, outputs, and corresponding DLIs are listed in Table 2, along with the associated ADB and cofinancier disbursements (allocated based on an 80:20 financing ratio for each DLI).

Table 2: Disbursement-Linked Indicators

Indicator	Disbursement Allocated		Share of Total ADB plus AFD Financing (%)
	ADB (\$ million)	AFD	
Outcome			
DLI 1. By 2021, access to electricity is provided to an additional 240,000 households and 2,600,000 students in unelectrified and poorly electrified areas.	61.40	14.55	20.0
Output 1			
DLI 2. By 2021, power generation capacity from clean energy sources is increased by an additional amount of 182 megawatts.	76.75	18.15	30.0
DLI 3. By 2021, at least 26,587 sites have renewable energy-based power plants installed.	61.40	14.55	15.0
Output 2			
DLI 4. By 2021, at least 30% of schools with solar plants installed are girls' schools.	22.35	5.30	5.0
DLI 5. By 2021, at least 7% of target households newly connected to electricity are women-headed households.	17.85	4.15	5.0
Output 3			
DLI 6. By 2021, governance, financial management, and procurement functions are improved.	30.70	7.26	10.0
DLI 7. From 2017, the information and communication technology-driven program performance monitoring system is operationalized to produce, annual performance monitoring reports for all indicators and program action plan actions.	29.86	7.03	8.0
Output 4			
DLI 8. By 2019, energy audits are conducted on 100% of identified public sector buildings and a model net-zero building is constructed.	6.69	1.64	7.0
Interest During Construction			
Total	325.00	78.63	100.0

ADB = Asian Development Bank, AFD = Agence Française de Développement, DLI = disbursement-linked indicator. Sources: Asian Development Bank, and Khyber Pakhtunkhwa and Punjab province energy departments.

15. DLIs and other performance indicators have been selected to provide ambitious yet achievable measures of progress toward the program outcome and outputs. The outcome DLI (DLI 1) measures the number of people that benefit from access to reliable electricity (target: 240,000 households and 2.6 million students). Under output 1, DLI 2 monitors the power generation capacity added from clean energy sources (target: 182 MW additional capacity), and DLI 3 tracks the number of locations with installed renewable energy-based power plants (target: 1,000 MHPs, 23,000 schools, and 2,587 PHFs). Under output 2, two DLIs 4 and 5 ensure that planning and targeting give special attention to girls' schools and households headed by women. Under output 3, DLI 6 focuses on improving governance and systems for financial management and procurement, while DLI 7 promotes effective and continuous performance monitoring, which is essential to the program's success. Under output 4, DLI 8 tracks progress on energy efficiency measures.

16. The DLI selection process was based on the outcomes of due diligence conducted under the project preparatory TA. Best practices have been structured into the program's business model, with adoption of such practices made part of the program. The targets for each quantitative DLI were based on provincial averages, which are quite high when compared with the rural areas targeted by the program. Similarly, targets for DLIs 4 and 5 (regarding gender) were developed based on current statistics and on empirical evidence that girls' schools households headed by women need special attention in planning and targeting. DLIs 6 and 7

seek to strengthen institutional setups; these are ambitious in seeking to institute essential new procedures and systems (e.g., the establishment of institutionalized procurement procedures; an internal audit function that meets the standards set by the auditor-general of Pakistan; and most importantly, a web-based monitoring system with functions beyond traditional monitoring). For the quantitative indicators on households and students (DLI 1), off-grid generation capacity and number of sites (DLIs 2 and 3), indicative baseline numbers are not available as interventions must be site-specific. These targets have been set based on terrain, results achieved by similar projects developed by NGOs, and a comparison with provincial data. Similarly, the disbursement amount allocated to each DLI depends on its proportion for program success, with bigger shares allocated to critical DLIs (e.g., MHP development, which has the largest impact on results).

17. **Disbursement allocation and schedule.** Financing under the loan will be disbursed subject to the achievement and verification of targets for each DLI in accordance with the verification protocols established for that DLI, including for multiple measurements within the same target year. For some DLIs, the verification protocols allow partial disbursements, and early as well as late achievement. An independent verification agent or agency (IVA) will verify the satisfaction of the relevant DLIs (Appendix 3, Tables A3.1 and A3.2).

E. Expenditure Framework and Financing Plan

18. **Program expenditures.** The RBL program expenditures are estimated to be \$454.3 million from 2017 to 2021 (Table 3).

Table 3: Summary of Program Expenditure Framework, 2017–2021
(in 2016 prices)

Item	Broader Government Program				Item	Results-Based Lending Program			
	Punjab	KPP	Total	Share		Punjab	KPP	Total	Share
	(\$ million)			(%)		(\$ million)			(%)
Hydropower	2,798	8,143	10,941	41.6	MHP		246.1	246.1	54.2
Thermal power	8,568	1,054	9,622	36.6	Solar	101.2	35.30	136.5	30.0
Solar PV	1,973	117	2,089	8.0	Others ^a	6.0	2.2	8.2	1.8
Wind/biogas	1,793	0	1,793	6.8	IDC	6.0	18.0	24.0	5.3
Others	1,135	699	1,834	7.0	Contingencies	10.8	28.7	39.5	8.7
Total	16,267	10,013	26,280	100.0	Total	124.0	330.3	454.3	100.0

^a Others = recurrent cost and capacity building.

IDC = interest during construction and commitment charges; KPP = Khyber Pakhtunkhwa Province, MHP = micro-hydropower plant, PV = photovoltaic.

Sources: Asian Development Bank and Khyber Pakhtunkhwa and Punjab provincial energy departments.

19. **Program financing.** The financing plan is summarized in Table 4. The government has requested a loan of \$325 million from ADB's ordinary capital resources to help finance the RBL program. The loan terms and conditions are in para. 34.

Table 4: Program Financing Plan

Source	Punjab	KPP	Program	Share of Total
	(\$ million)	(\$ million)	(\$ million)	(%)
Government				
Provincial government	13.9	26.9	40.8	9.0
Community contribution	0.0	9.9	9.9	2.2
Development partners				
Asian Development Bank				
Ordinary capital resources (loan)	87.7	237.3	325.0 ^a	71.5

Agence Française de Développement ^d	22.4	56.2	78.6 ^c	17.3
Total	124.0	330.3	454.3	100.0

KPP = Khyber Pakhtunkhwa Province.

^a Interest and other charges during construction to be capitalized in the loan.

^b Joint and collaborative cofinancing from Agence Française de Développement will be in the form of a loan and will not be administered by Asian Development Bank.

^c Agence Française de Développement commitment is €70 million (converted for calculation purposes only).

Sources: Asian Development Bank estimates and Khyber Pakhtunkhwa and Punjab provincial energy departments.

20. **Disbursement arrangements.** From 2017 onward and for disbursement purposes, the Pakhtunkhwa Energy Development Organization (PEDO) in KPP and the Office of the Chief Engineer (Power) in Punjab will periodically submit separate withdrawal applications, along with the evidence of DLI achievement based on the relevant verification protocol. Before submission of the first withdrawal application, the Economic Affairs Division of Pakistan will submit to ADB the evidence of the authority of the person(s) who will sign the withdrawal applications for each province on behalf of PEDO and the Office of the Chief Engineer (Power), together with the authenticated specimen signatures of each authorized person. The government will then arrange for the IVA to verify satisfaction of the relevant DLIs and submit its report. The loan proceeds will be disbursed through the State Bank of Pakistan to the respective provincial consolidated funds,²¹ and then to the assignment accounts of PEDO and the Energy Department of Punjab (EDP). Advance financing of 15% is allowed to address related financing requirements. The government will refund any advance financing amount outstanding within 6 months of program completion, if the DLIs are not achieved on or before program completion.

F. Capacity Development and Program Action Plan

21. Capacity development activities will be carried out by consultants hired under the RBL program, complimenting the program results framework and DLIs, and have been detailed in the program action plan (PAP) covering actions in key areas. These activities will also complement the physical investments and support the achievement of program results and sustainability.

G. Technical Assistance

22. TA for capacity development and program performance monitoring will support program implementation and results achievement. The TA will hire experts during the RBL program period to (i) strengthen monitoring and evaluation (M&E) by PEDO and EDP, (ii) improve safeguard management, and (iii) conduct a sampled verification of the IVA third-party validation report.²² The TA will be implemented from December 2016 to December 2021 and is estimated at \$800,000, of which \$750,000 will be financed on a grant basis by ADB's Technical Assistance Special Fund (TASF-V). The government will support the TA in the form of counterpart staff, office facilities, and other in-kind contributions. ADB will be the executing agency of the TA.

H. Implementation Arrangements

23. The program will be implemented from December 2016 to December 2021. In Punjab, EDP will be the executing agency and the Office of Chief Engineer (Power) will be the implementing agency. In KPP, the Energy and Power Department will be the executing agency and PEDO will be the implementing agency. Each implementing agency will execute the

²¹ The government will relend the ADB loan proceeds to KPP and Punjab provinces.

²² Attached Technical Assistance (accessible from the list of linked documents in Appendix 2).

program through a strengthened program management unit. The executing agencies will be responsible for overall monitoring of the program results. Procurement will be conducted under the rules of the program procurement systems of KPP and Punjab provinces; because Agence Française de Développement will provide cofinancing, universal procurement will apply.²³ Financial auditing and reporting arrangements will rely on country systems. Systems will be enhanced as set out in the program action plan. Results verification will be conducted by the IVA, hired by the implementing agencies under the loan and acceptable to ADB.

III. SUMMARY OF ASSESSMENTS

A. Program Technical Assessments

24. Assessments concluded that the program is well justified and technically sound. The use of off-grid renewable energy is the least-cost option for rural communities scattered over the mountainous areas of KPP province. The program will increase energy security, reduce reliance on imported fuel, reduce the carbon footprint, and contribute to social equity. These conclusions underpin the program's result areas, key actions, and performance indicators. Design and implementation arrangements are sound and the results framework is well designed, being based on a robust causal analysis of the results chain. Each DLI indicator represents an action critical to the achievement of the results.

25. The program will supply reliable electricity to schools, PHFs, and rural communities that currently either lack electricity or receive it for a very limited period, and use other sources (e.g., kerosene or candles) as alternatives. This benefit is incremental and valued at willingness to pay. Some incremental benefits will also be contributed through the sale of saved electricity, which is assumed to be redistributed to the grid for customers without alternative means of generating electricity, valued at the current tariff rate plus subsidies. Similarly, non-incremental benefits have been estimated at the resource saving value for electricity supplied to schools and PHFs that use alternative means, such as gasoline or diesel for generating electricity. The economic internal rate of return is 17.4%, confirming the economic viability of the program.²⁴

26. **Classification.** The RBL program is classified *general intervention*, which supports poverty reduction indirectly by providing electricity to poorer households, schools, and PHFs, and by supporting skills development. The program is classified as *effective gender mainstreaming*, with (i) a gender-specific output and three gender-related DLIs, (ii) training on gender-inclusiveness, (iii) consultations with men and women during site selection and program implementation, (iv) collection of baseline data for DLI verification, and (v) monitoring and evaluation of gender-related components.

B. Program Systems Assessments

27. **Monitoring and evaluation system.** The M&E systems of PEDO and EDP were assessed and measures to strengthen were identified. The current M&E indicators are limited and are the responsibility of project directors. PEDO focuses on monitoring construction

²³ The program will be financed by ADB's ordinary capital resources and cofinancing from Agence Française de Développement. The funds of ADB and Agence Française de Développement will be commingled and jointly used to finance the common expenditure framework of the program, including the individual procurement packages for goods, works, and consulting services under the program. ADB. 2015. *Enhancing Operational Efficiency of the Asian Development Bank*. Manila.

²⁴ Program Soundness Assessment (accessible from the list of linked documents in Appendix 2).

progress and not operation and maintenance, while EDP has no established indicators. Data collection and reporting are done manually with assistance from management consultants, which will become challenging given the expanded number of monitoring indicators under the RBL, and the large number of sites. Institutional arrangements are satisfactory, with PEDO and EDP reporting to provincial authorities on program progress. The program will support a web-based M&E system, which will enable PEDO and EDP to manage the expanded M&E activities. ADB's TA (para. 22) will support training on verifying and monitoring indicators.

28. **Fiduciary systems.** The program will use country fiduciary systems for public financial management, procurement, and anticorruption. These systems were assessed to determine whether they would be able to manage fiduciary risks and provide assurance that RBL program funds are used for their intended purposes, with economy and efficiency. The financial management assessment confirms that adequate financial management capacity exists in the KPP and Punjab provincial governments, with sound budgeting, accounting, and financial reporting; and auditing procedures and practices. Improvements are needed to strengthen internal control and establish internal audit functions. The PAP includes mitigating measures to manage fiduciary risks.

29. **Procurement systems.** The procurement systems and practices are sound and can deliver the intended outcomes. Procurement will follow the respective KPP and Punjab provincial procurement rules, which are both largely modeled on the Federal Public Procurement Rules of Pakistan. These rules are substantially aligned with international best practices and allow for open competitive bidding, adequate provision for advertising procurement opportunities, and the use of standard bidding documents. The risks are assessed as *high*, because some provisions in the national procurement rules can be used to restrict competition and endow procuring entities with discretionary powers that may compromise fairness and transparency. The lack of established procedures and procurement manuals represents major weaknesses. The PAP sets out mitigating measures, including institutional strengthening and ensuring that restrictive clauses are not used in bidding documents.

30. The Guidelines to Prevent or Mitigate Fraud, Corruption, and Other Prohibited Activities in Results-Based Lending Programs were explained to and discussed with the government, PEDO, and EDP.²⁵ The government's anticorruption system is led by the National Accountability Bureau at the federal and provincial levels. The Federal Investigation Agency, with its provincial offices, has the authority to investigate corruption and fraud cases. The main risk is the seemingly reactive nature of the anticorruption system and can be mitigated through implementing a proactive policy and increased awareness training.

31. **Safeguard systems.** A program safeguard systems assessment was conducted and discussed with program stakeholders. The safeguard classification is *category B* for the environment, indigenous peoples, and involuntary resettlement. The climate risk to the program is rated as *high*. The potential impact of climate change on hydrology and irradiation can be mitigated to some extent during site selection. Activities under the program will involve civil works with site-specific environmental impacts, which will be limited to the construction period, and will be addressed through adequate mitigation measures. Solar plants are to be placed on rooftops of existing facilities, while the land required for the MHPs will be provided voluntarily by the beneficiary communities. MHP sites will be screened to exclude sites assessed *category A* for the environment and with involuntary resettlement impacts. Environmental assessments and

²⁵ ADB. 2013. *Piloting Results-Based Lending for Programs*. Manila.

management plans will be prepared for each site. The PAP identifies mitigation actions to address weaknesses.

C. Integrated Risk Assessment and Mitigating Measures

32. Major risks and mitigating measures are summarized in Table 5. The overall benefits and impacts are expected to outweigh the risks and costs. The overall risk level is substantial.

Table 5: Summary of Integrated Risk Assessment and Mitigating Measures

Risks	Ratings	Key Mitigating Measures
Results. There are issues relating to site access, gender priority actions, and communities and local authorities fail to undertake O&M of plants.	Substantial	Ensure backup plans for site selection and access, and implement robust monitoring and compliance with O&M and gender actions.
Expenditures and financing. The government may not include any budget for the O&M for solar plants.	Moderate	Include O&M for the first 3 years in the installation contract and ensure another O&M contract for the next 3 years is awarded.
Fiduciary. Institutional inertia and vested interests impede the required changes to strengthen internal controls and systems.	Substantial	The Finance Department will establish an internal audit system and prioritize implementation in the Energy Department.
Procurement. Institutional procurement, project management, and contract administration capacity are limited.	High	Implementing agencies will (i) establish capacity and procurement-specific skills, (ii) prepare procurement manual, (iii) prepare customized SBDs with due attention to discretion and eligibility, (iv) strengthen contract management capacity, and (v) establish procurement monitoring system.
Operating environment. Some sites may not be implemented due to security risks or cost implications.	Moderate	Undertake extensive consultations with community elders to find solutions for extreme high-security risk areas. Ensure sufficient funds and insurance of assets is made.
Overall RBL program risk	Substantial	

O&M = operations and management, RBL = results-based lending, SBD = standard bidding document.

Note: Risk factors are assessed against two dimensions: (i) the likelihood that the risk will occur, and (ii) the impact of the risk on the outcome. Rating scale: low = low likelihood and low impact, moderate = substantial to high likelihood but low to moderate impact, substantial = low to moderate likelihood but substantial to high impact, high = high likelihood and high impact.

Source: Asian Development Bank.

IV. ASSURANCES

33. The government, the Energy Department of Punjab, the Office of the Chief Engineer (Power) of Punjab, the Energy Department of KPP, and PEDO have agreed with ADB on certain covenants for the RBL program, which are set forth in the loan agreement.

V. RECOMMENDATION

34. 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 \$325,000,000 to the Islamic Republic of Pakistan for the Access to Clean Energy Investment Program, 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 agreement presented to the Board.

Takehiko Nakao
President

4 November 2016

DESIGN AND MONITORING FRAMEWORK

Impact the Results-Based Lending Program is Aligned With			
Inclusive economic growth achieved through sustainable energy access (Pakistan Vision 2025: One Nation–One Vision) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>Outcome Access to sustainable and more reliable electricity services increased, particularly for vulnerable communities in KPP and Punjab</p>	<p>a. By 2021, access to electricity is provided to an additional 240,000 households and 2.6 million students in unelectrified and poorly electrified areas. (DLI 1) (2016 baseline: 0)</p> <p>b. In previously electrified areas, the number of targeted schools and PHFs affected by load shedding is reduced to zero by 2021. (2016 baseline: 13,000 schools, 1,900 PHFs)</p>	<p>a. PPR of PEDO and EDP</p> <p>b. PPR of PEDO and EDP</p>	<p>Provincial governments have financing shortfalls.</p> <p>Communities and/or district authorities are unable and/or unwilling to carry out operation and maintenance of solar plants as planned.</p>
<p>Outputs</p> <p>1. Renewable energy-based power plants installed</p> <p>2. Opportunity for women and girls to obtain energy services and benefits increased</p> <p>3. Institutional capacity to foster sustainability enhanced</p> <p>4. Public sector energy efficiency promoted in Punjab</p>	<p>1a. By 2021, power generation capacity from clean energy sources is increased by 182 MW. (DLI 2) (2016 baseline: 0 MW)</p> <p>1b. By 2021, at least 26,587 sites have renewable energy-based power plants installed. (DLI 3) (2016 baseline: 0 installed)</p> <p>2a. By 2021, girls' schools account for at least 30% of schools with solar plant installed. (DLI 4) (2016 baseline: %, no school)</p> <p>2b. By 2021, households headed by women account for at least 7% of target households that are newly connected to electricity.^b (DLI 5) (2016 baseline: 0 households connected)</p> <p>2c. By 2021, 500 PHFs used by women for delivery or antenatal care are equipped with solar plants.^c (2016 baseline: 0 facilities equipped)</p> <p>2d. By 2021, 3,000 women are trained to equip them in using energy benefits.^d (2016 baseline: 0 women trained)</p> <p>3a. By 2021, PEDO and EDP's governance, financial management, and procurement functions are improved. (DLI 6) (2016 baseline: No dedicated procurement unit or internal audit function)</p> <p>3b. By 2021, 100% of identified energy and finance department staff of both provinces are trained on technical issues, gender, project management, financial management, contract management, energy audit, environmental and social management, and climate risk management. (2016 baseline: 0 staff trained)</p> <p>3c. Annual performance monitoring reports are produced on all indicators and PAP actions based on the internet-based PPMS starting in 2017. (DLI 7) (2016 baseline: no PPMS)</p> <p>4a. By 2019, energy audits are conducted on 100% of identified public sector buildings and a model net-zero energy building is constructed. (DLI 8) (2016 baseline: no energy audits, no net-zero energy building)</p>	<p>a. PPR of PEDO and EDP</p> <p>b. PPR of PEDO and EDP</p> <p>a. PPR of PEDO and EDP</p> <p>b. PPR of PEDO and EDP</p> <p>c. PPR of PEDO and EDP</p> <p>d. PPR of PEDO</p> <p>a. PPR of PEDO and EDP</p> <p>b. PPR of PEDO and EDP</p> <p>c. PPR of PEDO and EDP</p> <p>a. PPR of PEDO and EDP</p>	<p>Resistance from local communities impedes identification and targeting of households headed by women and girls schools.</p> <p>Institutional inertia and vested interests impede the required changes.</p> <p>Standards and recommendations for net-zero energy buildings and energy audits are delayed or rejected due to cost implications.</p>

Key Program Actions

1. Renewable energy-based power plants installed
 - 1.1 Consult with and mobilize communities for participation in MHP initiatives (2017 onward).
 - 1.2 Install MHPs with business model in KPP (2017 onward).
 - 1.3 Consult with communities on solar plants (2017 onward).
 - 1.4 Install solar plants in schools and PHFs in KPP and Punjab provinces (2017 onward).
 - 1.5 Set up operation and maintenance arrangements for solar plants (2017 onward).
2. Opportunity for women and girls to obtain energy services and benefits increased
 - 2.1 Map, identify, and target households headed by women in KPP for MHP connection (2017 onward).
 - 2.2 Identify and prioritize girls' schools in the allocation of solar plants (2017 onward).
 - 2.3 Identify and prioritize PHFs providing antenatal care and/or delivery services in the allocation of solar plants (2017 onward).
 - 2.4 Identify women beneficiaries, and develop and implement multiyear training plans to equip women with skills in the use of energy benefits (2017 onward).
3. Institutional capacity to foster sustainability enhanced
 - 3.1 Establish internal audit and strengthen internal controls (2017 onward).
 - 3.2 Establish procurement unit and adopt improved procurement manual (2017 onward).
 - 3.3 Develop and implement training plans for energy and finance staff of KPP and Punjab (2017 onward).
 - 3.4 Set up PPMS in PEDO and EDP, establish baselines and monitoring mechanisms, and produce reports (2017 onward).
4. Public sector energy efficiency promoted in Punjab
 - 4.1 Develop construction standards and a design for a net-zero energy building, implement construction (2017 onward).
 - 4.2 Finalize government building standards and design for net-zero energy buildings, and notify all relevant stakeholders (2019).
 - 4.3 Conduct energy audits and develop methodology for follow-up on energy audit recommendations (2017 onward).

Financing Plan

Total program financing from 2017 to 2021: \$454.3 million

Government of Pakistan: \$40.8 million
 Asian Development Bank: \$325 million (loan)
 Communities: \$9.9 million

Assumptions for Partner Financing

AFD is cofinancing the results-based lending program on a joint collaborative basis (\$78.6 million). The cofinancing will be in support of outputs in a common results framework agreed between the government, ADB, and AFD.

AFD = Agence Française de Développement, DLI = disbursement-linked indicator, EDP = Energy Department of Punjab, KPP = Khyber Pakhtunkhwa Province, MHP = micro-hydropower plant, MW = megawatt, PAP = program action plan, PEDO = Pakhtunkhwa Energy Development Organization, PHF = public health facility, PPMS = program performance monitoring system, PPR = program performance report.

^a Government of Pakistan. Ministry of Planning, Development & Reform. 2014. *Pakistan Vision 2025: One Nation—One Vision*. Islamabad.

^b Households headed by women mean any household headed by (i) a single woman living on her own; and (ii) a widow or woman separated from her husband for any reason, including migration, with or without children.

^c Not every health facility or unit is equipped for antenatal care or delivery care. The minimum requirement to qualify is the presence of a trained midwife or nurse certified to conduct antenatal care.

^d Training of community beneficiaries to be conducted by nongovernment organization community mobilizers.

Sources: Asian Development Bank, Energy Department of Punjab, and Pakhtunkhwa Energy Development Organization.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=49056-002-3>

1. Loan Agreement
2. Country Economic Indicators
3. Summary Sector Assessment: Energy
4. Program Soundness Assessment
5. Program Results Assessment
6. Program Results Framework
7. Program Expenditure and Financing Assessment
8. Program Monitoring and Evaluation System Assessment
9. Program Fiduciary Systems Assessment
10. Program Safeguard Systems Assessment
11. Integrated Risk Assessment and Mitigating Measures
12. Program Action Plan
13. Attached Technical Assistance
14. Contribution to the ADB Results Framework
15. Development Coordination
16. Summary Poverty Reduction and Social Strategy
17. Program Implementation Document

Supplementary Documents

18. Gender Mainstreaming Strategy
19. Poverty and Social Analysis Report
20. Environment and Social Safeguard Assessment

DISBURSEMENT-LINKED INDICATORS, VERIFICATION PROTOCOLS, AND DISBURSEMENT SCHEDULE

Table A3.1: Disbursement-Linked Indicators

Results Indicators	Baseline and year	2017	2018	2019	2020	2021
Outcome: Access to sustainable and more reliable electricity services increased, particularly for vulnerable communities in KPP and Punjab						
DLI 1. By 2021, access to electricity is provided to an additional 240,000 households and 2,600,000 students in un-electrified and poorly electrified areas:	0	40,000 households 500,000 students	80,000 households 1,100,000 students	120,000 households 1,600,000 students	180,000 households 2,100,000 students	240,000 households 2,600,000 students
KPP: households	0	40,000	80,000	120,000	180,000	240,000
KPP: total students	0	160,000	320,000	480,000	640,000	800,000
Punjab: total students	0	340,000 (<i>Partial disbursements allowed</i>)	780,000 (<i>Partial disbursements allowed</i>)	1,120,000 (<i>Partial disbursements allowed</i>)	1,460,000 (<i>Partial disbursements allowed</i>)	1,800,000 (<i>Partial disbursements allowed</i>)
Output 1: Renewable energy-based power plants installed						
DLI 2. By 2021, power generation capacity from clean energy sources is increased by an <i>additional</i> amount of 182 MW:	0 MW	36 MW	73 MW	109 MW	146 MW	182 MW
KPP	0 MW	31 MW	61 MW	92 MW	123 MW	153 MW
Punjab	0 MW	5 MW (<i>Partial disbursements allowed</i>)	12 MW (<i>Partial disbursements allowed</i>)	17 MW (<i>Partial disbursements allowed</i>)	23 MW (<i>Partial disbursements allowed</i>)	29 MW (<i>Partial disbursements allowed</i>)
DLI 3. By 2021, at least 26,587 sites have renewable energy-based power plants installed:	0 installed	5,317	10,635	15,952	21,270	26,587
KPP: 1,000 MHPs installed		200	400	600	800	1,000
KPP: 8,187 solar plants installed		1,637	3,275	4,912	6,550	8,187
Punjab: 17,400 solar plants installed		3,480 (<i>Partial disbursements allowed</i>)	6,960 (<i>Partial disbursements allowed</i>)	10,440 (<i>Partial disbursements allowed</i>)	13,920 (<i>Partial disbursements allowed</i>)	17,400 (<i>Partial disbursements allowed</i>)
Output 2. Opportunity for women and girls to obtain energy services and benefits increased.						
DLI 4. By 2021, at least 30% of schools with solar plant installed are girls schools:	0%	6%	12%	18%	24%	30%
KPP		6%	12%	18%	24%	30%
Punjab		6% (<i>Partial disbursements allowed</i>)	12% (<i>Partial disbursements allowed</i>)	18% (<i>Partial disbursements allowed</i>)	24% (<i>Partial disbursements allowed</i>)	30% (<i>Partial disbursements allowed</i>)

Results Indicators	Baseline and year	2017	2018	2019	2020	2021
DLI 5. By 2021, at least 7% of target households newly connected to electricity are women-headed households ¹	0%	2% <i>(Partial disbursements allowed)</i>	4% <i>(Partial disbursements allowed)</i>	5% <i>(Partial disbursements allowed)</i>	6% <i>(Partial disbursements allowed)</i>	7% <i>(Partial disbursements allowed)</i>
Output 3. Institutional capacity to foster sustainability enhanced.						
DLI 6. By 2021, governance, financial management and procurement functions are improved.						
KPP energy department (PEDO)	No procurement unit, no internal audit	<ul style="list-style-type: none"> • Corporate governance structure implemented, including dedicated procurement unit • Internal audit department established and operationalized • Procurement manual adopted • Business model adopted for micro-hydroelectricity plants • Program management unit strengthened. 	First internal audit report approved by PEDO board			PEDO internal performance audit report on the program produced

¹ Women-headed households mean any household headed by: (i) a single woman living on her own, (ii) a widow, or woman separated from her husband for any reason, including migration, with or without children.

Results Indicators	Baseline and year	2017	2018	2019	2020	2021
Energy department of Punjab (EDP)	No procurement unit, no internal audit	<ul style="list-style-type: none"> • Dedicated procurement unit established. • Internal audit department established and operationalized • Procurement manual adopted • Program management unit strengthened. 	EDP internal audit report produced			EDP internal performance audit report on the program produced
DLI 7. From 2017, ICT-driven program performance monitoring system (PPMS) is operationalized to produce annual performance monitoring reports on all indicators and PAP actions.	No PPMS					
KPP		PPMS set up, 2017 report issued	2018 report issued on all indicators and PAP actions	2019 report issued on all indicators and PAP actions	2020 report issued on all indicators and PAP actions	2021 report issued on all indicators and PAP actions
Punjab		PPMS set up, 2017 report issued	2018 report issued on all indicators and PAP actions	2019 report issued on all indicators and PAP actions	2020 report issued on all indicators and PAP actions	2021 report issued on all indicators and PAP actions
Output 4. Public sector energy efficiency promoted in Punjab						
DLI 8. DLI 8: By 2019, energy audits are conducted on 100% of identified public sector buildings and a model net zero building is constructed.	No energy audits	<ul style="list-style-type: none"> • 30% of identified public sector buildings have conducted energy audits (<i>Partial disbursements allowed</i>) • Construction of model net zero building initiated 	100% of identified buildings have conducted energy audits (<i>Partial disbursements allowed</i>)	<ul style="list-style-type: none"> • Methodology developed and approved for follow-up on energy audit recommendations. • Construction of model net zero building completed and government standards and design for net-zero buildings notified. 		

Results Indicators	Baseline and year	2017	2018	2019	2020	2021
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ADB = Asian Development Bank, DLI = disbursement-linked indicator, EDP = Energy Department of Punjab, ICT = Information and Communication Technology, KPP = Khyber Pakhtunkhwa province, MHP = micro-hydropower plant, MW = megawatts, PAP= Program Action Plan, PEDO = Pakhtunkhwa Energy Development Organization, PPMS = program performance monitoring system, RBL = results-based lending.

Sources: Asian Development Bank, Energy Department of Punjab, and Pakhtunkhwa Energy Development Organization.

Table A3.2: Disbursement-Linked Indicator Verification Protocols

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
DLI 1. By 2021, access to electricity is provided to an additional 240,000 households and 2,600,000 students in un-electrified and poorly electrified areas.			
<p>2016 baseline: 0 All targets are cumulative and provide the minimum threshold for disbursement without prejudice to the arrangements for partial disbursement. <u>Disbursement targets for KPP:</u> Households: • 2017: 40,000 • 2018: 80,000 • 2019: 120,000 • 2020: 180,000 • 2021: 240,000 Students: • 2017: 160,000 • 2018: 320,000 • 2019: 480,000 • 2020: 640,000 • 2021: 800,000</p> <p><u>Disbursement targets for Punjab</u> Students: • 2017: 340,000 • 2018: 780,000 • 2019: 1,120,000 • 2020: 1,460,000 • 2021: 1,800,000</p>	<p>Definition: For MHP, the DLI refers to the total households connected to the MHP grids provided by the RBL program. For solar sources, the DLI refers to the total number of students in schools provided with solar electricity by the RBL program, to be obtained from education authorities.</p> <p>Conditions for disbursement are met when (i) the total number of households provided with electricity by the program from MHPs equals or exceeds the annual cumulative target specified, and (ii) when the total number of students in beneficiary schools is equal to or exceeds the annual cumulative target specified. In KPP, MHP component counts for 80% of full disbursement and solar sources component counts for 20% of full disbursement. For example, if all the household targets are achieved but student targets are not, then 80% of the target amount allocated for KPP for that year will be disbursed.</p> <p>Partial disbursement: The DLI is scalable and partial disbursement is allowed for each of the above components. If the target is not fully achieved, then disbursement is proportional to the increase made from the previous period's targeted achievement for that component. The following formula will be applied: <i>Partial DLI disbursement = planned DLI disbursement for the period × (actual achievement of the current period – targeted achievement of the previous period) / (targeted achievement of the current period – targeted achievement of the previous period).</i>² Disbursements are allowed for early or late achievement of the DLI. This means that the planned disbursement amount for a given year can be released when the set target is fully achieved, even if the achievement is a year or more late, as long as this is within the loan period. If the target achievement is early, early disbursement can be made.</p>	<p>KPP: PEDO reports drawn from its PPMS.</p> <p>Punjab: EDP reports drawn from its PPMS. Frequency for reporting will be annual.</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant report. The IVA will verify the results each year first, from the administrative records. These will be the number of consumers per site and schoolchildren in connected schools in KPP and the number of schoolchildren in connected schools in Punjab. Second, the IVA will back this up with random spot checks of communities, and schools in field visits. Field trips may be combined as appropriate for DLIs 1 to 5, with checking of different elements for each DLI on the same field trip.</p> <p>Within three weeks of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>
DLI 2. By 2021, power generation capacity from clean energy sources is increased by an additional amount of 182 MW.			
<p>2016 baseline: 0 All targets are cumulative and provide the minimum threshold</p>	<p>Definition: Clean energy sources mean MHPs and solar plants installed by the RBL program in KPP, and solar plants installed by the RBL program in schools in</p>	<p>KPP: PEDO reports drawn from its</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant</p>

² For each year, the baseline (representing 0% disbursement) is taken from the previous period's planned target, while the current year's target (representing 100% disbursement) is taken from the current year's planned target.

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
<p>for disbursement without prejudice to the arrangements for partial disbursement.</p> <p><u>Disbursement targets for KPP:</u></p> <ul style="list-style-type: none"> •2017: 31 MW •2018: 61 MW •2019: 92 MW •2020: 122 MW •2021: 153 MW <p><u>Disbursement targets for Punjab:</u></p> <ul style="list-style-type: none"> •2017: 6 MW •2018: 12 MW •2019: 17 MW •2020: 23 MW •2021: 29 MW 	<p>Punjab, and the University of Bahawalpur. For each province, installed power generation capacity will be added up. There is no need to disaggregate by type of renewable sources.</p> <p>Conditions for disbursement are met for each province when the <i>total</i> installed capacity from the above sources reach or exceed the megawatts specified in the annual target for that province.</p> <p>Partial disbursement: The DLI is scalable and partial disbursement is allowed. If the target is not fully achieved, then disbursement is proportional to the increase made from the previous period's targeted achievement. The following formula will be applied: <i>Partial DLI disbursement = planned DLI disbursement for the period × (actual achievement of the current period – targeted achievement of the previous period) / (targeted achievement of the current period – targeted achievement of the previous period).</i>³</p> <p>Disbursements are allowed for early or late achievement of the DLI. This means that the planned disbursement amount for a given year can be released when the set target is fully achieved, even if the achievement is a year or more late, as long as this is within the loan period. If the target achievement is early, early disbursement can be made.</p>	<p>PPMS.</p> <p>Punjab: EDP reports drawn from its PPMS. Frequency for reporting will be annual.</p>	<p>report. The IVA will verify the results each year through (i) a review of program records on delivery, installation and capacity of power source and (ii) backed up by field spot checks. The verification process will take into account the different capacities of each source. Field trips may be combined as appropriate for DLIs 1 to 5, with checking of different elements for each DLI on the same field trip. Within three weeks of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>
DLI 3: By 2021, at least 26,587 sites have renewable energy-based power plants installed.			
<p>2016 baseline: 0</p> <p>All targets are cumulative and provide the minimum threshold for disbursement without prejudice to the arrangements for partial disbursement.</p> <p><u>Disbursement targets for KPP:</u></p> <p>Total MHPs installed:</p> <ul style="list-style-type: none"> •2017 : 200 •2018 : 400 •2019 : 600 •2020 : 800 •2021 : 1,000 <p>Solar plants installed:</p> <ul style="list-style-type: none"> •2017: 1,637 	<p>Definition: Renewable energy sources mean MHPs in KPP, and solar plants in schools and PHFs in both KPP and Punjab. These are considered installed when the plant is operational and producing electricity. Whatever the installed capacity of the MHP or solar plants, each plant is counted as an entity.</p> <p>Conditions for full disbursement are met for each province when the <i>total</i> number of installations (MHPs and solar plants in KPP and solar plants in Punjab) is equal to or exceed the annual target for that province. For KPP, the MHPs account for 80% and solar plants for 20% of full disbursement. For example, if all the MHP installation targets are achieved but not the solar plant targets are achieved, then from the target amount allocated for DLI 3 for KPP for that year, 80% disbursement will be made for the full achievement of MHP installation.</p>	<p>KPP: PEDO reports drawn from its PPMS.</p> <p>Punjab: EDP reports drawn from its PPMS. Frequency for reporting will be annual.</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant report. The IVA will verify the results each year, in the same process as for DLIs 1 to 5 (review of records backed up by field spot checks). For DLI 3, field checks will focus on the installation and operationalization of plants. Field trips may be combined as appropriate for DLIs 1 to 5, with checking of different elements for each DLI on the</p>

³ For each year, the baseline (representing 0% disbursement) is taken from the previous period's planned target, while the current year's target (representing 100% disbursement) is taken from the current year's planned target.

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
<ul style="list-style-type: none"> •2018: 3,275 •2019: 4,912 •2020: 6,550 •2021: 8,187 <p><u>Disbursement targets for Punjab:</u> Solar plants installed:</p> <ul style="list-style-type: none"> •2017: 3,480 •2018: 6,960 •2019: 10,440 •2020: 13,920 •2021: 17,400 	<p>Partial disbursement: The DLI is scalable and partial disbursement is allowed for each component. If the target is not fully achieved, then disbursement is proportional to the increase made from the previous period's targeted achievement for that component. The following formula will be applied:</p> <p><i>Partial DLI disbursement = planned DLI disbursement for the period × (actual achievement of the current period – targeted achievement of the previous period) / (targeted achievement of the current period – targeted achievement of the previous period).</i>⁴</p> <p>Disbursements are allowed for early or late achievement of the DLI. This means that the planned disbursement amount for a given year can be released when the set target is fully achieved, even if the achievement is a year or more late, as long as this is within the loan period. If the target achievement is early, early disbursement can be made.</p>		<p>same field trip. Within three weeks of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>
DLI 4: By 2021, at least 30% of schools with solar plant installed are girls' schools.			
<p>2016 baseline: No school connected to solar plant. All targets are cumulative and provide the minimum threshold for disbursement without prejudice to the arrangements for partial disbursement. <u>Disbursement targets (Share of girls schools within the total number of schools having received solar plants):</u> <u>for KPP:</u></p> <ul style="list-style-type: none"> •2017: 6% •2018: 12% •2019: 18% •2020: 24% •2021: 30% <p><u>for Punjab:</u></p> <ul style="list-style-type: none"> •2017: 6% •2018: 12% 	<p>Definition: The numerator for this indicator is the number of girls-only schools ("girls' schools") connected to a solar plant. The denominator is the total number of schools connected to a solar plant. Each year, the numerator and denominator are measured on a cumulative basis.</p> <p>Conditions for disbursement are met for each province when the percentage share of girls' schools equals or exceeds the annual percentage target for that province.</p> <p>Partial disbursement: The DLI is scalable and partial disbursement is allowed. If the target is not fully achieved, then disbursement is proportional to the increase made from the previous period's targeted achievement. The following formula will be applied:</p> <p><i>Partial DLI disbursement = planned DLI disbursement for the period × (actual achievement of the current period – targeted achievement of the previous period) / (targeted achievement of the current period – targeted achievement of the previous period).</i>⁵</p> <p>Disbursements are allowed for early or late achievement of the DLI. This means that the planned disbursement amount for a given year can be released when the set target is fully achieved, even if the achievement is a</p>	<p>KPP: PEDO reports drawn from its PPMS.</p> <p>Punjab: EDP reports drawn from its PPMS. Frequency for reporting will be annual.</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant report. The IVA will verify the results each year, in the same two stage process as for DLIs 1 to 5 (first, review of program and school records; second, random spot checks conducted in the field). Field trips may be combined as appropriate for DLIs 1 to 5, with checking of different elements for each DLI on the same field trip. Within three week of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>

⁴ For each year, the baseline (representing 0% disbursement) is taken from the previous period's planned target, while the current year's target (representing 100% disbursement) is taken from the current year's planned target.

⁵ For each year, the baseline (representing 0% disbursement) is taken from the previous period's planned target, while the current year's target (representing 100% disbursement) is taken from the current year's planned target.

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
<ul style="list-style-type: none"> •2019: 18% •2020: 24% •2021: 30% 	year or more late, as long as this is within the loan period. If the target achievement is early, early disbursement can be made.		
DLI 5: By 2021, at least 7% of target households newly connected to electricity are women-headed households.			
<p>2016 baseline: 0</p> <p>All targets are cumulative</p> <p><u>Disbursement targets for KPP:</u></p> <p>All targets are cumulative and provide the minimum threshold for disbursement without prejudice to the arrangements for partial disbursement.</p> <p>Share of women-headed households within the total number of households in KPP having received electricity generated from MHPs:</p> <ul style="list-style-type: none"> •2017: 2% •2018: 4% •2019: 5% •2020: 6% •2021: 7% 	<p>Definition:</p> <p>The denominator for this indicator, the “target households”, means the households in the communities selected by the RBL program that have received electricity generated from MHPs. The numerator is the number of women-headed households provided with electricity from MHPs under the RBL program. Women-headed households mean any household headed by: (i) a single woman living on her own, with or without children, or (ii) a widow, or woman separated from her husband for any reason, including migration, with or without children.</p> <p>Conditions for disbursement are met when the percentage share of women-headed households equals or exceeds the annual cumulative target for KPP.</p> <p>Partial disbursement: The DLI is scalable and partial disbursement is allowed. If the target is not fully achieved, then disbursement is proportional to the increase made from the previous period’s targeted achievement. The following formula will be applied:</p> <p><i>Partial DLI disbursement = planned DLI disbursement for the period x (actual achievement of the current period – targeted achievement of the previous period) / (targeted achievement of the current period – targeted achievement of the previous period).</i>⁶</p> <p>Disbursements are allowed for early or late achievement of the DLI. This means that the planned disbursement amount for a given year can be released when the set target is fully achieved, even if the achievement is a year or more late, as long as this is within the loan period. If the target achievement is early, early disbursement can be made.</p>	<p>KPP: PEDO reports drawn from its PPMS.</p> <p>Punjab: EDP reports drawn from its PPMS. Frequency for reporting will be annual.</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant report. The IVA will verify the results each year, in the same two stage process as for DLIs 1 to 5 (first, review of program records, and second, random spot checks conducted in the field). Checks for this DLI will focus on the number of women-headed households in MHP beneficiary communities. Field trips may be combined as appropriate for DLIs 1 to 5, with checking of different elements for each DLI on the same field trip.</p> <p>Within three week of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>
DLI 6: By 2021, governance, financial management and procurement functions are improved.			
<p>2016 baseline: No procurement unit, no internal audit department.</p> <p><u>Disbursement targets for KPP:</u></p> <ul style="list-style-type: none"> •2017: (i) Corporate 	<p>Definition:</p> <p>The actions under DLI 6 in terms of institutional strengthening are measured by the results produced, as follows:</p> <p>a) An internal audit department must meet the following criteria. The department (i) independently assesses the organization's risk management,</p>	<p>KPP: PEDO reports</p> <p>Punjab: EDP reports</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant report and the following as applicable:</p>

⁶ For each year, the baseline (representing 0% disbursement) is taken from the previous period’s planned target, while the current year’s target (representing 100% disbursement) is taken from the current year’s planned target.

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
<p>governance structure implemented, including dedicated procurement unit, (ii) Internal audit department established and operationalized, (iii) procurement manual adopted (iv) business model adopted for micro-hydroelectricity plants, (v) program management unit strengthened.</p> <ul style="list-style-type: none"> •2018: First internal audit report approved by PEDO board. •2021: PEDO internal performance audit report on the program produced. <p><u>Disbursement targets for Punjab:</u></p> <ul style="list-style-type: none"> •2017: (i) Dedicated procurement unit established, (ii) Internal audit department established and operationalized, (iii) Procurement manual adopted, (iv) Program management unit strengthened. •2018: EDP internal audit report produced. •2021: EDP internal performance audit report on the program produced. 	<p>governance and internal control system, (ii) reports regularly on these to the highest level in the organization (e.g., head of the organization, management and the audit committee), and (iii) is made up of qualified and skilled people able to work in accordance with the requirements contained within the International Professional Practices Framework. Most importantly, the internal audit report (2018) and performance audit report (2021) produced by the internal audit department must meet the standards set by the Auditor-General of Pakistan.</p> <p>b) A dedicated procurement unit must meet the following criteria: (i) it is established as a permanent unit of the organization with supplementary procurement staff in the Program Management Unit, (ii) its functions are procurement planning, procurement process, contract management and procurement monitoring and reporting, and (iii) the roles and accountabilities are clearly defined within the unit as well as with the rest of the organization.</p> <p>c) The procurement manual must be able to guide all PEDO/EDP activities in procurement and contracting practices and must meet provincial regulatory requirements in the procurement of all goods, services and works, as well as in the internal controls and standards of conduct for all personnel involved in the procurement process.</p> <p>d) The business model adopted for MHPs means the KPP government has to review, select and adopt one of a number of business models developed as part of the due diligence report under ADB's TA 9047 PAK.</p> <p>e) A strengthened program management unit means a unit that has been established and staffed in line with the organogram in the PPTA report, which means having the operational strength to implement PAP.</p> <p>Conditions for disbursement are met for each province when the institutional action(s) specified for that year has been completed and the entities or products set up or produced meet the criteria set out in (a) to (d) above. For 2017, each of the 5 actions required of the KPP government accounts for 20% of the full disbursement allocation for that year, while for Punjab, each of the 4 actions required accounts for 25% of the full disbursement allocation for that year. That is, if Punjab completes only the action on internal audit and no other in 2017, then it will receive only 25% of the full allocation for that year.</p> <p>Partial disbursement is not allowed: The DLI is not scalable. The action has to be completed before any disbursement. Disbursements are not allowed for late achievement of the DLI. This means that all actions and reports must be completed on time. Early payment against an earlier than scheduled completion date is allowed.</p>	<p>Frequency for reporting will be annual.</p>	<p>(a) for the implementation of the corporate governance structure: a copy of the new corporate governance structure in place, with an indication of the names of the staff occupying the various positions reflected in the structure, and a copy of the document which describes the functions and responsibilities of each unit and position in the structure;</p> <p>(b) for the establishment of the dedicated procurement unit or internal audit department: a certification from the appropriate officer of PEDO or EDP confirming that the procurement unit or internal audit department has been established and operationalized with a copy of the document which describes the functions and responsibilities of the unit or department and a list of the names of the staff occupying each position in the unit or department;</p> <p>(c) for the adoption of the procurement manual or business model: a copy of the notification or other order of the appropriate body or officer in PEDO or EDP adopting the procurement manual or business model, and a copy of the manual or model;</p> <p>(d) for the strengthening of the program management unit: a certification of the appropriate</p>

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
			<p>officer in PEDO or EDP listing the actions that were completed in order to strengthen the program management unit, with an indication of the dates of completion and other supporting details.</p> <p>The IVA will verify the results in 2017, 2018 and 2021 on the basis of the required reports. Within three week of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>
DLI 7: From 2017, ICT-driven program performance monitoring system (PPMS) is operationalized, to produce annual performance monitoring reports on all indicators and PAP actions.			
<p>2016 baseline: No PPMS</p> <p><u>Disbursement targets for KPP:</u></p> <ul style="list-style-type: none"> • 2017: PPMS set up in PEDO, 2017 report issued • 2018–2021: annual performance monitoring report issued on all indicators and PAP actions <p><u>Disbursement targets for Punjab:</u></p> <ul style="list-style-type: none"> • 2017: PPMS set up in EDP, 2017 report issued • 2018–2021: annual performance monitoring report issued on all indicators and PAP actions 	<p>Definition: Operationalization of PPMS means the establishment of the PPMS in EDP and PEDO, with the required software and capacity in place to (i) conduct performance monitoring of all DMF indicators as well as additional indicators, as required, for the procurement, installation and functioning of MHP and solar plants, and (ii) to implement all the PAP actions as agreed. The PPMS should be a web-based monitoring system, to allow for data transmission and collection from remote locations. “All indicators” mean all the indicators agreed on by all stakeholders in the early part of 2017.</p> <p>Conditions for disbursement are met for each province when the actions specified for that year are met. For 2017, full disbursement requires (a) PPMS to be set up (50% of full disbursement allocation for that year) and (b) a 2017 report to be produced on all indicators (50% of full disbursement allocation for that year).</p> <p>Partial disbursement is not allowed: The DLI is not scalable. Disbursements are also not allowed for late achievement of the DLI.</p>	<p>KPP: PEDO reports drawn from its PPMS.</p> <p>Punjab: EDP reports drawn from its PPMS. Frequency for reporting will be annual.</p>	<p>PEDO or EDP prepares an attestation that the DLI is met and attaches the relevant report.</p> <p>The IVA will verify the results each year on the basis of the performance monitoring reports.</p> <p>Within three week of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>
DLI 8: By 2019, energy audits are conducted on 100% of identified public sector buildings and a model net zero building is constructed.			
<p>2016 baseline: No energy audits</p> <p><u>Disbursement targets for</u></p>	<p>Definition: “Identified public sector buildings” are all those in the list developed by EDP in the first quarter of 2017 and acceptable to ADB. The number of buildings</p>	<p>EDP reports drawn from its PPMS.</p>	<p>EDP prepares an attestation that the DLI is met and attaches the relevant report.</p>

Disbursement-Linked Indicator	Definition and Description of Achievement and Verification	Information Source and Time Frame	Verification Agency and Procedure
<p>Punjab: 2017:</p> <ul style="list-style-type: none"> • 30% of identified public sector buildings have conducted energy audits • Construction of model net zero building initiated <p>2017:</p> <ul style="list-style-type: none"> • 100% of identified buildings have conducted energy audits <p>2018:</p> <ul style="list-style-type: none"> • Methodology developed and approved for follow-up on energy audit recommendations • Construction of model net zero building completed and government standards and design for net-zero buildings notified. 	<p>on this list constitutes the denominator for this indicator for 2017 and 2018. The numerator is the number of buildings from the list that have had energy audits conducted. "net-zero building" means a 62% reduction from current average level for net emission.</p> <p>Conditions for disbursement for the energy audits are met when the percentage targets for 2017 and 2018 are achieved, and when the institutional actions specified for each year have been completed. For the net-zero building, condition for disbursement for the 2017 target is met when civil works are started and target for 2019 is met when the building has been completed, furnished, equipped and Energy Department staff shifted to the building. For each year, the institutional actions relating to energy audits are allocated 15% of the full disbursement amount and institutional actions relating to net-zero building are allocated 85% of the full disbursement amount for that year.</p> <p>Partial disbursement: For 2017 and 2018 energy audits percentage targets, the DLI is scalable and partial disbursement is allowed. However, partial disbursement is not allowed for the institutional actions. Disbursements are allowed for early or late achievement of the DLI. This means that the planned disbursement amount for a given year can be released when the set target is fully achieved, even if the achievement is a year or more late, as long as this is within the loan period. If the target achievement is early, early disbursement can be made.</p>	<p>Frequency for reporting will be annual.</p>	<p>The IVA will verify the results for energy audits in 2017, 2018 and 2019 on the basis of the energy audit reports produced in 2017 and 2018, and the approval of follow up on energy audit recommendations in 2019. For the construction and government standards on net-zero building, the IVA will conduct checks of the site and the notification of standards. Within three week of receiving the independent verification report, ADB confirms that the target is met and initiates the process of disbursement.</p>

ADB = Asian Development Bank, DLI = disbursement-linked indicator, EDP = Energy Department of Punjab, ICT = Information and Communication Technology, IVA = independent verification agent, KPP = Khyber Pakhtunkhwa province, MHP = micro-hydropower plant, MW = megawatt, PAP = program action plan,⁷ PEDO = Pakhtunkhwa Energy Development Organization, PPMS = program performance monitoring system, PPTA = program preparatory technical assistance, RBL = results-based lending.

Sources: Asian Development Bank, Energy Department of Punjab, and Pakhtunkhwa Energy Development Organization.

⁷ Program Action Plan (accessible from the list of linked documents in Appendix 2)

Table A3.3: Disbursement Schedule for Khyber Pakhtunkhwa and Punjab Combined
(\$ million)

Disbursement Linked Indicator		Total ADB Financing Allocation	Share of total ADB Financing (%)	2017	2018	2019	2020	2021
DLI 1	By 2021, access to electricity is provided to an additional 240,000 households and 2,600,000 students in un-electrified and poorly electrified areas.	61.40	20%	12.28	12.28	12.28	12.28	12.28
DLI 2	By 2021, power generation capacity from clean energy sources is increased by an <i>additional</i> amount of 182 MW.	76.75	25%	15.35	15.35	15.35	15.35	15.35
DLI 3	By 2021, at least 26,587 sites have renewable energy-based power plants installed.	61.40	20%	12.28	12.28	12.28	12.28	12.28
DLI 4	By 2021, at least 30% of schools with solar plant installed are girls schools.	22.35	7%	4.47	4.47	4.47	4.47	4.47
DLI 5	By 2021, at least 7% of target households newly connected to electricity are women-headed households.	17.85	6%	3.57	3.57	3.57	3.57	3.57
DLI 6	By 2021, governance, financial management and procurement functions are improved.	30.70	10%	18.42	6.14	0.00	0.00	6.14
DLI 7	ICT-driven program performance monitoring system (PPMS) is operationalized to produce annual performance monitoring reports on all indicators and PAP actions	29.86	10%	15.34	5.31	3.07	3.07	3.07
DLI 8	100% of identified public sector buildings have conducted energy audits and the methodology for follow-up on energy audit recommendations has been approved.	6.69	2%	1.67	2.51	2.51	0.00	0.00
	Subtotal	307.00	100%	83.38	61.91	53.53	51.02	57.16
	Interest During Construction	18.00						
	Total	325.00						

ADB = Asian Development Bank, DLI = disbursement-linked indicator, ICT = Information and Communication Technology, MW = megawatts. PAP = program action plan.⁸

Sources: Asian Development Bank and Pakhtunkhwa Energy Development Organization.

⁸ Program Action Plan (accessible from the list of linked documents in Appendix 2).

Table A3.3.1: Disbursement Schedule for Khyber Pakhtunkhwa
(\$ million)

	Disbursement Linked Indicator	Total ADB Financing Allocation	Share of total ADB financing (%)	2017	2018	2019	2020	2021
DLI 1	By 2021, access to electricity is provided to an additional 240,000 households and 800,000 students in un-electrified and poorly electrified areas.	44.65	20%	8.93	8.93	8.93	8.93	8.93
DLI 2	By 2021, power generation capacity from clean energy sources is increased by an additional amount of 153 MW.	55.85	25%	11.17	11.17	11.17	11.17	11.17
DLI 3	By 2021, at least 9,187 sites have renewable energy-based power plants installed.	44.65	20%	8.93	8.93	8.93	8.93	8.93
DLI 4	By 2021, at least 30% of schools with solar plant installed are girls schools.	15.65	7%	3.13	3.13	3.13	3.13	3.13
DLI 5	By 2021, at least 7% of target households newly connected to electricity are women-headed households.	17.85	8%	3.57	3.57	3.57	3.57	3.57
DLI 6	By 2021, governance, financial management and procurement functions are improved.	22.34	10%	13.40	4.47	0.00	0.00	4.47
DLI 7	From 2017, ICT-driven program performance monitoring system (PPMS) is operationalized to produce annual performance monitoring reports on all indicators and PAP actions	22.32	10%	11.16	4.47	2.23	2.23	2.23
DLI 8	By 2019, 100% of identified public sector buildings have conducted energy audits and the methodology for follow-up on energy audit recommendations has been approved.	0.00	0%	0.00	0.00	0.00	0.00	0.00
	Subtotal	223.31	100%	60.29	44.67	37.96	37.96	42.43
	Interest and Commitment Charges	14.00						
	Total	237.31						

ADB = Asian Development Bank, DLI = disbursement-linked indicator, ICT = Information and Communication Technology, MW = megawatt. PAP = program action plan.⁹

Sources: Asian Development Bank and Energy and Power Department of KPP.

⁹ Program Action Plan (accessible from the list of linked documents in Appendix 2).

Table A3.3.2: Disbursement Schedule for Punjab
(\$ million)

		Total ADB financing allocation	Share of total ADB financing (%)	2017	2018	2019	2020	2021
	Disbursement Linked Indicator							
DLI 1	By 2021, access to electricity is provided to an additional 1,800,000 students in un-electrified and poorly electrified areas.	16.75	20%	3.35	3.35	3.35	3.35	3.35
DLI 2	By 2021, power generation capacity from clean energy sources is increased by an <i>additional</i> amount of 29 MW.	20.90	25%	4.18	4.18	4.18	4.18	4.18
DLI 3	By 2021, at least 17,400 sites have renewable energy-based power plants installed.	16.75	20%	3.35	3.35	3.35	3.35	3.35
DLI 4	By 2021, at least 30% of schools with solar plant installed are girls schools.	6.70	8%	1.34	1.34	1.34	1.34	1.34
DLI 5	By 2021, at least 7% of target households newly connected to electricity are women-headed households.	0.00	0%	0.00	0.00	0.00	0.00	0.00
DLI 6	By 2021, governance, financial management and procurement functions are improved.	8.36	10%	5.02	1.67	0.00	0.00	1.67
DLI 7	From 2017, ICT-driven program performance monitoring system (PPMS) is operationalized to produce annual performance monitoring reports on all indicators and PAP actions	7.54	9%	4.18	0.84	0.84	0.84	0.84
DLI 8	By 2019, 100% of identified public sector buildings have conducted energy audits and the methodology for follow-up on energy audit recommendations has been approved.	6.69	8%	1.67	2.51	2.51	0.00	0.00
	Subtotal	83.69	100%	23.09	17.24	15.57	13.06	14.73
	Interest and Commitment Charges	4.00						
	Total	87.69						

ADB = Asian Development Bank, DLI = disbursement-linked indicator, ICT = Information and Communication Technology, MW = megawatt. PAP = program action plan.¹⁰

Sources: Asian Development Bank, and Energy Department of Punjab.

¹⁰ Program Action Plan (accessible from the list of linked documents in Appendix 2).