Validation Report
December 2021

The Republic of Azerbaijan: Power Distribution Enhancement Investment Program – Tranche 1

Reference Number: PVR-817
Project Number: 42401-015
Loan Numbers: 3407

Independent Evaluation ADB

Raising development impact through evaluation

ABBREVIATIONS

ADB	–	Asian Development Bank
CPS	–	country partnership strategy
EIRR	–	economic internal rate of return
FIRR	–	financial internal rate of return
IED	–	Independent Evaluation Department
IFRS	–	international financial reporting standards
km	–	kilometer
kV	–	kilovolt
MFF	–	multitranche financing facility
PCR	–	project completion report
PMU	–	project management unit
PPMS	–	project performance management system
RRP	–	report and recommendation of the President
TA	–	technical assistance

NOTE

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

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PROJECT BASIC DATA

Project number	42401-015	**PCR circulation date**	21 June 2021	
Loan numbers	3407	**PCR validation date**	Dec 2021	
Program name	**Power Distribution Enhancement Investment Program – Tranche 1**			
Sector and subsector	Energy	Electricity transmission and distribution Energy efficiency and conservation		
Strategic agendas	Environment sustainable growth Inclusive economic growth			
Safeguard categories	Environment		B	
	Involuntary resettlement		B	
	Indigenous peoples		C	
Country	The Republic of Azerbaijan		**Approved** ($ million)	**Actual** ($ million)
ADB financing ($ million)	**ADF:** 0.00	**Total project costs**	325.00	304.29
	OCR: 250.00	**Loan**	250.00	249.97
		Borrower	75.00	54.32
Approval date	19 Jul 2016	**Effectiveness date**	20 Oct 2016	2 Sep 2016
Signing date	22 Jul 2016	**Project completion date**	31 Dec 2018	31 Dec 2018
		Financial closing date	—	31 Dec 2019
Project officers		**Location**	**From**	**To**
	T. Luo	ADB headquarters	Feb 2016	Feb 2017
	A. Tareen	ADB headquarters	Mar 2017	Dec 2019
IED review				
Director	N. Subramaniam, IESP			
Team leader	A. Guha, Evaluation Specialist, IESP*			

— = no approved financial closing date, ADB = Asian Development Bank, ADF = Asian Development Fund, IED = Independent Evaluation Department, IESP = Sector and Project Division, OCR = ordinary capital resources, PCR = project completion report.

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I. PROJECT DESCRIPTION

A. Rationale

1. In 2016, despite nearly 100% access to energy in Azerbaijan, power supply was unreliable and of poor quality. Its distribution networks in suburban areas, secondary cities, and rural areas outside Baku were likewise poor. Most of the power distribution facilities were operational for at least 30 years. The equipment and facilities were undependable, with frequent outages and high loss rates.[1] Unreliable power supply and inefficient utilization of resources undermined industrial competitiveness, constrained economic growth, and affected people's living conditions. During project preparation, the country's economic growth was slowing down. However, a recovery was projected to strengthen in 2018 and beyond. Therefore, domestic electricity sales were expected

[1] ADB. 2016. *Report and Recommendation of the President to the Board of Directors: Multitranche Financing Facility. Azerishiq Open Joint-Stock Company. Power Distribution Enhancement Investment Program.* Manila.

to grow, and the Government of the Republic of Azerbaijan considered rehabilitating and expanding the distribution network a high priority.

2. The Asian Development Bank (ADB) prepared an energy sector master plan with technical assistance (TA) that set out an investment strategy for the power generation, transmission, and distribution subsectors.[2] ADB supported a $1 billion investment, representing about 22% of the overall requirement. The investment program was to support the government's efforts in providing reliable and efficient power supply to meet its growing energy needs, especially in secondary cities and rural areas. Through rehabilitating and augmenting the power distribution network, the investment program was to improve power supply reliability and efficiency, and operational and financial performance of the state-owned power distribution company. The multitranche financing facility (MFF) was selected to finance the investment program to (i) establish a stronger long-term partnership with the government to meet its development goals; (ii) support energy sector reforms; and (iii) strengthen energy policies, governance, and capacities. Three tranches were envisaged under the MFF. Tranche 1 (the project) of the program is the subject of this validation.

B. Expected Impact, Outcome, and Outputs

3. The investment program's envisaged impact was increased availability of reliable electricity supply to all domestic consumers. The MFF and tranche 1 targeted the same outcome—improved efficiency and reliability of the power distribution networks. Tranche 1 and subsequent tranches had similar components, with the main differences being the locations selected. The three targeted outputs were (i) rehabilitated and augmented distribution network of substations and distribution lines, (ii) rehabilitated customer services lines and installed smart meters, and (iii) improved institutional capacity and corporate reform.

C. Provision of Inputs

4. The MFF and tranche 1 were approved in July 2016, with an MFF availability period of up to December 2022.[3] Tranche 1 became effective in September 2016, a month earlier than expected. The expected and actual loan closing date was in June 2019.

5. Tranche 1 was estimated at $325 million at appraisal with ADB's $250 million share and the balance from the government. The ADB loan covered turnkey contracts, meter supply, consulting services, and financing charges. The government's contribution covered taxes and duties, meter installation, procurement of information technology and other equipment, operational vehicles, and construction of institutional facilities. Tranche 1's actual cost was $304.29 million at completion, with ADB loan covered $249.97 million and the balance from the government. The savings from contracts were used to buy additional meters and pay for financing charges. The government paid $44.6 million for taxes and duties against the estimated $69.9 million, and also financed meter installation, originally under ADB financing, using surplus counterpart funds. Two cost categories of reallocations occurred in turnkey contract, goods, and consulting services and in the interest and commitment charges.

6. Azerishiq Open Joint-Stock Company (Azerishiq), the planned executing agency, awarded a contract in September 2016 for project supervision and management consulting for

[2] ADB. 2014. *Update of the Energy Sector Master Plan of Azerbaijan, 2013–2025: Final Report*. Manila.

[3] ADB. 2016. *Framework Financing Agreement: Power Distribution Enhancement Investment Program in Azerbaijan.* Manila; and ADB. 2021. *Completion Report: Power Distribution Enhancement Investment Program – Tranche 1 in Azerbaijan*. Manila.

$2.13 million and 2.05 million Azerbaijan manats (AZN), exclusive of local indirect taxes. The total inputs comprised 76 person-months for international and 168 person-months for national experts. Four amendments increased the contract price by $30,460 to account for an increase in on-ground local support, adding to the scope of tranche 2 preparation, and including preparation of the electricity grid code.

7. An environmental assessment and review framework was prepared for the MFF program. Tranche 1 was classified as category B for environment, and C for involuntary resettlement and indigenous peoples, according to ADB's Safeguard Policy Statement (2009).[4] Environmental impacts were mostly concentrated during the construction phase and could be addressed through mitigation measures. The due diligence that was carried out suggested that there were no involuntary resettlement impacts and no indigenous peoples in the project vicinity. The project was categorized with "some gender elements" at appraisal, although no gender action plan was prepared.

D. Implementation Arrangements

8. Azerishiq was responsible for the overall investment program and established a project management unit (PMU) for the implementation. The Office of the Deputy Prime Minister was to be the focal point for overall coordination of intergovernmental agencies. Azerishiq's first deputy chairman was primarily responsible for overall project implementation. The PMU included a project director, procurement specialists, technical specialists, financial management specialists, accountant, and environmental and social safeguard specialist. Azerishiq also hired supervision consultants, funded from the loan proceeds, to assist the PMU in implementation.

9. All loan covenants were complied with, except for two covenants which partly complied with: (i) maintaining separate accounts and records, and (ii) ensuring a current ratio of at least one for the fiscal year ending in December 2018 and thereafter. These two partly complied loan covenants did not affect the overall project performance. Azerishiq initially opened a separate bank account for the government's share of the project's payments. The company later decided to use the same account for the government's share for some other projects as the size of these projects did not justify separate accounts and made the annual audit easier.

II. EVALUATION OF PERFORMANCE AND RATINGS

A. Relevance of Design and Formulation

10. The project completion report (PCR) rated the project relevant. The outcome was in line with the government's electricity sector development priorities to reduce electricity losses and increase the quality of electricity supply and distribution.[5] The project was coordinated with project stakeholders and did not duplicate the work of other international financial institutions and donor organizations. The outcome pertaining to power distribution networks' improved efficiency and reliability was aligned with ADB's country partnership strategy (CPS) for Azerbaijan, 2014–2018.[6] The MFF was the appropriate modality to finance this large-scale project, allowing for a long-term partnership with the government on policy and capacity development.

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4 ADB. 2009. *Safeguard Policy Statement*. Manila.

5 Government of the Republic of Azerbaijan. 2016. *Strategic Road Map for Development of Utility Services (electricity, heat energy, gas, and water) in the Republic of Azerbaijan*. Baku.

6 ADB. 2014. *Azerbaijan Country Partnership Strategy. 2014–2018*. Manila.

11. This validation recognizes that the supply of reliable electricity to customers, particularly in secondary cities and rural areas, was constrained due to a weak distribution network. The technical and commercial losses of the distribution system in 2014 were high at 18.8% and the revenue collection rate was only at 70%. Supply quality and stability of over 30-year-old network was a concern outside of Baku. Unreliable power supplies and inefficient utilization of resources undermined industrial competitiveness, constrained economic growth, and created urban–rural income disparities. Rehabilitation and expansion of the distribution network was a priority.

12. The government committed to provide an adequate and reliable electricity supply to all consumers, as reflected in the country's medium-term development framework, Azerbaijan 2020: Look into the Future.[7] The Presidential order issued in February 2015 set the energy sector restructuring targets and directed Azerishiq to modernize the distribution network to enable a reliable and efficient power supply.[8] The investment program was closely aligned with ADB's Midterm Review of Strategy 2020 and its CPS for Azerbaijan, where ADB committed to support improved energy efficiency and operation for adequate and reliable energy supplies throughout the country.[9] The project design was formulated through a project preparatory TA.[10] The design was relevant and addressed the need for reliable electricity supply to consumers in tranche 1-covered areas, as well as the need to reduce losses and improve metering and collections.

13. There were four minor changes in scope to a few components during implementation. The first two increased the length of the 110 kilovolt (kV) transmission lines from 54.0 kilometers (km) to 58.7 km; and reduced the length of 35 kV distribution lines from 124.0 km to 117.6 km. The other two increased the length of 6 kV distribution lines from 1,237.0 km to 1,252.3 km; and reduced the length of the 0.4 kV distribution lines from 3,900.0 km to 3,893.5 km. These minor changes were not substantial and did not trigger changes to budgeted costs or lead to environmental or social safeguard impacts.

14. There were two additional minor changes that triggered social safeguard–related costs. These involved land acquisitions for the construction of a substation, and for the installation of distribution line towers in a project village. The changes did not have a substantial impact on project cost. Based on these discussions, this validation assesses the project relevant.

B. Effectiveness in Achieving Project Outcomes and Outputs

15. The PCR rated the project effective. All three outcome performance indicators in the design and monitoring framework were attained. Average annual unserved energy resulting from outages was reduced to 4.9% in 2019 (against the target of below 5.0%). Nationwide distribution network losses were reduced to 11.6% (against the target of 13.0%). Revenue collection increased to 93% (against the target of 80%). All three physical project outputs were completed and commissioned before the loan completion date and all performance target indicators were achieved.

16. The environmental mitigation measures, environmental management, and monitoring plans specified in the initial environmental examination and updated environmental management plan were largely followed. However, the contractors did not prepare site-specific environmental management plans as required. The impact of the mitigation measures on air quality, construction

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[7] Government of Azerbaijan. 2012. *Azerbaijan 2020: Look into the Future*. Baku.
[8] Government of Azerbaijan. 2015. *Presidential Order No. 1045*. Baku.
[9] ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.
[10] ADB. 2015. *Preparing MFF Power Distribution Enhancement Investment Program in Azerbaijan.* Manila.

noise, roads, and infrastructure were satisfactory. The project also had little impact on the quality of water sources, although removal of construction and domestic waste was poor, as contractors did not promptly remove waste from the sites. These issues had no material environmental impact on project components, and were satisfactorily addressed by Azerishiq, the contractors, and the project management and supervision consultant, following ADB's recommendations.

17. The project was categorized C for involuntary resettlement at appraisal and was recategorized to B after the safeguard review mission in July 2017, which noted that land acquisition and alignment affected past and potential social impacts. Consequently, Azerishiq prepared a corrective action plan to ensure payment to the affected person and a land acquisition and resettlement plan for affected persons who were to lose landholdings due to the construction of the 35 kV Zardab–Udjar distribution line. The land acquisition and resettlement plan was successfully implemented in compliance with ADB's safeguard policy and had no impact on the overall project outcome and outputs. The project was categorized C for indigenous peoples at appraisal and at completion. This validation assesses the project effective.

C. Efficiency of Resource Use

18. The PCR stated that project benefits were attributed to three sources: reduction in losses, reduction in outages, and growth. The economic benefit was valued as reduced outages as the average benefit of willingness-to-pay and resource cost savings, as in the case of loss reduction. The project's incremental economic benefit from increased growth in consumption was valued as the average benefit of willingness-to-pay and resource cost savings, the same as for loss and outage reductions. It was also assumed that the existing facilities could accommodate an additional 10% of sales, which was deducted from incremental growth in the project area used to quantify the economic benefit.

19. The PCR rated the project efficient. It recalculated the project's economic internal rate of return (EIRR) at 13.1%, compared to 13.4% at appraisal. This validation notes that the PCR assessed the recomputed EIRR using both the discount rates of 9% and 12%.[11] On both hurdle rates, the EIRR showed that the project was economically viable.

20. The PCR indicated that a sensitivity analysis with economic benefits 20.0% lower than the base case estimate resulted in an EIRR of 11.0%, while other sensitivity tests resulted in values higher than 10.1%. This validation assesses that the assumptions and parameters that underpinned the economic benefit methodology, including the sensitivity test, were conservative. Based on these, this validation assesses the project efficient.

D. Preliminary Assessment of Sustainability

21. The PCR rated the project likely sustainable. The project's financial internal rate of return (FIRR) was recalculated at –0.7%, compared to –10.8% at appraisal. It indicated that Azerishiq's low retail tariffs affected the outcome of the FIRR calculation and the subpar financial performance. Azerishiq's retail tariffs could be considered unsustainable. The FIRR also seemed

[11] IED recognizes the changes to the 2017 Economic Analysis Guidelines, particularly the lower thresholds. When IED evaluates, it looks into what the project EIRR targets were at approval and compare it to actual EIRRs at completion. Generally, for older projects approved before the 2017 update, IED gives emphasis to the approved EIRR targets. For more recent projects, IED applies the 2017 Economic Analysis Guidelines thresholds. There is no conflict between the 2017 Economic Analysis Guidelines and IED's 2016 Evaluation Guidelines, and at some point, all departments will be using the same (lowered) EIRR benchmarks. For projects approved in 2017 that used the new EIRR benchmark in the RRP, IED expects them to be consistent and use the same rate at completion.

to have omitted income taxes. The weighted average cost of capital included a cost of equity of 6.5%, based on the central bank lending rate. This seemed low since the central bank lending rate was risk free. Normally, the market and country risk premiums adjust risk-free rate and an industry beta to arrive at the cost of equity.

22. Low retail tariffs affected Azerishiq's financial performance. ADB loan covenants may result in minor tariff increases in the short term. However, Azerishiq had insufficient resources to self-finance. The government's ongoing capital infusions kept Azerishiq financially afloat since the company's inception in 2015. The 2 years of profitability in 2017 and 2018 yielded returns on net fixed assets that did not exceed 3%. However, the sector's financial situation is expected to improve, given the establishment of an independent regulator, support through ADB's TA on developing a tariff mechanism, and the government's acceptance of the financial recovery plan.

23. Azerishiq undertakes continuous corporate reforms to improve its business processes including financial management and technical operations. Azerishiq possesses the necessary level of institutional sustainability due to qualified staff and sound management structure. Its departments are adequately set up to handle routine planning, operation and maintenance, and finance activities. The company also (i) has well-documented financial management processes and systems, (ii) uses integrated enterprise resource planning across its finance and accounting functions, (iii) prepares financial statements in accordance with international financial reporting standards (IFRS), and (iv) a recognized international auditor conducts external audit annually. However, a few technical aspects of its operations could be improved to enhance the project's sustainability. In particular, operation and maintenance staff in subproject locations need to be trained on the use of new substation equipment. Given that the project's FIRR is below weighted average cost of capital and Azerishiq's financial performance has been poor, added to the dependance on government subsidy, this validation assesses the project less than likely sustainable.

III. OTHER PERFORMANCE ASSESSMENTS

A. Preliminary Assessment of Development Impact

24. The PCR rated tranche 1's development impact highly satisfactory. The project contributed to ADB's results framework. The target set in the results framework was 1.8 terawatt-hour of electricity savings per year after 2022 and implementation of the MFF. The PCR indicated the annual loss reduction from the Azerishiq networks was about 2% per year on average during 2015–2018, or about 0.4 terawatt-hour equivalent of energy saved, compared to 2015. The project was successful in achieving the impact of increasing the availability of a reliable electricity supply to all domestic consumers. However, in this validation's view, the PCR provided insufficient justification for the highly satisfactory rating. With the absence of enough evidence in the PCR and pandemic travel restrictions during the evaluation process, the highly satisfactory rating could not be validated and, hence, was not supported. By 2020, electricity savings were still well short of the 2022 set target and may not be met. Therefore, this validation assesses the development impact of the project satisfactory.

B. Performance of the Borrower and Executing Agency

25. The PCR rated Azerishiq's performance highly satisfactory. The key shortcoming in managing the project was the inadequate supervision of contractors regarding waste disposal and involuntary resettlement safeguard activities. However, this shortcoming was addressed in a timely and professional manner. In general, the performances of Azerishiq and the PMU were

satisfactory as they were proactive and generally complied with loan covenants. The PMU ensured an adequate progress and reporting on safeguards and promptly resolved issues that arose. The project's smooth implementation was largely attributed to the dedication and strong support of Azerishiq's management and staff. With the absence of enough evidence in the PCR and pandemic travel restrictions during the evaluation process, the highly satisfactory rating could not be validated and, hence, was not supported. Therefore, this validation assesses Azerishiq's performance satisfactory.

C. Performance of the Asian Development Bank

26. The PCR rated ADB's performance satisfactory. ADB fielded three review missions for tranche 1 to review implementation progress in May 2017, July 2017, and September 2018. The reviews covered project implementation and operational matters, such as maximum transformer loading of substations, ensuring continuous water supply to substations, and due diligence monitoring of contractor compliance with technical specifications for design and construction. ADB also fielded three safeguard review missions in July 2017, August 2017, and December 2017 in relation to involuntary resettlement concerns. It supported Azerishiq in follow-up and remedial activities, including the due diligence report preparation and the implementation of the corrective action and land acquisition and resettlement plans. ADB's reviews and approvals of procurement documents, project progress reports, and safeguard reports were also prompt and adequate. Apart from involuntary resettlement–related issues and procurement reviews, no other major interventions were required. This validation also assesses ADB's performance satisfactory.

IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS

A. Overall Assessment and Ratings

27. The PCR rated the project's overall performance successful. The project's design was relevant in addressing the need to rehabilitate the old power distribution infrastructure, reduce losses, and ensure a reliable and sustainable power supply. The project was effective since it achieved all outcome and output targets. Economic efficiency was higher than the threshold level of 12%. The executing agency and the project were assessed likely sustainable.

28. This validation assesses tranche 1 successful with ratings of relevant, effective, efficient, and less than likely sustainable. Sustainability was assessed lower due to the negative project FIRR and Azerishiq's poor financial performance. This validation also assesses the development impact and Azerishiq's performance satisfactory, lower than the PCR's ratings of highly satisfactory due to insufficient justification for the higher ratings.

Overall Ratings

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Relevance	Relevant	Relevant	
Effectiveness	Effective	Effective	
Efficiency	Efficient	Efficient	
Sustainability	Likely sustainable	Less than likely sustainable	FIRR is below the weighted average cost of capital and Azerishiq's financial performance has been poor.
Overall Assessment	Successful	Successful	

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Preliminary assessment of impact	Highly satisfactory	Satisfactory	No clear evidence that the project had positive development impacts beyond the expectations indicated in the RRP.
Borrower and executing agency	Highly satisfactory	Satisfactory	How Azerishiq achieved high performance standards not shown.
Performance of ADB	Satisfactory	Satisfactory	
Quality of PCR		Satisfactory	Para. 34.

ADB = Asian Development Bank, FIRR = financial internal rate of return, IED = Independent Evaluation Department, RRP = report and recommendation of the President, PCR = project completion report.
Source: ADB (IED).

B. Lessons

29. The PCR identified five lessons. First, the MFF's tranches 2 and 3 could have been processed and implemented to overlap with tranche 1 to maintain implementation momentum and achieve maximum benefits. Second, if possible, project components' locations and routes could be identified upfront and thoroughly analyzed for potential construction and safeguard impacts. Subsequent tranches should also build on lessons learned and issues identified with the initial tranche. Third, to achieve higher quality of project outputs, it is crucial that the design, technical specifications, and construction standards be based on national and international best practices. Fourth, contractors need to be encouraged to improvise where possible and introduce new technology standards. Fifth, the PMU for subsequent tranches must be more proactive in using the project management committee for capacity development of operational staff on new technology and standards. This validation notes that these are more like recommendations and supports these except for the fourth lesson. Validation cautions against expecting contractors to improvise on standards since the executing agency and ADB have to handle this with due diligence.

30. This validation offers two additional lessons. First, a project performance management system (PPMS) in power sector projects can provide data for the economic and financial analyses and evidence of the development impact. An appropriately designed PPMS could have been included in tranche 1 and should be required for the MFF's tranches 2 and 3. Second, a thorough capacity assessment of Azerishiq's financial and accounting staff and with measures included in the project design can enhance areas for improvement. At a minimum, Azerishiq staff should be able to apply IFRS to project financial statements.

C. Recommendations for Follow-Up

31. The PCR suggested one recommendation. ADB should continue supporting reforms at Azerishiq. This should entail engaging in policy dialogue with the government and Azerishiq to improve the entity's financial performance. This validation has no other recommendation to offer.

V. OTHER CONSIDERATIONS AND FOLLOW-UP

A. Monitoring and Reporting

32. No PPMS was required or implemented for the project. However, the PMU conducted routine project performance monitoring and reporting of physical works and social and environmental safeguard activities of the contractors, and prepared and submitted quarterly

progress reports to ADB. The PMU submitted nine quarterly progress reports covering 2017, 2018, and 2019, excluding the report for the first quarter of 2017.

33. Azerishiq was late in submitting annual project financial statements for 2016 as the statements from 2016 onwards were prepared in accordance with the international public sector accounting standards, rather than the IFRS, since the PMU did not have experience in preparing project financial statements under IFRS. ADB approved the request and the amendment to the loan agreement was signed in October 2017. Azerishiq submitted annual financial statements in accordance with IFRS on a consolidated basis and had qualified independent auditors audited these financial statements annually. The submissions were on time except for 2016 and the audit reports had unqualified opinions except for 2016.

B. Comments on Project Completion Report Quality

34. The PCR was succinct and assessed all the evaluation criteria. The FIRR was estimated negative and Azerishiq's financial performance was poor. However, the PCR rated the project likely sustainable. A more objective and candid assessment would have improved the PCR's quality. With the absence of enough evidence in the PCR and pandemic travel restrictions during the evaluation process, the highly satisfactory ratings could not be validated and, hence, was not supported. Nevertheless, the quality of the PCR is satisfactory.

C. Data Sources for Validation

35. Data sources used in this validation included ADB's CPS, mission reports, PCR, and report and recommendation of the President.

D. Recommendation for Independent Evaluation Department Follow-Up

36. The PCR recommended that a project performance evaluation report be prepared when all MFF tranches are complete. This validation supports this recommendation.