



# Report and Recommendation of the President to the Board of Directors

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Project Number: 47017-003  
November 2014

## Proposed Grant Republic of Tajikistan: Wholesale Metering and Transmission Reinforcement Project

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Asian Development Bank

## **CURRENCY EQUIVALENTS**

(as of 3 November 2014)

Currency unit	–	somoni (TJS)
TJS1.00	=	\$0.1999
\$1.00	=	TJS5.0035

## **ABBREVIATIONS**

ADB	–	Asian Development Bank
EMP	–	environmental management plan
EIRR	–	economic internal rate of return
LARP	–	land acquisition and resettlement plan
O&M	–	operation and maintenance
PAM	–	project administration manual
PMU	–	project management unit
SOPI	–	sector operational performance improvement

## **WEIGHTS AND MEASURES**

km	–	kilometer
kV	–	kilovolt
MVA	–	megavolt-ampere
MW	–	megawatt

## **NOTES**

- (i) The fiscal year (FY) of the Government of Tajikistan and its agencies ends on 31 December.
- (ii) In this report, "\$" refers to US dollars.

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## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number: 47017-003</b>	
<b>Project Name</b>	Wholesale Metering and Transmission Reinforcement Project (formerly Power Sector Development)	<b>Department /Division</b>	CWRD/CWEN
<b>Country Borrower</b>	Tajikistan Government of Tajikistan	<b>Executing Agency</b>	Barki Tajik
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ <b>Energy</b>	Electricity transmission and distribution		35.00
	Energy efficiency and conservation		19.00
		<b>Total</b>	<b>54.00</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Medium
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD)	Organizational development	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas		
<b>5. Poverty Targeting</b>		<b>Location Impact</b>	
Project directly targets poverty	No	Nation-wide	High
<b>6. Risk Categorization:</b>	Low		
<b>7. Safeguard Categorization</b>	Environment: B Involuntary Resettlement: B Indigenous Peoples: C		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>54.00</b>	
Sovereign Project grant: Asian Development Fund		54.00	
<b>Cofinancing</b>		<b>0.00</b>	
None		0.00	
<b>Counterpart</b>		<b>13.00</b>	
Government		13.00	
<b>Total</b>		<b>67.00</b>	
<b>9. Effective Development Cooperation</b>			
Use of country procurement systems		Yes	
Use of country public financial management systems		No	

## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed grant to the Republic of Tajikistan for the Wholesale Metering and Transmission Reinforcement Project.<sup>1</sup>

2. The project will improve electricity supply to households and industries in Tajikistan. The project will reduce losses through metering entire high- and medium-voltage transmission grid and expand transmission capacity in Panjakent region, which presently suffers from load shedding.<sup>2</sup>

## II. THE PROJECT

### A. Rationale

3. The performance of vertically integrated state-owned joint stock company Barki Tojik, which is responsible for electricity generation, transmission, and distribution in Tajikistan, is unsatisfactory. The corporate governance is weak, the financial management is not sustainable, the company structure is inadequate and the quality of the service is poor. These are exacerbated by a flawed initial power system design that ignores energy security considerations as well as limited investments for modernization made during the country's civil war.

4. Realizing that poor performance of the power sector was impeding economic development, the government initiated a three-phase restructuring process (commercialization, separation, and privatization) of Barki Tojik in 2011. The first phase, commercialization, is supported by the Asian Development Bank (ADB) through the sector operational performance improvement (SOPI) program.<sup>3</sup> The program addresses governance, financial management, control and audit, legal and regulatory frameworks, management systems, organizational structure, and technical operations. On 11 June 2013, the government approved the restructuring action plan prepared by the SOPI program and the new structure of Barki Tojik, which established three departments (generation, transmission, and distribution) under the same legal entity. On 5 September 2014, Barki Tojik formally adopted the new structure and technical separation principle between departments. Heads of the three departments have also been appointed, and formation of the new structure, based on international practices of modern power utilities, is ongoing. The implementation of the full-scale management contract is also being discussed between the government and international financial institutions, including ADB.

5. Improving the operational performance of Barki Tojik requires not only organizational restructuring but also capital investment. While the entire sector needs to be modernized, investments in loss reduction are a priority.<sup>4</sup> Tajikistan's power system has an installed capacity of 5,356 megawatts (MW) comprising eight large and a few small hydropower plants (4,737 MW), and three fossil fuel-fired combined heat and power plants (418 MW). In 2013, net power generation in Tajikistan was 16.9 terawatt-hours, of which only 13.4 terawatt-hours were billed. The difference is losses and system own consumption. Total transmission and distribution system losses in Tajikistan, as in any power system, are a combination of technical and

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<sup>1</sup> The design and monitoring framework is in Appendix 1.

<sup>2</sup> The Asian Development Bank (ADB) provided project preparatory technical assistance for the project. ADB. 2013. *Wholesale Metering and Transmission Reinforcement Project*. Manila.

<sup>3</sup> ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Republic of Tajikistan for the Regional Power Transmission Project*. Manila.

<sup>4</sup> ADB. 2009. *Technical Assistance for Power Sector Regional Master Plan*. Manila.

nontechnical (or commercial) losses.<sup>5</sup> Both types of losses are a cost to Barki Tojik, as they reduce the amount of electricity for which payment is received from customers.

6. Total transmission and distribution system losses in Tajikistan are estimated at around 22%, of which transmission system technical losses accounted for 5% in 2013.<sup>6</sup> Distribution system losses are 17% and have remained virtually unchanged since 2006. Barki Tojik does not recognize commercial losses and therefore applies norms for technical losses to the amount of energy received into the distribution networks from transmission. These are inaccurate figures and understated due to the absence of proper methodology to account the losses and a relevant metering system. A wholesale metering system with sufficient accuracy for commercial billing has never been installed in Tajikistan, and the absence of such a system results in inaccurate cost calculations and cost recovery tariff calculations.

7. Reduction of nontechnical losses is a priority for the government, which has already begun to address the issue. The turnkey contract for installation of a supervisory control and data acquisition system and associated telecommunication system, financed by ADB, was awarded in September 2014 (footnote 3). The World Bank and the European Bank for Reconstruction and Development are financing the installation of the retail (end user) meters in the two largest load centers—Dushanbe and Khujand. The remaining metering gap is bulk electricity metering from generation through transmission and up to distribution level meters. There is a need for the installation of wholesale meters and an associated settlement system, which will enable the management of Barki Tojik to (i) account for all electricity flows and associated costs; (ii) quantify technical and nontechnical losses at the wholesale level of the entire grid; and (iii) support the utility restructuring by defining clear commercial borders between generation, transmission, and distribution.

8. Certain parts of the Tajikistan power system still suffer from transmission bottlenecks. In some regions, current demand is not met due to limited transmission capacity and disconnection from the Central Asian Power System in November 2009. Presently, the most pressing problem is in Panjakent region, which has a population of 261,000 (39,122 customers) and several large industries. The demand in the region has grown steadily since 2005, with peak demand in 2013 reaching approximately 100 MW in the summer and 141 MW in the winter. However, electricity to Panjakent (through the Rudaki substation) has been supplied since 2011 from the main Tajik grid (through the 220-kilovolt [kV] Ayni substation) by a single circuit 110 kV transmission line commissioned in 1965 with a rated capacity of 67 megavolt-amperes (MVA).<sup>7</sup> Thus, households and industry in the region suffer from frequent load shedding even during the summer, which is Tajikistan's energy surplus period due to 98% reliance on hydropower

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<sup>5</sup> Technical losses occur naturally and consist mainly of power dissipation in electricity systems. They are a measure of the amount of energy injected into the system (transmission or distribution), less the amount of energy offloaded from that system. They exist as a result of losses through the lines, the transformers, and associated systems (bus bars, circuit breakers, metering, and connections), and they are usually expressed as a percentage of the total energy injected onto the system. Combined transmission and distribution losses can range from 8% to 10% in developed modern power systems to over 40% in overloaded, poorly maintained systems in need of rehabilitation. Commercial losses result from inaccurate calculation of technical losses, unauthorized use of electricity (theft), faulty meters, unmetered supplies, unbilled customers, inaccurate billing of customers, dishonest staff, and nonpayment of electricity bills. They are a measure of the amount of energy injected into the system, less technical losses and the amount of energy that is paid for. These losses are usually expressed as a percentage of total energy entering the system, and they range from 2% to 3% in an organized modern utility company.

<sup>6</sup> SOPI program consultants estimate.

<sup>7</sup> Until 2011 the Panjakent electrical network was still supplied with two 220 kV lines with a rated capacity of 320 MVA each from Uzbekistan despite the 2009 disconnection from the Central Asian Power System. In 2011, Barki Tojik completed the construction of a new 220/110 kV substation and energized an old 110 kV line to supply Panjakent.

generation. Additional transmission capacity is urgently needed in Panjakent to satisfy current and future power demand, which is expected to grow to 187 MW by 2020 due to planned industrial development.

9. ADB operations in the power sector have been based on government priorities and are aligned with ADB's Midterm Review of Strategy 2020 and with ADB's country partnership strategy, 2010–2014 for Tajikistan.<sup>8</sup> The project is included in the country operations business plan, 2014–2016 for Tajikistan.<sup>9</sup> It will be the seventh project intervention in the power sector of Tajikistan.

## B. Impact and Outcome

10. The impact of the project will be improved electricity supply to households and industry in Tajikistan. The outcome of the project will be an expanded and metered transmission network.

## C. Outputs

11. The outputs of the project will be (i) installation of approximately 1,100 wholesale meters and an associated settlement system including approximately 1,100 current transformers and 700 voltage transformers; and (ii) construction of an approximately 95-kilometer (km) new single circuit, single conductor 220 kV transmission line connecting Rudaki and Ayni substations with a rated capacity of 320 MVA.

## D. Investment and Financing Plans

12. The project is estimated to cost \$67 million (Table 1).

**Table 1: Project Investment Plan**  
(\$ million)

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>b</sup></b>	
1. Wholesale metering	16.9
2. Transmission line	36.2
<b>Subtotal (A)</b>	<b>53.1</b>
<b>B. Contingencies<sup>c</sup></b>	<b>9.2</b>
<b>C. Financing Charges During Implementation<sup>d</sup></b>	<b>4.7</b>
<b>Total (A+B+C)</b>	<b>67.0</b>

<sup>a</sup> Includes taxes and duties of \$8 million for which the government will either (i) allocate additional funds from the budget to cover value-added tax and customs duties accrued on project expenditures, or (ii) exempt the project from such taxes and duties.

<sup>b</sup> In mid-2014 prices.

<sup>c</sup> Physical contingencies computed at 12% of the base costs including taxes and duties. Price contingencies computed using Asian Development Bank cost escalation factors and including a provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

<sup>d</sup> Includes interest for subloan to Barki Tojik calculated at 5%, to be financed from Barki Tojik resources.

Sources: Asian Development Bank and technical assistance consultants.

13. The government has requested a grant not exceeding \$54 million from ADB's Special Funds resources to help finance the project. Two engineering, procurement, and construction

<sup>8</sup> ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila; ADB. 2010. *Country Partnership Strategy: Tajikistan, 2010–2014*. Manila.

<sup>9</sup> In the country operations business plan, this project is referred as the Power Sector Development Project. ADB. 2014. *Country Operations Business Plan: Tajikistan, 2014–2016*. Manila.



contracts will constitute 75% of this amount, while 8% will be used for consulting services. The grant will be onlent to Barki Tojik through a subsidiary loan agreement to fund the investments. The onlending is for a term of 25 years, with a 5-year grace period and an interest rate of 5% per annum. Barki Tojik will be responsible for foreign exchange risks, an established practice between the Ministry of Finance and Barki Tojik. The government will contribute \$8 million. For its contribution, the government will either (i) allocate additional funds from the budget to cover value-added tax and customs duties accrued on project expenditures, or (ii) exempt the project from such taxes and duties. Barki Tojik will contribute \$5 million to finance interest during construction and land acquisition costs.

14. The financing plan is in Table 2.

**Table 2: Financing Plan**

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank Special Funds (grant)	54.0	80.6
Government and Barki Tojik	13.0	19.4
<b>Total</b>	<b>67.0</b>	<b>100.0</b>

Sources: Asian Development Bank and technical assistance consultants.

## E. Implementation Arrangements

15. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual (PAM).<sup>10</sup>

**Table 3: Implementation Arrangements**

Aspects	Arrangements		
Implementation period	April 2015–October 2019		
Estimated completion date	31 October 2019 (grant closing date 31 March 2020)		
Management			
(i) Oversight body	Ministry of Energy and Water Resources Minister of Energy and Water Resources (chair)		
(ii) Executing agency	Barki Tojik		
(iii) Implementation unit	Project management unit for electro-energy sector, 75 staff		
Procurement	International competitive bidding	2 contracts	\$40.5 million
Consulting services	Quality- and cost-based selection (90:10)	365 person-months	\$4.3 million
Retroactive financing and/or advance contracting	Advance contracting for procurement of consulting services is approved.		
Disbursement	The grant proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2012, as amended from time to time) and detailed arrangements agreed upon between the government and ADB.		

ADB = Asian Development Bank, JSC = joint stock company.

Sources: ADB and technical assistance consultants.

16. The executing agency will be the power utility Barki Tojik. The project will be managed by an independent project management unit (PMU) that coordinates and implements power projects funded through loans and grants from bilateral donors and international financing institutions. The PMU has performed satisfactorily in implementing six previous ADB projects.<sup>11</sup>

<sup>10</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

<sup>11</sup> ADB. 2000. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Tajikistan for the Power Rehabilitation Project*. Manila; ADB. 2002. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Tajikistan for the Emergency Baipaza Landslide Stabilization Project*. Manila; ADB. 2006. *Report and Recommendation of the President to the Board of*

Lessons from these projects regarding implementation arrangements, procurement, funds flow, safeguards, and the implementation schedule have been analyzed and incorporated in the project.

17. Two turnkey engineering, procurement, and construction contracts covering the entire project will be procured by Barki Tojik. Procurement will follow international competitive bidding procedures using standard bidding documents for plant design, supply, and installation contracts. Engineering, procurement, and construction contracts will use a single-stage: two-envelope bidding procedure with prior review and without prequalification. The project preparatory technical assistance consultants will assist the PMU in preparing bidding documents and bid evaluation, and will also provide hands-on training to the PMU procurement staff (footnote 2).

18. Barki Tojik will employ a project implementation consultant firm that will provide technical, financial, and administrative support to the PMU during the entire project implementation period. ADB grant proceeds will cover the cost of this consulting service and recruitment will follow ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The quality- and cost-based selection method with a quality:cost ratio of 90:10 will be applied to the selection of the consultant firm. ADB's prior approval is needed for changing the selection method.

19. To expedite project implementation, ADB has approved advance contracting for consulting services. Advance contracting allows the government to start procurement activities at its own risk prior to the signing of the grant agreement, but it does not allow signing a contract with a firm before the grant has become effective. ADB informed the government that such advance contracting (including advertising) must comply with the Guidelines on the Use of Consultants.<sup>12</sup>

20. The project will be implemented over a 55-month period from April 2015 to October 2019. The implementation consultant will prepare a detailed implementation schedule during the preconstruction phase of the project and submit it to ADB.

### III. DUE DILIGENCE

#### A. Technical

21. ADB conducted in-depth technical due diligence. The inspection work included assessments of (i) the existing metering and billing system; (ii) the accuracy, class, and age of meters; (iii) the condition and accuracy of current transformers and voltage transformers; (iv) existing and planned communication systems; (v) ongoing end user metering and billing projects; (vi) specifications and interface of the selected supervisory control and data acquisition system; and (vii) the condition of the transmission equipment in substations in Rudaki and Ayni and various alternative routes for the line. Various cost estimation methods were used to obtain

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*Directors: Proposed Loans, Technical Assistance Grants, and Administration of Loan to the Islamic Republic of Afghanistan and the Republic of Tajikistan for the Regional Power Transmission Interconnection Project. Manila; ADB. 2008. Report and Recommendation of the President to the Board of Directors: Proposed Loan, Grant and Technical Assistance Grant to the Republic of Tajikistan for the Nurek 500 kV Switchyard Reconstruction Project. Manila; ADB. 2010. Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Republic of Tajikistan for the Regional Power Transmission Project. Manila; and ADB. 2013. Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Republic of Tajikistan for the Golovnaya 240-Megawatt Hydropower Plant Rehabilitation Project. Manila.*

<sup>12</sup> ADB also informed the government and Barki Tojik that approval of advance contracting does not commit ADB to finance the proposed project and that ADB will not finance any expenditures paid by the government prior to grant effectiveness.

up-to-date quotations for equipment. The project implementation schedule was prepared taking into account the demand profile to minimize impact from disconnections.

22. Investment sites were visited by consultants and ADB staff. ADB is satisfied with the quality of the cost estimates, cost structures, appropriateness of the technology, and execution plan. The readiness level is high and the proposed technical solutions are assessed to be more cost-effective than the alternatives. Barki Tojik's operation and maintenance staff is familiar with the proposed design concepts. The proposed metering and settlement system is consistent with existing practices. However, it will be more advanced and employ state-of-the-art technology that will require training to be included in the terms of reference for consultants and contractors. This is routine practice for a utility when first implementing similar systems.

23. Tajikistan is exposed to climate change risks and variability. It is vulnerable to extreme weather events such as flooding and mass movements. The project has taken into consideration relevant climate measures (e.g., improved tower standards, avoidance of areas prone to mass movements). The contractor will be required to undertake additional soil investigations to avoid locating the towers on unsafe grounds.

## **B. Economic and Financial**

24. The project's economic internal rate of return (EIRR) is 19.2%, confirming the project's economic viability. The project will reduce system losses and increase the electricity consumed in the country. The project's incremental cost streams (i.e., capital investment and operation and maintenance [O&M]), which reflect the costs of delivering the expected benefits (i.e., increased net electricity consumption), were compared with a without-project scenario based on 2014 constant prices for the project life of 25 years. The without-project scenario assumes that Barki Tojik does not implement wholesale metering or reinforce the power transmission capacity envisaged under the project. The EIRR was estimated for each component and was consolidated for the project.<sup>13</sup> The sensitivity analysis confirms the robustness of the project's economic viability under adverse conditions, including increased capital and O&M costs, and reduced benefits.

25. The financial analysis confirms the financial viability of the project. The financial internal rate of return of 15.8% is higher than the weighted average cost of capital of 2.3%. Based on a comparison of the with-project and without-project scenarios, the project cash flow, measured at 2014 constant prices for the project life of 25 years, reflects the costs (capital investment and O&M) and revenues (domestic sales) attributable to the project from Barki Tojik's perspective.<sup>14</sup> The project remains financially viable under the assumption that the end user tariffs continue to increase at the current rate of 13% per annum in real terms. The sensitivity analysis also confirms the project's financial sustainability under adverse conditions.

## **C. Governance**

26. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and Barki Tojik. Consistent with its commitment to good governance, accountability, and transparency, ADB reserves the right to investigate, directly or through its agents, any allegedly corrupt, fraudulent, collusive, or coercive practices relating to the project. To support these efforts, relevant provisions of the Anticorruption Policy are included in the grant regulations and the bidding documents. All contracts financed by ADB in connection with

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<sup>13</sup> EIRR is 29.9% for the wholesale metering component and 15.1% for the transmission component.

<sup>14</sup> Financial internal rate of return is 18.8% for the wholesale metering component and 14.4% for the transmission component.

the project shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agencies and all contractors, suppliers, consultants, and other service providers as they relate to the project. The specific policy requirements and supplementary measures are described in the PAM (footnote 10).

27. The recent financial performance of Barki Tojik has been weak and unstable, generating losses for FY2007–FY2009, profits for FY2010–FY2011, and losses again in FY2012.<sup>15</sup> Barki Tojik's financial management capacity requires significant improvement. External auditing for FY2011 and FY2012 based on international audit standards indicate major issues with (i) valuation of inventory, (ii) revaluation of assets, (iii) records on account receivables and payables, and (iv) data reconciliation of revenues.<sup>16</sup> Barki Tojik's accounting policies, procedures, and financial reporting follow International Financial Reporting Standards, which is required under the Law of Accounting and other decrees of the government.<sup>17</sup> Each of the 30 subordinate entities under the head office prepares its own financial report, and these are consolidated at the holding company level. Barki Tojik has an internal audit unit established at the head office, but with limited independence. External independent auditors have been engaged to undertake auditing based on international auditing standards for the holding company in compliance with the statutory requirements.<sup>18</sup>

28. Substantial efforts are being made to strengthen the financial management capacity of the power utility. In 2011, the government initiated a comprehensive program to restructure Barki Tojik. ADB provided support through the SOPI program to improve the commercial operations and financial performance of the utility, and to strengthen its capacity to service debt while providing high-quality services as referred to in paragraph 4. SOPI program includes institutional strengthening and reorganization of Barki Tojik using a phased approach (phase 1 involves sector assessment, phase 2 preparation of a detailed restructuring plan, and phase 3 the restructuring itself). The program addresses governance, financial management, control and audit, legal and regulatory frameworks, management systems, and organizational structure. In addition, the program will deal with technical operations and planning to optimize future investments and allocate sufficient funds for system maintenance. It will also address corporate financing, debt management, and debt restructuring. SOPI program consultants have already revised existing tariff methodology and started to develop new tariff structures for generation, transmission, and distribution departments. Installation of the wholesale metering system will enable proper cost accounting, which is necessary to determine the cost recovery tariff level.

29. On 11 June 2013, the government approved (i) the assessment report prepared under the SOPI program; (ii) the intervention plan prepared by the SOPI program consultants; and (iii) the new structure of Barki Tojik, with three departments (generation, transmission, and distribution) under the same legal entity. The detailed restructuring plan was completed and approved on 5 March 2014. The milestones have been set for the formation of the departments under the new structure and appointment of personnel. The entire process, including appointment of staff in regional offices, is expected to be completed by 1 May 2015. The

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<sup>15</sup> Details of the financial position of Barki Tojik are in the Financial Management Assessment (accessible from the list of linked documents in Appendix 2). ADB is in dialogue with the government to soften the onlending terms (para. 13), which will contribute to improving the financial position of the utility. Management of the debt is also a component under the SOPI program.

<sup>16</sup> External auditing of Barki Tojik by independent auditors has resulted in a disclaimer of opinion for FY2010–FY2012. Auditing for FY2013 has not been completed yet.

<sup>17</sup> Government's Decree 428 of 4 November 2002 for International Financial Reporting Standards; Government's Decree 231 of 2 May 2010 for Additional Arrangements for Implementing International Financial Reporting Standards in the Republic of Tajikistan; and President's Decree 702 of 25 March 2011 for the Law of Accounting.

<sup>18</sup> President's Decree 626 for the Law on Financial Management and Internal Control; and President's Decree 631 for the Law on Internal Audit.

preparation of an opening balance sheet and annual budget for each department is also ongoing.

30. As part of a separate project funded by the World Bank, Barki Tojik recruited international consultants to revalue assets in accordance with International Financial Reporting Standards and assess issues related to account receivables and payables.<sup>19</sup> Automated accounting and billing systems are being introduced, starting in major cities such as Dushanbe and Khujand. Continued efforts are needed to steadily increase the tariff level, improve tariff collection efficiency through the adoption of computerized accounting and reporting systems, and modernize and rehabilitate productive assets through investment. The last tariff increase, which averaged 15%, occurred on 3 June 2014. Positive changes are expected in Barki Tojik's accounting procedures, financial reporting, and management reporting systems in 2014–2016.

#### **D. Poverty and Social**

31. A reliable supply of electricity brings significant benefits to communities (especially poorer ones), including enhanced incomes and livelihoods, improved health and education, better security, and a generally higher standard of living. In Tajikistan, winter is difficult for people who lack reliable electricity and cannot afford adequate alternatives (or must spend time seeking fuel). Women in particular will benefit from the project because they bear the brunt of household and family responsibilities, including gathering fuel for cooking, heating, and processing water; and caring for children, the sick, and the elderly. Electricity also offers women more opportunities for home-based enterprises and income generation, and it has positive impacts on public facilities such as schools and health centers.

32. However, because this project will provide metering in existing substations (which will then supply electricity to the entire grid) as well as a new transmission line and towers, the benefits (although substantial) are generalized and indirect, and do not target particular communities. Similarly, there will not be specific power supply benefits for particular social groups such as women or the poor, beyond those that accrue to electricity consumers in general. The technological nature of the project allows little scope for social components, and the project provides no opportunities for specific pro-poor initiatives.

#### **E. Safeguards**

33. The project is classified as category B for environment. The initial environmental examination and environmental management plan (EMP) were prepared by Barki Tojik in accordance with ADB's Safeguard Policy Statement (2009). There are two legally protected areas and one important bird area located in the project area or its proximity. An approximately 1.5 km section of the transmission line passes outside the northern boundary of the Say Vota Botanical Reserve (International Union for Conservation of Nature category 4) conserving juniper. The environmental field survey found that no significant impacts on the reserve are expected.<sup>20</sup> The Rudaki substation and the power line in Panjakent are located in close proximity to the Sarazm Important Bird Area. The mitigation measures proposed in the project design include bird diverters to prevent collision of birds with conductors, and bird spikes that have been effective on other transmission lines in Tajikistan. The Zarafshan Complex Reserve (International Union for Conservation of Nature category 4) is 3 km from the project area and is not impacted by the project. Other anticipated adverse environmental impacts of the project are

<sup>19</sup> World Bank. 2005. *Energy Loss Reduction Project, 2005–2014*. Tajikistan.

<sup>20</sup> The International Union for Conservation of Nature is an international organization dedicated to finding pragmatic solutions to our most pressing environment and development challenges.

related to soil erosion, noise and dust generation during construction, and electromagnetic fields during operation. Adequate mitigation measures were designed and will be implemented through the EMP. The safeguard capacity of the PMU is limited; therefore, the EMP includes training of PMU personnel in environmental management. Public consultations were conducted in the project area from 25 to 28 July 2014. The initial environmental examination and the EMP were disclosed on the ADB website on 16 September 2014.

34. The project is classified as category B for involuntary resettlement. Based on the project's preliminary design, approximately 0.70 hectares of farmland will be permanently acquired, and approximately 20 hectares will be temporarily acquired for various activities such as stringing towers and building access roads. The temporary land acquisition will have an impact on crops and trees. Entitlements for the various impacts, such as permanent land acquisition, crop and tree loss, and allowances for vulnerable and severely affected persons, have already been defined in the draft land acquisition and resettlement plan (LARP), which was disclosed on the ADB website on 16 September 2014. Once the final design is available, a more detailed survey of impacts will be undertaken to determine the extent of actual involuntary resettlement impacts. Public consultation with the potential affected persons and the general public has been undertaken for purposes of the draft LARP. Another round of public consultations will be done during the finalization of the LARP.

35. The project is classified as category C for indigenous peoples safeguards. The project will not impact indigenous people or any similar groups during construction and operation.

## F. Risks and Mitigating Measures

36. The integrated benefits and impacts are expected to outweigh the costs. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.<sup>21</sup>

**Table 4: Summary of Risks and Mitigating Measures<sup>a</sup>**

<b>Risks</b>	<b>Mitigating Measures</b>
Transportation of large and heavy transformers to Rudaki substation and risk of equipment damage in transit	Bid documents will specify that the contract includes a detailed transportation logistics plan, and that goods be insured from point of origin to installation on-site.
Location of transmission towers in unsafe grounds	The contractor will be requested to undertake additional investigations of tower locations, in particular soil at the locations and in the surrounding area. The project implementation consultant will supervise the process.
Delay in project implementation and cost overruns due to involvement of local contractors	The PMU has experience with similar projects. Bid documents will request that bidders and subcontractors fulfill defined qualifications and demonstrate experience. The project implementation consultants will supervise installation, manage contracts and finances, and monitor environmental programs and reports. Bid documents will envisage a lump sum payment with penalties for late completion.
Staffing deficiencies and insufficient capacity of Barki Tojik and PMU to manage procurement and contract administration	The SOPI program consultants will address staffing deficiencies through extensive training until the project implementation consultants are recruited. The implementation consultants will be actively involved with the project after the contract award. Inadequacies in the number of staff of Barki Tojik will be addressed by its ongoing restructuring.
Inadequate corporate	ADB's SOPI program consultants will assist Barki Tojik in its corporate

<sup>21</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

structure; weak financial management, accounting and auditing policy and procedures, and reporting practices	restructuring to improve the efficiency of utility operations. <sup>b</sup> This restructuring will be further supported by a World Bank program addressing the introduction of International Financial Reporting Standards, asset valuation, receivables, billing and auditing, and financial capacity development. These combined measures will result in improved financial management, internal auditing and reporting, and transparency. External auditing based on International Standards of Accounting will be maintained. The direct payment and letter of commitment methods will be used, with no imprest account.
Operation and maintenance	The project implementation consultants, in conjunction with Barki Tojik staff, will develop a plant operation and maintenance plan that will be approved by Barki Tojik management.

ADB = Asian Development Bank, PMU = project management unit, SOPI = sector operational performance improvement.

<sup>a</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

<sup>b</sup> ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Grant to the Republic of Tajikistan for the Regional Power Transmission Project*. Manila.

Sources: ADB and technical assistance consultants.

#### IV. ASSURANCES AND CONDITIONS

37. The government and Barki Tojik have assured ADB that implementation of the project shall conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the project administration manual and legal documents.

38. The government and Barki Tojik have agreed with ADB on certain covenants for the project, which are set forth in the grant agreement and project agreement.

39. No withdrawal shall be made from the grant account until (i) a subsidiary loan agreement, in form and substance satisfactory to ADB, has been duly authorized or approved by, and executed and delivered on behalf of, the government and Barki Tojik; (ii) appropriate legislation has been passed to provide exemption from taxes and duties on project expenditures, or the government has made budgetary allocation to Barki Tojik for the costs of such taxes and duties; (iii) an opening balance sheet for each of the generation, transmission, and distribution departments of Barki Tojik, in form and substance acceptable to ADB, has been approved by the chairman of Barki Tojik; and (iv) an annual budget for FY2016 for each of the generation, transmission, and distribution departments of Barki Tojik, in form and substance acceptable to ADB, has been approved by the chairman of Barki Tojik.

#### V. RECOMMENDATION

40. I am satisfied that the proposed grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the grant not exceeding \$54,000,000 to the Republic of Tajikistan from ADB's Special Funds resources for the Wholesale Metering and Transmission Reinforcement Project, on terms and conditions that are substantially in accordance with those set forth in the draft grant and project agreements presented to the Board.

Takehiko Nakao  
President

10 November 2014

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Improved electricity supply to households and industry in Tajikistan</p>	<p>National electricity transmission system losses reduced from 5.0% in 2013 to 3.5% in 2025<sup>a</sup></p> <p>Electricity transmission capacity-related summer load shedding in Panjakent reduced from 46 MW in 2013 to 0 MW in 2025</p>	<p>Barki Tojik annual reports</p>	<p><b>Assumptions</b> Adequate operation and maintenance is provided</p> <p>The government is committed to increase tariff to cost recovery level</p> <p><b>Risk</b> Inappropriate corporate structure and weak financial management</p>
<p><b>Outcome</b> Expanded and metered transmission network</p>	<p>196 high- and medium-voltage substations metered and interconnected to central advanced metering infrastructure and settlement system in 2019</p> <p>Transmission capacity in Panjakent region increased from 67 MVA in 2013 to 320 MVA in 2019</p>	<p>Barki Tojik annual and audit reports</p> <p>Project implementation consultants' progress reports</p>	<p><b>Assumption</b> The government is committed to reorganizing Barki Tojik to improve its operational performance</p>
<p><b>Output</b> 1. Wholesale metering and settlement system functional</p> <p>2. Rudaki–Ayni transmission line operational</p>	<p>Installation of 1,100 wholesale meters and an associated settlement system including 1,100 current transformers and 700 voltage transformers functional in 2019</p> <p>95 kilometers of 220-kilovolt single-circuit overhead transmission line commissioned in</p>	<p>Barki Tojik annual reports</p> <p>Commissioning certificate</p> <p>Project implementation consultants' completion report</p> <p>Barki Tojik annual reports</p> <p>Commissioning</p>	<p><b>Assumption</b> Competent personnel trained in Barki Tojik</p>



Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
	2019	certificate  Project implementation consultants' completion report	
<b>Activities with Milestones</b> <b>1. Wholesale metering and settlement system</b> 1.1 Recruitment of implementation consultant (January 2016) 1.2 Bid initiation, evaluation, and award (February 2017) 1.3 Installation works (October 2019)  <b>2. Rudaki–Ayni transmission line</b> 2.1 Bid initiation, evaluation, and award (February 2017) 2.2 Installation works (October 2019)		<b>Inputs</b>  <b>ADB (ADF Grant): \$54 million</b> <b>Government and Barki Tojik: \$13 million</b>	

ADB = Asian Development Bank, ADF = Asian Development Fund, MVA = megavolt-ampere, MW = megawatt.  
 Appendix 2 Source: Asian Development Bank.

### **LIST OF LINKED DOCUMENTS**

<http://www.adb.org/Documents/RRPs/?id=47017-003-2>

1. Grant Agreement
2. Project Agreement
3. Sector Assessment (Summary): Energy
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Economic and Financial Analysis
8. Country Economic Indicators
9. Summary Poverty Reduction and Social Strategy
10. Initial Environmental Examination
11. Resettlement Plan
12. Risk Assessment and Risk Management Plan

### **Supplementary Documents**

13. Project Feasibility Study
14. Financial Management Assessment
15. Procurement Capacity Assessment