Report and Recommendation of the President to the Board of Directors

Project Number: 49013-002
August 2016

Proposed Loan and Grant
Kyrgyz Republic: Toktogul Rehabilitation Phase 3 Project

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 25 July 2016)

Currency unit	–	som (Som)
Som1.00	=	$0.015
$1.00	=	Som67.80

ABBREVIATIONS

ADB	–	Asian Development Bank
CAPS	–	Central Asian Power System
EDB	–	Eurasian Development Bank
EMP	–	environmental management plan
EPP	–	Open Joint-Stock Company Electric Power Plants
HPP	–	hydroelectric power plant
kWh	–	kilowatt-hour
MOE	–	Ministry of Economy
MTTP	–	Medium-Term Tariff Plan
MW	–	megawatt
PIU	–	project implementation unit
PMC	–	project management consultant

NOTE

In this report, "$" refers to US dollars.

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CONTENTS

PROJECT AT A GLANCE

1. Basic Data — **Project Number:** 49013-002

Project Name	Toktogul Rehabilitation Phase 3 Project	**Department /Division**	CWRD/CWEN
Country	Kyrgyz Republic	**Executing Agency**	Ministry of Economy, OJSC Electric Power Plants
Borrower	Kyrgyz Republic		

2. Sector

	Subsector(s)	ADB Financing ($ million)
✓ **Energy**	Energy efficiency and conservation	5.50
	Energy sector development and institutional reform	5.50
	Large hydropower generation	99.00
	Total	**110.00**

3. Strategic Agenda

	Subcomponents
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded
Environmentally sustainable growth (ESG)	Global and regional transboundary environmental concerns
Regional integration (RCI)	Pillar 1: Cross-border infrastructure

Climate Change Information

Mitigation ($ million)	97.20
CO_2 reduction (tons per annum)	16,865
Climate Change impact on the Project	High

4. Drivers of Change

	Components
Partnerships (PAR)	International finance institutions (IFI) Official cofinancing

Gender Equity and Mainstreaming

No gender elements (NGE) ✓

5. Poverty Targeting

Project directly targets poverty	No

Location Impact

Nation-wide	High

6. Risk Categorization: Low

7. Safeguard Categorization **Environment:** B **Involuntary Resettlement:** C **Indigenous Peoples:** C

8. Financing

Modality and Sources	Amount ($ million)
ADB	**110.00**
Sovereign Project grant: Asian Development Fund	50.00
Sovereign Project loan: Asian Development Fund	60.00
Cofinancing	**40.00**
Eurasian Development Bank - Loan	40.00
Counterpart	**25.00**
Government	25.00
Total	**175.00**

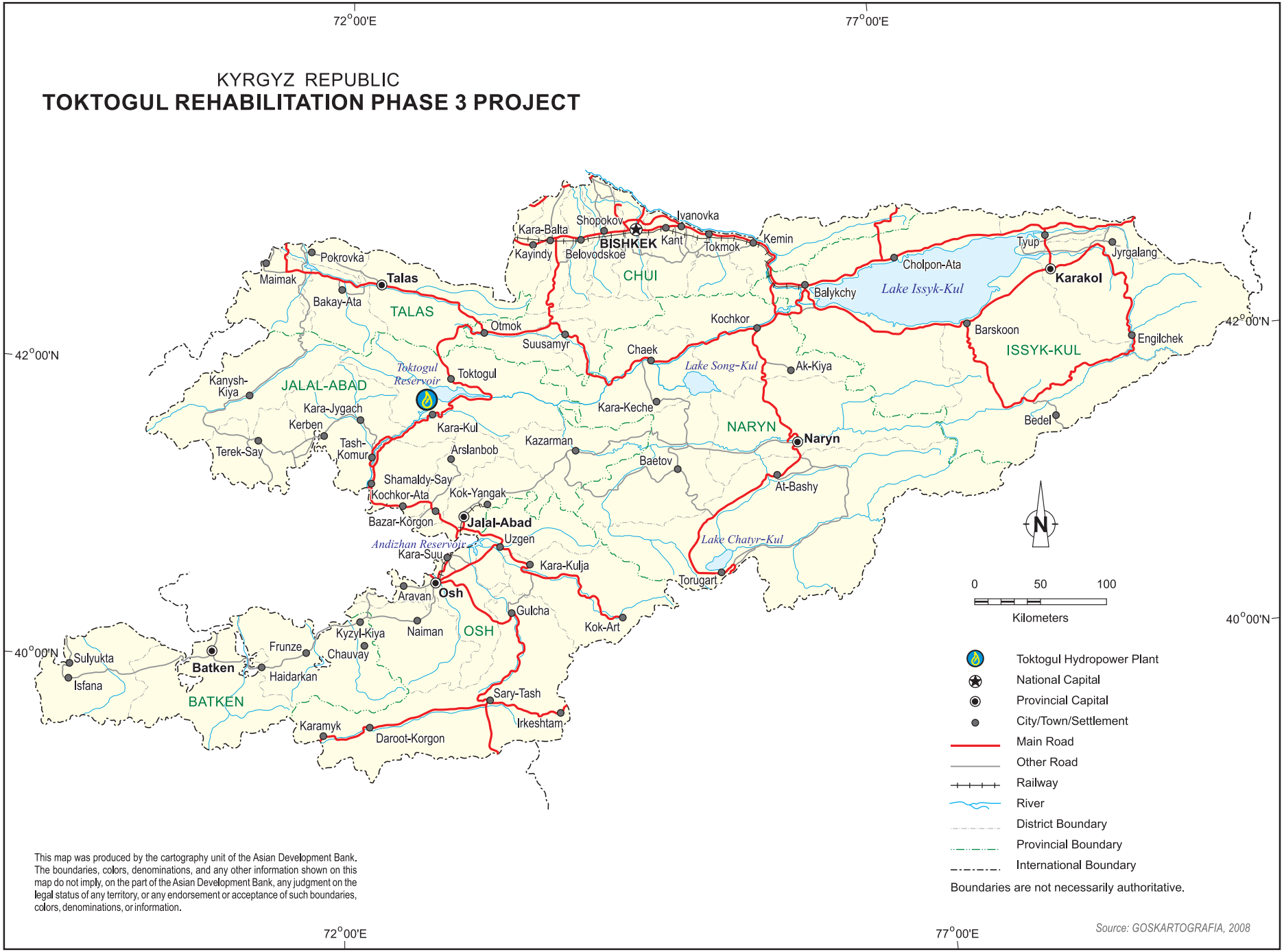
9. Effective Development Cooperation

Use of country procurement systems	No
Use of country public financial management systems	No

Source: Asian Development Bank

KYRGYZ REPUBLIC

TOKTOGUL REHABILITATION PHASE 3 PROJECT



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I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan and (ii) a proposed grant both to the Kyrgyz Republic for the Toktogul Rehabilitation Phase 3 Project. The report also describes the proposed partial administration of a loan to be provided by the Eurasian Development Bank (EDB) to the Kyrgyz Republic for the purposes of this project, and if the Board approves the proposed loan and grant, I, acting under the authority delegated to me by the Board, approve the partial administration of the EDB loan.

2. The Asian Development Bank (ADB) financed the rehabilitation of the first two turbine-generator units and secondary electrical equipment of the largest and most important power plant in the Kyrgyz Republic under the Power Sector Rehabilitation Project (Phase 1) and the Toktogul Rehabilitation Phase 2 Project.[1] Implementation of both Phase 1 and Phase 2 projects is ongoing.[2] The proposed phase 3 project aims to (i) complete the rehabilitation of the Toktogul hydroelectric power plant (HPP) by replacing the two remaining turbine-generator units and refurbishing the civil structures of Toktogul dam, (ii) overhaul the dam monitoring systems at five dams along the Naryn cascade, (iii) continue the information campaign to educate the public on sector reforms, (iv) conduct corporate financial audits and business operation assessments of eight state-owned power and heat companies, and (v) implement a management modernization program for the power generation company.[3]

II. THE PROJECT

A. Rationale

3. The power sector of the Kyrgyz Republic is characterized by aging assets, high commercial losses, and poor performance of the sector companies. Most assets are more than 30 years old and approaching the end of their economic lives. Given the increased demand for power in the Kyrgyz Republic, rehabilitation, replacement, and augmentation of power sector assets are critical for energy security in the country.[4] The economy has shown sustained growth, averaging 5% in 2011–2015. However, growth in 2016 and 2017 is expected to slow to 1%–2% because of a slowdown in the economies of key neighboring trade partners.[5]

4. The Kyrgyz Republic is rich in renewable energy sources. More than 3,070 megawatts (MW) of the total 3,786 MW of installed power generation capacity come from hydropower, although the hydropower potential amounts to more than 18,500 MW. About 80% of power generation is from hydropower and the rest is from two combined heat and power plants in

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[1] ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Grant to the Kyrgyz Republic for the Power Sector Rehabilitation Project*. Manila (L2869/G0294-KGZ); and ADB 2014. *Report and Recommendation of the President to the Board of Directors: Proposed Loan, Grant and Administration of Loan to the Kyrgyz Republic for the Toktogul Rehabilitation Phase 2 Project*. Manila. (L3212/G0419-KGZ). EDB cofinances phase 2 of the project. ADB also finances the strengthening of transmission infrastructure by linking major substations to a supervisory control and data acquisition system and introducing an automated metering system under the ongoing ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Grant to the Kyrgyz Republic for the Power Sector Improvement Project*. Manila (L2671/G0218).

[2] For Phase 1 project, all major contracts were awarded and at advanced stage of implementation, last consultancy contract is expected to be awarded in Q4 2016. One of the project outputs was successfully completed. For Phase 2, project implementation consultant commenced work since April 2016 and bidding documents for major component are expected to be tendered in end-August 2016. Both projects are currently "on track".

[3] The project is included in ADB. 2015. *Country Operations Business Plan: Kyrgyz Republic, 2016–2018*. Manila.

[4] Winter consumption grew by 62% from 2009 to 2012, while summer consumption grew by 16% in the same period. World Bank. 2014. *Power Sector Policy Note for the Kyrgyz Republic*. Washington, DC.

[5] ADB. 2016. *Asian Development Outlook 2016*. Manila.

Bishkek and Osh where electricity is generated as a byproduct. Almost 100% of the population is connected to the electricity grid; however, with the increase in demand, outages occur in the winter months when hydropower is not available.

5. The power sector consists of two generation companies (Open Joint-Stock Companies Electric Power Plants [EPP] and Chakan GES); a transmission company; four electricity distribution companies; and a district heating company. The Ministry of Economy (MOE) has temporarily taken over strategic planning, policy development, and forecasting from the Ministry of Energy and Industry, which was abolished at the end of 2015 to optimize the activities of state agencies.[6] Restructuring of state agencies is underway so that a new agency will be appointed to assume the former ministry's function. The State Agency for Regulation of Fuel and Energy has tariff-setting and licensing authority, while the National Energy Holding Company was established in early 2016 to manage the power sector.

6. The country is the largest net exporter of electricity to the 500-kilovolt Central Asian Power System (CAPS), with average annual exports of 1,600 gigawatt-hours during 2007–2014. Exports of hydro-based electricity to CAPS occur during summer when electricity production exceeds domestic demand, which is associated with water release for regional irrigation needs.[7] Along with electricity imports to augment supply, fossil fuels are imported during winter to supply thermal power plants.

7. Toktogul HPP, located on the Naryn River in Jalal–Abad Province and in service since 1975, is the largest and most important power plant in the Kyrgyz Republic. It has installed capacity of 1,200 MW and available capacity of 1,192 MW. Producing 40% of the country's average electricity output (both base and peak load), the Toktogul HPP plays a critical role as a power source for domestic use and export, and provides voltage and frequency regulation services to CAPS. Toktogul HPP has had an increasing number of critical failures since 2009 because of the dilapidated state of its equipment and, as a result, was using only 50% of its installed capacity in the winter of 2015/2016.

8. The government's Action Plan for Reforming the Energy Sector, supported by development partners, has yielded some good results: the appointment of a regulator, the reduction of losses, and the adoption of a Medium-Term Tariff Plan, 2014–2017 (MTTP).[8] The government achieved a substantial reduction in electricity losses, from nearly 40% of generation in 2008 to 22% in 2014. Further reform efforts on corporate governance, operational efficiency, and the financial viability of power companies identified by the action plan are required to improve the operational performance of the power sector. The project will assist the sector by (i) auditing the financial performance of the eight power and heat companies, (ii) assessing the sector's operational efficiency, and (iii) implementing a business process reengineering program for EPP as a pilot for the sector. These components will increase transparency in power sector activities, streamline business processes, and modernize management and decision-making processes.

[6] Government of the Kyrgyz Republic. 2015. *About Organization Measures in Connection with New Structure of the Government of Kyrgyz Republic*. Bishkek (Resolution number 768).

[7] CAPS connects the power systems of the Kyrgyz Republic, Southern Kazakhstan, Tajikistan, and Uzbekistan.

[8] Government of the Kyrgyz Republic. 2013. *Action Plan for Reforming the Energy Sector for 2013–2014*. Bishkek. (approved by Ordinance No. 299 on 24 July 2013; and Government of the Kyrgyz Republic. 2014. *Medium-Term Tariff Plan for Electricity and Thermal Energy for 2014–2017*. Bishkek. (approved by Ordinance No. 660 on 20 November 2014).

9. At the start of MTTP implementation, the residential tariff was increased in 2014 by 10 to 208% while the commercial consumer tariff was increased by 92%.[9] The government will gradually increase the weighted average tariff to Som1.67 per kilowatt-hour (kWh) by 2017 to achieve cost recovery.[10] The main objective of the MTTP is to ensure sustainable financing and reliable supply in the face of electricity shortages caused by declining output and the need to import electricity. The government was successful in raising the residential tariff in 2014 and 2015 without causing social unrest thanks to a public information program funded under the phase 1 project, which made the population more aware of the benefits of sector reforms. The campaign will be continued as part of phase 3 to inform the public about recent sector developments and the benefits of an effective tariff policy.

10. Development of the energy sector is a critical priority for the Government of the Kyrgyz Republic.[11] The project aligns with the government's and ADB's country partnership strategy for 2013–2017: (i) focus on reliable power supply, (ii) increase energy security, (iii) expand regional power exports, and (iv) improve sector management and operational performance.[12]

11. ADB maintains dialogue with the government on energy sector reform and development, capacity enhancement, and good governance. In 2012, the Power Sector Regional Master Plan prepared under the Central Asia Regional Economic Cooperation Program defined investment priorities and a development plan.[13] From 2016 to 2018, the government will prepare a 10-year master plan under the phase 2 project, which will provide long-term demand projections and specify priority projects to secure sustainable and reliable power. The plan will also assess renewable energy capacities and the government's energy efficiency strategy.

B. Impact and Outcome

12. The project impact will be aligned with increased reliability of national and regional power systems (National Sustainable Development Program, 2013–2017). The outcome will be improved operational performance of the Kyrgyz Republic's power sector.

C. Outputs

13. The project's physical outputs will be the (i) rehabilitation of the Toktogul HPP by replacing two turbine-generator units (including associated auxiliary equipment) and refurbishing the civil structures of Toktogul dam, and (ii) overhaul of the dam monitoring systems at Toktogul, Kurpsai, Tashkumyr, Shamaldy-Sai, and Uch Kurgan dams. The Toktogul HPP rehabilitation is expected to result in (i) a fully refurbished plant that is operational for an additional 35 years, (ii) an increase in generation capacity by 120 MW, and (iii) more reliable domestic and regional power supply.[14] The project's nonphysical outputs will be better public

[9] Prior to implementation of MTTP, the residential tariff was Som0.70 per kWh and the industrial tariff was Som1.32 per kWh. In 2014, the tariff was increased to Som0.77 per kWh for consumption below 700kWh and to Som2.16 for those above, while commercial tariff was increased to Som2.24 per kWh.

[10] According to the MTTP, the residential tariff will be increased by 20% in 2016 and 2017. For consumption above 700 kWh and other consumer groups, the tariff will be increased based on the weighted average tariff plus cost of electricity import with an annual inflation adjustment. In 2014, the cost-to-service weighted average residential tariff was Som1.20 per kWh and Som1.38 per kWh for other consumer groups, while in 2017, the cost-to-service weighted average residential tariff will be Som1.47 per kWh and Som1.69 per kWh for other consumer groups.

[11] Government of the Kyrgyz Republic. 2013. *National Strategy of Sustainable Development for 2013–2017*. Bishkek (approved by Presidential Decree on 21 January 2013).

[12] ADB. 2013. *Country Partnership Strategy: Kyrgyz Republic, 2013–2017*. Manila.

[13] ADB. 2010. *Technical Assistance for Central Asia Regional Economic Cooperation: Power Sector Regional Master Plan*. Manila (TA 7558-REG).

[14] Upgrading the generators by 60 MW each will result in additional generation capacity of 120 MW. The new turbine-generator units will be 2.5% more efficient than the old ones after the installation of state-of-the-art technology.

knowledge about sector reforms and benefits, and stronger governance and management procedures in the sector (including business operation assessment, management modernization, and corporate financial audit).

D. Investment and Financing Plans

14. The project is estimated to cost $175,000,000 (Table 1).

Table 1: Project Investment Plan
($ million)

Item			Amount[a]
A.	**Base Cost**[a]		
	1.	Replacement of Toktogul turbine-generator units 1 and 3	97.19
	2.	Refurbishment of Toktogul civil structures	7.50
	3.	Dam monitoring system	1.70
	4.	Business operation assessment and management modernization	5.00
	5.	Corporate financial audit of eight power and heat companies[b]	1.20
	6.	Public information program	0.40
	7.	Project management and individual consultants[c]	4.00
	8.	Project financial statement audit of EPP and MOE	0.13
	Subtotal (A)		**117.12**
B.	**Taxes and Duties**[d]		**23.90**
C.	**Contingencies**[e]		**31.54**
D.	**Financial Charges During Implementation**[f]		**2.44**
	Total (A+B+C+D)		**175.00**

EPP = Open Joint-Stock Company Electric Power Plants, MOE = Ministry of Economy.
[a] In 2015 prices.
[b] The power and heat companies consist of two generation companies, EPP and Chakan GES; one electrical grid transmission company, National Electrical Grid of Kyrgyzstan; four regional electricity distribution companies: Jalalabatelectro (southern Jalalabat region), Oshelectro (Osh and Batken regions), Severelectro (Bishkek, Chuy, and Talas regions) and Vostokelectro (eastern region); and one heat and hot water distribution company, Bishkekteploset.
[c] Includes project implementation support for EPP and MOE.
[d] Includes taxes and duties (10% custom duties and 12% value-added tax) to be financed or waived by the Government of the Kyrgyz Republic.
[e] Physical contingencies computed at 16% for turnkey contracts and 5% for all other cost categories. Price contingencies computed following ADB's cost escalation factors; a purchasing power parity assumption was made to compute exchange rate adjustments.
[f] Includes financial charges during construction on the ADB loan at 1% per annum, and 1% per annum for the European Development Bank (EDB) loan and 0.5% upfront commission on the EDB loan. The government will finance EDB loan financing charges and upfront commission.
Source: Estimates by the project preparation due diligence consultant and the Asian Development Bank.

15. The government has requested a loan in various currencies equivalent to SDR43,228,000 and a grant not exceeding $50,000,000, both from ADB's Special Funds resources, to help finance the project. The loan will have a 32-year term, including a grace period of 8 years, an interest rate of 1.0% per annum during the grace period and 1.5% per annum thereafter, and such other terms and conditions set forth in the draft financing and project agreements.

16. The government has also requested a loan of $40,000,000 from the EDB Eurasian Fund for Stabilization and Development to cofinance part of the project. The EDB loan will have a 20-year term, including a grace period of 8 years, an interest rate of 1.0% per annum, an upfront fee of 0.5%, and such other terms and conditions set forth in EDB's draft financing and project agreements. The government will relend the amount to EPP on terms and conditions

satisfactory to EDB. The EDB loan will be partially administered by ADB, including procurement review and disbursement procedure.

17. The government will allocate grant funds ($7,370,000), including a contingency allocation of 10% to MOE, for the nonphysical outputs (para. 13). The government will transfer the entire loan amount and the remaining amount of the grant ($42,630,000) to EPP as follows: 25% as equity and 75% as a loan under a relending agreement. The relending to EPP will be for a 25-year term, including a grace period of 7 years, and an interest rate of 1.5% per annum. EPP will bear the foreign exchange risk. The government will finance $25 million equivalent in taxes and duties, and the financing charges during implementation for the EDB loan. The financing plan is in Table 2.

Table 2: Financing Plan

Source	Amount ($ million)	Share of Total (%)
Asian Development Bank		
Special Funds resources (loan)	60.0	34.3
Special Funds resources (grant)	50.0	28.6
Eurasian Development Bank (loan)	40.0	22.8
Government of the Kyrgyz Republic	25.0	14.3
Total	**175.0**	**100.0**

Source: Asian Development Bank estimates.

E. Implementation Arrangements

18. EPP will be the executing agency for the physical outputs of the project (para. 13). The project implementation unit (PIU), which is implementing the phase 1 and phase 2 projects, will be expanded to include the staff needed for phase 3. The expanded PIU will be assisted by technical departments within EPP and by the project management consultant (PMC). The project will fund three additional PIU support consultants.

19. MOE will be the executing agency for the nonphysical outputs of the project (corporate financial audit, business operation assessment and management modernization, and public information program). MOE already has a PIU to administer all consulting services. The PIU will be expanded to include staff needed for the project. The project will fund two additional PIU support consultants.

20. ADB is partially administering the cofinancing loan from EDB. Accordingly, universal procurement will apply to all goods, works, and services to be financed under the project.

21. The government and EPP agreed to fast-track the implementation and to optimize costs of the phase 2 and phase 3 projects by tendering all four turbine-generator units under phase 2 and phase 3. The preparation of bidding documents is at an advanced stage; the target is to award the contract by the fourth quarter of 2017.

22. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual.[15]

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

Table 3: Implementation Arrangements

Aspects	**Arrangements**		
Implementation period	October 2016–December 2022		
Estimated completion date	31 December 2022		
Loan and grant closing date	30 June 2023		
Aspects	**Arrangements**		
Management			
(i) Executing agencies	EPP, MOE		
(ii) Project implementation unit	EPP will use and expand its existing PIU. MOE will use and expand its existing PIU.		
Procurement	**Method**	**Contracts**	**Amount** ($)
(i) Replacement of Toktogul turbine-generator units 1 and 3	ICB	1 contract	97.2 million
(ii) Refurbishment of Toktogul dam civil structures	ICB	1 contract	7.5 million
(iii) Overhaul of dam monitoring system	ICB	1 contract	1.7 million
Consulting services	**Method**	**Person-months**	**Amount** ($)
(i) Project management consultant	QCBS (90:10)	200 person-months	3.7 million
(ii) Corporate financial audit	QCBS (90:10)	70 person-months	1.2 million
(iii) Business operation assessment and management modernization	QCBS (90:10)	100 person-months	5.0 million
(iv) Public information program	CQS	40 person-months	0.4 million
(v) Project financial statement audit	CQS	35 person-months	0.1 million
(vi) Individual consultants	ICS	120 person-months	0.3 million
Advance contracting and/or retroactive financing	Advance contracting and retroactive financing will be conducted for all goods, works, and consulting services following ADB's Procurement Guidelines (2015, as amended from time to time) and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).[a] Retroactive financing will be applied not exceeding 20% of the total ADB loan, incurred before loan and grant effectiveness, but not more than 12 months before the signing of the loan agreement.		
Disbursement	The loan and/or grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time) and detailed arrangements agreed between the government and ADB.		

ADB = Asian Development Bank, CQS = consultants' qualification selection, EPP = Open Joint-Stock Company Electric Power Plants, ICB = international competitive bidding, ICS = individual consultant selection, MOE = Ministry of Economy, PIU = project implementation unit, QCBS = quality- and cost-based selection.

[a] The government and EPP have been advised that approval of advance contracting and retroactive financing does not commit ADB to future financing of the proposed project.

Source: Asian Development Bank estimates.

III. DUE DILIGENCE

A. Technical

23. The project will replace turbine-generator units 1 and 3 and all associated equipment and repair the dam's civil structures. This will bring benefits by (i) increasing unit power output from 300 MW to 360 MW, (ii) increasing unit efficiency from 90.0% to 92.5%, and (iii) improving availability from 80.0% to 95.0%. The economic life of the rehabilitated units will be 35 years.

24. The need to repair Toktogul dam's civil structures and overhaul the dam monitoring systems at five dams was identified in the Naryn Cascade Dam Safety Assessment carried out under phase 1. The recommended dam repairs involve (i) corrosion protection, (ii) repair of inspection galleries, (iii) overhaul of walkways and ladders, and (iv) implementation of measures to protect the civil structures from rock fall and landslides. The overhaul of the dam monitoring systems will improve the acquisition of critical automated data relating to safety and

management of the dam under both normal and extreme loading conditions (occurs during earthquakes and flooding). Detailed technical specifications will be finalized by the PMC.

25. Suitable replacement equipment is available in the international market. Technical specifications for the design, manufacture, installation, and commissioning of the new turbine-generator units were prepared under phase 2. Firms qualified to perform the turnkey contract are available in the international market. Training of EPP staff on operation and maintenance will be provided by the contractors.

26. Initial screening rated the project at *high* risk from future climate change impacts because of the expected changes in water availability. The climate change impact on the hydrology of the Syr Darya river basin, which supplies the Toktogul reservoir, was assessed so as to ensure climate-proofing measures in the detailed design**.**[16] The hydrology specialist's report supports the Toktogul HPP rehabilitation and states that (i) the reservoir and dam spillways can safely cater for water inflows that will first increase (owing to melting glaciers) and then decrease, (ii) average energy production will decrease by 11.0% over the next 40 years (0.3% per year), and (iii) sediment transport will not decrease the volume of the reservoir.

B. Economic and Financial

27. The economic internal rate of return is calculated at 29%, which compares favorably with the 12% opportunity cost of capital. The project's economic viability takes into account streams of costs and benefits resulting from the rehabilitation of Toktogul HPP and operation over the project's life. Without the project, the performance of existing units will continue to deteriorate, and they will eventually cease to operate. The project will rehabilitate the power station and increase its generation capacity. The benefits of the project come from avoided power outages and major incidents. Regional economic benefits are not included in the economic internal rate of return calculations since they accrue to countries other than the Kyrgyz Republic. Sensitivity analysis on key issues such as capital cost increase, completion delay, and slower deterioration of the existing units also indicate economic viability of the project.

28. The financial internal rate of return is calculated at 12.54%, which compares favorably with the weighted average cost of capital of 2.00%. Financial viability was gauged by comparing the revenue and cost streams of scenarios with and without the project. The result of a sensitivity analysis confirms that the project's economic and financial viability is robust even under unfavorable circumstances. The financial internal rate of return is based on proposed tariff increases under the MTTP. In the event of a tariff increase not being implemented, government assurances to provide for debt servicing and operation and maintenance coverage at EPP have been sought through a legal covenant to assure financial sustainability of the project. The government agrees to provide at least 60% of incremental heat and electricity revenues resulting from the implementation of the MTTP to EPP as additional revenues to improve EPP's financial situation.

C. Governance

29. A financial management assessment, including a risk management assessment, was conducted following ADB guidelines. Similar to the country's weak public financial management, EPP's financial management capabilities are also weak but improving compared with the previous assessment. EPP has been implementing the phase 1 and phase 2 projects since

[16] ADB. 2009. *Technical Assistance for Enabling Climate Change Interventions in Central and West Asia*. Manila. (TA 7274-REG).

2012 and has submitted an external audit report on its project financial statement on time and with no material qualifications. Consequently, the financial management arrangements now in place for phase 1 are considered acceptable for the phase 3 project. Building up financial management capabilities and effective internal control and auditing, and strengthening procurement capacity and procedures are critical to improve corporate performance. These will be addressed under the business operations assessment and EPP management modernization component.

30. A procurement risk assessment concluded that the project risk is *medium*. To mitigate the risk, a procurement risk management plan was proposed.[17]

31. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and EPP. The specific policy requirements and supplementary measures are described in the project administration manual (footnote 15).

D. Poverty and Social

32. **Poverty**. The general population will benefit from a transparent, accountable, and efficient power sector. During power cuts, the poor are disproportionally affected because they must rely on more expensive (nonelectric) energy sources. The project will not impact affordability or operational employment opportunities, but without the project, energy security will be compromised and will affect industries and therefore jobs. Benefits for women will be in the form of less time required to do housework because they will be able to use reliable electrical appliances under reliable electricity supply.

33. During construction, civil works contractors will be required to ensure equal opportunities for all social groups, equal pay for equal work regardless of gender, and prohibition of child labor. The contractors will also be required to undertake HIV/AIDS awareness activities with construction workers.

E. Safeguards

34. **Environmental assessment**. The project (including the EDB-financed part) is classified category B under ADB's Safeguard Policy Statement (2009). An initial environmental examination with an environmental management plan (EMP) was prepared in accordance with the Safeguard Policy Statement, as guided by the framework financing agreement between ADB and EDB. Public consultation was carried out, and the records were included in the initial environmental examination. The report was endorsed by EPP and approved by the State Agency for Environmental Protection and Forestry in early February 2016, and posted on the ADB and EPP websites in February 2016. The initial environmental examination will be updated by the PIU as necessary, based on the detailed design by the turnkey contractor.

35. The main environmental impacts of the project are (i) occupational health and safety at the project site; (ii) handling of used oil and grease waste; (iii) disposal of scrap metal and other solid waste; (iv) civil works for dam refurbishment; (v) transportation of construction materials and heavy equipment to the project site; and (vi) removal of generated waste from the project site. The EMP specifies adequate mitigation measures and monitoring plans to cover these impacts. Released oils and scrap metals will be kept safe at the on-site storage area, which will be improved with financing under the phase 1 project for usage throughout the whole Toktogul

[17] Project Procurement Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

rehabilitation program. EPP is responsible for ensuring that licensed companies, under the monitoring and supervision of the PMC and PIU, recycle and dispose oils and scrapmetals.

36. The PIU will be responsible for EMP implementation with assistance from the PMC and staff of EPP's Service of Reliability and Safety Department. An environmental and hazardous waste management specialist will be hired under the project as part of the PIU, for in-house capacity building of EPP during the implementation of the whole Toktogul rehabilitation program. Environmental monitoring will be performed by the PMC. Monitoring results will be included in the project quarterly progress reports and semiannual environmental reports.

37. The costs of EMP mitigation measures will be included in the turnkey contract, and the cost for environmental monitoring will be included in the consulting services of the PMC.

38. **Involuntary resettlement and indigenous peoples.** The project is classified category C for both involuntary resettlement and indigenous peoples under ADB's Safeguard Policy Statement. A due diligence report was prepared to support the C categorization. All civil works will be carried out within the confines of the existing Toktogul HPP, so no land acquisition or livelihood impacts will occur. A transport management plan will be developed by the turnkey contractor for the delivery of turbines and other oversized materials and equipment. EPP will coordinate the plan with the National Traffic Police and local governments. The project is not expected to affect indigenous peoples as defined under ADB's safeguard requirements on indigenous peoples.

F. Risks and Mitigating Measures

39. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[18] The overall assessment is that risks were identified and mitigated, and that the integrated benefits and impacts are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
Weak financial management, internal control, and risk management	The government will implement an action plan to improve the financial management systems and business operations of eight power and heat companies under MOE. MOE has mandated the creation of an internal audit department in EPP. External audits will be required to meet international standards. The direct payment procedure will be used for consultants and contractors. EPP governance and business processes will improve as the management modernization program is implemented. Specialist support will be provided to the PIU.
The executing agency management and bid evaluation committee has limited experience, and no in-depth knowledge on procuring goods and services in accordance with ADB guidelines and procedures.	ADB to conduct capacity building focused on ADB procedure and guidelines. Development partners in the country to coordinate capacity-building efforts, taking into account lessons from different projects and programs.
Reduction in losses does not occur.	An electricity settlement center is being established, thereby increasing transparency and assisting in loss reduction. Retail metering programs are being implemented.

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

Risks	Mitigating Measures
Need for additional rehabilitation is identified during execution. Prices of commodities and raw materials rise more than budgeted.	Due diligence was conducted to define the rehabilitation scope. The physical contingency was increased above standard rates.
Reduction in supply due to reduced water volume	Ongoing rehabilitation of Bishkek Thermal Power Plant will increase the plant capacity from 385 MW to 685 MW.

ADB = Asian Development Bank, EPP = Open Joint-Stock Company Electric Power Plants, MOE = Ministry of Economy, MW = megawatt, PIU = project implementation unit.
Source: Asian Development Bank.

IV. ASSURANCES

40. The government and EPP 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 loan documents. The government and EPP have agreed with ADB on certain covenants for the project, which are set forth in the financing agreement and project agreement.

V. RECOMMENDATION

41. I am satisfied that the proposed loan and the proposed grant would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

(i) the loan in various currencies equivalent to SDR43,228,000 to the Kyrgyz Republic for the Toktogul Rehabilitation Phase 3 Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft financing and project agreements presented to the Board; and

(ii) the grant not exceeding $50,000,000 to the Kyrgyz Republic, from ADB's Special Funds resources, for the Toktogul Rehabilitation Phase 3 Project, on terms and conditions that are substantially in accordance with those set forth in the draft financing and project agreements presented to the Board.

Takehiko Nakao
President

16 August 2016

DESIGN AND MONITORING FRAMEWORK

Impact the Project Is Aligned with
Increased reliability of national and regional power systems (National Sustainable Development Program, 2013–2017[a])

Results Chain	**Performance Indicators with Targets and Baselines**	**Data Sources and Reporting**	**Risks**
Outcome Operational performance of the Kyrgyz Republic power sector improved	By 2023 a. Domestic supply increased to 12,000 GWh (2014 baseline: 10,147 GWh) b. Efficiency of Toktogul turbine-generator units 1 and 3 increased by 2.5 percentage points (2015 baseline: 90%)	a. EPP annual report b. Toktogul annual operations report	Supply is reduced due to reduced water volume.
Outputs 1. Toktogul HPP and civil structures rehabilitated	1. Turbine-generator units 1 and 3 (including associated auxiliary equipment) installed and upgraded to 360 MW each by 2022 (2015 baseline: 300 MW)	1. Commissioning certificate	Need for additional rehabilitation is identified during execution. Prices of commodities and raw materials rise more than budgeted.
2. Dam monitoring system overhauled	2. Dam monitoring systems in Kurpsai, Shamaldy-Sai, Tashkumyr, Toktogul, Uch Kurgan dams upgraded by 2020 (2015 baseline: 0)	2. Commissioning certificate	
3. Public knowledge about the power sector reform and benefits improved	3. At least 2 TV shows and 3 newspaper articles with gender-sensitive messages aired and published by 2018 (2015 baseline: 0)	3. Published newspaper articles and pamphlets, and aired television coverage	
4. Governance and management procedure of power sector enhanced	4a. Financial audits and business operation assessments of 8 selected power and heat companies conducted by 2018 (2015 baseline: 0)	4a. Power companies' annual report	
	4b. Management modernization program for EPP implemented by 2022 (2015 baseline: 0)	4b. EPP annual report	

Key Activities with Milestones
Output 1: Toktogul HPP and civil structures rehabilitated 1.1 Prepare and finalize bidding documents (Q3 2015–Q3 2016, advance action) 1.2 Bidding and award of turnkey contract (Q3 2016–Q4 2017) 1.3 Bidding and award of civil structure refurbishment contract (Q3 2017–Q1 2018) 1.4 Refurbish civil structures (Q1 2018–Q2 2020) 1.5 Commission units 1 and 3 (Q2 2021–Q4 2022) **Output 2: Dam monitoring system overhauled** 2.1 Prepare bidding documents (Q3 2016–Q2 2017) 2.2 Award turnkey contracts (Q2 2017–Q1 2018) 2.3 Refurbish dam monitoring system in 5 dams (Q1 2018–Q2 2020) **Output 3: Public knowledge about the power sector reform and benefits improved** 3.1 Conduct needs assessment (Q1 2017–Q2 2017) 3.2 Implement public information program (Q2 2017–Q4 2018) **Output 4: Governance and management procedure of power sector enhanced** 4.1 Conduct financial audit and business operation assessments of 8 state-owned power and heat companies (Q2 2017–Q2 2018) 4.2 Prepare management modernization program (Q2 2018–Q4 2018) 4.3 Implement management modernization program for EPP (Q1 2019–Q1 2022)
Inputs ADB: $60,000,000 (ADF loan) ADB: $50,000,000 (ADF grant) Government: $25,000,000 Eurasian Development Bank: $40,000,000 (loan)
Assumptions for Partner Financing Not applicable

ADB = Asian Development Bank, ADF = Asian Development Fund, EPP = Open Joint-Stock Company Electric Power Plants, GWh = gigawatt-hour, HPP = hydroelectric power plant, MW = megawatt, Q = quarter.

[a] Government of the Kyrgyz Republic. 2013. *National Strategy of Sustainable Development for 2013–2017*. Bishkek. (approved by Presidential Decree on 21 January 2013).

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/RRPs/?id=49013-002-3

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

Supplementary Documents

13. Financial Management Assessment
14. Project Procurement Risk Assessment and Risk Management Plan
15. Involuntary Resettlement Due Diligence Report
16. Project Technical Description