



Report and Recommendation of the President to the Board of Directors

Project Number: 46348
October 2014

Proposed Loan, Grant, and Administration of Loan Kyrgyz Republic: Toktogul Rehabilitation Phase 2 Project

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Asian Development Bank

CURRENCY EQUIVALENTS

(as of 1 October 2014)

Currency unit	–	som (Som)
Som1.00	=	\$0.018
\$1.00	=	Som54.52

ABBREVIATIONS

ADB	–	Asian Development Bank
EDB	–	Eurasian Development Bank
EMP	–	environmental management plan
EPP	–	Open Joint-Stock Company Electric Power Plants
ERP	–	enterprise resource planning
GWh	–	gigawatt-hour
HPP	–	hydroelectric power plant
IEE	–	initial environmental examination
kWh	–	kilowatt-hour
MOEI	–	Ministry of Energy and Industry
MW	–	megawatt
PAM	–	project administration manual
PIC	–	project implementation consultant
PIU	–	project implementation unit
SPF	–	State Property Fund
TA	–	technical assistance

NOTE

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

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PROJECT AT A GLANCE

1. Basic Data		Project Number: 46348-003	
Project Name	Toktogul Rehabilitation Phase 2 Project	Department /Division	CWRD/CWEN
Country Borrower	Kyrgyz Republic Kyrgyz Republic	Executing Agency	Ministry of Energy and Industry, OJSC Electric Power Plants, State Property Fund
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	Climate Change Information	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded	Climate Change impact on the Project	Low
Regional integration (RCI)	Pillar 1: Cross-border infrastructure		
4. Drivers of Change	Components	Gender Equity and Mainstreaming	
Partnerships (PAR)	International finance institutions (IFI) Official cofinancing	No gender elements (NGE)	✓
5. Poverty Targeting		Location Impact	
Project directly targets poverty	No	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		44.50	
Sovereign Project loan: Asian Development Fund		65.50	
Cofinancing		100.00	
Eurasian Development Bank		100.00	
Counterpart		41.68	
Government		40.68	
Others		1.00	
Total		251.68	
9. Effective Development Cooperation			
Use of country procurement systems		No	
Use of country public financial management systems		No	

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) a proposed loan, (ii) a proposed grant, and (iii) proposed administration of a loan to be provided by the Eurasian Development Bank (EDB), all to the Kyrgyz Republic for the Toktogul Rehabilitation Phase 2 Project.¹

2. The project will (i) continue the phased rehabilitation of Toktogul hydroelectric power plant (HPP) by replacing two of the four existing generator and turbine units and associated auxiliary equipment; (ii) prepare an asset inventory and revaluation for the seven power companies,² and Bishkekteploset (heat and hot water distribution company); (iii) prepare a power sector master plan to include a due diligence study for the rehabilitation of Uch Kurgan HPP; and (iv) implement a business process improvement project for the main generation company, Open Joint-Stock Company Electric Power Plants (EPP). The project will increase domestic energy supply and international electricity trade, improve asset management and sector planning, and strengthen sector operational performance.³ The project complements ongoing sector developments in asset rehabilitation, system loss reduction, tariff policy, and sector governance.

II. THE PROJECT

A. Rationale

3. The Kyrgyz Republic power sector is characterized by ageing assets, high commercial losses, below-cost tariffs, and poor performance of sector companies. Power sector assets are over 30 years old and approaching the end of their economic life. This results in reduced reliability and high system technical losses (15% of net supply). The sector also suffers from high commercial losses (15% of net supply), poor financial management and performance, and tariffs that are below cost recovery. Following exceptionally high growth in domestic demand (50% from 2009 to 2013), there is a critical need for major rehabilitation, replacement, and augmentation of sector assets.

4. The government has identified development of the energy sector as a major component of its development plan.⁴ The government's strategy is to (i) improve sector financial performance and corporate management, (ii) increase energy security by development of domestic resources, (iii) expand regional power exports, and (iv) phase in cost-recovery tariffs by 2017.

5. Over \$5 billion of investment in the generation and transmission subsectors is planned in 2014–2024, including \$4 billion of proposed commercial export-oriented HPPs to be developed by the private sector. While the private sector projects are under active development, financing is not confirmed. The project focuses on the immediate priority of ensuring domestic supply.

¹ The design and monitoring framework is in Appendix 1.

² The power sector consists of two generation companies, EPP and Chakan GES; one electrical-grid transmission company, National Electrical Grid of Kyrgyzstan; and four regional electricity distribution companies: Vostokelectro (eastern region), Oshelectro (Osh and Batken regions), Jalalabatelectro (southern Jalalabat region), and Severelectro (Bishkek, Chuy, and Talas regions).

³ The Asian Development Bank (ADB) provided project preparatory technical assistance for the Toktogul Rehabilitation Project Phase 2 (TA 8434-KGZ).

⁴ Government of the Kyrgyz Republic. 2013. *The Kyrgyz Republic Sustainable Development Program, 2013–2017*. Bishkek. Approved by Government Resolution No. 3694-V on 18 December 2013.

6. EPP, the owner and operator of Toktogul HPP, wishes to implement the complete rehabilitation of the Toktogul HPP. Toktogul HPP is the country's largest and most important power plant, with installed capacity of 1,200 MW. It produces 40% of the country's average electricity output, and is critical both as a domestic power source and for power export; it also provides frequency regulator services to the Central Asian power system. Toktogul HPP was placed into service in 1975, and has undergone no significant rehabilitation. Critical equipment components are failing, resulting in availability dropping to 80%; a continued decline in availability is expected in the absence of rehabilitation. An assessment concluded that all the HPPs on the Naryn Cascade require rehabilitation; rehabilitation of Toktogul HPP was identified as the highest priority.⁵ Failure of Toktogul HPP would affect the stability of the Central Asian power system and be catastrophic for the Kyrgyz Republic's electricity supply.

7. The complete rehabilitation of Toktogul HPP is planned over a three-phase program. The first ongoing phase under ADB financing covers replacement of secondary electrical and mechanical equipment, which was identified as the top priority.⁶ The proposed project constitutes the second phase, and will rehabilitate two of the four turbine and generator units. The proposed project is included in the Asian Development Bank's (ADB) country operations business plan for the Kyrgyz Republic, 2014–2016.⁷ The third phase will rehabilitate the two remaining turbine and generator units and will carry out repairs to civil structures as may be identified by an ongoing dam safety assessment study being financed by ADB. Each phase is a standalone project that is independent of each other. The three-phase program is consistent with ADB's country partnership strategy for the Kyrgyz Republic.

8. Ongoing ADB and donor projects are assisting the government in addressing (i) loss reduction by establishment of an independent electricity settlement center and installation of wholesale and retail meters; (ii) policy reform through establishment of an independent regulator, introduction of a cost-recovery tariff, and implementation of an information program to inform the public of the need for tariff increases; (iii) sector-wide asset rehabilitation; and (iv) commercial strengthening of sector companies through improved governance and business processes.

9. Additional sector issues to be addressed to ensure sector viability include (i) poor operational performance of EPP because of deficient governance and management procedures and practices, and inadequate business systems; (ii) absence of an up-to-date power sector master plan leading to sub-optimal sector development; (iii) weak asset inventory and valuation, which inhibits financial control; and (iv) preparation for the rehabilitation of the 180 MW Uch Kurgan HPP, the next priority project after Toktogul.

10. Tariffs are below cost recovery, with a 2013 weighted average consumer tariff of Som0.92 per kilowatt-hour (kWh). The government will implement a phased tariff increase in accordance with its medium-term tariff plan, which will increase the weighted average tariff in 2017 to Som1.43/kWh.⁸ The government is empowered to implement such a tariff increase following decisions by the Parliament (in June 2014) and by the President (in July 2014) to transfer tariff approval authority from Parliament to the government. In July 2014, Parliament

⁵ ADB. 2010. *Technical Assistance to the Kyrgyz Republic for the Power Sector Rehabilitation Project*. Manila (TA-7704-KGZ).

⁶ 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 (Loan 2869-KGZ and Grant 0294-KGZ).

⁷ ADB 2013. *Kyrgyz Republic: Country Partnership Strategy, 2013–2017*. Manila; ADB. 2013. *Country Operations Business Plan: Kyrgyz Republic, 2014–2016*. Manila.

⁸ Government of the Kyrgyz Republic. 2014. *Medium-Term Tariff Plan for Electricity and Heating Sectors for 2014–2017*. Bishkek. Approved by Government Resolution No. 336 on 17 June 2014.

also approved legislation to create an independent energy regulator and an independent market settlement operator.

B. Impact and Outcome

11. The impact will be increased reliability of national and regional power systems. The outcome will be improved operational performance of EPP.

C. Outputs

12. The project will have the following outputs:
- (i) rehabilitation of generator and turbine units 2 and 4 of Toktogul HPP;
 - (ii) preparation of an asset inventory and revaluation of all seven power sector companies and Bishkekteploset;
 - (iii) preparation of a power sector master plan, which includes (a) a 20-year demand projection, (b) identification of new and rehabilitation generation and transmission projects, (c) computation of annual and seasonal export and import trade, (d) a 10-year capital expenditure plan, and (e) a feasibility study for the rehabilitation of Uch Kurgan HPP; and
 - (iv) implementation of a business process improvement project for EPP to (a) assess current governance and business processes and propose a modernization plan, and (b) design and implement an enterprise resource planning (ERP) system.

D. Investment and Financing Plans

13. The project is estimated to cost \$251.68 million (Table 1).

Table 1: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Toktogul powerhouse and HSS rehabilitation	139.00
2. Asset inventory and revaluation	2.00
3. Power sector master plan	1.75
4. EPP business process improvement	5.00
5. Capacity building and project management	11.58
6. Taxes and duties	40.68
Subtotal (A)	200.01
B. Contingencies^c	45.10
C. Financing Charges During Implementation^d	6.57
Total (A+B+C)	251.68

EPP = Open Joint-Stock Company Electrical Power Plants, HSS = hydraulic steel structure.

^a Includes taxes and duties of \$40.68 million to be financed by the government through exemptions.

^b In mid-2014 prices.

^c Physical contingencies were computed at 19% for the hydraulic structures and powerhouse, and 5% for the remaining procurement and consulting packages. Price contingencies were computed following the international and domestic cost escalation factors provided by the Asian Development Bank. A purchasing power parity assumption has been adopted for exchange rate adjustment.

^d Interest during construction has been computed following the appropriate interest rates for Asian Development Bank and Eurasian Development Bank loans.

Source: Asian Development Bank estimates.

14. The government has requested a loan in various currencies equivalent to SDR43,680,000 and a grant not exceeding \$44,500,000, 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 to be set forth in the draft financing and project agreements.

15. The government has also requested a loan of \$100,000,000 from the EDB Anti-Crisis Fund. The EDB loan will have a 20-year term, including a grace period of 8 years; an interest rate of 1% per annum and an up-front fee of 0.50%. The EDB loan will be partially administered by ADB, including procurement review and disbursement supervision. The EDB loan will exclusively finance the turnkey contract for the rehabilitation of generator and turbine units 2 and 4 of Toktogul HPP.

16. The government will allocate grant funds including a contingency allocation of 20% to (i) the Ministry of Energy and Industry (MOEI) for the master plan component and individual consultants to assist its project implementation unit (PIU), and (ii) the State Property Fund (SPF) for the asset revaluation component and individual consultants to assist its PIU. The government will transfer the remaining amount to EPP for the turnkey rehabilitation contracts, consulting services for project implementation, and external audits; the transfer will take the form of 50% by equity contribution and 50% by relending. The equity and loan components will be progressively disbursed to EPP based on amounts disbursed under the ADB loan and grant, and EDB loan. The relending to EPP will be for a 25-year term, including a grace period of 8 years, and an interest rate of 1.5% per annum. EPP will bear the foreign exchange risk.

17. The financing plan is in Table 2. ADB loan and grant funds and EDB funds will finance the rehabilitation of Toktogul units 2 and 4 and the repair of the hydraulic steel structures. ADB loan and grant funds will finance implementation of the ERP system and financial charges during implementation. ADB grant funds will finance consulting services. The government will finance taxes and duties by way of exemptions and EPP will finance it's PIU. Detailed cost estimates and allocation of funding sources to project components are in the project administration manual (PAM).⁹

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
ADB (ADF grant)	44.50	17.68
ADB (ADF loan)	65.50	26.03
EDB (Loan)	100.00	39.73
Government	40.68	16.16
EPP	1.00	0.40
Total	251.68	100.00

ADB = Asian Development Bank, ADF = Asian Development Fund, EDB = Eurasian Development Bank, EPP = Open Joint-Stock Company Electric Power Plants.

Source: Asian Development Bank estimates.

E. Implementation Arrangements

18. The implementation arrangements are summarized in Table 3 and described in detail in the PAM.

⁹ Project Administration Manual (accessible from the list of linked documents in Appendix 2).

Table 3: Implementation Arrangements

Aspects		Arrangements		
Implementation period		April 2015–December 2021		
Estimated completion date		31 December 2021		
Management				
(i) Executing agencies		MOEI, SPF, EPP		
Procurement		Method	Contracts	Amount (\$)
(i) Toktogul turbine and generator units 2 and 4		ICB	1 contract	127.00 million
(ii) Toktogul hydraulic steel structures		ICB	1 contract	12.00 million
(iii) EPP business process improvement		ICB	1 contract	3.50 million
Consulting services		Method	Person-Months	Amount (\$)
(i) Toktogul project implementation consultant		QCBS (90:10)	555	10.00 million
(ii) EPP business process improvement project		QCBS (90:10)	102	1.50 million
(iii) Asset inventory and revaluation		QCBS (90:10)	74	2.00 million
(iv) Power sector master plan		QCBS (90:10)	45	1.75 million
(v) External audit		CQS	35	0.40 million
(vi) Individual consultants		ICS	180	0.18 million
Advance contracting	Advance contracting will be conducted for consulting services in accordance with ADB's guidelines. ^a			
Disbursement	The loan and/or 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, CQS = consultants' qualifications selection, EPP = Open Joint-Stock Company Electric Power Plants, ICB = international competitive bidding, ICS = individual consultants selection, MOEI = Ministry of Energy and Industry, QCBS = quality- and cost-based selection, SPF = State Property Fund.

^a The government has been advised that approval of advance contracting does not commit ADB to future financing of the proposed project.

Source: Asian Development Bank estimates.

19. EPP is responsible for implementation of Toktogul HPP rehabilitation and the EPP business improvement process project components. EPP will establish a dedicated full-time PIU to oversee execution of the consulting and construction contracts. The PIU will be supported by individual national consultants from 2015 to 2017. The PIU will be assisted by an international engineering consulting firm for Toktogul HPP rehabilitation whose services will include preparation of bidding documents, bid evaluation, construction supervision, project accounting, safeguard monitoring, and reporting to the government and ADB. The PIU will also be assisted by an international ERP consulting firm whose services will include assessment of existing business procedures, identification of project requirements, preparation of ERP bid documents, bid evaluation, and project supervision.

20. MOEI is responsible for implementation of the power sector master plan including the Uch Kurgan due diligence study. MOEI will be assisted by an international consulting firm recruited by the existing MOEI PIU, which will be supported by an individual national consultant. SPF is responsible for execution of the asset inventory and revaluation project. SPF will be assisted by an international consulting firm recruited by a new PIU to be created. The PIU will be supported by an individual national consultant.

21. The project will be implemented over 7 years, beginning in 2015. Consultants will be recruited in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). Procurement will be carried out in accordance with ADB's Procurement Guidelines (2013, as amended from time to time). ADB is administering cofinancing resources in the form of a loan from EDB on a partial administration basis. Accordingly, universal

procurement will apply to all procurement and consulting services packages to be financed under the project.¹⁰

III. DUE DILIGENCE

A. Technical

22. An international consulting firm, recruited under ADB-financed technical assistance (TA), conducted due diligence of the rehabilitation of Toktogul HPP. The TA concluded that the entire plant's electrical and mechanical equipment needed to be replaced. Considering funding constraints, a phased rehabilitation was recommended, with the first phase to cover priority auxiliary equipment, and the second and third phases to be done on a turbine and generator unit basis. The ongoing Power Sector Rehabilitation Project covers priority common electrical equipment. ADB-financed TA for preparation of this project recruited the same international consultant to conduct due diligence for phase 2. The TA identified rehabilitation of turbine and generator units 2 and 4 as the next priority, with the final third phase to cover replacement of turbine and generator units 1 and 3.

23. The project will replace turbine and generator units 2 and 4 and all associated auxiliary and control equipment and repair the existing hydraulic steel structures. The project benefits will include (i) increasing unit power output from the existing 300 MW to 360 MW, (ii) increasing unit efficiency by 2.5 percentage points from 90.0% to 92.5%, and (iii) improving availability from 80% to 95%. Life expectancy of the rehabilitated units will be 35 years.

24. Suitable replacement equipment is available in the international market, uses proven technology, and is appropriate for Toktogul site conditions. The consultant will prepare technical specifications in accordance with industry practice for turnkey contracts to (i) design, manufacture, install, and commission the new turbine and generator units; and (ii) perform repairs of the hydraulic steel structures. 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 turnkey contractor.

25. The climate change impact on the hydrology of the Syr Darya river basin, which supplies Toktogul reservoir, has been assessed under separate TA.¹¹ A hydrology specialist was recruited to assess the impact of climate change on the project and to assess reservoir sedimentation. The 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 (due to melting of glaciers) and then decrease, (ii) average energy production will decrease by 11% over the next 40 years (0.25% per year), and (iii) sediment transport has not significantly decreased the volume of the reservoir.

26. To ensure complementarity of the project with the ongoing first phase of the Power Sector Rehabilitation Project (footnote 7), under which the turnkey contract rebidding is in progress, the scope of the first phase has been adjusted by (i) adding an underwater survey of the hydraulic steel structures, to allow specification of the work to be done under the project; and (ii) removing the generator and turbine control systems, which are better associated with the provision of the turbine and generator units in the project.

¹⁰ ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources*. Manila.

¹¹ ADB. 2010. *Technical Assistance for Water and Adaptation Interventions in Central and West Asia*. Manila (TA 7532-REG).

B. Economic and Financial

27. The economic internal rate of return is calculated at 19.16%, which compares favorably with the 12% opportunity cost of capital. The project's economic viability takes into account cost-benefit streams resulting from rehabilitation of Toktogul HPP and operation over the life of the project. The incremental benefits come from avoided outages and major incidents and associated repair costs, and reduced energy imports. Regional economic benefits are not included in the economic internal rate of return calculations because they accrue to countries other than the Kyrgyz Republic.

28. The financial internal rate of return is calculated at 9.1%, which compares favorably with the weighted average cost of capital of 4.8%. Financial viability was gauged by comparing the revenue and cost streams of "with-project" and "without-project" scenarios. The sensitivity analysis indicates the project's economic and financial viability is robust even under unfavorable circumstances.

29. EPP's financial situation is critical. Its average tariff (Som0.28/kWh in 2014) is insufficient to cover costs. Equity is forecast to be depleted by 2016. To ensure that EPP will be financially sustainable and in a position to meet its financial covenants by 2019,¹² the government will (i) transfer ADB and EDB loan and grant funds to EPP through 50% equity contribution and 50% relending, (ii) waive taxes and duties on project-related expenditures, and (iii) provide at least 60% of incremental heat and electricity sector revenues resulting from implementation of the Medium-Term Tariff Policy as additional EPP revenues.

C. Governance

30. A financial management assessment, which includes a risk management assessment, was prepared in accordance with ADB guidelines. While the country's public financial management capacity is weak, EPP is an autonomous corporate enterprise with strong financial management, accounting, and reporting systems. EPP has been implementing the first phase of the Toktogul HPP rehabilitation since 2012 and has submitted an external audit report for the project financial statements on time with no material qualifications. Consequently, the financial management arrangements now in place for the Power Sector Rehabilitation Project are considered acceptable for the project. The assessment found that internal control could be strengthened and adherence to accounting standards and disclosure improved. A procurement capacity assessment was also conducted and found that procedures are not followed and capacity is weak. In order to improve corporate performance, improvements must be made to (i) financial management capabilities, internal control and auditing, and procurement capacity and procedures. This will be addressed under the EPP business process improvement project.

31. To ensure good governance in project-related activities, the project will include measures to:

- (i) strengthen the existing PIU and maintain separate project accounts by EPP;
- (ii) recruit an international consulting firm to provide assistance in project implementation;
- (iii) establish a direct payment procedure and/or commitment procedure for disbursements to contractors and consultants; and

¹² Debt-service coverage ratio not less than 1 (by 2017) and 1.3 (by 2019), debt-equity ratio (debt as a percentage of the sum of debt and equity) not more than 75% (by 2017) and 70% (by 2019), current ratio of at least 1, and self-financing ratio of at least 20% (by 2019).

- (iv) ensure the project accounts of each agency and corporate accounts of EPP are audited annually by an independent auditor acceptable to ADB, in accordance with international standards.

32. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and the EPP. The specific policy requirements and supplementary measures are described in the PAM.

D. Poverty and Social

33. The general population will benefit from a transparent, accountable, and efficient power sector. During power cuts, the poor are disproportionately affected as they must rely on more expensive (non-electric) energy sources.

34. The project will not impact affordability or operational employment opportunities. During construction, the turnkey contractor 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 contractor will also be required to undertake HIV/AIDS awareness activities with construction workers.

E. Safeguards

35. **Environmental assessment.** The project is classified as environmental category B according to ADB's Safeguard Policy Statement (2009). An initial environmental examination (IEE) including an environmental management plan (EMP) was prepared and public consultation was carried out. The IEE has been endorsed by EPP and disclosed in mid-August 2014 on the EPP website. ADB has advised its no objection and posted the IEE on its website on 8 August 2014. The IEE will be updated by the PIU with assistance from the project implementation consultant based on detailed design by the turnkey contractor. A copy of the State Agency for Environmental Protection and Forestry approval of the IEE will be sent to ADB during project detailed design.

36. The main environmental impacts of the project include (i) occupational and health and safety at the project site; (ii) management of the waste oil and grease; (iii) disposal of scrap metal and other solid waste; and (iv) transportation of construction materials and heavy equipment to the project site, as well as generated waste out of the project site. The EMP specifies adequate mitigation measures and monitoring plans to cover these impacts. Released oil and scrap metal will be safely kept at the onsite storage area, improvement for which will be financed by the phase 1 loan, for use throughout all phases of the Toktogul rehabilitation program. EPP is responsible for recycling and disposing of oil and scrap metal, which will be performed by licensed companies under the monitoring and supervision of the project implementation consultant (PIC) and PIU.

37. The PIU will be responsible for EMP implementation with assistance from the project implementation consultant and staff of the EPP Service of Reliability and Safety department. An environmental and hazardous waste management specialist will be hired upon commencement of the construction contract to work for 3 years in the PIU to build EPP's in-house capacity. Environmental monitoring will be performed by the PIC. Monitoring results will be included in the project quarterly progress reports and semi-annual environmental reports.

38. The costs of EMP mitigation measures will be included in the turnkey contract, and the cost of environmental monitoring will be included in the project implementation consultant

contract. EPP costs for disposal of waste material will be covered by revenue from the sale of waste material.

39. **Involuntary resettlement and indigenous peoples.** The project is classified as category C for both involuntary resettlement and indigenous peoples in accordance with ADB's Safeguard Policy Statement (2009). The project investment will be implemented in the existing Toktogul HPP, and land acquisition and resettlement impacts are not envisaged. The site where the project is to be implemented has been in operation for 45 years. There are no outstanding safeguard issues. The possible transport routes for equipment and machines were also found to have no safeguard issues. The project is not expected to affect indigenous peoples as defined under ADB's safeguard requirements for indigenous peoples.

F. Risks and Mitigating Measures

40. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.¹³ The overall assessment is that risks have been 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 is implementing an action plan to reform the public financial management system. MOEI has mandated creation of an internal audit department in EPP. External audits will be required to meet international standards. Specialist support will be provided to the project implementation unit. Direct payment procedures will be used for consultants and contractors. EPP governance and business processes will improve as ERP study findings are implemented.
Central Asia power system ceases to operate and export markets collapse.	Regional cooperation and trade are supported by the Central Asia Regional Economic Cooperation Program. Export markets are diversified through the World Bank-developed Central-Asia South Asia Electricity Transmission and Trade Project.
Failure of HPPs on the Naryn cascade.	Dam integrity is being assessed through a safety assessment study that will identify priority remedial measures. Increased EPP tariffs will allow a higher maintenance budget.
Delayed implementation due to weak procurement capacity.	An international consulting firm will be recruited to assist with project implementation.
Continued high growth in domestic demand.	Demand will reduce as tariffs are increased.
Reduction in losses does not occur.	A settlement center is being established, thereby increasing transparency and assisting in loss reduction. Retail metering programs are being implemented.

EPP = Open Joint-Stock Company Electric Power Plants, ERP = enterprise resource planning, HPP = hydroelectric power plant, MOEI = Ministry of Energy and Industry.

Source: Asian Development Bank.

¹³ Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

IV. ASSURANCES AND CONDITIONS

41. The government and EPP have assured ADB that implementation of the project will conform to all applicable ADB policies, including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM 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.

42. As additional conditions for loan and grant effectiveness, a loan agreement between the EDB and Kyrgyz Republic, as well as a subsidiary financing agreement for the transfer to EPP of part of the ADB loan and grant proceeds and all EDB loan proceeds, each in form and substance satisfactory to EDB, shall have been signed and become effective in accordance with their terms.

V. RECOMMENDATION

43. 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 SDR43,680,000 to the Kyrgyz Republic for the Toktogul Rehabilitation Phase 2 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;
- (ii) the grant not exceeding \$44,500,000 to the Kyrgyz Republic, from ADB's Special Funds resources, for the Toktogul Rehabilitation Phase 2 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; and
- (iii) the administration by ADB of the loan not exceeding \$100,000,000 to the Kyrgyz Republic for the Toktogul Rehabilitation Phase 2 Project, to be provided by the Eurasian Development Bank.

Takehiko Nakao
President

14 October 2014

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p>Impact Increased reliability of national and regional power systems</p>	<p>10-year average exports of 2,000 GWh/year continued in 2025 (2013 baseline: 10-year average exports of 2,015 GWh)</p> <p>Growth in domestic supply from 9,000 GWh in 2014 to 11,400 GWh in 2025 to match economic growth</p>	<p>Annual report by Central Asian Power System Coordinated Dispatch Center</p> <p>EPP financial statements</p> <p>Central Asia Regional Economic Cooperation Program sector reports</p>	<p>Assumptions Continued demand in export markets for summer electricity at market tariff rates</p> <p>300 MW of commercial export projects commissioned</p> <p>Growth in domestic demand reduced to a sustainable rate</p> <p>Risks Reduction in exports due to reduced water volume and/or lack of regional cooperation</p> <p>Retail tariffs are not increased in accordance with the Medium Term Tariff Plan</p>
<p>Outcome Improved operational performance of EPP</p>	<p>Efficiency of Toktogul units 2 and 4 increased by 2.5 percentage points—from 90% in 2014 to 92.5 % in 2021</p> <p>EPP DSCR improved from 0.25 in 2014 to at least 1.3 in 2020.</p> <p>EPP debt–equity ratio improved from 65:35 in 2014 to 70:30 in 2022</p>	<p>Operation reports of Toktogul HPP</p> <p>EPP management reports</p> <p>Corporate audit reports of EPP</p>	<p>Assumption EPP wholesale tariffs are increased</p> <p>Risks Failures of units 1 and 3 of Toktogul</p> <p>Failure of other HPPs and combined heat and power plants</p>
<p>Outputs 1. Toktogul HPP rehabilitated</p> <p>2. Asset inventory and revaluation prepared</p>	<p>Toktogul HPP unit 2 operating at 360 MW capacity by 2021 (2014 baseline: 300 MW)</p> <p>Toktogul HPP unit 4 operating at 360 MW by 2020 (2014 baseline: 300 MW)</p> <p>Audited accounts of seven power companies and Bishkek heat company included revalued assets in their respective corporate accounts starting in 2019</p> <p>ERP system produced required management and financial reports by 2020</p>	<p>Commissioning certificate</p> <p>Company corporate audited accounts</p>	<p>Assumption Scope of hydraulic repairs will be confirmed in 2015</p> <p>Risk Need for additional rehabilitation is identified during execution</p> <p>Assumption State Property Fund ensures full data disclosure by the energy companies</p> <p>Risk Complexity of estimating remaining asset life may result in below optimal value</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks		
3. Kyrgyz Republic power sector master plan developed	Report is accepted by the Ministry of Energy and Industry and posted on its website by 2017	Power sector master plan	Assumption Data is made available to the consultant Risk Disagreement on demand forecast, because below-cost tariff assumptions may produce unsustainable growth forecasts		
4. EPP business process improved	EPP business process improvement strategies recommended by 2017 ERP system commenced by 2020	EPP business process improvement report ERP project completion report and commissioning certificate	Assumption EPP remains committed to implementing modernization measures Risk Bureaucratic procedures may delay implementation of proposed improvements		
Activities with Milestones		Scheduled Start	Scheduled Finish	Input	(\$ million)
1. Toktogul HPP units 2 and 4 rehabilitated				Loan	
1.1	Recruit consultant	Nov 2014	May 2015	ADB (ADF)	65.50
1.2	Procure contractor hydraulic steel structure	Dec 2015	Sep 2016	EDB	100.00
1.3	Procure contractor units 2 and 4	Jan 2016	Jul 2016	Grant	
1.4	Hydraulic steel structure repaired	Jun 2016	Aug 2018	ADB (ADF)	44.50
1.5	Units 2 and 4 commissioned	Feb 2017	Dec 2021		
2. Asset inventory and revaluation prepared				Government	40.68
2.1	Recruit consultant	Sep 2015	Jul 2015	EPP	<u>1.00</u>
2.2	Execute assignment	Jul 2015	Jun 2016	Total:	251.68
3. Kyrgyz power sector master plan developed					
3.1	Recruit consultant	May 2015	Feb 2016		
3.2	Execute assignment	Mar 2016	Mar 2017		
4. EPP business process improved					
4.1	Recruit consultant	May 2016	Feb 2017		
4.2	Procure ERP contractor	Jan 2018	Sep 2019		
4.3	Commission ERP system	Sep 2019	Sep 2020		

ADB = Asian Development Bank, ADF = Asian Development Fund, DSCR = debt-service coverage ratio, EDB = Eurasian Development Bank, EPP = Open Joint-Stock Company Electric Power Plants, ERP = enterprise resource planning, GWh = gigawatt-hour, HPP = hydroelectric power plant, MW = megawatt.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS

<http://www.adb.org/Documents/RRPs/?id=46348-003-3>

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. Financial Performance of Open Joint-Stock Company Electric Power Plants
15. Project Technical Description