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Report No: PAD5511

INTERNATIONAL DEVELOPMENT ASSOCIATION

PROJECT PAPER

ON A

PROPOSED ADDITIONAL CREDIT

IN THE AMOUNT OF US\$18.3 MILLION

TO THE

KYRGYZ REPUBLIC

FOR

CENTRAL ASIA SOUTH ASIA ELECTRICITY TRANSMISSION AND TRADE PROJECT
(CASA-1000) FOR KYRGYZ REPUBLIC

OCTOBER 10, 2023

Energy & Extractives Global Practice
Europe and Central Asia Region

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CURRENCY EQUIVALENTS

(Exchange Rate Effective August 31, 2023)

Currency Unit = Kyrgyz Som (KGS)

KGS87.30 = US\$1

FISCAL YEAR

January 1 - December 31

Regional Vice President: Antonella Bassani

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ABBREVIATIONS AND ACRONYMS

ADM	Accountability and Decision Making
ARIS	Community Development and Investment Agency
CASA-1000	Central Asia South Asia Electricity Transmission and Trade Project
CPF	Country Partnership Framework
CSP	Community Support Program
EIB	European Investment Bank
EIRR	Economic Internal Rate Of Return
EPC	Engineering, Procurement, And Construction
ESIA	Environment and Social Impact Assessment
ESMP	Environment and Social Management Plan
FIRR	Financial Internal Rate Of Return
GHG	Greenhouse Gas
GRM	Grievance Redress Mechanism
HVAC	High-Voltage Alternating Current
HVDC	High-Voltage Direct Current
IDA	International Development Association
IPF	Investment Project Financing
IsDB	Islamic Development Bank
MDTF	Multi-Donor Trust Fund
NEGK	National Electric Grid of Kyrgyzstan
NPV	Net Present Value
O&M	Operations And Maintenance
PDO	Project Development Objective
PMU	Project Management Unit
PPA	Power Purchase Agreement
WACC	Weighted Average Cost Of Capital



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BASIC INFORMATION – PARENT (Central Asia South Asia Electricity Transmission and Trade Project (CASA-1000) - P145054)

Country	Product Line	Team Leader(s)		
South Asia	IBRD/IDA	Sunil Kumar Khosla		
Project ID	Financing Instrument	Resp CC	Req CC	Practice Area (Lead)
P145054	Investment Project Financing	ISAE1 (9260)	SARVP (1544)	Energy & Extractives

Implementing Agency: National Electric Grid of Kyrgyzstan, National Transmission and Despatch Company (NTDC), Barki Tajik, Da Afghanistan Breshna Sherkat

Is this a regionally tagged project?	Country (ies)			
Yes	Afghanistan, Kyrgyz Republic, Pakistan, Tajikistan			
Bank/IFC Collaboration	Joint Level			
Yes	Complementary or Interdependent project requiring active coordination			
Approval Date	Closing Date	Expected Guarantee Expiration Date	Original Environmental Assessment Category	Current EA Category
27-Mar-2014	31-Dec-2025		Full Assessment (A)	Full Assessment (A)

Financing & Implementation Modalities

<input type="checkbox"/> Multiphase Programmatic Approach [MPA]	<input type="checkbox"/> Contingent Emergency Response Component (CERC)
<input type="checkbox"/> Series of Projects (SOP)	<input checked="" type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input checked="" type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input checked="" type="checkbox"/> Fragile within a Non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made disaster

[] Alternate Procurement Arrangements (APA)

[] Hands-on Expanded Implementation Support (HEIS)

Development Objective(s)

The objective of the project is to create the conditions for sustainable electricity trade between the Central Asian countries of Tajikistan and Kyrgyz Republic and the South Asian countries of Afghanistan and Pakistan.

Ratings (from Parent ISR)

	Implementation					Latest ISR
	26-Dec-2020	29-Jun-2021	03-Jan-2022	29-Jun-2022	12-Dec-2022	14-Jun-2023
Progress towards achievement of PDO	MS	MS	MU	MU	MU	MU
Overall Implementation Progress (IP)	MS	MS	MU	MU	MU	MU
Overall Safeguards Rating	MS	MS	MS	MS	MU	MU
Overall Risk	H	H	H	H	H	H
Financial Management	S	S	S	S	S	S
Project Management	MS	MS	MS	MS	MS	MS
Procurement	S	S	MS	MS	MS	MS
Monitoring and Evaluation	S	S	S	S	S	S

BASIC INFORMATION – ADDITIONAL FINANCING (Additional Financing for Central Asia South Asia Electricity Transmission and Trade (CASA-1000) Project for Kyrgyz Republic - P181218)

Project ID	Project Name	Additional Financing Type	Urgent Need or Capacity
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P181218	Additional Financing for Central Asia South Asia Electricity Transmission and Trade (CASA-1000) Project for Kyrgyz Republic	Cost Overrun/Financing Gap	Constraints No
Financing instrument Investment Project Financing	Product line IBRD/IDA	Approval Date 31-Oct-2023	
Projected Date of Full Disbursement 31-Jul-2025	Bank/IFC Collaboration No		
Is this a regionally tagged project? Yes		Country (ies) Afghanistan, Kyrgyz Republic, Pakistan, Tajikistan	

Financing & Implementation Modalities

<input type="checkbox"/> Series of Projects (SOP)	<input type="checkbox"/> Fragile State(s)
<input type="checkbox"/> Performance-Based Conditions (PBCs)	<input type="checkbox"/> Small State(s)
<input type="checkbox"/> Financial Intermediaries (FI)	<input type="checkbox"/> Fragile within a Non-fragile Country
<input type="checkbox"/> Project-Based Guarantee	<input type="checkbox"/> Conflict
<input type="checkbox"/> Deferred Drawdown	<input type="checkbox"/> Responding to Natural or Man-made disaster
<input type="checkbox"/> Alternate Procurement Arrangements (APA)	<input type="checkbox"/> Hands-on Expanded Implementation Support (HEIS)
<input type="checkbox"/> Contingent Emergency Response Component (CERC)	

Disbursement Summary (from Parent ISR)

Source of Funds	Net Commitments	Total Disbursed	Remaining Balance	Disbursed
IBRD				%
IDA	591.50	400.70	134.21	75 %
Grants	36.18	33.78	2.40	93 %

PROJECT FINANCING DATA – ADDITIONAL FINANCING (Additional Financing for Central Asia South Asia Electricity Transmission and Trade (CASA-1000) Project for Kyrgyz Republic - P181218)

FINANCING DATA (US\$, Millions)

SUMMARY (Total Financing)

	Current Financing	Proposed Additional Financing	Total Proposed Financing
Total Project Cost	1,126.50	18.30	1,144.80
Total Financing	1,126.50	18.30	1,144.80
of which IBRD/IDA	526.50	18.30	544.80
Financing Gap	0.00	0.00	0.00

DETAILS - Additional Financing

World Bank Group Financing

International Development Association (IDA)	18.30
IDA Credit	18.30

IDA Resources (in US\$, Millions)

	Credit Amount	Grant Amount	SML Amount	Guarantee Amount	Total Amount
Kyrgyz Republic	18.30	0.00	0.00	0.00	18.30
National Performance-Based Allocations (PBA)	6.10	0.00	0.00	0.00	6.10
Regional	12.20	0.00	0.00	0.00	12.20
Total	18.30	0.00	0.00	0.00	18.30

COMPLIANCE

Policy

Does the project depart from the CPF in content or in other significant respects?



Yes No

Does the project require any other Policy waiver(s)?

Yes No

Explanation

Waiver of Section III, paragraph 28, of the Investment Project Financing (IPF) Policy in connection with the proposed Additional Financing (AF) of the Central Asia South Asia Electricity Transmission and Trade Project (CASA-1000 or Project) in the amount of US\$11 million to be financed by an IDA Grant for the Republic of Tajikistan, and US\$18.3 million to be financed by an IDA Credit for the Kyrgyz Republic. This request is submitted pursuant to Bank Policy, "Operational Policy Waivers", and Bank Procedure, "Operational Policy Waivers and Waivers of Operational Requirements"

Has the waiver(s) been endorsed or approved by Bank Management?

Approved by Management Endorsed by Management for Board Approval No

Explanation

Waiver of Provisions of Section III, paragraph 28 of the Investment Project Financing Policy has been endorsed by OPCSVP

INSTITUTIONAL DATA

Practice Area (Lead)

Energy & Extractives

Contributing Practice Areas

Climate Change and Disaster Screening

This operation has been screened for short and long-term climate change and disaster risks

PROJECT TEAM

Bank Staff

Name	Role	Specialization	Unit
Dmytro Glazkov	Team Leader (ADM Responsible)	Project Management	ISAE1
Jianping Zhao	Team Leader	Project Management	IECE1

Irina Goncharova	Procurement Specialist (ADM Responsible)	Procurement	EECRU
Garik Sergeyan	Financial Management Specialist (ADM Responsible)	Financial Management for Central Asia	EECG1
Gaurav Dilipkumar Joshi	Environmental Specialist (ADM Responsible)	Environmental Safeguards	SCAEN
Harjot Kaur	Social Specialist (ADM Responsible)	Social Safeguards	SCASO
Abdul Hamid Quraishi	Team Member	Coordination/Energy in Afghanistan	ISAE1
Adis Medetov	Procurement Team	Procurement	EECRU
Aidai Anvarbek Kyzy	Team Member	Program Assistant	IECE1
Aizhan Tursalieva	Team Member	Program Assistant	ECCKG
Almaz Asipjanov	Environmental Specialist	Environmental Safeguards	SCAEN
Bekten Doolotov	Team Member	Energy Specialist	IECE1
Burcu Polat	Team Member	Consultant	ISAE1
Davor Smiciklas	Team Member	Financial Management	WFACS
Dilip Kumar Prusty Chinari	Team Member	Financial Management	WFACS
Dung Kim Le	Team Member	Senior Program Assistant	IECE1
Jenny Helena Dangre	Counsel	Counsel	LEGLE
Kunduz Ermekbaeva	Team Member	Operations Analyst	ECCKG
Lien Thi Bich Nguyen	Team Member	Senior Program Assistant	ISAE1
Niso Bazidova	Team Member	Financial Management	EECG1
Rong Cui	Team Member	Operations	IECE1
Sunil Kumar Khosla	Team Member	Task Team Leader of Parent Project	ISAE1
Syrga Asanalieva	Team Member	Social Safeguards	SCASO
Thuy Bich Nguyen	Team Member	Program Assistant	IECE1
Extended Team			
Name	Title	Organization	Location

I. BACKGROUND AND RATIONALE FOR ADDITIONAL FINANCING

1. **Summary.** This project paper seeks the approval of the Board of Executive Directors to provide an International Development Association (IDA) credit to the Kyrgyz Republic in the amount of US\$18.3 million as additional financing for the Central Asia South Asia Electricity Transmission and Trade Project (CASA-1000) to help close the financing gap in Kyrgyz Republic under the project. There is no change in the Project Development Objective (PDO), which is “to create the conditions for sustainable electricity trade between the Central Asian countries of Tajikistan and Kyrgyz and the South Asian countries of Afghanistan and Pakistan.” The additional financing will not require any changes in the results framework or implementation arrangements or in the fiduciary or environmental and social aspects of the project because it finances only existing scope of the parent project and does not involve any new activities.
2. **CASA-1000 Project.** The parent project is a regional power interconnection project to facilitate transfer of 1,300 MW of surplus renewable (hydro) power from Tajikistan and the Kyrgyz to Afghanistan and Pakistan. The project was approved on March 27, 2014, and became effective on January 24, 2018. The original closing date, June 30, 2020, was extended to March 31, 2023, and recently extended to March 31, 2025, for the Kyrgyz Republic.
3. **Overall Implementation Status.** It took a significant length of time after Board approval for the project to become effective, as effectiveness was linked to several prior actions, including the signing of some key commercial agreements. In early 2020, the COVID-19 pandemic resulted in implementation challenges and delays in all four countries. The August 2021 political crisis in Afghanistan led to all construction activities in the Afghan section of the project being paused, and they have remained paused to give the Bank, donors, international financial institutions, and the other three countries time to consider the options for restarting construction in Afghanistan. Construction under the project has continued in the other three countries, with more than 90 percent of materials and supplies delivered to the appropriate sites in all four countries, including Afghanistan (before the pause in 2021). Installation completion rates for the required 4,264 transmission towers across the four countries as of May 1, 2023, are shown in Table 1.

Table 1. Installation of Transmission Towers

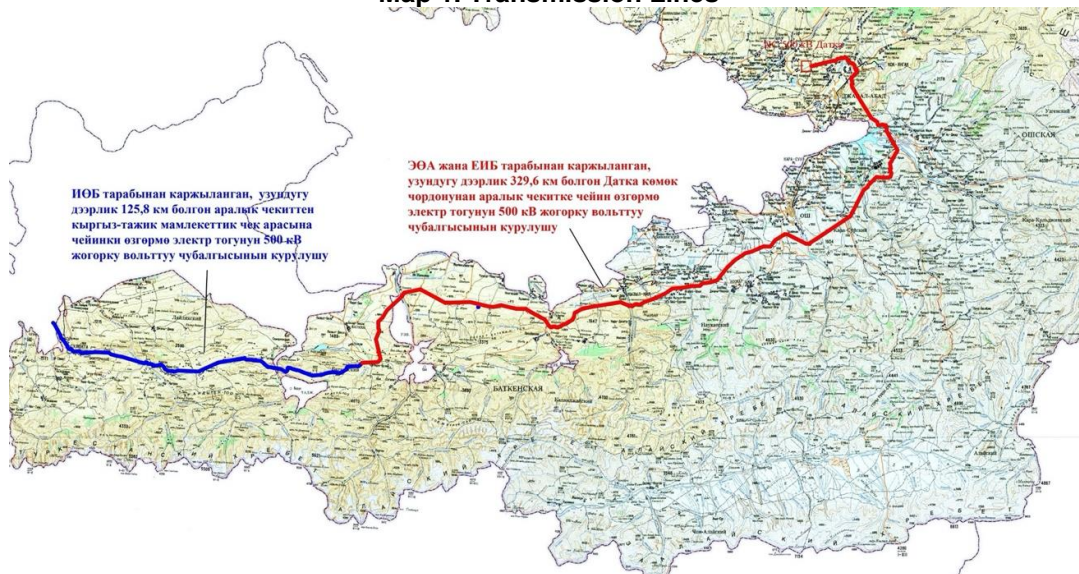
Country	Needed, n	Installed, n (%)
Tajikistan	839	820 (98)
Kyrgyzstan	1,243	1,086 (85)
Pakistan	462	384 (83)
Afghanistan	1,713	315 (18)
Total	4,257	2,605 (61)

4. **Overall PDO and Implementation Progress Achievement Ratings.** Project implementation had progressed relatively well and was moving toward achievement of the PDO as of August 2021. Overall PDO and implementation progress ratings were Moderately Satisfactory, and the overall risk rating was High, given continued security risks in Afghanistan. After work was paused in Afghanistan in August 2021, PDO and implementation progress ratings were adjusted to reflect the impact of the pause and downgraded to Moderately Unsatisfactory. According to Bank Policy “Operational Policy Waivers” and Bank Procedure “Operational Policy Waivers and Waivers of Operational Requirements,” Board approval is sought for waiver of

Section III, paragraph 28 of the investment project financing for this additional financing, which the Operations Policy and Country Services vice president has endorsed. Project implementation, fiduciary requirements, and safeguards implementation in the other three countries are progressing well. There are no overdue audit reports or reported ineligible expenditures. The safeguards rating was assessed as Moderately Unsatisfactory because of land acquisition delays in Afghanistan even before work was paused and because of initial delays in payments to some project-affected persons and in the hiring of a social specialist for the Kyrgyz Republic Project Management Unit (PMU). As of July 30, 2023, all pending compensation has been paid to project-affected persons in the Kyrgyz Republic, and a social specialist is expected to be on Board in October/November 2023, but land acquisition and construction activity in Afghanistan have not progressed since August 2021. Because the political situation in Afghanistan is not expected to change any time soon, the Kyrgyz Republic, Pakistan, and Tajikistan have agreed, with the support of IDA, to explore other sources of financing, primarily commercial and private capital, to complete construction of Afghanistan’s section of the transmission line. High-level joint working group meetings of the three countries were held in January and April 2023, and a high-level committee comprising a deputy minister from each of the three countries was established to determine how to continue work in Afghanistan.

5. **Implementation of CASA-1000 in the Kyrgyz Republic.** The National Electrical Grid of Kyrgyzstan (NEGK) is responsible for implementation of the project, which has two components: Component A (construction of high-voltage transmission infrastructure) and Component B (technical assistance and project implementation support). Component A involves construction of approximately 456 km of high-voltage alternating current (HVAC) (500 kV) transmission lines in the Kyrgyz Republic through two contract packages: the design, supply, and installation of a 126.4-km HVAC transmission line to the border with Tajikistan (US\$51.6 million financing solely from the Islamic Development Bank) and the design, supply, and installation of a 329.56-km HVAC transmission line to the Datka Substation (US\$38.2 million IDA financing, US\$58.54 million European Investment Bank (EIB) financing) (Map 1). An engineering, procurement, and construction (EPC) contractor has been hired for both packages.

Map 1. Transmission Lines



Blue: transmission line to Tajik border; red: transmission line to Datka Substation

6. **Overall Progress of Implementation under Component A.** Implementation of Component A is progressing well. As of July 31, 2023, all materials had been supplied, and 99 percent of the planned 1,243 transmission

towers had been erected. The contractor has begun stringing works, with installation of conductors and ground wire on the transmission line and conductor stringing was completed for 274 km of 456 km (60 percent). Reconstruction of the Datka Substation has also begun and is progressing well, with completion expected by December 2023. Implementing agencies Barqi Tojik in Tajikistan and NEGK in the Kyrgyz Republic have agreed on joint use of high-frequency telecommunications equipment at the 500-kV Sugd Substation. It is expected that all construction and installation work under the project in Kyrgyz will be completed by the end of June 2024, with additional funds secured to cover the financing gaps under Components A and B.

7. Component B: Technical Assistance and Project Implementation Support (financed by the CASA Multi Donor Trust Fund). This component is designed to provide technical assistance and project implementation support to NEGK. Subcomponent B1 includes financing for the HVAC facility's owner's engineer. The contractor will continue to provide construction supervision services for design, supply, and installation of HVAC transmission lines and associated substations in the Kyrgyz Republic. The contract was signed on August 11, 2016, after several amendments, the contract completion date was extended to October 2023 and the contract value was increased from US\$1.3 million to US\$3.9 million to continue effective project supervision support. It is expected that the contract period will be further extended to December 2024. Subcomponent B2 includes support for NEGK. The funding will be used to hire local experts and consultants and for operational expenditures. The allocated funds under the Multi Donor Trust Fund (MDTF) for the operational cost of NEGK include costs for implementation, technical specialists, audits, and other consulting services until December 31, 2024. Because NEGK will continue to supervise the CASA-1000 until completion of construction of the entire CASA-1000 transmission line and will be responsible for testing and commissioning the infrastructure in all four countries, additional funding of US\$3 million is required for the NEGK team to cover the costs of hands-on support from the owner's engineer, environment and social management support, audits and financial and revenue management, project management support and coordination, project communications and capacity building etc. for at least two more years. Additional funds are not available from the MDTF, so they must come from IDA to cover the above-mentioned additional costs resulting from delayed project completion.

8. Justification for Proposed Additional Financing. Progress under the two EPC contracts in the Kyrgyz Republic is satisfactory, although increases in prices for goods and transportation as a result of the COVID-19 pandemic, exchange rate fluctuations between special drawing rights and the U.S. dollar, and the overall economic crisis have increased contract costs, creating a significant budget deficit. Additional financing is needed to close the financing gap of the contract package for the HVAC transmission line to Datka Substation. The contractor has submitted a revised bill of quantities that includes actual work, in particular, modification of tower foundations because of soil conditions and of tower structure because of the terrain. The cost of this contract is 50 percent to 60 percent higher than originally planned because of cost increases for goods shipped from March to May 2022 from China and Turkey to the Kyrgyz Republic. The original contract of US\$96.76 million has increased by US\$43.74 million, resulting in a new contract value of US\$140.05 million. The EIB funded portion of the contract package for the supply of equipment requires additional financing of US\$28.44 million, and the IDA funded portion for construction of the transmission line requires additional financing of US\$15.3 million. The EIB released the fourth tranche (US\$20 million) of its original funding package in January 2023 to cover materials that the contractor had supplied. Additional funds are urgently needed from IDA to pay for work that the contractor has completed to avoid late payment penalties or even litigation. Additional funds of US\$3.0 million from IDA are also needed to support the continued work of the owner's engineer and operation of the PMU. The proposed additional financing will help close the financing gap and complete the remaining activities for the Kyrgyz portion of the CASA-1000 project by providing financing for completed and future work under

the contract package for the HVAC transmission line to Datka Substation under Component A and for additional technical assistance and project implementation support under Component B. There is still a funding gap of about US\$8.7 million for the EIB funded portion of the contract to be filled. As EIB is entering a new cycle, it would take at least 18 months to complete EIB’s approval process and the government’s ratification process to have the funds available. NEGK is also exploring other funding options. As the US\$8,7 million will be used to pay a portion of the US\$14 million retention funds for the contract, it will not be needed until around end of 2024.

9. **Estimated Cost and Financing Sources for the Kyrgyz Republic.** The total estimated cost for IDA to complete Components A and B of the project in the Kyrgyz Republic is US\$67.87 million. The project is in the advanced stage of implementation, and changes in the volume of work and equipment are expected to be modest based on the updated assessment that the EPC contractor provided. Additional financing will be needed for work already done and remaining activities under Component A (US\$15.3 million) and for technical assistance and implementation support activities under Component B (US\$3 million). Table 2 summarizes project costs and additional funding needs per component. There is a funding gap of US\$12.5 million for the contract package that the Islamic Development Bank (IsDB) approved in April 2023, but without a grace period. After negotiation, IsDB provided a grace period for the credit which is now being ratified by Kyrgyz Republic.

Table 2. Cost and Financing Sources for Central Asia South Asia Electricity Transmission and Trade Project in the Kyrgyz Republic (US\$ Million)

Project component	Project cost	International Development Association (IDA) and Multi Donor Trust Fund (MDTF) financing	Financing gap
A. Construction of high-voltage transmission infrastructure	60.30	45.00 (IDA)	15.3
B. Technical assistance and project implementation support	7.57	4.57 (MDTF)	3.0
Total	67.87	49.57	18.3

10. **Alignment with the World Bank Country Partnership Framework (CPF).** The proposed additional financing is aligned with the high-level outcome of the CPF for Fiscal Years 2024 to 2028 (scheduled for Board discussion on October 31, 2023) to improve access to sustainably managed natural resources, thus, ensuring a more inclusive, sustainable, climate resilient development path. The proposed additional financing will provide support under CPF Objective 2.2 (Enhance sustainability and increase renewables capacity in the energy sector) with the objectives to “support the country in leveraging its natural endowments to increase its renewable energy capacity (hydro) and diversify electricity generation through public and private financing.”

11. **Alignment with the World Bank Climate Change Action Plan 2021-2025.** The proposed additional financing is also well aligned with the World Bank Climate Change Action Plan, which anticipates a major expansion of renewable energy, including hydropower, to enable countries to achieve their nationally determined contributions to combatting climate change. According to the plan, “the World Bank sees hydropower as a key clean energy source—and an important option to support the integration of wind and solar in power systems. The World Bank will support countries in developing sustainable and resilient hydropower, while not damaging the ecosystems, and the associated water storage needed, including through regional cooperation to advance complementary investments across countries.

12. **Mitigation Climate Co-Benefits of CASA-1000 and Proposed Additional Financing.** The original financing and the proposed additional financing will generate environmental benefits in the form of net reduction of carbon dioxide emissions. The environmental benefits of the overall project are computed as total avoided social cost of carbon due to reduction of greenhouse gas (GHG) emissions from displaced marginal generation sources in Afghanistan and Pakistan using the relevant emission factors. The avoided social cost of GHG emissions is estimated based on the conservative social cost of carbon (US\$13 per ton of carbon dioxide equivalent), which is assumed to increase gradually throughout the evaluation period. The project would allow greater integration of solar photovoltaic and wind capacity, which, according to the generation expansion plan, would be part of the generation mix to meet forecast electricity demand in the four countries from 2020 to 2040. Hydropower projects with large storage reservoirs are well suited for regulation purposes if the power network relies on intermittent renewable power, such as solar photovoltaic and wind. The increase in penetration of solar photovoltaic would reduce reliance on thermal generation fueled by coal. An informal indicator will be adopted to monitor the parameters related to climate co-benefits.

II. DESCRIPTION OF ADDITIONAL FINANCING

13. The proposed additional financing would help close the financing gap under CASA-1000 in the Kyrgyz Republic, which is estimated at US\$18.3 million. There are no changes in the scope of existing project activities. The financing gap is expected to be filled with the following sources (Table 3).

- An additional US\$6.1 million equivalent from national IDA would be delivered in the form of an IDA credit: US\$3.1 million under Component A for construction of an HVAC transmission line to the Datka Substation and US\$3.0 million under Component B for technical assistance and project implementation support, covering the costs of owner’s engineer, environment and social management support, audits and financial and revenue management, project management support and coordination, project communications and capacity building etc.
- An additional US\$12.2 million equivalent from regional IDA would be delivered through the proposed US\$12.2 million additional financing in the form of an IDA credit for Component A, which includes construction of an HVAC transmission line to the Datka Substation.

Table 3. Sources for Proposed Additional Financing (US\$ Million)

Component	National IDA	Regional IDA	Total
A	3.1	12.2	15.3
B	3.0	0.0	3.0
Total	6.1	12.2	18.3

14. **Implementation arrangements remain unchanged.** The Ministry of Finance provides the proceeds of the IDA credit to the project implementing entity (NEGK) through a subsidiary agreement. PMU within NEGK for the parent project will be responsible for all project implementation-related activities, including technical, operational, environmental and social, reporting, monitoring and evaluation activities; financial management; audits; procurement; studies; and capacity building.

15. **Change in Disbursement Estimates.** The disbursement estimate by year is updated to reflect the new project cost and align with the newly established closing date of March 31, 2025.

16. **Other Changes.** No other changes.

III. KEY RISKS

17. The overall risk of the proposed additional financing operation is Moderate. Environmental and social risks are Substantial, and other risks are Moderate or Low. Risk ratings for the various parts of the project and overall are based on project and country context for implementation of the Kyrgyz components of CASA-1000. The risks are different from the risks of the parent project, which are largely determined by the Afghanistan situation and beyond the control of this additional financing operation.

18. **Environmental Risk Is Substantial.** The project involves large-scale construction of transmission lines in new locations. In addition to selection of the locations, which has already been done, other risks are related to occupational health and safety during construction of the high-voltage lines and related infrastructure; chemical management; loss of vegetation and attendant biodiversity; tall construction across migratory bird flyways; and operation phase impacts related to management of chemicals, fire, and risk of shocks. The key remaining activities for the Kyrgyz section include completion of measures to mitigate impacts on birds, including for stretches affecting migration flyways; construction of a slight deviation from the original location; and restoration of areas temporarily occupied by plants, camp sites, and storage. Given the discovery of archaeological artefacts during the supplementary environmental and social impact assessment for this stretch, construction of the deviation must be carefully monitored. The NEGK team continues to manage and report these risks in line with the project's environmental and social management plan. The task team will continue to monitor this closely for remaining project activities, including those supported under the proposed additional financing.

19. **Social Risk Is Substantial.** This risk is Substantial considering the scale of the project and the pending land acquisition and compensation. The Bank team has assessed the implementation status of the social safeguard measures, including implementation of two resettlement action plans developed for Batken and Osh, Jalal-Abad regions, and payment of compensation to affected landholders. NEGK reported in July 2023 that it had compensated all project-affected persons, although there was some delay, and some project-affected persons do not agree with the payments received, although they initially agreed to the amounts. These cases are being negotiated and referred to the court as needed. NEGK has not been able to monitor resettlement action plan implementation effectively there is no designated social development specialist in the PMU, as envisaged earlier for smooth implementation of the resettlement action plan and regular monitoring. NEGK has taken corrective action, including the recruitment of a social specialist. NEGK is conducting broad information campaigns and citizen engagement activities, in part through the Community Support Program (CSP) that the Community Development and Investment Agency (ARIS) has implemented to increase transparency and accountability of the project, strengthen client-customer relationships and community engagement, and establish a feedback and grievance redress mechanism (GRM). Feedback received from beneficiaries will continue to emphasize the project aspects that perform well or need improvement. Extensive outreach activities and citizen engagement have been conducted to increase familiarity of involved communities with services provided. Capacity built in the context of earlier World Bank-financed projects is being used in the areas of safeguards, GRM, and citizen engagement.

IV. APPRAISAL SUMMARY

A. Economic and Financial Analysis

20. **The economic justification for the project remains sound with the additional financing.** Economic analysis has revealed that the additional capital injection into Component A will generate economic benefits and significant social co-benefits. The ensuing economic and financial analysis is a revision of the analysis conducted in 2022 and is compared with the original analysis conducted at appraisal (summarized below).

21. **Economic Analysis at Appraisal.** An economic cost-benefit analysis was conducted for 2014 to 2047 based on a cost-benefit analysis with and without the project.¹ Project economic costs include construction, environmental, land-acquisition, CSP, incremental operations and maintenance (O&M), and power costs. Construction costs are based on the expected design supply and installation (including physical contingencies) of the HVAC and high-voltage direct current (HVDC) facilities and network reinforcement in the four countries. Associated costs include the community benefit program, additional security arrangements, and implementation support during construction. The economic cost of power for the Kyrgyz Republic was assessed at the opportunity cost of existing exports to Kazakhstan. In the absence of competing export opportunities for Tajikistan for the available surplus, the economic cost of power for Tajikistan was estimated at the marginal cost of generation. The economic benefits of the project include a reduction in the costs of meeting projected power demand in Pakistan and Afghanistan and a reduction in GHG emissions from marginal fossil fuel plants. The economic analysis indicated that the project is economically viable, with a net present value (NPV) of US\$1,208 million with a discount rate of 10 percent and an economic internal rate of return (EIRR) of 26 percent, even with the conservative base case assumptions.

22. **Financial Analysis at Appraisal.** The financial analysis was conducted for 2014 to 2047 and based on the financial benefits and costs that the project would generate, inclusive of applicable direct taxes. The financial benefits include incremental revenues from the sale of power to Afghanistan and Pakistan. The financial costs include the tax-inclusive investment costs, incremental O&M costs, incremental cost of power generation in the Kyrgyz Republic and Tajikistan, incremental transmission and distribution costs in the four countries, and the O&M fee of the HVDC operator. Investment costs include expected supply and installation costs (including physical and price contingencies), transmission connection and network reinforcement costs, and land acquisition costs. The financial analysis indicated that the project was financially viable, with an NPV of US\$3,861 million with a financial discount rate of 2.1 percent and a financial internal rate of return (FIRR) of 25 percent. The project would continue to be robust in the case of substantial variation of key variables that affect its financial viability.

23. **Update of the Financial and Economic Analysis of the Entire Project.** The focus of this section is on elements that have changed to provide an updated context within which to evaluate the EIRR and FIRR. This updated analysis uses electricity sale volumes and tariffs as negotiated under the master agreement and the power purchase agreements (PPAs) and incorporates revisions to project design made in 2016.² The estimated commissioning date of the project has been postponed from 2019 as outlined in the original Project Appraisal Document / 2020 (PPA) to August 2024. For simplicity, it is assumed that Year 1 of the PPA is 2025.

¹ The analysis was based on the following assumptions: (a) Power export volumes are limited to surplus power available from existing generation capacity after meeting forecast summer power demand in these countries. No new capacity has been assumed to be added in the Kyrgyz Republic or Tajikistan for economic analysis. The capacity of the CASA-1000 transmission line caps the volume to be traded. (b) The Kyrgyz Republic continues to have the option of exporting to Kazakhstan in the absence of the project, and Tajikistan's surplus to be exported via CASA-1000 is in addition to the maximum that can be exported to Afghanistan under the current power purchase agreement. (c) Pakistan and Afghanistan reduce their marginal generation costs by implementing their ambitious power sector expansion plan and build significant new generation capacity to meet forecast demand, and Pakistan replaces its existing expensive generation plants (diesel- and fuel oil-fired independent power producers). (d) The economic benefits that would be generated for the communities along the route of the transmission line through the CSP are excluded from the analysis.

² The original design with three HVDC converter stations was restructured in April 2016 to two converter stations (Tajikistan, Pakistan). Afghanistan deferred development of the back-to-back station on the existing 220-kV line with Tajikistan.

24. **Updated Economic Analysis.** The economic analysis discusses the rationale for public financing of the project and the value added from Bank support and estimates the project's development impact in terms of expected benefits and costs. *Rationale for public sector provision and financing:* The project warrants public intervention given its economic viability and the fact that private sector financing and provision is not plausible because of limited domestic capital markets (Domestic private capital markets in the participating countries lack the breadth and depth to mobilize the financing required for such a large infrastructure project) and prohibitively high private capital costs due to scarce capital and risks (Costs for private capital are significantly higher than for public debt in all of the involved countries given the macro and project-specific risks involved). Thus, in the case of private financing, end-users of electricity in importing countries would benefit less. Moreover, transmission line operators in all of the project countries are state-owned companies with limited ability to borrow on commercial terms. Given the risks involved and significant social benefits (development of communities along the transmission line) and externalities associated with the project, public financing of the project is justified. *Added value of Bank support:* The participating countries have limited capacity to prepare and implement the project given the complexity of overall project management and technical, fiduciary, and safeguards factors. The Bank's added value arises from the technical input of its staff in helping the borrower countries identify and address in a timely manner all project implementation challenges related to technical factors, procurement, financial management, and environmental and social impact mitigation. *Social discount rate:* The analysis assumes a project life of 30 years and uses 2019 as the base year. It is therefore not a retrospective analysis that estimates the impact of procurement delays since appraisal on the EIRR. Since appraisal, the Bank has issued new guidance on the social discount rate that suggests a value of two times the real per capita gross domestic product growth rate. Table 4 shows historical and forecast (International Monetary Fund, World Economic Outlook) real per capita growth rates in each country. On the basis of these values, it is likely that, by assuming a 10 percent discount rate, as was done at appraisal and is continued here, the analysis places greater weight on costs and benefits in the short than the long run, as opposed to an analysis that uses the revised guidance. *Project economic costs:* Project economic costs are essentially project construction and associated costs and opportunity and generation costs of the Kyrgyz Republic and Tajikistan. Construction and associated costs are summarized in Table 4 and include EPC costs of and network reinforcements in the four countries, the owner's engineer's costs, and environmental and social costs. The economic costs of the project include community benefit program costs, additional security costs, and implementation support during construction, which are designed to ensure sustainability of the project and additional security during construction.³

³ The costs for CSP have been considered, but benefits have not because of the difficulty in quantification; benefits from the open-access regime have not been considered either (power flow during the period when CASA supplies are not taking place, which is about 7 months of non-supply period under the PPAs). When considered, CSP and open-access benefits would significantly enhance the economic benefit of the overall project and to individual countries.

Table 4: Total Economic Investment Costs (US\$ Million)

Construction cost	Kyrgyz Republic	Tajikistan	Afghanistan	Pakistan	Total
EPC and network reinforcement	187	273	284	231	975
Owner's Engineer	3.5	5.1	5.3	4.3	18
Environmental and Social Cost	0.4	2.2	10.9	6.3	20
Total Construction Cost	191	280	300	242	1013
Associated Cost					0
Community benefit sharing program	10	10	40	10	70
Line security during constr.	0	0	10	0	10
Implementation support during constr.	1.7	2.4	2.5	2.1	9
Total Associated Cost	11.7	12.4	52.5	12.1	89
Total Project Cost	203	292	353	254	1102

25. The economic cost of power in the exporting countries is assessed as the economic opportunity cost for the Kyrgyz Republic and incremental generation cost for Tajikistan. For the Kyrgyz Republic, it is assumed to be equal to the average export tariff to Kazakhstan (US\$2.12/kWh). For Tajikistan, it was computed to be equal to the variable cost of hydropower generation (US\$1.62/kWh), given that Tajikistan does not have export opportunities competing with CASA-1000.

26. **Economic Benefits.** Economic benefits are estimated as the economic value of the reduction in GHG emissions from marginal fossil fuel plants, and of power imported under the project, computed in terms of reduction in costs of meeting projected power demand in Pakistan and Afghanistan. The value of imported power is computed as the avoided cost of the marginal generator in summer months. In Afghanistan, the economic value of imported power is computed as the variable economic cost of grid-connected diesel-fired generation and thermal generation-based power imports, estimated at US\$10/kWh to US\$12/kWh. In Pakistan, the economic value of imported power is computed as the variable economic cost of open cycle gas turbine plants displaced. The variable economic cost of displaced generation is estimated at US\$8.6/kWh initially, dropping to US\$6.8/kWh in the long run.

27. The environmental benefits of the overall project are computed as total avoided social cost of carbon due to the reduction of GHG emissions from displaced marginal generation sources in Afghanistan and Pakistan using the relevant emission factors. Since appraisal, the Bank has issued new guidance on the social cost of carbon that is adopted here. Under the low scenario, this starts at US\$39/ton in 2019 and increases to US\$76/ton in 2049; under the high scenario it starts at US\$78/ton in 2019 and increases to US\$153/ton in 2049—much higher than the value of US\$13/ton assumed in 2014.

28. **Economic Internal Rate of Return.** The EIRR has changed as a result of changes in project design, PPA terms, and context since appraisal. At the project level, higher infrastructure costs decrease returns, and higher costs of carbon emissions increase returns. At the country level, higher energy tariffs negotiated under the PPA increase revenues for exporters, and lower fossil fuel prices reduce incentives for importers to offtake power. The project EIRR is still high—17.4 percent with low carbon prices and 19.8 percent with high carbon prices—easily exceeding the assumed discount rate of 10 percent. At the country level, the EIRRs for Afghanistan, the Kyrgyz Republic, and Tajikistan are all greater than 10 percent, but Pakistan's depends on how the value of reduced GHG emissions is allocated. Following the methodology at appraisal, with the benefits of avoided carbon

dioxide emissions allocated not to any country but to the whole project, the EIRR for Pakistan drops to less than 0.

Table 5: Economic Internal Rate of Return (EIRR) (Percentage)

Country	Low carbon price			High carbon price	
	At appraisal	At AF	At Midterm	At AF	At Midterm
Kyrgyz Republic	11.5%	24.6%	17.3%	24.6%	17.3%
Tajikistan	28.1%	35.6%	25.9%	35.6%	25.9%
Afghanistan	14.7%	19.4% (22.3%)	12.6% (XX)	19.4% (24.8%)	12.6% (XX)
Pakistan	42.7%	<0% (26.1%)	<0% (XX)	<0% (45.2%)	<0% (XX)
Project	26.1%	27.7%	17.4%	32.3%	19.8%

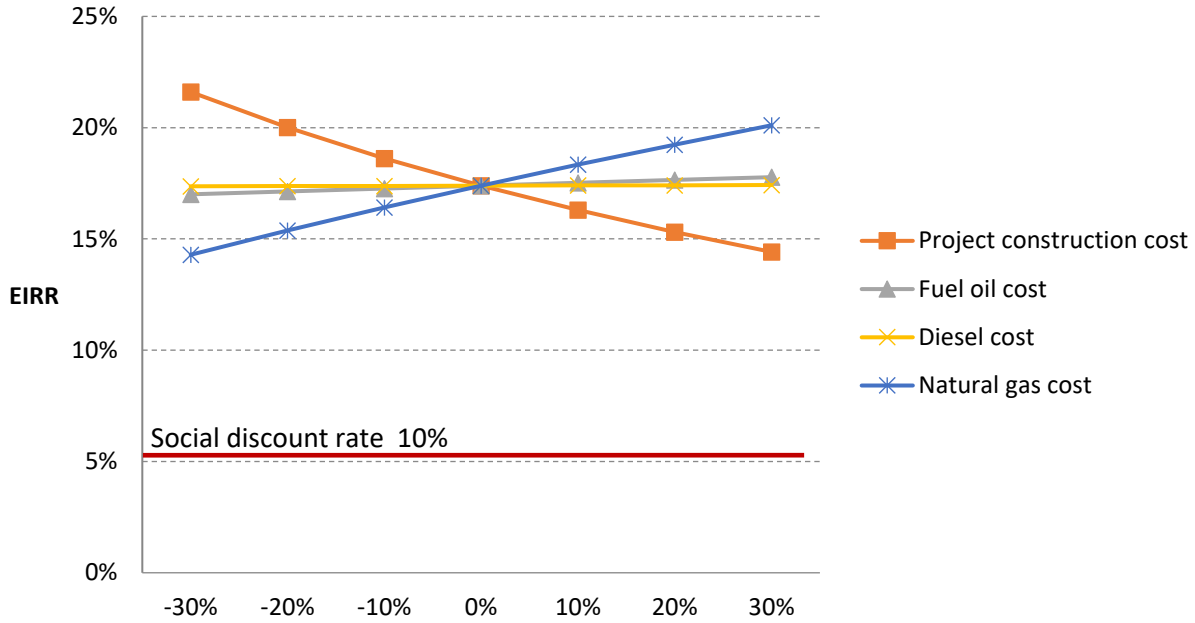
* Numbers in brackets indicate EIRR when CO2 benefits are attributed to country in which CO2 is displaced.

29. **Sensitivity analysis.** Total project EIRR is robust to significant deviations of the key parameter assumptions from their baseline values, as shown in Table 6 and plotted in Figure 1 for the low-price-of-carbon scenario. Only increases in project costs (beyond the already-included contingencies) and severe shortages of available power to export from Tajikistan (relative to the agreed-upon volumes in the PPAs) make a significant difference in the EIRR.

Table 6: Sensitivity of Economic Internal Rate of Return (EIRR) to Changes in Key Parameters (Low-Price-of-Carbon Scenario)

Parameter/EIRR baseline	Parameter change/EIRR (%)							
Project construction cost	-30	-20	-10	0	10	20	30	
17.4%	21.6	20.0	18.6	17.4	16.3	15.3	14.4	
Fuel oil cost	-30	-20	-10	0	10	20	30	
17.4%	17.0	17.1	17.3	17.4	17.5	17.7	17.8	
Diesel cost	-30	-20	-10	0	10	20	30	
17.4%	17.4	17.4	17.4	17.4	17.4	17.4	17.4	
Natural gas cost	-30	-20	-10	0	10	20	30	
17.4%	14.3	15.4	16.4	17.4	18.3	19.2	20.1	
Surplus available Kyrgyz Republic	-30	-20	-10	0	10	20	30	
17.4%	17.8	17.7	17.5	17.4	17.2	17.1	17.0	

Figure 1: Sensitivity of Economic Internal Rate of Return (EIRR) (Low-Price-of-Carbon Scenario)



30. **Updated Financial Analysis.** The financial analysis, which is conducted at the country implementing agency level and aggregated for the overall project, shares the inputs of the economic analysis and excludes environmental benefits but includes taxes (value-added tax, import duties, sales tax, income tax). Costs that are incurred over time, such as O&M, are inflated. The financial analysis indicates that the project is financially viable, with an NPV of US\$4,671 million and an FIRR of 21.9 percent.

31. **Financial Discount Rate.** The weighted average cost of capital (WACC) is used to assess the financial NPV for each country and is based on the after-tax on-lending rates applicable to on-lending arrangements between the implementing entities and their respective governments. The WACC for the overall project is estimated based on individual implementing agency average cost of capital weighted by share of project financial costs for that country (Table 7).

Table 7: Financial Discount Rates (Percentage)

Rate	Kyrgyz Republic (National Electric Grid of Kyrgyzstan)	Tajikistan (Barki Tojik)	Afghanistan (Da Afghanistan Breshna Sherkat)	Pakistan (National Transmission and Despatch Company)	Total
On-lending rate	1.5	3.0	0.5	8.2	-
Income tax rate	10.0	25.0	25.0	35.0	-
Financial discount rate	1.4	2.3	0.4	5.3	2.2
Share of project financial costs	19.4	27.4	29.7	23.4	100

32. **Project Financial Costs.** Financial costs include investment costs, marginal costs of power generation in the Kyrgyz Republic and Tajikistan, incremental transmission costs, incremental distribution costs (applicable only

for Afghanistan), HVAC facility O&M costs, and the fee paid to the HVDC facility operator in charge of O&M of the HVDC portion of the project.

33. Investment costs include EPC, network reinforcement, and environmental and social costs (primarily for land acquisition) and physical and price contingencies (Table 8). Total financial investment costs of US\$1,071 million are slightly higher than the US\$1,035 million estimated at appraisal.

Table 8: Financial Investment Costs (US\$ Million)

Category	Kyrgyz Republic	Tajikistan	Afghanistan	Pakistan	Total
Engineering, procurement, and construction (EPC) and network reinforcing	218	273	313	246	1,049
Environmental and social	0.4	2.2	12.0	7.4	22
Total	218	275	325	253	1,071

34. **Project Financial Benefits.** In Afghanistan, the financial benefits are the incremental revenues of Da Afghanistan Breshna Sherkat from the domestic sale of imported power, with an estimated end-user tariff of US¢17.6/kWh. In Pakistan, wholesale sale of imported power by the National Transmission and Dispatch Company and the Central Power Purchasing Agency to distribution companies brings in additional revenue at a weighted average tariff of US¢10/kWh. Financial benefits for NEGK and Barki Tajik are derived from the revenue they retain for each kWh delivered as agreed in the PPA terms.

35. **FIRR and NPV.** The project's FIRR is 21.9 percent, exceeding the WACC of 2.2 percent (Table 9). The same is true at the entity level, although the distribution of net financial benefits has shifted. In Pakistan, higher eligible costs have increased capital expenditures and transmission tariffs on imported power. In Afghanistan, higher transit tariffs outweigh the impacts of higher eligible costs and their impact on transmission tariffs. Power-exporting countries benefit from higher transmission tariffs. The increase in the calculated NPV is higher in the Kyrgyz Republic because on-lending rates are lower than assumed at appraisal, whereas in Tajikistan, they are higher.

Table 9: Financial Internal Rate of Return (FIRR) and Net Present Value (NPV)

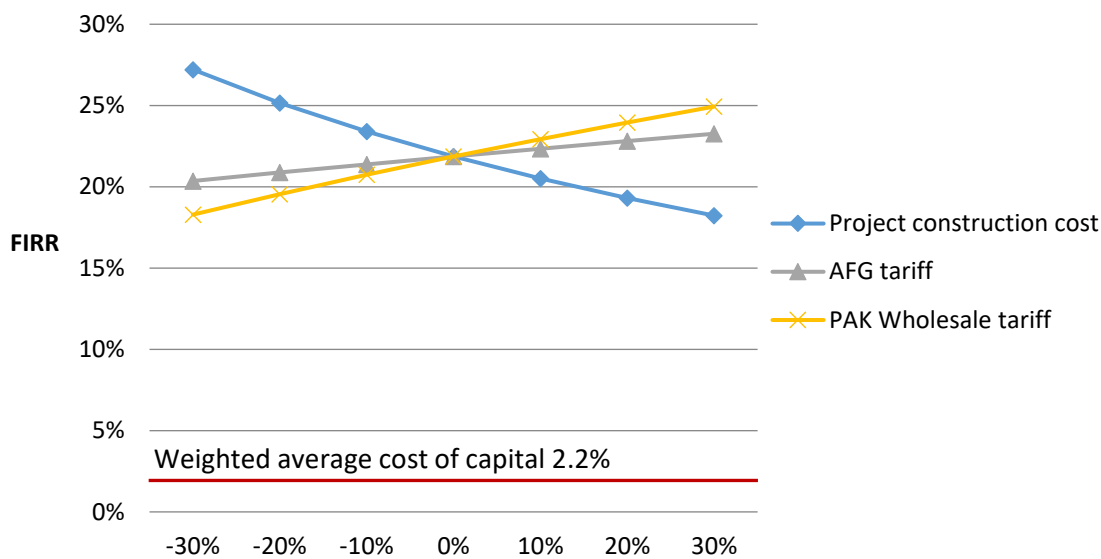
Country	At appraisal		At additional financing		At midterm	
	FIRR (%)	NPV (US\$ million)	FIRR (%)	NPV (US\$ million)	FIRR (%)	NPV (US\$ million)
Kyrgyz Republic	2.9	11	6.4	95	3.4	95
Tajikistan	28.7	1,617	36.3	1,923	26.9	1,923
Afghanistan	18.5	1,082	27.9	2,070	21.4	2,070
Pakistan	31.5	710	9.6	88	5.9	88
Project	24.8	3,861	27.7	4,362	21.9	4,671

36. **Sensitivity analysis.** At the project level, significant deviations of key parameters from baseline values have limited impact on FIRR, which stays well above WACC (Table 10, Figure 2).

Table 10: Sensitivity of Financial Internal Rate of Return (FIRR) to Changes in Key Parameters

Parameter/FIRR baseline	Parameter change/FIRR (%)						
	-30	-20	-10	0	10	20	30
Project construction cost	-30	-20	-10	0	10	20	30
21.9%	27.2	25.2	23.4	21.9	20.5	19.3	18.2
Afghanistan tariff	-30	-20	-10	0	10	20	30
21.9%	20.4	20.9	21.4	21.9	22.3	22.8	23.3
Pakistan wholesale tariff	-30	-20	-10	0	10	20	30
21.9%	18.3	19.6	20.7	21.9	22.9	24.0	24.9

Figure 2: Sensitivity of Financial Internal Rate of Return (FIRR)



37. Examining the FIRR for the National Transmission and Despatch Company in Pakistan reveals that the largest risk to financial viability is a reduction of the wholesale tariff, which would reduce the margin between the cost of importing power through CASA-1000 and the price at which it is sold on the market.

B. Technical

38. **Technical Appraisal.** The proposed additional financing will provide financing for completion of the CASA-1000 HVAC transmission line in the Kyrgyz Republic. The technologies to be implemented are commercially proven, have been widely used by transmission operators in developed and developing countries, and will be implemented according to internationally accepted technical standards and practices. Construction of about 456 km of 500kV HVAC transmission line within the Kyrgyz Republic is implemented through two contracts for the design, supply, and installation of a 126.4 km HVAC transmission line to the border with Tajikistan and a 329.56 km HVAC transmission line to the Datka Substation.

39. HVDC has significant financial, technical, and commercial advantages over HVAC, although HVAC systems are more appropriate for the import and export of surplus power over short distances between neighboring countries, especially when the transmission networks are well developed. HVDC and HVAC systems are increasingly being used together to increase system reliability and facilitate operation of large regional systems.

40. Technical soundness of the selected investment packages was reassessed, and qualified companies with international experience have developed detailed designs and technical specifications for investments in HVAC transmission lines, as reflected in the agreed-upon terms of reference and bidding documents. To ensure that installation and civil projects are properly supervised, a qualified supervision company will be retained as the owner's engineer to supervise construction of transmission lines, and training will be provided to NEGK staff on assembling, installing, and maintaining the transmission lines, with proper verification by the supplier and targeted site supervision by the design company.

C. Financial Management

41. **Financial Management Arrangements.** There will be no change in project financial management arrangements as a result of the proposed additional financing. The PMU will continue to implement the project's financial management function. The financial management arrangements of the parent program, including planning and budgeting, accounting, internal controls, funds flow, financial reporting, and external audit, have been periodically assessed during financial management implementation support and supervision missions (latest in November 2022) and found, in general, to be adequate for program implementation, including the additional financing.

42. For Bank reporting under the Project, one set of quarterly IFR is submitted. The Interim Financial Reports (IFRs) for the Project were submitted to the Bank usually on time and were, in general, acceptable to the Bank.

43. The quarterly IFRs under the additional financing will be consolidated with the IFRs under the parent project, and one set of IFR for both Component A and Component B will be submitted to the Bank within 45 days after the end of the reporting period.

44. There are overall adequate audit arrangements under the Project. The audited financial statements under the Project have always been received by the Bank on time and were acceptable to the Bank. The auditing arrangements under the additional financing will remain the same as for the parent project.

45. The annual audited financial statements of the AF will be prepared and submitted to the Bank no later than 6 months after the end of the reporting period.

46. **Disbursement Arrangements for Additional Financing.** The disbursement arrangements under the proposed AF will be similar to those under the parent project with no changes in the disbursement methods. The detailed disbursement arrangements will be provided in the Disbursement and Financial Information Letter of the AF.

D. Procurement

47. The additional financing will largely finance existing contracts procured under the existing procurement guidelines. Any new procurement activities for the proposed additional financing will be conducted in accordance with the World Bank Procurement Regulations for Recipients under Investment Project Financing dated July 1, 2016, and revised in September 2023. The project will also be subject to the World Bank Anti-Corruption Guidelines dated July 1, 2016. The client will process procurement through the World Bank's online procurement planning and tracking tool, Systematic Tracking of Exchanges in Procurement, as is being done under the parent project.

48. The implementing entities' capacity to perform procurement has been demonstrated to be adequate and acceptable to the Bank. Responsibility for implementation and procurement under the additional financing will rest with NEGK, the project implementing agency. There are no planned changes to the existing procurement arrangements for the project, and NEGK will continue to appoint a project-specific procurement officer to oversee implementation of Component A. The procurement arrangements in place at NEGK were reviewed

during preparation of the additional financing in parallel to the implementation support and supervision arrangements for active projects that NEGK implemented in November 2022. Procurement arrangements at NEGK have been assessed to be acceptable to the Bank. The overall procurement risk for the project is Substantial.

49. Procurement of the two large EPC packages (TW05 and TW06-Lot 2) has been completed. The proposed additional financing would primarily help close the financing gap under the existing TW06-Lot 2 contract. The following measures will help mitigate the fiduciary risks. The owner's engineer hired under Component B will continue to provide implementation support to NEGK for procurement and contract management. NEGK's relevant staff and procurement staff will be provided training on contract management and be required to prepare and monitor contract management plans and key performance indicators. The activities to be supported under the proposed additional financing entail amendments to existing contract package 1. The noted risks are gaps in oversight of construction activities and higher prices for goods and transportation because of the COVID19 pandemic and the Russia's invasion of Ukraine, which has created a substantial budget deficit that, if not resolved, will delay implementation. The proposed mitigation measures are that two owner's engineers hired under the original project will continue to provide implementation support to contract management, NEGK's technical and procurement staff will receive training on contract management, NEGK will be required to prepare and monitor contract management plans and key performance indicators, and an adequate budget for the work will be provided based on updated cost estimates that reflect recent market prices and adjustment of the scope of work to fit within available funds.

50. The NEGK PMU will retain and upload all records related to tender awards, such as bid notifications, bid opening minutes, bid evaluation reports, and bid securities, to Systematic Tracking of Exchanges in Procurement for record keeping. The following documents shall be disclosed: procurement plan and updates via Systematic Tracking of Exchanges in Procurement; invitation to bid for goods and work for all contracts; request for expression of interest for selection and hiring of consulting services; and contract awards for goods, work, and non-consulting and consulting services. The following details shall be published in the United Nations Development Business and World Bank external websites: invitation to bid for procurement of goods and work following open international market approaches, request for expression of interest for selection of consulting services following open international market approaches, and contract award details of procurement of goods and work and selection of consultants using open international market approaches.

E. Environmental and Social Impacts (including Safeguards)

51. NEGK awarded the construction contract for CASA-1000 transmission lines to a reputable international firm with dedicated health, safety, and environmental staff to implement contractual obligations. The contractor is already mobilized, including its subcontractors. Under the contractual obligations, the contractor prepared and submitted a construction environmental, health, and safety plan, which NEGK approved. The project is already at an advanced stage of construction and implementation, and no serious compliance problems have been reported. The NEGK PMU has a two-member environmental team to assist with and oversee project environmental requirements. The PMU, the contractor, and the owner's engineer have a team of environmental and social specialist. No problems were observed with compliance with social requirements under Component A.

52. **Environmental Impacts.** The project's environmental impacts are site specific and temporary, although because of the proximity of the construction sites and related activities to residential areas and trees, the risks could be substantial if not adequately managed. The risks and impacts associated with project activities are mainly attributed to stringing work and construction of transmission towers and access roads. Potential impacts include noise; vibration; dust; pollution due to improper care, handling, storage, and disposal of construction

material and waste; accidental release of wastewater to drainage systems; water and soil pollution; soil disturbance during excavation; tree cutting and loss of vegetation; traffic safety problems; and community and worker health and safety. These impacts are predictable and temporary and can be mitigated by adhering to construction and occupational health and safety management best practices. An environmental and social Impact Assessment, including an Environmental and Social Management Plan, was prepared and disclosed. The Environment and Social Impact Assessment (ESIA)/ Environment and Social Management Plan (ESMP) has been under implementation since construction commencement and compliance is considered satisfactory so far. The safeguards apply due to the AF only covering a financing gap/cost overrun and does not involve any new activities. All the safeguard instruments for the parent project will apply to the AF.

53. **Social Impacts.** The project will have some negative social impacts attributable to land acquisition. Two resettlement action plans developed for Batken and Osh, Jalal-abad regions have been under implementation. NEGK reported in July 2023 that it had compensated all project-affected persons, although there was some delay, and some project-affected persons do not agree with the payments received, although they initially agreed to the amounts. These cases are being negotiated and referred to the court as needed. NEGK has not been able to monitor resettlement action plan implementation effectively there is no designated social development specialist in the PMU, as envisaged earlier for smooth implementation of the resettlement action plan and regular monitoring. NEGK has taken corrective action, including the recruitment of a social specialist. NEGK is conducting broad information campaigns and citizen engagement activities, in part through the CSP that the ARIS has implemented to increase transparency and accountability of the project, strengthen client-customer relationships and community engagement, and establish a feedback and grievance redress mechanism (GRM). Feedback received from beneficiaries will continue to emphasize the project aspects that perform well or need improvement. Extensive outreach activities and citizen engagement have been conducted to increase familiarity of involved communities with services provided. Capacity built in the context of earlier World Bank-financed projects is being used in the areas of safeguards, GRM, and citizen engagement.

F. Climate and Disaster Risk Screening

54. It is projected that the water sector in the Kyrgyz Republic will experience a regime shift over the long term. The loss of mountain glaciers may reduce the regularity of flows and result in the drying of some watersheds. Flooding and associated hazards such as landslides are expected to intensify. The operation's location in the Kyrgyz Republic is at risk of several climate hazards, including landslides, floodings and water scarcity, that are projected to intensify because of climate change, as well as general hydrological variation.⁴ To reduce these climate hazards, an appropriate project design has been implemented, including several risk-reduction measures in line with international best practices, including commercial agreements considering hydrological variations and the design of the transmission infrastructure, which contains protection against natural hazards, including sufficient clearance, foundations with adequate safety margins, and emergency restoration kits. A rapid climate and disaster risk screening conducted for the proposed additional financing concluded that, with implementation of these measures, the overall climate and disaster risk for the transmission line constructed in the Kyrgyz Republic under the project is Low.

G. Citizen Engagement

55. Engagement of the local population and other civil society stakeholders (civil society, media, community-based organizations, the general public) is essential to the success of the project by ensuring collaboration between project staff and local community to enhance project outcomes. This has been done through the CASA-1000 CSP, which ARIS has implemented with support from NEGK. The CSP supports measures that benefit

⁴ *Think Hazard*

communities along the transmission line corridor and will expand its engagement with local communities to maintain an effective interface with target communities along the transmission line. Citizen engagement activities have been and will continue to be implemented regularly throughout the project. ARIS will implement the following activities to build on and expand the citizen engagement mechanisms established for the CASA-1000 CSP.

- ***A series of digital (virtual, online) or traditional community consultations***, blended to adapt to post-COVID-19 circumstances and prevailing regulations, will inform communities and be used to obtain feedback on the power plant and bridge rehabilitation design and implementation process. Consultations will be held at least twice per year to give all citizens an opportunity to provide feedback on the interventions and the effectiveness of the consultation process.
- ***Using online complaint and response platforms, open information and feedback desks*** will provide a feedback mechanism and a GRM expanding the arrangements under the project. This would provide citizens with an immediately accessible place to obtain information on the project, provide feedback, and raise concerns and to explain adapted processes due to the COVID-19 context. Feedback on any project-related concerns and the appropriate responsibilities of community liaison officers, contractors, supervision consultants, and departments of NEGK and ARIS assigned to record, process, or provide meaningful responses to feedback received and resolve complaints can be submitted through the GRM.
- ***Capacity building for local ARIS citizen engagement facilitators*** would include training for project field staff in organizing and facilitating online and blended solutions for community consultations.

56. NEGK will conduct annual public consultations and quarterly focus group discussions with beneficiaries on key project-related activities to provide opportunities for all citizens to raise questions, including individuals from vulnerable groups, who will be specifically invited to the focus groups. NEGK will continue to build the capacity of key stakeholders and train customer liaison officers to improve customer orientation and organize annual consultative workshops to engage customers in planning and decision-making for the rollout plan—paying particular attention to inclusion of vulnerable populations and discussing and validating the proposed rollout plan. During these workshops, NEGK will provide information on project progress and request citizen feedback on project interventions, including how to make consultations and other citizen engagement processes more effective in implementation through short surveys after each workshop and focus group. The results of such consultations will be agreed upon with participants and documented and posted on NEGK’s website, clearly defining actions that will be taken. During civil projects, contractors will be required to maintain billboards with information about the project and telephone numbers and channels for residents to use.

57. NEGK has established a GRM under the parent project that has been functioning well and will continue to serve the additional financing. To facilitate timely, effective, efficient resolution of grievances and complaints to the satisfaction of all parties, a two-tier GRM has been established that provides a transparent, credible process for achieving fair, effective, lasting results. The GRM has increased trust and cooperation as an integral component of broader community consultation that promotes corrective action. An institutional beneficiary feedback system is available to collect a wide range of feedback from key project stakeholders. An informal indicator will be adopted to monitor and report on how effectively NEGK responds to and resolves any complaints received.

58. The overall effectiveness of the citizen engagement activities would be measured through intermediate results indicators of the CSP.

H. Gender

59. The gender gap in labor force participation in the Kyrgyz Republic is significant. In 2019, approximately 47.3 percent of Kyrgyz women and 74.5 percent of men aged 15 to 64 were economically active. Women's employment varies greatly according to economic activity; although most workers in sectors such as health care and social services (83.6%) and education (80.6 percent) are women, only a few employees in highly paid technical sectors such as gas, electricity, and water production are women (9.5 percent in 2016). Although the share of female graduates in science, technology, engineering, and mathematics in the Kyrgyz Republic is smaller than that of male graduates (31.3 percent in 2018), this lack of available female candidates for jobs in the energy sector cannot explain the large gender gap in employment in the sector. The project, together with other ongoing IDA-funded energy projects, will continue to address the gender gap in employment at the companies responsible for implementation of each component.

60. Through an analysis of employment policies, skills, educational opportunities, and practices in the energy sector that may be conducted under another energy project, the proposed project will provide technical and leadership training for female employees at NEGK to increase opportunities for them to progress in their careers. Other actions will be added based on the findings of a baseline assessment of women's employment in the energy sector in four Central Asian countries that the World Bank is commissioning with Energy Sector Management Assistance Program financing, which will help reveal the factors restricting women's opportunities in the sector. Actions may include strengthening existing internship programs (if available) in collaboration with relevant academic institutions to attract more female engineers, training energy sector managerial and technical staff on gender inclusion, and providing childcare services and facilities to reduce barriers to women's retention.

61. The proposed additional financing will build on parent project activities designed to address gender gaps in employment in the energy sector and the surrounding communities. For example, measures have been adopted to protect vulnerable groups (including female-headed households) against involuntary acquisition of land or assets. Particular attention is paid to inclusion of women's voices in consultations and project implementation. In addition, initiatives that target poverty reduction through economic activity may continue to provide specialized training for women, taking into account their lower educational levels.

V. WORLD BANK GRIEVANCE REDRESS

Grievance Redress. Communities and individuals who believe that a project that the World Bank supports has adversely affected them may submit complaints to existing project-level grievance mechanisms or the Bank's Grievance Redress Service, which ensures that complaints received are promptly reviewed to address project-related concerns. Project-affected communities and individuals may submit their complaints to the Bank's independent accountability mechanism, which houses the Inspection Panel, which determines whether harm occurred, or could occur, as a result of Bank non-compliance with its policies and procedures, and the Dispute Resolution Service, which gives communities and borrowers an opportunity to address complaints through dispute resolution. Complaints may be submitted through the accountability mechanism any time after concerns have been brought directly to the attention of Bank management and management has been given an opportunity to respond. For information on how to submit complaints to the Bank's Grievance Redress Service, visit <http://www.worldbank.org/GRS>. For information on how to submit complaints to the Bank's accountability mechanism, visit <https://accountability.worldbank.org>.

VI. SUMMARY TABLE OF CHANGES

	Changed	Not Changed
Components and Cost	✓	
Implementing Agency		✓
Project's Development Objectives		✓
Results Framework		✓
Loan Closing Date(s)		✓
Cancellations Proposed		✓
Reallocation between Disbursement Categories		✓
Disbursements Arrangements		✓
Safeguard Policies Triggered		✓
EA category		✓
Legal Covenants		✓
Institutional Arrangements		✓
Financial Management		✓
Procurement		✓
Implementation Schedule		✓
Other Change(s)		✓

VII. DETAILED CHANGE(S)

COMPONENTS

Current Component Name	Current Cost (US\$, millions)	Action	Proposed Component Name	Proposed Cost (US\$, millions)
Construction of High Voltage Transmission Infrastructure 'revised'	576.25	Revised	Construction of High Voltage Transmission Infrastructure 'revised'	591.55
Technical Assistance and Project Implementation	15.00	Revised	Technical Assistance and Project Implementation	18.00



Support			Support	
Community Support Programs	0.00	No Change	Community Support Programs	0.00
TOTAL	591.25			609.55

Expected Disbursements (in US\$)

Fiscal Year	Annual	Cumulative
2014	0.00	0.00
2015	522,025.80	522,025.80
2016	897,926.10	1,419,951.90
2017	1,287,844.20	2,707,796.10
2018	1,454,703.60	4,162,499.70
2019	1,728,343.50	5,890,843.20
2020	2,015,488.80	7,906,332.00
2021	1,873,737.00	9,780,069.00
2022	2,107,391.40	11,887,460.40
2023	1,938,939.90	13,826,400.30
2024	2,116,321.80	15,942,722.10
2025	1,947,028.50	17,889,750.60
2026	169,586.10	18,059,336.70

SYSTEMATIC OPERATIONS RISK-RATING TOOL (SORT)

Risk Category	Latest ISR Rating	Current Rating
Political and Governance	● High	● Moderate
Macroeconomic	● Substantial	● Low
Sector Strategies and Policies	● Substantial	● Low
Technical Design of Project or Program	● Moderate	● Low
Institutional Capacity for Implementation and Sustainability	● Substantial	● Moderate



Fiduciary	● Moderate	● Moderate
Environment and Social	● High	● Substantial
Stakeholders	● High	● Low
Other		● Low
Overall	● High	● Moderate

LEGAL COVENANTS – Additional Financing for Central Asia South Asia Electricity Transmission and Trade (CASA-1000) Project for Kyrgyz Republic (P181218)

Sections and Description

Schedule 2. B. 1: The Recipient shall not amend, suspend, abrogate or waive any of the Core Construction Agreements or Core Commercial Agreements to which it is a party in a manner that would affect materially and adversely the carrying out of the Project.

Schedule 2. B. 2: The Recipient shall implement the Revenue Management Program. Except as the Association shall otherwise agree, the Recipient shall not amend, suspend, abrogate or waive the Revenue Management Program or any of its provisions.

Conditions

Type	Financing source	Description
Effectiveness	IBRD/IDA	The Additional Conditions of Effectiveness consist of the following, namely that the Subsidiary Agreement has been executed on behalf of the Recipient and the Project Implementing Entity and all conditions precedent to its effectiveness (other than the effectiveness of this Agreement) have been fulfilled.



VIII. RESULTS FRAMEWORK AND MONITORING

Results Framework

COUNTRY: Central Asia

Additional Financing for Central Asia South Asia Electricity Transmission and Trade (CASA-1000) Project for Kyrgyz Republic

Project Development Objective(s)

The objective of the project is to create the conditions for sustainable electricity trade between the Central Asian countries of Tajikistan and Kyrgyz Republic and the South Asian countries of Afghanistan and Pakistan.

Project Development Objective Indicators by Objectives/ Outcomes

Indicator Name	PBC	Baseline	Intermediate Targets							End Target
			1	2	3	4	5	6	7	
Trade initiated between the participating countries										
Trade initiated between the participating countries (Yes/No)		No	No	No	No	No	Yes	Yes	Yes	Yes
Commercial framework between the countries is established and operational (Text)		Not established	Master Agreement and PPAs signed	Master Agreement and PPAs effective	Master Agreement and PPAs effective	Account Bank Agreements signed and Technical Code Finalized	All Core Project agreements including Account Bank, Technical Code finalized	All Core Project agreements including Account Bank, Technical Code finalized	All Core Project agreements including Account Bank, Technical Code finalized	All Core Project agreements including Account Bank, Technical Code finalized
Institutional mechanism for project sustainability is in place (Text)		IGC Secretariat and JWG established	IGC and JWG established	IGC Secretariat and JWG strengthened	IGC and JWG meetings held	IGC and JWG meetings held	IGC and JWG meetings held	IGC and JWG meetings held	IGC and JWG meetings held	IGC and JWG meetings held



Indicator Name	PBC	Baseline	Intermediate Targets							End Target
			1	2	3	4	5	6	7	
Transmission lines constructed or rehabilitated under the project (Kilometers)		0.00	0.00	0.00	0.00	700.00	1,300.00	1,300.00	1,300.00	1,300.00
Transmission lines constructed under the project (Kilometers)		0.00	0.00	0.00	0.00	700.00	1,300.00	1,300.00	1,300.00	1,300.00

Intermediate Results Indicators by Components

Indicator Name	PBC	Baseline	Intermediate Targets							End Target
			1	2	3	4	5	6	7	
Construction of a High Voltage Transmission Infrastructure										
Construction contracts signed for HVDC converter stations (Yes/No)		No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Construction contracts signed for HVDC line (Yes/No)		No	No	No	No	Yes	Yes	Yes	Yes	Yes
Converter stations constructed under the Project (Number)		0.00	0.00	0.00	0.00	2.00	2.00	3.00	2.00	2.00
HVDC line constructed under the Project (Kilometers)		0.00	0.00	0.00	0.00	0.00	750.00	750.00	750.00	750.00



Indicator Name	PBC	Baseline	Intermediate Targets							End Target	
			1	2	3	4	5	6	7		
HVAC line between the Kyrgyz Republic and Tajikistan constructed under the Project (Kilometers)		0.00	0.00	0.00	0.00	0.00	0.00	0.00	455.00	455.00	455.00
Indirect Project Beneficiaries (Number)		0.00	0.00	0.00	0.00	0.00	0.00	27,500,000.00	28,500,000.00	30,000,000.00	30,000,000.00
Technical Assistance and Project Implementation Support											
Owner's Engineer hired and in place (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Timely Audits carried out of Entity Financial Statements within 9 months of the closure of financial year - Tajikistan and Kyrgyz Republic (Yes/No)		No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Timely Audits carried out of Entity Financial Statements within 9 months of the closure of the financial year - Pakistan and Afghanistan (Text)		No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
Number of staff receiving knowledge transfer on HVDC technology/ Transmission Dispatch (Number)		0.00	0.00	0.00	10.00	10.00	40.00	40.00	40.00	40.00	40.00



Indicator Name	PBC	Baseline	Intermediate Targets							End Target
			1	2	3	4	5	6	7	
Community Support Programs										
Development of operations manual for the Community Support Programs (Yes/No)	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes
Agreement on financing of Community Support Programs for operations phase (Yes/No)	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes

Monitoring & Evaluation Plan: PDO Indicators						
Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection	
Trade initiated between the participating countries	Commercial flows of electricity traded under at least one of the PPA between at least one of the sellers and one of the buyers.	Annual	NTCs/utility database	Utility database	NTCs	
Commercial framework between the countries is established and operational	Number of commercial framework agreements signed and implemented.	Annual	NTCs/utility database	Utility database	NTCs/IGC Secretariat	
Institutional mechanism for project sustainability is in place	Ensure coordination and decision-making processed	Annual	IGC/JWG Meetings	IGC/JWG Meetings	IGC Secretariat	



	and capacity are established.				
Transmission lines constructed or rehabilitated under the project	Total extension of new transmission lines constructed under the Project	Cumulative	NTCs/utility database	Utility database	NTCs/IGC Secretariat
Transmission lines constructed under the project	Total extension of new transmission lines constructed under the Project.	Cumulative	NTCs/utility database	Utility database	NTCs/IGC Secretariat

Monitoring & Evaluation Plan: Intermediate Results Indicators

Indicator Name	Definition/Description	Frequency	Datasource	Methodology for Data Collection	Responsibility for Data Collection
Construction contracts signed for HVDC converter stations	Contracts signed for HVDC converter stations prior to construction	Cumulative	NTCs/utility database	Utility database	NTCs/IGC Secretariat
Construction contracts signed for HVDC line	Signing of construction contracts for HVDC line	Cumulative	NTCs/utility database	Utility database	NTCs/IGC Secretariat
Converter stations constructed under the Project	Construction of converter stations	Cumulative	NTCs / utility database	Utility database	NTCs/IGC Secretariat
HVDC line constructed under the Project	Construction of HVDC line	Cumulative	NTCs/utility database	Utility database	NTCs/IGC Secretariat
HVAC line between the Kyrgyz Republic and Tajikistan constructed under the Project	Construction of HVAC line between Kyrgyz Republic and Tajikistan	Cumulative	NTCs/utility database	Utility database	NTCs/IGC Secretariat
Indirect Project Beneficiaries	Electricity consumers in Pakistan and Afghanistan	Annual	NTCs/utility database	Utility database	NTDC, DABS



	benefiting from increased electricity supply.				
Owner's Engineer hired and in place	Hiring and placement of OEs	Once	NTCs / IGC Secretariat	Reporting to NTCs / IGC Secretariat	NTCs / IGC Secretariat
Timely Audits carried out of Entity Financial Statements within 9 months of the closure of financial year - Tajikistan and Kyrgyz Republic	Periodic audits carried out within agreed timeframe	N/A	NTCs / IGC Secretariat	NTCs / IGC Secretariat	NTCs / IGC Secretariat
Timely Audits carried out of Entity Financial Statements within 9 months of the closure of the financial year - Pakistan and Afghanistan	Periodic audits are carried out in a timely manner	N/A	NTCs/IGC Secretariat	Reporting to NTCs/IGC Secretariat	NTCs / IGC Secretariat
Number of staff receiving knowledge transfer on HVDC technology/ Transmission Dispatch	Number of NTCs/ national consultants / contractor staff involved in HVDC activities and Transmission dispatch during design and construction phases.	Annual	NTCs / IGC Secretariat	NTCs / IGC Secretariat	NTCs / IGC Secretariat
Development of operations manual for the Community Support Programs	Operations Manual for Afghanistan CSP Project is in place Operations Manual for Kyrgyz Republic is in place. Operations Manual for Tajikistan CSP is now in place. Operations Manual for Pakistan CSP project is not yet in place.	N/A	NTCs / IGC Secretariat	NTCs / IGC Secretariat	NTCs / IGC Secretariat



Agreement on financing of Community Support Programs for operations phase	Agreement reached on financing of operations phase	N/A	NTCs / IGC Secretariat	NTCs / IGC Secretariat	NTCs / IGC Secretariat
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PROJECT MAP

