

Document of
The World Bank

Report No: ICR00003831

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(IBRD-80090)

ON A

LOAN

IN THE AMOUNT OF US\$110 MILLION

TO THE

REPUBLIC OF UZBEKISTAN

FOR THE

TALIMARJAN TRANSMISSION PROJECT

December 22, 2016

Energy and Extractives Global Practice
Europe and Central Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective as of November 22, 2016)

Currency Unit = Uzbekistan sum (UZS)

US\$1 = UZS 3157.502

US\$1.5148 = SDR 1

FISCAL YEAR

January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
CAS	Country Assistance Strategy
CAPS	Central Asian Power System
CCGT	Combined Cycle Gas Turbine
CPS	Country Partnership Strategy
DSCR	Debt Service Coverage Ratio
EA	Environmental Assessment
EIRR	Economic Internal Rate of Return
EMP	Environmental Management Plan
ENS	Energy-Not-Served
FIRR	Financial Internal Rate of Return
GOST	Guide to the Organization of Science, Engineering, and Technology
GoU	Government of Uzbekistan
IEC	International Electrotechnical Commission
IFI	International Financial Institution
ICB	International Competitive Bidding
IFRS	International Financial Reporting Standards
ISR	Implementation Status and Results Report
JICA	Japan International Cooperation Agency
NPV	Net Present Value
OSY	Open Switchyard
PAD	Project Appraisal Document
PMU	Project Management Unit
RAP	Resettlement Action Plan
SS	Substation
TA	Technical Assistance
TPP	Thermal Power Plant
UE	Uzbekenergo
WIS	Welfare Improvement Strategy

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**REPUBLIC OF UZBEKISTAN
TALIMARJAN TRANSMISSION PROJECT**

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MAP

A. Basic Information			
Country:	Uzbekistan	Project Name:	Talimarjan Transmission Project
Project ID:	P119939	L/C/TF Number(s):	IBRD-80090
ICR Date:	04/26/2016	ICR Type:	Core ICR
Lending Instrument:	Specific Investment Loan	Borrower:	REPUBLIC OF UZBEKISTAN
Original Total Commitment:	US\$110.00 million	Disbursed Amount:	US\$96.79 million
Revised Amount:	US\$96.79 million		

Environmental Category: B

Implementing Agencies: Uzbek Energo

Cofinanciers and Other External Partners:

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	04/19/2010	Effectiveness:	11/11/2011	11/11/2011
Appraisal:	12/23/2010	Restructuring(s):		07/25/2013 12/23/2015
Approval:	03/15/2011	Midterm Review:	05/14/2014	06/10/2014
		Closing:	12/31/2015	06/30/2016

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Development Outcome:	Moderate
Bank Performance:	Satisfactory
Borrower Performance:	Moderately Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance (by ICR)

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Satisfactory	Government:	Moderately Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	Overall Borrower Performance:	Moderately Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators

Implementation Performance	Indicators	QAG Assessments (if any)	Rating
Potential Problem Project at any time (Yes/No):	No	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
DO rating before Closing/Inactive status:	Satisfactory		

D. Sector and Theme Codes

	Original	Actual
Sector Code (as % of total Bank financing)		
Energy Transmission and Distribution	100	100
Theme Code (as % of total Bank financing)		
Business Enabling Environment	20	20
Regulation and Competition Policy	20	20
Enterprise Development	20	20
MSME Development	20	20
ICT	60	60
ICT Solutions	60	60

E. Bank Staff

Positions	At ICR	At Approval
Vice President:	Cyril Muller	Philippe H. Le Houerou
Country Director:	Lilia Burunciuc	Motoo Konishi
Practice Manager/Manager:	Ranjit J. Lamech	Peter D. Thomson
Project Team Leader:	Sunil Kumar Khosla	Doina Vișa
ICR Team Leader:	Dmytro Glazkov	
ICR Primary Author:	Dmytro Glazkov	

F. Results Framework Analysis**Project Development Objectives (from Project Appraisal Document)**

The project development objective is ‘to improve the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan.’

Revised Project Development Objectives (as approved by original approving authority)

(a) PDO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Reduced number/duration of electricity outages in the project area			
Value (quantitative or qualitative)	92 hours per year	92		24
Date achieved	02/16/2011	09/06/2011		06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. As a result of the reinforcement of 500kV network and the improvement of supply reliability, the electricity outages in the project area have been reduced. The duration of end-user electricity outages in the project region in 2015 was 24 hours.			
Indicator 2 :	Increased electricity supplied to consumers in the southwestern part of Uzbekistan			
Value (quantitative or qualitative)	16,333 GWh per year	22,200		17,460
Date achieved	02/16/2011	09/06/2011		06/30/2016
Comments (including % achievement)	The amount of electricity supplied to consumers in the southwestern part of Uzbekistan from October 1, 2015 to September 30, 2016 was 17,460 GWh. The targeted indicator was partially achieved. Reduction of unserved energy is enabled by increased electricity supply and system losses as a result of the generation capacity increase and transmission network reinforcement. However, the first combined cycle gas turbine (CCGT) unit was launched only on August 25, 2016 and the second one was scheduled to start operation by the end of December 2016. In parallel, in October 2012, Uzbekenergo completed construction of the CCGT at Navoi Thermal Power Plant (TPP) with a capacity of 478 MW and with the power generation of 3.4 billion kWh per year, and second unit was under construction. Both Talimarjan TPP CCGT Unit 1 and Navoi TPP CCGT Unit 1 contributed to increase in electricity output, but full output will be achieved when the second CCGT unit of Talimarjan TPP is commissioned in late December 2016.			
Indicator 3 :	Reduced voltage variation range			
Value (quantitative or qualitative)	10%	5%		4.3%
Date achieved	02/16/2011	09/06/2011		06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. The reinforced 500 kV transmission network has brought robust transmission voltage support. Actual voltage fluctuation of 500 kV and 220 kV buses in substations in the project southwestern area was reduced to 4.3% in 2015 from the baseline of 10%. The stable voltage enables high quality of electricity supply, which is vital for modern human activities.			
Indicator 4 :	Average interruption frequency per year in the project area			
Value (quantitative or qualitative)	80.00		40.00	37.60

qualitative)				
Date achieved	02/16/2011		12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. As a result of the reinforcement of 500 kV network and the improvement of supply reliability, the electricity outages in the project area have been reduced. The average interruption frequency per year in the project region in 2015 was 37.6.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Concluded contracts for long time delivery items			
Value (quantitative or qualitative)	0 contracts	0	2	2
Date achieved	02/16/2011	11/21/2011	12/31/2012	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved.			
Indicator 2 :	Construction of 500 kV Open Switchyard (OSY)			
Value (quantitative or qualitative)	0 units	0	1	1
Date achieved	02/16/2011	09/06/2011	12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. In February 2014, the 500 kV Talimarjan OSY was constructed.			
Indicator 3 :	Commissioning of 500 kV OSY			
Value (quantitative or qualitative)	0 units	0	1	1
Date achieved	02/16/2011	09/06/2011	12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. In February 2014, the 500 kV Talimarjan OSY was constructed.			
Indicator 4 :	New constructed 500 kV transmission line			
Value (quantitative or qualitative)	0 km		220	216
Date achieved	02/16/2011		12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. Single-circuit 500 kV transmission line from Talimarjan TPP to Sogdiana substation was constructed on time in February 2014. The actual length of the transmission line has been slightly reduced to 216 km based on a detailed route design.			
Indicator 5 :	Transition from GOST to IEC Standards			

Value (quantitative or qualitative)	0		5	5
Date achieved	02/16/2011		12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved. All the bidding documents were developed based on IEC Standards.			
Indicator 6 :	Enhanced capacity of Internal Audit Departments			
Value (quantitative or qualitative)	0		Yes	Yes
Date achieved	02/16/2011		12/31/2013	06/30/2016
Comments (including % achievement)	The contract for enhanced capacity of Internal Audit Departments has been completed. While there was quite a good progress in helping Uzbekenergo (UE) enhance its internal audit capacity, the indicator as originally described in the Results Framework was not achieved. Under the project, the gap analysis with recommendations followed by the audit manual, audit program, and audit methodology in accordance with international internal audit standards have been developed. About 85 staff from the UE group were trained. The technical assistance provided under the project has laid solid foundation for UE to transform its internal audit functions to comply with international standards. At the same time, the long delay in approval of contract by the Government of Uzbekistan (GoU) authorities did not leave adequate time with UE to complete all the envisaged activities. Moreover, the current practice of using part-time staff also undermines the proper functioning of the internal audit function.			
Indicator 7 :	Identification of areas with wind power potential			
Value (quantitative or qualitative)	None		Wind assessment study for 2 demonstration projects completed	Wind assessment study for 2 demonstration projects completed
Date achieved	02/16/2011		12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved.			
Indicator 8 :	Number of circuit breakers replaced			
Value (quantitative or qualitative)	0		25	36
Date achieved	06/25/2013		12/31/2015	06/30/2016
Comments (including % achievement)	The targeted indicator is fully achieved.			
Indicator 9 :	Number of power transformers and autotransformers replaced			
Value (quantitative or qualitative)	0		5	10
Date achieved	06/25/2013		12/31/2015	06/30/2016

Comments (including % achievement)	The targeted indicator is fully achieved.
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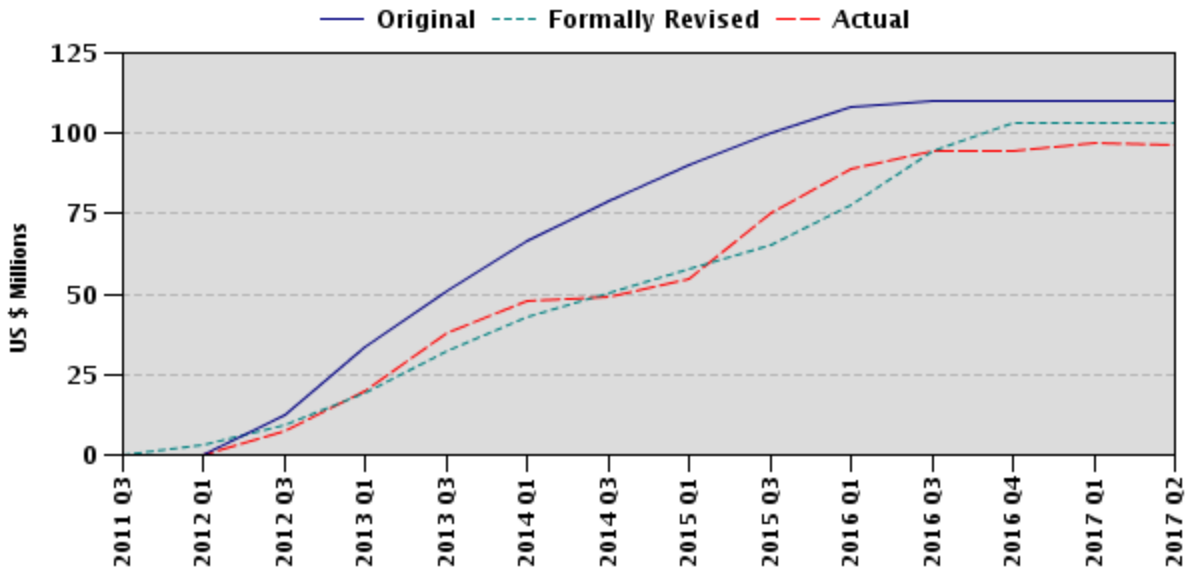
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	DO	IP	Actual Disbursements (US\$, millions)
1	09/21/2011	Satisfactory	Satisfactory	0.00
2	03/30/2012	Satisfactory	Satisfactory	7.22
3	11/28/2012	Satisfactory	Satisfactory	29.35
4	06/18/2013	Satisfactory	Moderately Satisfactory	37.75
5	01/03/2014	Satisfactory	Moderately Satisfactory	49.32
6	08/16/2014	Satisfactory	Satisfactory	54.83
7	01/27/2015	Satisfactory	Satisfactory	60.63
8	08/10/2015	Satisfactory	Moderately Satisfactory	87.28
9	03/17/2016	Satisfactory	Moderately Satisfactory	94.48
10	06/24/2016	Satisfactory	Satisfactory	94.48

H. Restructuring (if any)

Restructuring Date(s)	Board Approved PDO Change	ISR Ratings at Restructuring		Amount Disbursed at Restructuring in US\$, millions	Reason for Restructuring & Key Changes Made
		DO	IP		
07/25/2013	N	S	MS	43.48	This restructuring proposes to add a new subcomponent under Component 1, Strengthening of Power Transmission Network, and expand the scope of Component 2, Institutional Strengthening, using cost savings of about US\$48 million, and accordingly adjust the Results Framework, disbursement estimates, and appraisal summary for economic, financial, and technical analyses. In addition, the core sector indicators related to electricity transmission and distribution were added for the existing activities under Component 1.
12/23/2015	N	S	MS	90.31	The proposed changes consist of an extension of the closing date by six months from December 31, 2015 to June 30, 2016 and a partial cancellation of the loan in the amount of US\$6.6 million.

I. Disbursement Profile



1. Project Context, Development Objectives and Design

1.1 Context at Appraisal

1. At the time of appraisal, Uzbekistan was an upper-low-income, resource-rich, and a landlocked country in the heart of Central Asia. The country accounted for one-third of the region's population, and its economic and social prospects were important both for the 27 million Uzbeks and the population in the rest of the Central Asian countries (Kazakhstan, the Kyrgyz Republic, Tajikistan, and Turkmenistan), which were part of the former Soviet Union.

2. During 2004–2006, the economy of Uzbekistan had been growing at an average annual rate of over 7 percent, and 9 percent in 2007–2009. Despite the global financial and economic crises, growth prospects for 2010 and beyond were expected to be within the range of 8 percent to 9 percent. The country had taken a gradual approach to reform, and the response to the crises was balanced and successful.

3. Economic growth at the time of appraisal has not translated fully into better living conditions, particularly for Uzbekistan's rural population. In 2007, the Government of Uzbekistan (GoU) approved the Welfare Improvement Strategy (WIS) aimed at sustaining growth, reducing poverty, and raising living standards through regional development and efficient use of its natural resources. The GoU was concerned with the slow pace of poverty reduction and developed a second WIS for the period 2011–2014, focusing again on the same development issues.

4. **Sector background.** The country is rich in energy resources. When the project was prepared, it was assessed that it has about 1.8 trillion cubic meters of proven natural gas reserves and 590 million barrels of oil reserves, as well as 3 billion tons of coal reserves. In 2006, Uzbekistan exported 12.2 billion cubic meters of gas, which accounted for about 15 percent of export revenues; in 2008, it reached 25 percent. Since January 2009, the country has been exporting about 150 MW of electricity to Afghanistan. This was expected to increase to 300 MW in future years with further development of Afghanistan's power system.

5. Development of basic infrastructure was one of the key constraints to faster and more widespread growth in the future. Uzbekistan had generally maintained its infrastructure (roads, irrigation network, electricity, and gas distribution) in better condition compared to some other former Soviet Union countries and has continued to invest in basic infrastructure projects throughout the transition period. Nonetheless, the infrastructure was aging and needed large investments. The GoU had to face a major challenge going forward to finance the investments needed to ensure that the availability and quality of infrastructure supports future growth objectives in both urban and rural areas.

6. **Sectoral and institutional context.** The power sector of Uzbekistan was a vertically integrated monopoly. Uzbekenergo (UE) served as the principal power sector utility in the country, a state-owned holding managed through a council chaired by the

Deputy Prime Minister. It was established in August 2001 after public sector reorganization and was the legal successor of the former Ministry of Energy and Electrification. UE was the holding company of 54 companies and had 51 percent to 100 percent equity ownership. Three of these companies (Uzelektroset - the grid operator, Talimarjan Thermal Power Plant (TPP), and Energosoqlash) were fully owned by UE. The other power generation company, Uzsuvenergo under the Ministry of Agriculture and Water Recourses, focused on development and operation of the small hydropower plants on water reservoirs and irrigation canals managed by the ministry. UE operated the power generation sector (7 TPPs, 3 heat and power plants, and 28 hydropower plants), the power transmission network, power distribution and supply (through 14 subsidiaries), coal sector, and auxiliary service companies (design institutes and service companies). All subsidiary companies were organized as separate joint-stock companies, but UE's management reported consolidated physical and financial results for the entire sector.

7. The Uzbek power network was part of the larger Central Asian Power System (CAPS), which was coordinated through a central dispatch coordination center located in Tashkent. In the past, the CAPS encompassed the five Central Asian countries, but transformed to the operation of only three countries. Turkmenistan and Tajikistan were disconnected from the CAPS. UE owned and operated the power transmission network, which had 1,850 km of 500 kV lines, 6,200 km of 220 kV lines, and 15,300 km of 110 kV lines. The transmission network was fully interconnected with neighboring countries with 220 kV and 500 kV transmission lines.

8. Insufficient and unreliable power supply during appraisal was assessed as the third most significant obstacle to doing business in Uzbekistan, up from eighth in 2005, according to the Doing Business Report (2009) prepared by the World Bank and International Finance Corporation. Recognizing this, the GoU had assigned priority to developing the power sector and was committed to achieving the following strategic objectives: (a) expanding and modernizing the power system to provide reliable electricity supply to end users; (b) ensuring UE's financial sustainability and developing UE's institutional capacity to sustainably undertake this mandate; (c) improving efficiency in power generation, delivery, and end use, given the high energy intensity of the economy; (d) reducing the environmental footprint of the energy sector; and (e) developing opportunities for exporting power to other countries both in the region and South Asia.

9. To achieve the above objectives, the GoU had undertaken several steps. These included (a) approving an investment program (through the Presidential Decree DP-1072, dated March 2009), which consisted of 37 projects to modernize and expand the Uzbek power sector; (b) allowing periodic tariff revisions and support to UE in implementing the investment program by borrowing from international financial institutions (IFIs) and increasing UE's exposure to several IFIs to help develop its institutional capacity; (c) mandating energy-intensive industries to improve the efficiency of the processes in a fixed time frame and selecting the most efficient technology in new thermal generation projects; (d) assessing renewable energy potential; (e) maintaining commitment to the preparation and implementation of an advanced metering project to improve energy accountability as well as data and information on the power sector; and (f) assessing power trade opportunities with Afghanistan and Pakistan.

10. **Higher-level objectives to which the project contributed.** The World Bank's country assistance strategy (CAS) for Uzbekistan for FY2008–2011 supported the Government objectives in its WIS, which was part of a comprehensive framework that included regional development strategies. The WIS highlighted the role of maintaining high rates of sustainable economic growth as a main instrument for poverty reduction. This was set to be achieved through a combination of continued stable macroeconomic management, state-led industrialization policy, and acceleration of structural reforms in selected areas. Part of these reforms was aimed at improving the performance of utility and communal services in large and small cities, towns, and villages through, among other measures, the reduction of physical and commercial losses in the electricity and gas systems.

11. The World Bank's engagement in the energy sector was focusing on critically important areas such as energy efficiency, utility accountability, demand-side management, and strengthened transmission linkages, all aimed at supplying power to deficit regions, supporting economic growth, and ensuring future energy growth with lower carbon footprint. The Talimarjan Transmission Project was consistent with the CAS objectives and CAS progress report, as well as with UE's development strategy issued by the cabinet and approved by the President of Uzbekistan in May 2009. In particular, the CAS progress report signaled Uzbekistan's renewed access to limited IBRD financing for energy investments, which were being tapped for this transmission project.

1.2 Original Project Development Objectives (PDO) and Key Indicators (as approved)

12. The original PDO as approved and stated on March 15, 2011 in the Loan Agreement and consistent with the Project Appraisal Document (PAD) was 'to improve the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan.'

Project Outcome Indicators:

- Reduced number/duration of electricity outages in the project area
- Increased electricity supplied to consumers in southwestern part of Uzbekistan
- Reduced voltage variation range

1.3 Revised PDO (as approved by original approving authority) and Key Indicators, and reasons/justification

13. The PDO was not revised. However, during project restructuring on June 28, 2013, a number of revisions were made to better reflect project realism and align core sector indicators with project components. This restructuring added a new subcomponent under Component 1, Strengthening of Power Transmission Network; expanded the scope of Component 2, Institutional Strengthening, financed by using cost savings of about US\$48 million; and accordingly adjusted the Results Framework, disbursement estimates, and

appraisal summary for economic, financial, and technical analyses. In addition, the core sector indicators related to electricity transmission and distribution were added for the existing activities under Component 1.

14. There were significant project cost savings accumulated by June 2013, amounting to about US\$48 million because of substantially lower equipment prices offered under the International Competitive Bidding (ICB) process than estimated at appraisal. The GoU has requested the World Bank to allow Uzbekenergo to use these cost savings to finance transmission network rehabilitation activities in the southwestern and southern regions of Uzbekistan. These proposed investments were found to contribute to the original PDO ‘to improve the reliability of the electricity supply to residential and business consumers in southwestern Uzbekistan’. Details on Project Development Objective Indicators with actual and end targets are given in Annex 2, section C. The following intermediate output indicators were added to measure implementation progress of the proposed rehabilitation activities:

Original Core Sector Indicators

- Number of circuit breakers replaced
- Number of power transformers replaced

15. In addition, some missing core sector indicators and intermediate indicators have been added for better monitoring. In addition, the existing Results Framework was complemented by relevant core sector indicators for distribution of electricity:

- Average interruption frequency per year (number) in the project area through the System Average Interruption Frequency Index (SAIFI) to measure reliability for the target distribution areas
- Transmission lines constructed under the project (km)

1.4 Main Beneficiaries

16. The PAD anticipated that project benefits will directly accrue to residential and business consumers of electricity in the southwestern part of Uzbekistan (including Samarkand, Kashkadarya, Navoyi, and Bukhara Regions) with a total population of over 4 million people. The strengthening of the transmission network was planned to generate direct benefits in the form of reduced electricity supply outages because of transmission network capacity constraints and increased supply reliability. The project was also targeting to generate indirect countrywide benefits in the form of an increased transmission network stability because of a reduced number of line outages and downtime caused by the overloading of existing transmission lines feeding the southwestern regions.

17. The restructuring in 2013 allowed to use savings and to bring more economic and financial benefits to the residential and business consumers in the southwestern part of Uzbekistan as part of (a) improved power system reliability and (b) reduced transmission losses because of strengthening of transmission network assets.

1.5 Original Components *(as approved)*

18. The original project was approved by the Board on March 15, 2011 and became effective on November 11, 2011. The project consisted of two components: investments in power transmission network and institutional strengthening of UE.

19. **Component 1: Strengthening of Power Transmission Network (estimated cost US\$151.04 million).** The investments included construction of (a) about 220 km, single-circuit 500 kV transmission line from Talimarjan TPP to Sogdiana Substation (SS); (b) 500/220 kV OSY at Talimarjan TPP; (c) a bay extension at Sogdiana SS; and (d) a 500 kV connection line from the 500/220 kV OSY at Talimarjan TPP to the Karakul-Guzar transmission line. The investments targeted to increase the electricity supply to customers in the beneficiary region, reduce the technical losses in the transmission network, increase the reliability of electricity supply, and enable UE to effectively supply the additional electricity generated at the two new units at the gas-fired Talimarjan TPP, which were expected to be commissioned in 2014–2015. The Karakul- Guzar line interconnection was designed to help in improving the reliability of the power supply in the southwestern part of the country, which will be further enhanced with the commissioning of the new capacity.

20. **Component 2: Institutional Strengthening (estimated cost US\$10 million).** This component was designed to support (a) strengthening of the project implementing entity's and its subsidiaries' technical and fiduciary capacity and (b) strengthening of the project implementing entity's capacity for project management, monitoring, reporting and evaluation, including procurement, financial management (FM), and disbursement activities, and carrying out the project and the project implementing entity audit.

1.6 Revised Components

21. First restructuring in 2013 proposed a number of revisions. The restructuring expanded the scope of Component 1 to include a new subcomponent (e) 'rehabilitation activities of the transmission network in the southwestern region of Uzbekistan, that is, Samarkand, Bukhara, Navoiy, and Kashkadarya Regions'. The estimated project cost savings of US\$48.19 million were used to upgrade 200–500 kV backbone SS and switchyards under this new subcomponent. This involved modernization of existing old and obsolete technology power equipment, including replacement of circuit breakers and high voltage equipment, transformers, and so on. Rehabilitation of the depreciated power equipment helped improve the reliability of the electricity supply to residential and business consumers in southwestern Uzbekistan.

22. The restructuring also expanded the scope of the activities financed under Component 2 by including additional advisory support and studies related to modernization of distribution networks and preparation of feasibility study for some oblasts and a Tariff Study to support Uzbekenergo on preparing an appropriate methodology for future tariff reviews. Since the additional activities were financed out of project cost savings achieved under the respective components, total project costs of the components remained unchanged.

1.7 Other Significant Changes

23. The second restructuring request in 2015 was for closing date extension and partial cancellation of loan. In its letter dated December 4, 2015, the borrower requested an extension of the closing date to ensure sufficient time for completion of important project activities, utilization of the loan savings, achievement of the intermediate results indicators, and cancellation of the remaining uncommitted loan proceeds. On December 24, 2015, the World Bank sent a letter agreeing with the extension of the closing date by six months from December 31, 2015 to June 30, 2016 and a partial cancellation of the loan in the amount of US\$6.6 million.

2. Key Factors Affecting Implementation and Outcomes

24. Three main factors positively affected implementation of the project and contributed to achieving the stated outcomes: (a) UE's (Project Implementing Unit) solid capacity to manage the project and quick adoption of the World Bank's procurement regulations; (b) the World Bank's experience in the implementation of projects in Uzbekistan; and (c) advance procurement and works started using own funds on the transmission line and SS before effectiveness and preparing bidding documents for the first stage without assistance provided by an international consultant.

2.1 Project Preparation, Design, and Quality at Entry

25. **Soundness of the project preparation.** Overall, the project was well prepared and project design was well conceived. It was based on a thorough assessment of the borrower's and implementing agency's capacity and reflected lessons learned from past World Bank operations in Uzbekistan. The project indicators allowed for the capturing of project benefits and achievement of the PDO although some of the indicators required further refinement during implementation, such as adding core indicators related to electricity transmission and distribution.

26. **Assessment of the project design.** The PDOs were clear, realistic, and mostly focused on the outcome for which the operation could reasonably be held accountable, given its duration, resources, and approach. The PDOs were also important for the country and sector and furthered the World Bank's CAS. The PDOs reflected the borrower's development priorities and the restructuring responded effectively to the borrower's changing circumstances and paved a way to use cost savings. Project design was guided by an in-depth analysis of options. The project has been drawing extensively upon the lessons of the previous World Bank engagement in Uzbekistan and other similar projects implemented by the World Bank elsewhere. The design of the project reflected the following lessons learned from three other electricity transmission projects: the Ukraine Power Transmission Project (2007), Azerbaijan Power Transmission Project (2005), and the Turkey ECSEE APL 2 (2005):

- Strong commitment and ownership by the implementing agency is essential for post-project sustainability of the investment.

- Formation and early engagement of a competent counterpart project team are essential for successful implementation of the project.
- Advanced preparation of bidding documents and initiation of procurement during the project preparation stage strengthen the project ownership and speed of implementation.
- Hiring of international consultants to support project implementation and supervision helps to ensure project success for entities having limited experience in the implementation of ICB.

27. UE has assigned day-to-day supervision and management responsibility for the project to the Project Management Unit (PMU), which has been operational since March 2010. The PMU was responsible for preparation and implementation of this project as well as the Talimarjan Power Generation Project. Before project commencement, UE appointed a PMU Director and hired a Procurement Specialist, three Power Engineers, a Specialist on Social and Gender Issues, Environmental Specialist, Disbursement Specialist, and Chief Accountant. The Financial Manager's duties were implemented by the Chief Accountant of the Talimarjan TPP. The PMU was supported by the design institute for detailed engineering and technical work. Given UE's proposal to implement the project through multi-package procurement and its lack of experience with World Bank procurement guidelines and procedures, UE was also hiring an experienced international engineering consulting firm to support implementation, management, third-party quality control, and project supervision and monitoring. The Consultant supported and supplemented the PMU in discharging its role and provide exposure to better international practices.

28. While designing this project, UE had prepared an investment plan to add new and efficient generating capacity and expand transmission network to reduce the electricity supply gap in deficient regions of the country. For the consumers in southwestern Uzbekistan, which suffer from significant electricity supply shortfall and have high demand growth rate, two new combined cycle gas turbine (CCGT) generation units with total capacity of 900 MW were planned to be constructed at Talimarjan TPP, increasing the total available generation capacity to 1,700 MW. The first unit originally was scheduled to be completed in 2014 and the second by the end of 2015, but later on the schedule was revised, and finally the first unit was launched on August 25, 2016, and the second one is scheduled to start operating by the end of December 2016/January 2017.

29. On the basis of the load flow analysis and a pre-feasibility study conducted by SredAzEnergoSetProject design institute, UE has decided to strengthen the transmission system to meet the additional electricity demand in the southwestern region. A 500 kV transmission line from Talimarjan TPP to Sogdiana SS was designed to offer a dual backup of generation sources (Syrdarya TPP and Talimarjan TPP) to the Tashkent, Samarkand-Bukhara, and Surkhandarya energy hubs. The proposed transmission line was designed to help reduce losses and improve the reliability of electricity supply for these regions. If the proposed 500 kV transmission line and 500/220 kV OSY would not be constructed, the electricity supply in these regions will continue to be inadequate and unreliable, which will hamper economic growth and diminish the quality of life.

30. Social and environmental safeguards were taken into consideration in the project design. The project was classified as Environmental Category ‘B’ in accordance with the World Bank Operational Policy 4.01, ‘Environmental Assessment’. An Environmental Impact Assessment and an Environmental Management Plan (EMP) for both construction and operation phases were prepared by the borrower.

31. **Adequate attention was given to social issues.** The overall social impact of the proposed project was defined as positive because the investment addresses the urgent need for both the urban and rural populations in southwestern Uzbekistan to receive a reliable supply of electricity. Based on focus group discussions carried out in December 2009 with residents of rural communities located near the Talimarjan TPP and in the western and eastern parts of the Kashkadarya Oblast, as well as the urban and business communities in Karshi City (Kashkadarya Oblast), these outages have a severe impact not only on families, but on local businesses, some of which have had to close due to the inadequate electricity supply. Some of the main concerns expressed by residents about the electricity supply included (a) frequent voltage changes in the power lines damage electric equipment, thus requiring costs for replacement; (b) limits school children’s use of computers and other educational technology; (c) households spending increasing amounts on candles and flashlights; and (d) residents’ increasing vulnerability to personal security because of the lack of street lighting. Moreover, an analysis of gender issues revealed that women, who are the main users of electricity at home, are more negatively affected by the power outages in the household than men, given their roles as homemakers and family caregivers.

32. Based on a broader assessment of social impacts, the project presented the following potential risk. The risk was related to the need for UE to acquire approximately 12.03 ha of land on a permanent basis and 159.42 ha on a temporary basis from 114 leasehold farms in Kashkadarya and Samarkand Oblasts. In Kashkadarya, land was acquired from 90 leasehold farms; in Samarkand Oblast, land was taken from 24 leasehold farms. The large majority of farms grow cotton and wheat. The land to be acquired had not exceeded more than 4 percent of the total holdings for any one farm, and most of the land has been acquired on a temporary basis. In accordance with OP 4.12 (Involuntary Resettlement), UE considered all options in recommending the optimal route for the transmission line and chose the one having the least negative social and environmental impacts. In meeting the World Bank’s policy requirement, UE prepared a Resettlement Action Plan (RAP) in consultation with the affected farmers that describes the measures that would be taken to compensate the affected farmers for their losses, the principles incorporated in formulating the RAP, institutional arrangements for implementing the plan, grievance and redress measures, and arrangements for monitoring RAP implementation. The World Bank cleared the final RAP on November 28, 2010. The document has been disclosed in the World Bank InfoShop and UE website in English, Russian, and Uzbek languages.

33. **Assessment of Government commitments and participatory processes.** Strong Government commitment facilitated the smooth implementation of the project. The project enjoyed strong support from the GoU, and had been approved as part of Government objectives in its WIS, which was part of a comprehensive framework that included regional development strategies. The WIS highlights the role of maintaining high rates of

sustainable economic growth as a main instrument for poverty reduction. This was achieved through a combination of continued stable macroeconomic management, state-led industrialization policy, and acceleration of structural reforms in selected areas. Part of these reforms was aimed at improving the performance of utility and communal services in large and small cities, towns, and villages through, among other measures, the reduction of physical and commercial losses in the electricity and gas systems.

34. **Assessment of the project risks and mitigation measures.** The assessment of risks identified and addressed the major risks likely to be faced and outlined a mitigation strategy for each. The overall risk rating was assessed as Medium-L (Low Impact/High Likelihood) for the project preparation stage, given the current progress being made under the project; and Medium-I (High Impact/Low Likelihood) for the project implementation stage, mainly due to UE's lack of experience with implementing World Bank-financed projects. Details on Project Risks and Risk Mitigation is given in Annex 2.

35. Although the procurement risk for the project was initially assessed as 'Substantial', based on the current progress and the proposed mitigation measures, the team has rated the residual risk as 'Moderate'. The PMU has already hired a Procurement Specialist. PMU staff have been provided training in World Bank procurement guidelines and procedures. In addition, an Implementation Support Consultant was hired to help the PMU prepare bidding documents, evaluate proposals, and contract negotiations.

36. One risk, which was not identified or assessed at appraisal, related to the timeliness of the other donor (ADB and JICA) approvals.

2.2 Implementation

37. **Implementation arrangements.** The project was implemented under budget and ahead of schedule on Component 1, despite periodic delays in obtaining necessary clearances and approvals. Since the project became effective on November 11, 2011, progress toward achievement of the PDO and overall implementation progress (IP) has been rated Satisfactory. In June 2013, the IP rating was downgraded to 'Marginally Satisfactory' due to the significant delays (11 months) in the submission of the entity (UE) audited financial statements. There has been a delay in submission of the UE audited financial statements since, though the timing has been subsequently approved.

38. **Progress of implementation.** Specifically, under Component 1 (Strengthening of Power Transmission Network), the following implementation progress has been made: manufacturing and supply of World Bank-funded equipment has significantly progressed. The construction works at SS and transmissions lines have made good progress, including erection of 100 percent of planned towers (562), installation of 100 percent of the conductor length, 100 percent of steel ground wires, and 100 percent of optical fiber ground wires. The construction works at the Talimarjan and Sogdiana switchyards has also been completed, including construction of boundary walls, control and auxiliary buildings, and foundations for high voltage equipment. All this has been achieved much ahead of the planned implementation, at the time of appraisal, helped by advanced procurement actions for long delivery items by Uzbekenergo. Under Component 2 (Institutional Strengthening

of Uzbekenergo), notably the following implementation progress has been made: completion of the avian risk management training; selection of the consultants for the assessment of wind power potential and development of pilot projects; finalizing terms of reference for support in preparing financial statements (International Financial Reporting Standards [IFRS]); preparing terms of reference for internal audit capacity building; and preparing distribution system modernization guidelines and feasibility studies.

39. The existing Karakul-Guzar line was looped in and out of the new Talimarjan OSY and energized in February 2014, followed by commissioning of 500 kV new power transmission line (216 km) connecting Talimarjan TPP with Sogdiana SS in October 2014. These transmission links provide valuable support to the Uzbekistan Grid. The 500/220 kV OSY at Talimarjan has been completed and is ready to receive power from a CCGT power plant being constructed with financial support from ADB and JICA. Currently, it is being used for 500 kV interconnection of the grid, and in late August, when the first unit of the CCGT was launched, it has started receiving power from the CCGT.

40. The consultancy for establishing the design standards for distribution modernization and preparation of the feasibility studies for four provinces was fully completed before by June 30, 2016.

2.3 Monitoring and Evaluation (M&E) Design, Implementation and Utilization

41. **M&E design.** The Results Framework was, in general, well designed to capture the outcome of each component. The original project outcome indicators assessed (a) reduced number/duration of electricity outages in the project area; (b) increased electricity supplied to consumers in southwestern part of Uzbekistan; and (c) reduction in voltage variation range. During the process of project restructuring in 2013, core sector indicators were added during project restructuring, such as (a) number of circuit breakers replaced and (b) number of power transformers replaced. In addition, some missing core sector indicators and intermediate indicators were added for better monitoring. In addition, the existing Results Framework was complemented by relevant core sector indicators for distribution of electricity: (a) average interruption frequency per year (number) in the project area (SAIFI) to measure reliability for the target distribution areas and (b) transmission lines constructed under the project (km). Other project intermediate outcome indicators were adequate to follow implementation progress. They included PDO indicators: (a) reduced number/duration of electricity outages in the project area; (b) reduced voltage variation range (%); and (c) increased electricity supplied (GWh per year) to consumers in southwestern part of Uzbekistan. Also, original intermediate results indicators included (a) construction of 500 kV OSY; (b) commissioning of 500 kV OSY; (c) concluded contracts for long time delivery items; (d) enhanced capacity of Internal Audit Departments; (e) identification of areas with wind power potential; (f) new constructed 500kV transmission line; and (g) transition from Guide to the Organization of Science, Engineering and Technology (GOST) to International Electrotechnical Commission (IEC) Standards.

42. The project monitoring section in the PAD indicated that the Board of UE had the overall responsibility for monitoring project outcomes. UE was requested to provide

regular reports on intermediate outcome indicators. Monitoring and evaluation of the project had involved (a) quarterly progress reports; (b) regular supervision missions; and (c) a midterm review of implementation and outcome progress. The PMU had developed a progress report format (including a monitoring and evaluation plan) as part of the Project Operational Manual, and was responsible for daily monitoring of project implementation progress. The implementation support consultant hired in 2011 provided support and hands-on training to PMU staff for project monitoring, evaluation, and reporting and quarterly implementation supervision reports.

43. **Implementation.** UE was responsible for the collection of the project's performance indicators data and analysis of the results. Progress toward the achievement of the final targets was monitored through regular project progress reports and World Bank's implementation reviews and Implementation Status and Results Reports (ISRs). The data needed for monitoring the selected indicators were of the type that were normally collected by UE and thus were easily monitored. Progress indicators were consistently used to keep track of and identify problems in implementation progress. Slippage in implementation of procurement packages was identified during all supervision missions, and an agreement was reached on efforts needed to speed up the process and bring it in line with the procurement plan, which was closely tied to the completion schedule of the Talimarjan Transmission Project.

44. **Utilization.** UE collected and reported on the requisite data at regular intervals. The intermediate results indicators were used as intended to track physical progress of civil works and capacity development. At project end, values also were obtained for all of the key indicators for project assessment purposes. Intermediate outcome indicators were used to ensure that the project implementation remained on schedule. To have a full evidence of increased electricity supplied (GWh per year) to consumers in the southwestern part of Uzbekistan, electricity output from Talimarjan TPP and CCGT will continue to be collected throughout project life. The quantitative indicators related to Component 1 such as (a) reduced voltage variation range (%); (b) construction of 500 kV OSY; (c) commissioning of 500 kV OSY; and (d) newly constructed 500kV transmission line have been achieved. The indicators requiring data from a full year of Talimarjan CCGT plant operation (power generated which will impact indicator - Increased electricity supplied [GWh per year] to consumers in the southwestern part of Uzbekistan) gave every indication that they will be achieved as first unit of Talimarjan CCGT is launched in August 2016 and second is launched in December 2016. UE will continue providing operation data for the Talimarjan Transmission Project and electricity supply in the southwestern part of Uzbekistan for the World Bank's monitoring of the project's performance. A detailed discussion of project outputs is provided in section 3.2.

2.4 Safeguard and Fiduciary Compliance

45. The project was classified as Environmental Category 'B' in accordance with the World Bank Operational Policy 4.01, 'Environmental Assessment,' based on the fact that (a) construction works as such were essentially confined to the existing right-of-way, which was fully owned by the State; (b) there was no resettlement of people or businesses and land acquisition was limited to transfer of land from farmers to UE for transmission line

towers; and (c) the potential environmental impacts of the project were not expected to be significant or only of a temporary nature. OP/BP4.12 on involuntary resettlement was triggered.

46. **Social and Environmental Safeguards Environmental Management (OP/BP 4.01).** The project activities have been implemented in full compliance with the World Bank and national environmental requirements and project management performance was qualified at satisfactory level. In general, the project presented well-defined and well-understood environmental issues of narrow scope. Most of the impacts were minor, of limited duration, influence a relatively small area, and occur primarily during the construction phase. As reported and acknowledged during the project implementation, UE has established a well-functioning system of EMP supervision, monitoring, and reporting which allowed project activities to be compliant with the environmental requirements. While constructing electrical SS all waste was disposed in special available spaces and no complaints from communities in the area were received by the authorities, no human casualties whatsoever happened; no technical failures occurred that were likely to affect the environment such as spill of fuel or lubricants; excavation works using blasting for towers installation were performed with due care; proper technical procedures have been applied during tower erection works, and no casualties have been reported. Furthermore, based on preliminary Avian Risk Diagnostic Study, Uzbekenergo has identified the most important migratory corridors where it has installed birds protection devices on the transmission line wires and agreed to conduct periodical bird collision monitoring/reporting.

47. There was no significant environmental issues during construction of the OSY and the transmission line other than the normal issues associated with the movement of men, machines, and materials (for example, dust, noise and disposal of construction wastes, and worker health and safety). The route and right-of-way selected does not cross any known structures or sites of cultural significance or special areas of nature protection (other than the migratory bird paths). In addition, there were no protected or declared conservation areas or nature reserves within the project site or the surrounding areas that might potentially be affected by project activities. The existing vegetation cover of the plains section of the transmission line construction area comprised agricultural areas but no sites with rare plant species.

48. UE had started Environmental Assessment (EA) of the electrical stations impacts during operation phase. This was required by the national EA framework and the project EMP, and include, in particular, identification of the level of noise, vibration, of magnetic and electrical fields, which might have harmful effects on the workers' health. In this regard, the EMP prescribed organizing site testing on specified impacts at the initial stage of electrical stations' operation as well as conducting periodical monitoring, which would allow verifying the compliance with the national sanitary norms, and, if needed, propose relevant mitigation measures. The mission was informed in April 2016 that the State Labor Inspection (Uzenergonadzor) had already conducted at the Talimarjan electrical SS the testing on specified impacts (similar EA activities were expected to be conducted also at the Sogdiana SS by the end of 2016). The results of the testing were presented in June 2016, based on which the Director General of Talimarjan PS issued a special order on station's

working places labor conditions regimes. All these activities constitute the basis for official commissioning of the electrical SS in Talimarjan and Sogdiana, which is expected to be done by the end of 2016 and should be done by an official State Commission with the participation of representatives from the State Sanitary Authorities and Environmental Protection Authorities. As the transmission line was already put into operation, UE was conducting bird collision monitoring. Such monitoring is done based on periodical routine inspection of the status of transmission line by the UE workers by collecting information with regard to dead or injured birds observed in the proximity of the transmission line. As part of this review, UE had to submit its first report in this regard to the World Bank on October 10, 2016.

49. As specified in the EMP, UE has established a well-functioning system of environmental supervision, monitoring and reporting, which allowed the project activities to be compliant with the environmental requirements. While constructing electrical SS, all waste was disposed in special available spaces and no complaints from communities in the area were received by the authorities; no human casualties whatsoever happened; no technical failures occurred that were likely to affect the environment such as spill of fuel or lubricants; excavation works using blasting for tower installation were performed with due care; proper technical procedures were applied during tower erection works, and no casualties were reported. According to the project Avian Risks Study, once the transmission line has been put into operation, Uzbekenergo started mobilizing its workers and inhabitants in the proximity of the line for collecting information with regard to dead or injured birds that might occur. Based on this information, it will be possible to assess avian impacts (electrocution and collision mortalities) from operation of the transmission line, compared with the targeted maximum levels identified during initial Avian Risks Study. The monitoring results will be used to implement any additional mitigating activities, which may be necessary to further reduce avian mortality, if needed. The first monitoring report for 2015–2016 show that no bird casualties have occurred. The increased tariff was not significant and has not affected the low-income population.

50. **Involuntary Resettlement (OP/BP 4.12).** The project triggered OP 4.12 on Involuntary Resettlement due to land acquisition associated with project activities. The project involved some permanent and temporary land acquisition linked with the construction of one SS and laying of transmission towers and line. In total 141 farmers and Hokimiyats in eight districts in Kashkadarya and Samarkand Regions received compensation. Apart from the land acquired from one project-affected person for the sub-station (26.7 ha), most land acquisitions to accommodate the transmission towers were small (1.1 ha on average).

51. The initial RAP foresaw compensating 114 farmers. Land acquisition and compensation payments were completed by April 2013 to 147 farmers. These were later revised to 141. Several factors explain these changes. First, the Government optimization program to combine farms and increase farm size resulted in some changes. In addition, an audit was carried out on behalf of the Project Implementing Unit by the Director of the plant and Land Surveyors from each of the affected Hokimiyats. This audit led to further revisions of the number of affected farmers as well as minor changes to the size of acquired land. The audit revealed that six farmers had erroneously received compensation and they

were asked to return the received funds. This explains the difference in numbers between the RAP (114 farmers), the implementation support mission Aide Memo that found (147 farmers), and the final list of compensated farmers (141). The basis for calculating compensations as detailed in the entitlement matrix approved by the World Bank was not modified.

52. Overall, the involuntary resettlement was carried out in accordance with OP 4.12 and the initial RAP. Farmers received compensation according to the entitlement matrix approved by the World Bank, and detailed records of contracts and bank transactions are kept at the plant. Two consultations were carried out to inform about the RAP, and a Grievance Redress Mechanism was established. To date, no complaints have been recorded.

53. **Financial management, legal covenants, and cofinancing.** UE's FM procedures have been reviewed as part of project regular supervisions. The project FM arrangements met the World Bank requirements except for the issue with the annual audit (see the next paragraph). Overall, the project FM system, including budgeting, accounting, reporting and internal control, has been adequate and satisfactory to the World Bank. The project FM unit was adequately staffed and managed. The accounting software was adjusted to accommodate the project needs. Quarterly Interim Unaudited Financial Reports were submitted on time and were acceptable to the World Bank.

54. At the same time, there have been recurring delays with the submission of the project and entity audit reports resulting in the FM rating being downgraded to Moderately Satisfactory throughout the project life. The reason for delays in audit reports' submission was the extremely long procurement and contracting process by the counterparts. For example, the No Objection letters issued by the World Bank for the final audit Request for Proposals was issued early October 2015 and the contract was signed only on June 30, 2016 (nine months). Consequently, the final audit reports for the project and the implementing entity will be submitted with delays again. Lessons learned will be to try to sign three-year audit contracts in the future to ensure the timely audit report submission in the second and third year.

55. Another issue has been UE noncompliance with the Debt Service Coverage Ratio (DSCR) covenant stipulated in the Talimarjan Project agreement. The analysis of financial statements showed that UE struggled with cash collections (which averaged 91 percent of annual sales in 2014) undermining its ability to service the required principal and interest payments. At the same time, the preliminary analysis of the consolidated unaudited IFRS financial statements for the UE group for 2013–2014 showed that the financial position of the sector as a whole is considerably better than that of UE itself, who assumes 90 percent of approximately US\$1.85 billion debt without having the corresponding assets or adequate tariff compensation. Consequently, DSCR for the sector was 0.94 compared with 0.45 for UE itself in 2014 against the stipulated legal covenant of 1.2. The World Bank team had extensive discussions with UE, Ministry of Economy, and Ministry of Finance in May 2016, and it was agreed that an action plan comprising a range of activities with quantifiable monetary effect would be developed and agreed with all stakeholders as soon

as possible. The measures were envisaged to be implemented over the two-year period until July 2018 to make Uzbekenergo financially sustainable.

56. The problem with cash experienced by UE in 2015–2016 also contributed to slow installation and commissioning of equipment purchased from loan savings, but was resolved by UE where they allocated funds to complete all pending installations.

57. **Procurement.** The GoU and UE had agreed to begin procurement for this project immediately following the project negotiations before the project started. Typically, procurement is not initiated until the financing has been approved, that is, the project has become effective. However, under the subject project, the most critical procurement packages, including the autotransformers, which do require about one-year lead time for their production, had been started, advancing the procurement under the project significantly. The success story of this project is that by effectiveness, in November 2011, the contracts for four of the seven main supply packages and two consultancy packages were signed owing to the above advanced procurement. For each contract which was financed, the procurement or consultant selection method, the need for prequalification, estimated costs, prior review requirements, and time frame have been agreed between the borrower and the World Bank and described in the Procurement Plan.

2.5 Post-completion Operation/Next Phase

58. The World Bank continues to engage in the energy sector with an ongoing operation and new operations in Uzbekistan to improve the reliability of electricity supply and distribution, metering to residential and business consumers. UE will continue to collect information from a full year of Talimarjan CCGT plant operation (power generated which will impact the indicator—increased electricity supplied [GWh per year] to consumers in southwestern part of Uzbekistan) and confirmed in early September 2016 that they have installed the first unit of Talimarjan CCGT and are in preparation to complete the second unit installation in December 2016. UE will continue providing operation data for the Talimarjan Transmission Project and electricity supply in the southwestern part of Uzbekistan for the World Bank’s monitoring of the project’s performance.

59. The Modernization and Upgrade of Transmission Substations Project was negotiated between the World Bank and UE and planned for board approval at end of November 2016 and the Electricity Distribution Modernization Project is in the final stage of preparation. This project is included in the World Bank’s FY2016–2020 Country Partnership Framework. Such follow-up investments would improve efficiency and reliability of electricity supply of UE’s three regional electricity distribution companies in Tashkent City and the Tashkent and Samarkand Oblasts and would improve efficiency and reliability of electricity supplied through selected power networks in the project area in Uzbekistan. It would also provide the basis to sustain the dialogue with the GoU on further sector reforms and transformations.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design and Implementation

Rating: Substantial

60. The relevance of project objectives, design, and implementation is rated High based on an assessment of the PDO's links to the development priorities of the GoU and on the links between the project design and implementation to the achievement of the PDO.

61. **Relevance of Objectives.** The project's objective, as stated earlier, was “to improve the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan.” In the context of the PDO, reliability is understood to mean not only the ability to satisfy the immediate demands of consumers but also the ability to meet future medium and long-term demand growth, while quality focuses on short-term measures such as reduced number/duration of electricity outages in the project area, reduced voltage variation range, and decrease in average interruption frequency per year in the project area.

62. As was stated in the FY2012–2015 Country Partnership Strategy (CPS) Completion Report, relieving the infrastructure constraints to growth was a key component of the Uzbekistan competitiveness agenda in the FY2012–2015 CPS. The project remains consistent with the objectives of the World Bank for Uzbekistan, outlined in the World Bank's Country Partnership Framework for FY2016–2020, which is designed to help Uzbekistan implement its key development priorities, specifically its strategic long-term development goal of becoming an industrialized, high middle-income country by mid-century, continuing the gradual transition to a more market-oriented economy, mitigating the potential negative consequences of external shocks, ensuring equitable distribution of growth across regions, and maintaining infrastructure and social services at an adequate level. The current FY2012–2015 CPS makes specific mention of four cross-cutting development policy goals and priorities: (a) to increase the efficiency of infrastructure, especially of energy, transport, and irrigation; (b) to enhance the competitiveness of targeted, strategic industries, such as agroprocessing, petrochemicals, and textiles; (c) to diversify the economy, in particular to reduce its reliance on commodity exports; and (d) to improve access to and the quality and outcomes of education, health, and other social services, so that the benefits of overall growth are shared equitably by the entire population. The project is therefore highly relevant to the World Bank's strategy for Uzbekistan.

63. The World Bank's implementation assistance was responsive to the client's changing needs. Despite a change of project components, the operation remained highly important to achieving country objectives aimed at improving the performance of utility and communal services in large and small cities, towns, and villages through, among other measures, the reduction of physical and commercial losses in the electricity and gas systems and World Bank development objectives of improving the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan through loans and TA.

64. **Relevance of design and implementation.** The project's design was directly relevant to the achievement of the objectives at the time of appraisal and continues to fulfil a key role in improving the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan by overcoming transmission constraints within this region in Uzbekistan. At the time of appraisal, construction of two new CCGT generation

units with total capacity of 900 MW at Talimarjan TPP was being discussed, which would have efficiency of about 57 percent. These plants would generate nearly three times more power with just 30 percent more gas consumption and would also reduce greenhouse gas emissions per unit of power generation. The CCGT power plants to be constructed in Talimarjan and Navoiy are located in the southwest, close to gas production fields. These investments will reduce losses from the gas and power transmission networks and will free up transmission capacity to supply other regions in Uzbekistan and in the neighboring countries. In May 2010, the GoU signed a loan with the ADB and JICA to construct two new CCGT units (450 MW each) at the Talimarjan TPP, where the first unit were planned to be completed in 2014, and the second by the end of 2015, but there were delays. During ICR drafting in early September 2016, the first unit was launched and second was under preparation to be launched in December 2016. The World Bank financed the construction and commissioning of a 500 kV OSY and 220 km of a 500 kV transmission line, which were completed ahead of schedule and are waiting for the CCGT to commence generating power to meet the indicator, increased electricity supplied (GWh per year) to consumers in southwestern part of Uzbekistan.

65. Relevance was rated as Substantial for the project objectives and Substantial for the project design based on the following: (a) close alignment of the project to the objectives of Government's WIS and World Bank's Country Assistance Strategies (2008–2011 and 2012–2015) and Country Partnership Framework (2016–2020), where energy is high on the Government's agenda; (b) the WIS highlights the role of maintaining high rates of sustainable economic growth as a main instrument for poverty reduction, where this project helps by improving reliability of power supply to the highly industrialized southwestern region and supporting implementation of the high-efficiency Talimarjan CCGT, the largest in the country, which would help save precious gas—a big source of foreign exchange revenue; (c) concise and measurable indicators; and (d) strengthening of effective partnership with the Government and other development partners on energy sector and introducing several firsts, such as transition to IFRS, which is now required according to the Government Decree; (e) introduction of advance procurement for externally funded projects; and (f) wind power assessment and laying the foundation of a distribution system modernization program, a high priority for the Uzbekistan energy sector and the GoU.

3.2 Achievement of Project Development Objectives

Rating: Substantial

66. The development objective of improving the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan was achieved. The supply of electricity to Uzbekistan's southwestern region has been achieved with completion of the first unit of Talimarjan CCGT which was launched in late August 2016 and launch of the second is planned for December 2016, where the 500 kV OSY and 220 km transmission line will start full operation and distribute the electricity generated by the Talimarjan CCGT. In October 2014, a 500 kV new power transmission line (216 km) connecting Talimarjan TPP with Sogdiana SS was commissioned. The existing Karakul-Guzar line was looped in and out of the new Talimarjan OSY and energized in February 2014

67. The project has achieved its development objective as measured by the set of monitoring indicators presented in the datasheet. The project has resulted in the following benefits toward achieving the development objectives:

- Electricity outages in the project area reduced substantially due to the strengthening of transmission network and the improvement of supply reliability and capacity.
- Voltage variation range reduced to the 5 percent rate due to the enhancement of transmission network stability.
- Average interruption frequency per year in the project area reduced through the strengthening of the transmission network and the improvement of supply reliability and capacity.
- As part of savings under the project, UE procured and replaced an additional number of circuit breakers, power autotransformers, and transformers with that bringing more reliable and efficient operation of UE SS and with this further decreasing interruption, outages, and voltage variation.
- TA provided as part of Component 2 enabled UE to start the process of transition of its financial statements to IFRS within the UE group as well as enhanced the capacity of its Internal Audit Department.
- In addition, as part of Component 2, TA helped in identification of areas with wind power potential.
- Part of Component 2 TA also helped with transition from GOST to IEC standards.
- TA of Component 2 also helped UE to finalize several feasibility studies which were instrumental in preparing the new project.

68. A detailed description of the benefits resulting from the implementation of the project is presented in the following sections.

69. **Electricity outages in the project area** has reduced as a result of the reinforcement of transmission network and the improvement of supply reliability and capacity. The construction of the 500 kV Talimarjan-Sogdiana transmission line as well as the loop in and out at Talimarjan OSY for the 500 kV Karakul-Guzar transmission line enables continuous electricity transmission even in the case of a loss of one transmission line. Increased generation capacity at Talimarjan TPP reduces the shortage of supply capacity in the project area. As a result of these reinforcements, the duration of electricity outages in the project area was reduced to 24 hours in 2015 from the baseline value of 92 hours. As the first CCGT unit has been commissioned only in August 2016, the improvement was enabled solely by the network reinforcement.

70. **Voltage variation range** reduced to the 5 percent rate due to the enhancement of transmission network stability. The construction of the 500 kV Talimarjan-Sogdiana transmission line as well as the loop in and out at Talimarjan OSY for the 500 kV Karakul-Guzar transmission line increases the voltage stability. Specifically the reinforcement mitigates the voltage fluctuation at the 500 kV and 220 kV SS buses as a result of the reduced system impedances and the multiplied network elements. In addition, newly installed shunt reactors provide reactive power support for the voltage stabilization. Actual voltage fluctuation of the 500 kV and 220 kV buses in the project SS was reduced to 4.3 percent in 2015 from the baseline of 10 percent. This is a significant improvement from the baseline value of 10 percent. The stable voltage enables high quality of electricity supply, which is vital for modern human activities.

71. **Average interruption frequency per year in the project area** reduces from the strengthening of transmission network and the improvement of supply reliability and capacity. The improvement is enabled by the same logic as the reduction of the electricity outages. Average interruption frequency per year (SAIFI) in the project area was calculated based on an assumption because of unavailability of data. Since the actual numbers of unsupplied customers for all interruption events were not available, it was assumed that 10 percent of the total customers were affected for all of the interruption events. The average impact ratio of 10 percent was obtained in a course of discussions with distribution companies. The calculated SAIFI of 37.6 is considered reasonable, as the actual SAIFI for the Samarkand region calculated by an international consultant is 25.0. The target value of 40.00 is fully achieved.

72. As part of savings under the project, UE procured and replaced an additional number of circuit breakers, power autotransformers, and transformers with that bringing more reliable and efficient operation of Uzbekenergo SS and with this further decreasing interruption, outages, and voltage variation. Thirty-six circuit breakers and ten autotransformers and power transformers have been installed.

73. **Enhanced capacity of Internal Audit Departments.** The TA provided under the contract on internal audit development has laid solid foundations for UE to transform its internal audit function to comply with international standards. The consultants have submitted the gap analysis with recommendations followed by the audit manual, audit program, and audit methodology in accordance with the international internal audit standards. About 85 people were trained across the UE group, including internal auditors, chief accountants, and members of supervisory boards across the UE group. It is very important that UE fully uses the contract deliverables and builds upon this foundation going forward to comply with requirements toward strengthening corporate governance as stipulated by the Presidential Decree dated April 25, 2015.

74. Unfortunately, two factors prevented the TA work from fully achieving the target of the original project indicator. One was the extremely long procurement process for having the consultancy contract awarded and signed. The issue was caused by the Ministry of Foreign Economic Relations, Investments and Trade of the Republic of Uzbekistan delayed approvals contrary to the World Bank procurement rules. As a result, the contract became effective only about six months before the original project closing date. Though

the project was extended, UE did not have enough time to implement the deliverables during the two-year timeframe within the project timeline as planned originally. The second issue relates to staffing. The current practice is to use part-time employees who work across several companies. This prohibits the internal audit from functioning properly as envisaged by the Corporate Governance Code and international benchmarks. For the internal audit to become an effective part of the Uzbekenergo corporate governance structure, it needs to be properly used by management; the work of internal audit as reflected in periodic reports has to be done thoroughly and not as a box-ticking exercise. This will only be possible with dedicated and qualified staff on board. The World Bank will continue to support UE in this area under future engagements.

75. **Support toward IFRS transition.** The support provided to UE under the project to facilitate the transition of UE group to IFRS has been extremely timely, as the preparation of IFRS financial statements is required not only by donors, but also by the Presidential Decree dated April 25, 2015. Unfortunately, the consultancy contract has been significantly delayed because of the Ministry of Foreign Economic Relations, Investments and Trade of the Republic of Uzbekistan delayed approvals of contract signing and effectiveness contrary to the World Bank procurement rules. So UE started with setting up an internal IFRS consolidation unit in late 2014 staffed with qualified professionals. So while the consultancy contract deliverables were successful, it is equally important to maintain the internal capacity to ensure a timely preparation of the consolidated IFRS financial statements for 2015 and onwards. The staff are best placed to coordinate the work with external auditors and consultants as well as within the group; to be a sustainable source of knowledge sharing for UE subsidiaries.

76. Unfortunately, the work of this unit was not sustainable because of an unresolved remuneration issue, as the utilities staff receive salaries significantly below that of the private sector qualified experts. This resulted in serious delays in the preparation of the consolidated financial statements of UE group in accordance with IFRS for 2015. The temporary solution by UE was to outsource the experts, but this solution is more expensive and does not create internal capacity within UE. Since the preparation of the IFRS financial statements is required by the Presidential Decree, UE needs to identify the measures together with the GoU, if needed, to maintain the qualified staff.

77. **Identification of areas with wind power potential.** The assessment of wind power potential work has been completed and two 80 m high meteorological masts to measure the wind speed and air density have been procured by UE from their own funds. The procurement for consultancy to design the power distribution systems upgrade and standardization of the medium voltage has been completed. Final report for the wind power potential assessment has been provided.

78. **Transition from GOST to IEC Standards** took place, where in November 2013, UE had three bid documents, which were prepared based on the IEC Standards, within utilization the saved funds, that is, autotransformers and transformers, power equipment 110–500 kV, and medium voltage power equipment standards.

79. **Feasibility studies**, which were instrumental in preparing a new project, where an international consultant was hired to develop the ‘Assessment of the Power Distribution Systems Rehabilitation Options and Preparing the Feasibility Reports (Assessment)’ and was finalized in May 2016. This work has laid out the foundation for the countrywide design standard of distribution systems upgrade and new investment project financing.

3.3 Efficiency

Rating: Substantial

80. The project was implemented on time and under budget, with significant cost savings, which were used for procurement of additional number of circuit breakers, power autotransformers, and transformers. The post-completion economic analysis of the project confirmed that the project was economically viable with the net present value (NPV) equal to US\$400 million and the economic internal rate of return (EIRR) of 36.6 percent compared to the appraisal stage NPV of US\$381.6 and EIRR of 27.7 percent. The costs involved in achieving the project benefits were efficient. The higher post-completion EIRR of the project is due to 35 percent lower investment cost due to strong competition under the International Competitive Bidding (ICB) contract for design, supply, and installation of the transmission facilities. The post-completion financial analysis of the project confirmed that the project was financially viable with an NPV equal to US\$212 million and the financial internal rate of return (FIRR) of 26.3 percent compared to the appraisal stage NPV of US\$188.7 and FIRR of 19.2 percent. The costs involved in achieving the project benefits were efficient. The higher post-completion EIRR of the project is due to the 35 percent lower investment cost because of strong competition under the ICB contract for design, supply, and installation of the transmission facilities. Detailed assumptions of the financial analysis are in annex 3.

81. The main project (Component 1) was implemented well before the time and at much lower than appraised cost, which resulted in substantial benefits to the consumers and savings in cost. This helped in further improving reliability of the transmission system in the southwestern region by helping procure equipment to replace aged and obsolete key equipment in 17 SS. For Component 2, all the activities, including the project implementation support consultant were done within budget, although, there was delay in implementing some initiatives.

3.3 Efficacy

Rating: Substantial

82. The Talimarjan Transmission Project financing was intended to enhance the reliability of electricity supply to the southwestern region. Project efficacy is rated as Substantial on the basis of four out of five indicators’ targets being met or exceeded and the remaining indicator partially met and likely to be achieved after commissioning of the under construction CCGT at Talimarjan, The results and outcomes for Component 2 are fully satisfactory on several accounts and modest on one account (internal audit).

3.4 Justification of Overall Outcome Rating

83. The project is considered to have a Satisfactory overall outcome rating. The project was implemented below estimated costs with cost savings and additional components implemented in time before loan closing date. The development objectives were achieved. The economic and financial benefits of the project have been Substantial. Despite the inability to report on one indicator, where the remaining indicators were fully met, the team is confident that the missing indicator will be fully complied as this indicator required data from a full year of Talimarjan CCGT plant operation (power generated, which will impact the indicator - increased electricity supplied (GWh per year) to consumers in the southwestern part of Uzbekistan) give every indication that it will be fully achieved as the first unit of Talimarjan CCGT was already launched at the end of August or early September 2016 and the second one is due to be commissioned in December 2016.

3.5 Overarching Themes, Other Outcomes and Impacts

(a) Poverty Impacts, Gender Aspects, and Social Development

84. The project impact is on the quantity and quality of the supply of electricity in Uzbekistan's southwestern region, primarily in Samarkand, Kashkadarya, Navoyi, and Bukhara regions, with a total population of over 4 million people, with regard to reducing power outages during periods of peak demand and ensuring access to electricity as regional demand continues to grow. The avoided service disruptions in the southwestern region will positively affect the region's growth. While the indirect cost to businesses, and industries have not been assessed, unscheduled brownouts and sudden interruptions of power supply are known to cause substantial costs to all. Provision of a stable supply of electricity almost inevitably will reduce the cost of power to businesses, thus it has a positive effect on the economy of the southwestern region. It is also recognized that power interruptions disproportionately affect the poorest consumers, which further signifies the contribution of the project to poverty reduction.

85. An analysis of gender issues revealed that women, who are the main users of electricity at home, are more negatively affected by the power outages in the household than men. Some of the main concerns expressed are that (a) women cannot complete their household chores without operating electrical equipment; (b) women are forced to do laundry manually as well as cook, serve food, and bathe themselves and their children in the dark; (c) women cannot use the refrigerator during summer months resulting in the need to go to the market to purchase food each day; (d) gender inequality affects women's access to public utilities such as public baths; (e) working women affected by electricity outages have the pressure to return to their homes quickly before the electricity is turned off, so they can prepare meals for the family; and (f) women who do not work outside of their homes cannot watch television, often their only means of obtaining local and international news and information. In light of these considerations, women will clearly benefit from more reliable energy supply given their roles as homemakers and family caregivers. Moreover, the ADB-financed Talimarjan Power Project, which is closely related to the project, will include measures to promote gender equality and women empowerment through better access to and use of relevant facility services, resources, and assets as well as the development of new employment or income generation opportunities for women at both the power plant and surrounding community.

86. As noted in the section on social issues, this project is associated with two related investments (ADB-financed Talimarjan Power Project and the proposed World Bank-financed Metering Project) that have implications for changes in the tariff policy that could affect the poor. However, this investment in itself has not resulted in major changes in the tariff structure.

(b) Institutional Change/Strengthening

87. The project has a second component, which provided a direct institutional strengthening component.

88. **Component 2: Institutional strengthening** by providing TA to build Uzbekenergo capacity (estimated cost US\$10 million). This component has supported:

- strengthening the project implementing entity's and its subsidiaries' technical and fiduciary capacity; and
- strengthening the project implementing entity's capacity for project management, monitoring, reporting, and evaluation, including procurement, FM, and disbursement activities and carrying out the project and the project implementing entity audit.

89. However, the World Bank's engagement with UE and the GoU in the electricity sector over many years, including the Talimarjan Transmission Project has contributed significantly to UE's operational and institutional strengthening. With further training and capacity strengthening Uzbekistan and UE have a potential to become a model for other Commonwealth of Independent States countries, with an overall sound institutional and legal framework.

(c) Other Unintended Outcomes and Impacts (positive or negative)

90. There are no noticeable negative impacts of the project. Using the project's advance procurement experience, the procurement team decided to use this under all new projects. A Memorandum of Understanding (MOU) was signed with the Government to enable the local institutions implementing the World Bank projects to conduct advance procurement, which means starting the procurement as soon as possible before the project effectiveness, under new projects of the Uzbekistan portfolio.

3.6 Summary of Findings of Beneficiary Survey and/or Stakeholder Workshops

Not applicable

4. Assessment of Risk to Development Outcome

Rating: Moderate

91. The development outcomes were to improve the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan

92. At the time of this evaluation, there was negligible risk that this outcome of improving the reliability of electricity supply to residential and business consumers in southwestern Uzbekistan would not be achieved. As part of World Bank financing, the transmission line and Talimarjan SS were put into operation much earlier than the new Talimarjan CCGT where two units were planned to be launched—the first unit in August 2016 and the second unit in December 2016—and this derailed the full operation and output of EE from the new SS and transmission line.

93. There were no financial, economic, or environmental risks envisaged at the time of this ICR. The GoU is committed and takes ownership of the project, which is good to sustain the development outcome.

94. Taken together, the risk to development outcome is Moderate.

5. Assessment of Bank and Borrower Performance

5.1 Bank Performance

(a) Bank Performance in Ensuring Quality at Entry

Rating: Satisfactory

95. The World Bank's preparation was thorough and collaborative, and built on lessons learned. The scope of the project was strategically relevant and the approach was appropriate. Specific analyses of technical, financial, and economic aspects were carried out by experts in their respective fields. The PDO and project design was simple and straightforward. The implementation plan was practical with support for the implementation agency on the use of World Bank guidelines and procedures for procurement, FM, and environmental/social safeguards management. The project also included strengthening of the institutional capacity of energy sector institutions of the borrower by providing TA and training, in particular, the capacity of UE in FM, where PMU staff were trained on World Bank fiduciary procedures and capacity was built for internal auditing, which unfortunately were not always observed and were constantly delayed. The M&E arrangement was well prepared and indicators were uncomplicated, with the baselines collected properly. Very detailed Aide Memoires from each mission demonstrated the World Bank team's close collaboration with the recipient and implementing agency in preparation, appraisal, and implementation of the project.

(b) Quality of Supervision

Rating: Satisfactory

96. Introducing advance procurement and works being started using own funds, on the transmission line and SS, before effectiveness was a creative and diverse solution for financing the energy sector in Uzbekistan. The World Bank was proactive in carrying out a series of fiduciary and technical training programs following project effectiveness. The World Bank's supervision of fiduciary aspects was exemplary. Supervision was carried out at regular intervals in the areas of environment and social safeguards, FM, and procurement. Mission oversight in each area was supplemented by training and assistance when requested and proactively offered when deemed necessary.

97. Mission reporting was timely and thorough, and assessments of performance were realistic and accurately reported in ISRs. Harmonized systems and coordinated efforts were a major source of success, with one implementation manual, one system for the Government to implement, and one set of reports to prepare.

(c) Justification of Rating for Overall Bank Performance

Rating: Satisfactory

98. The World Bank's performance was rated Satisfactory for quality at entry and Satisfactory for quality of supervision. Therefore the overall World Bank performance rating is Satisfactory.

5.2 Borrower Performance

(a) Government Performance

Rating: Moderately Satisfactory

99. The Government's ownership and commitment were strong, as the objectives of the Talimarjan Transmission Project were consistent with the CPS and Uzbekistan's evolving development strategy and in direct support of the Government's objectives for the energy sector that are expressed in assigned priority to developing the power sector and committed to achieving the following strategic objectives: (a) expanding and modernizing the power system to provide a reliable electricity supply to end users; (b) ensuring UE's financial sustainability and developing UE's institutional capacity to sustainably undertake this mandate; (c) improving efficiency in power generation, delivery, and end use, given the high energy intensity of the economy; (d) reducing the environmental footprint of the energy sector; and (e) developing opportunities for exporting power to other countries both in the region and South Asia. To achieve the above objectives, the GoU has undertaken several steps. These include (a) approving an investment program (through the Presidential Decree DP-1072, dated March 2009), which consists of 37 projects to modernize and expand the Uzbek power sector; (b) allowing periodic tariff revisions and support to UE in implementing the investment program by borrowing from IFIs and increasing UE's exposure to several IFIs to help develop its institutional capacity; (c) mandating energy intensive industries to improve the efficiency of the processes in a fixed time frame and selecting the most efficient technology in new thermal generation projects; (d) assessing renewable energy potential; (e) maintaining commitment to the preparation and implementation of an advanced metering project to improve energy accountability as well as data and information on the power sector; and (f) assessing power trade opportunities with Afghanistan and Pakistan.

(b) Implementing Agency or Agencies Performance

Rating: Satisfactory

100. After the aforementioned initial delays, the project was implemented efficiently and effectively by UE. Within UE, a Project Implementation Team was created, which consisted of experienced officials who performed well with supervision; environmental and social monitoring; FM, accounts, and audits; and data collection for economic

evaluation. All major civil works contracts and most of the institutional activities were completed by the project closing date.

101. The project commenced with innovative advance procurement and continued with good pace throughout, completing a number of component activities ahead of schedule and ahead of other partners—including the SS and transmission line, which were completed ahead of completion of the two new Talimarjan CCGT units. Almost all covenants were complied with (except for the DSCR). Fiduciary compliance was good, but audit reports were submitted with delay. Environmental supervision activities and reporting have been adequate. Follow-up actions were generally taken on time when required. However, there have been long delays in approving and awarding the consultancy contracts, including the annual audit, contrary to the World Bank’s procurement guidelines.

102. Mission review meetings were well attended, including high level officials whenever possible. Implementation problems were usually addressed promptly and supervision was generally timely.

(c) Justification of Rating for Overall Borrower Performance

Rating: Moderately Satisfactory

103. The borrower ensured quality of preparation and implementation, and complied with most covenants (except for the DSCR) and agreements toward the achievement of development outcomes. The combination of the Government’s performance rating of Moderately Satisfactory and the implementing agency rating of Satisfactory results in an overall borrower performance rating of Moderately Satisfactory.

6. Lessons Learned

104. **The combination of supervision by local World Bank staff, whose proximity enabled them to provide timely advice and solve problems, with the participation of international staff with expertise in specific areas when needed, yields good results.** In the case of the Talimarjan Transmission Project, the successful performance of the implementing agency in the areas of civil works, safeguards, and FM, for example, was due both to the commitment and qualifications of UE staff and the effective, timely support from local and Washington DC-based World Bank staff when needed.

105. **On-the-job training** clearly improved the implementing agency’s capacity to manage procurement and contracts.

106. **Sufficient flexibility in project design.** Though the implementation agency has strong capacity, experiences showed that decisions made at the ministerial level can sometimes be overturned (permanently or temporarily). In the case of a sophisticated client country, project design as reflected in legal documents needs to consider introducing sufficient flexibility to allow minor changes without major restructuring and complex approval processes.

107. **Conducting specialized avian risk assessment and ensuring bird protection activities.** In this regard the project undertook a series of activities which can be considered

as best practice that might be replicated under other projects not only nationally but also regionally. As agreed with the World Bank, Uzbekenergo organized and conducted a special avian risk assessment with the participation of both international ('Pandion Systems, Inc.' and Normandeau Associates Inc, United States) and national consultants ('Nazar Business Technology' and the 'Research Institute of Zoology Academy of Sciences, Republic of Uzbekistan'). Furthermore, Uzbekenergo organized the conducting of a preliminary monitoring of migratory high birds along the proposed transmission line, in October 2011. In the result, the company produced a set of special avian collision and electrocution risk mitigation recommendations as well as a Post-construction Mortality Monitoring Protocol to be applied during the operational phase. These documents include avian collision and electrocution risk mitigation measures and proposals on selection and use of marking devices in that regard. The report recommends the installation of marking devices (type of 'bird flapper') on shield wires, in particular on the segments where the transmission line would be crossing Karatepe Reservoir, and the task was implemented by Uzbekenergo in 2013. As the transmission line was put into operation, UE is already conducting bird collision monitoring. Such monitoring is conducted based on periodical routine inspection of the status of the transmission line by the UE workers by collecting information with regard to dead or injured birds observed in the proximity of the transmission line. UE has informed the World Bank mission during the spring 2016 transmission line inspection that there was no registered dead birds as a result of their collision with the transmission line.

108. Sustained effort in the transition toward IFRS and internal audit in accordance with international standards. The transition toward international standards (both in accounting and reporting as well as in the internal audit) is a long-term process, which could not be completed in a year or two. The TA under the project has laid down solid foundations in this regard, but further sustained efforts are needed by UE within the next 3–5 years. It is very important to continue to build upon the trainings and other TA received so far.

109. M & E design. For this project, the M & E system relied on data already routinely collected—the data needed for monitoring the selected indicators was of the type normally collected by the GoU and UE departments and agencies and thus were easily monitored. A core indicator, 'increased electricity supplied to consumers in southwestern part of Uzbekistan', was expected to be achieved as a result of both the reinforcement of the 500 kV network and the installation of two 450 MW CCGT units. However, due to the delay of the commissioning of the CCGT units, the indicator was not fully achieved. The indicator and its target value should have been designed carefully for the following reasons: (a) electricity supply from the CCGT is the major contributor to the target value; however the contribution is out of control as the CCGT installation is not a part of the World Bank-financed project, and (b) an increased electricity supply is more linked to the end-user demand increase than supply adequacy and reliability improvements.

110. Sustainable financing of energy infrastructure maintenance on advance procurement. In the case of Uzbekistan, introducing advance procurement and works started using own funds, on the transmission line and SS, before effectiveness was a creative and diverse solution for financing the energy sector. It emphasized the importance

of conducting advance procurement and frontloading the feasibility study, which helped timely preparation and implementation of the project.

111. **Importance of feasibility study activities** for future project preparation (the electricity distribution modernization project is a direct outcome of a feasibility study, and also the wind resource mapping will likely be used for future renewable energy development project).

112. **Continuation of the same PMU for World Bank-funded projects.** This seems to have helped the PMU accumulate skills and get used to World Bank guidelines and processes and helped smoother project preparation for the next phase transmission project.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

113. The Borrower was provided an opportunity to review and comment on the draft ICR. No comments were received by the specified deadline. The overall assessment and rating on the performance of the project was found acceptable. A summary of the borrower's ICR is presented in annex 7.

(b) Cofinanciers

Not applicable.

(c) Other partners and stakeholders

(for example, nongovernmental organization/private sector/civil society)

Not applicable.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in US\$, million equivalent)

Components	Appraisal Estimate	Actual/Latest Estimate	Percentage of Appraisal
Component 1: Strengthening of Power Transmission Network	90.00	93.22	104
Component 2: Institutional Strengthening	10.00	3.25	33
Total Baseline Costs	100.00	96.47	96
Total Project Costs	109.73	96.47	88
Front-end fee IBRD	0.28	0.28	100
Total Financing Required	110.00	96.75	88

(b) Financing

Source of Funds	Type of Cofinancing	Appraisal Estimate (US\$, millions)	Actual/Latest Estimate (US\$, millions)	Percentage of Appraisal
Borrower		56.759		0
IBRD		110.00	96.75	88

Annex 2. Outputs by Component

A. Outputs by Component

Project Activities	Outputs	Changes and Current Status
Component 1: Strengthening of Power Transmission Network		
Strengthening of Power Transmission Network	The investments will include construction of the following:	
	<ul style="list-style-type: none"> • Transmission line - 500 kV , about 220 km from Talimarjan TPP to SS Sogdiana • New OSY 500/220 kV at Talimarjan TPP and bay extension at SS Sogdiana • A short connection 500 kV between the nearby Karakul-Guzar line and the new OSY • ‘Rehabilitation activities of the transmission network in southwestern region of Uzbekistan 	Completed
Component 2: Institutional Strengthening		
Institutional Strengthening	<ul style="list-style-type: none"> • Strengthening the project implementing entity’s and its subsidiaries’ technical capacity • Strengthening the project implementing entity’s capacity for project management, monitoring, reporting and evaluation, including procurement, FM, and disbursement activities and carrying out the project • Additional advisory support and studies related to modernization of distribution networks • Preparation of feasibility study for some oblasts • a tariff study to support Uzbekenergo on preparing an appropriate methodology for future tariff reviews¹ • Identification of areas with wind power potential 	Completed

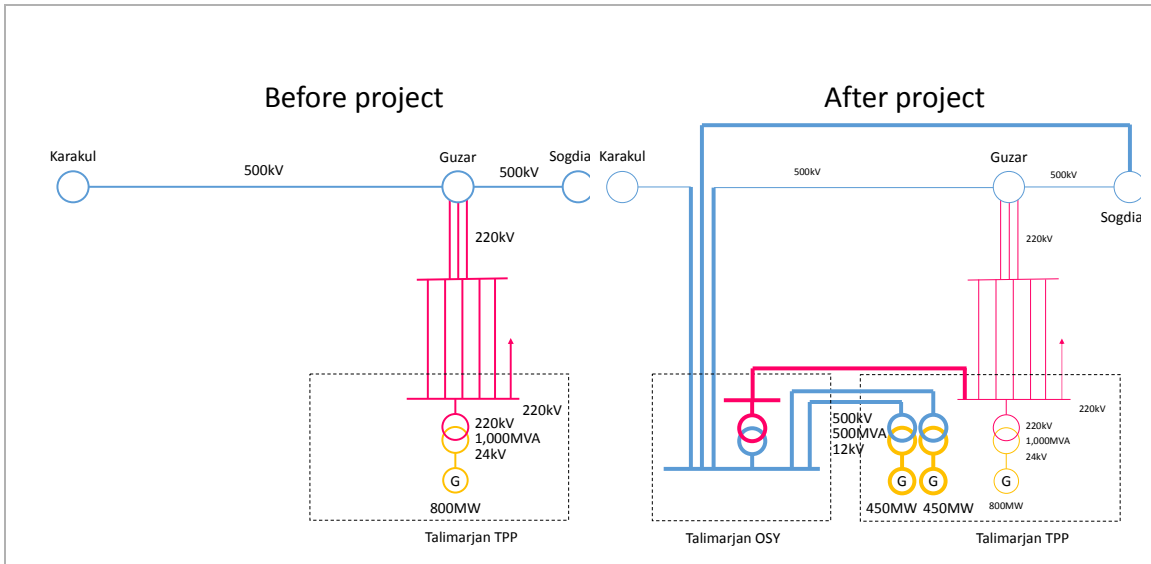
B. Description of Project Outcomes

1. The project built (a) a 500 kV Talimarjan-Sogdiana line, (2) a 500/220 kV Talimarjan OSY, and (3) a 500 kV in-and-out connection at Talimarjan OSY to the existing 500 kV Karakul-Guzar line. A network diagram is shown in figure 2.1.

2. The reinforced 500 kV network enhances not only transmission capacity but also reduces losses and increases supply reliability and network stability. The addition of the second line from Talimarjan to Sogdiana secures continuous power transmission even in case of a loss of one line and also reduces impedances of the network, leading to transmission stability enhancement and loss reduction. Electricity generated by the newly installed CCGT units will be directly injected to the 500 kV network through Talimarjan OSY instead of the existing 220 kV network, which will continue to evacuate electricity generated by the existing 800 MW unit in Talimarjan TTP.

¹ This study was planned as part of the project, but on Government request was moved as grant funded and in view of this request it was agreed by the World Bank to move the Subsidy Study to be done separately in 2017.

Figure 2.1. Electrical Connection Before and After Project



Source: The World Bank ICR team.

Figure 2.2. Completed Talimarjan Switch Station



Figure 2.3. 500kV Talimarjan-Sogdiana Line



Source: The World Bank ICR team.

3. As highlighted in an indicator, all transmission lines and SS equipment are designed according to an international standard, IEC, as opposed to originally adopted Russian GOST standards, leading to design optimization and cost reduction. A 500 kV transmission line capacity increase was achieved without cost increase, according to World Bank advice, by increasing conductor spacing.

4. In Component 2, a wind assessment study was prepared. Based on the wind resource assessment, areas where wind farm operations are commercially suitable were identified: Navoiy and Karakalpaskan region. It was recommended to initially target those two regions for large-scale wind farm installations.

C. Description of Project Development Indicators

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
No change	Reduced number/duration of electricity outages in the project area	<input type="checkbox"/>	Number	Value	92.00	24.00	48.00
				Date	February 16, 2011	May 02, 2016	December 31, 2015
				Comment		The indicator results are for the full year 2015 and the indicator has been met. Replacement of old equipment procured using the savings from the project has helped in exceeding the target level of this indicator and once the work is fully completed improve it further.	
No change	Reduced voltage variation range (%)	<input type="checkbox"/>	Percentage	Value	10.00	4.30	5.00
				Date	February 16, 2011	May 02, 2016	December 31, 2015
				Comment		This indicator has been worked based on 2015 full-year data and has exceeded the	

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
						target value (lower voltage variations are better for the stability of the grid system).	
No change	Increased electricity supplied (GWh per year) to consumers in southwestern part of Uzbekistan	<input type="checkbox"/>	Number	Value	16,333.00	17,303.00	22,200.00
				Date	February 16, 2011	November 6,2015	December 31,2015
				Comment		This indicator for the year 2015 has not been met fully, primarily because of delay in completion of the 2*450 MW CCGT project in Talimarjan which when completed will provide required increase in electricity supplied required as end target. The project which started a year before the World Bank-financed project is at final	

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
						stage of commissioning to be completed by December 31, 2016. The team has verified the site progress and there is a high likelihood of completion of the project in the current year. Most of the energy from this project will be supplied to the southwestern region and it is estimated that this indicator will be fully met after commissioning of the Talimarjan gas turbine project.	
New	Average interruption frequency per year in the project area	☒	Number	Value	80.00	37.60	40.00
				Date	16-Feb-2011	02-May-2016	31-Dec-2015
				Comment		This indicator worked on 2015	

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
						data and has also exceeded the target.	
New	Customers served in the project area	<input checked="" type="checkbox"/>	Number	Value	4,000,000.00	4,000,000.00	4,000,000.00
				Date	February 16, 2011	May 02, 2016	December 31, 2015
				Comment			
Intermediate Results Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
No change	Construction of 500 kV Open Switchyard (OSY)	<input type="checkbox"/>	Number	Value	0.00	1.00	1.00
				Date	February 16, 2011	May 23, 2015	March 31, 2015
				Comment		The indicator was achieved well before the target time	
No change	Commissioning of 500 kV OSY	<input type="checkbox"/>	Number	Value	0.00	1.00	1.00
				Date	February 16, 2011	October 17, 2014	December 31, 2015
				Comment		The indicator was achieved well before the targeted time frame	
No change			Number	Value	0.00	2.00	2.00

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
	Concluded contracts for long time delivery items	<input type="checkbox"/>		Date	February 16, 2011	November 21, 2011	December 31, 2012
			Comment		The indicator was achieved well before the targeted date.		
	Transmission lines constructed or rehabilitated under the project	<input type="checkbox"/>	Kilometers	Value	0.00	218.00	220.00
				Date	June 25, 2013	June 11, 2014	December 31, 2015
				Comment		The indicator was achieved well before the targeted date.	
	Transmission lines constructed under the project	<input type="checkbox"/>	Kilometers	Value	218.00	218.00	218.00
				Date	June 25, 2013	June 11, 2014	December 31, 2015
				Comment			
New	Number of circuit breakers replaced	<input type="checkbox"/>	Number	Value	0.00	30.00	25.00
				Date	June 25, 2013	May 02, 2016	December 31, 2015
				Comment		The indicator achieved the targeted value.	
New			Number	Value	0.00	4.00	5.00

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
	Number of power autotransformers and transformers replaced	<input type="checkbox"/>		Date	June 25,2013	February 01, 2016	June 01, 2016
				Comment		Four transformers have been commissioned and four additional transformers are under erection. By May end 2017, seven transformers are expected to be commissioned.	
No change (indicator was missing in the portal)	Enhanced capacity of Internal Audit Departments	<input type="checkbox"/>	Yes/No	Value	No	No	Yes
				Date	February 16, 2011	May 02, 2016	December 31, 2013
				Comment		While there was quite a good progress in helping UE in enhancing its internal audit capacity, the indicator as originally described in the Results	

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
						<p>Framework was not achieved. There was a typo in the reporting on this in the previous ISR. Under the project, the gap analysis with recommendations followed by the audit manual, audit program, and audit methodology in accordance with international internal audit standards have been developed. About 85 staff from the UE group were trained. The technical assistance provided under the project has laid solid foundation for UE</p>	

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
						<p>to transform its internal audit functions to comply with international standards.</p> <p>The long delay in approval of the contract by the GoU authorities had not left adequate time with UE to complete all the envisaged activities. The current practice of using part-time staff also undermines the proper functioning of the internal audit function.</p>	
No change (indicator was missing in the portal)	Identification of areas with wind power potential	<input type="checkbox"/>	Text	Value	None	Initial study results completed. The data for extended period	Wind assessment study for 2 demonstration

Project Development Objective Indicators							
Status	Indicator Name	Core	Unit of Measure		Baseline	Actual(Current)	End Target
						(for robustness of the analysis) has been collected. The draft feasibility reports were under preparation and finalized by end May 2016. The final result sharing workshop was completed on June 9, 2016.	projects completed
				Date	February 16, 2011	May 02, 2016	April 01, 2016
				Comment			
No change (indicator was missing in the portal)	New constructed 500kV transmission line	<input type="checkbox"/>	Kilometers	Value	0.00	2018.00	220.00
				Date	February 16, 2011	June 11, 2014	December 31, 2015
				Comment		The indicator was achieved well before the time.	
No change (indicator was missing in the portal)	Transition from GOST to IEC Standards	<input type="checkbox"/>	Number	Value	0.00	5.00	5.00
				Date	February 16, 2011	December 01, 2013	December 31, 2013
				Comment		The indicator was achieved on time.	

D. Description of Risks and Risk Mitigation

Table 1. Project Risks and Risk Mitigation

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures	Realized Risks
Project Stakeholder Risks	M-L	The stakeholders may consider alternative sources to finance the project.	Continued engagement and awareness of sensitive issues by the country team, advocacy and in-depth consultations.	Risk not realized since stakeholder (UE) continued to be highly engaged.
		The risk is that a sharp increase in the exported power will reduce the availability of electricity to the domestic market.	The generation capacity will increase through the construction of two new units at Talimarjan Power Plant, therefore the quantity of available electricity will be also increased.	No sharp increase in exporting power realized, Talimarjan two units of CCGT, where one was launched in August 2016 and second to be launched by end of December 2016 when targeted generation will be increased.
Implementing Agency Risks (including FM & Procurement Risks)	M-I	There are risks of noncompliance with World Bank procedures and requirements, and possible delays in project implementation due to the fact that UE has no experience with World Bank-financed projects.	Training of the UE staff on fiduciary aspects was provided during 2010. Additional support will be provided by the Implementation Support Consultancy Company, as well as under the technical assistance (TA) to improve the FM capacity. The Project Operational Manual includes the procedures to be followed during project implementation.	PMU staff were trained on World Bank fiduciary procedures; the fiduciary performance was satisfactory throughout the project, except for the situation with annual audits, which were constantly delayed.
Project Risks				
Design	Low	The risk is that the approved design will not meet the technical standards.	The Implementation Support Consultancy Company to be hired under the project will assist UE in the project implementation.	Consultants were hired and worked with UE from 2011 to 2014, providing implementation supervision support.
Social & Environmental	M-I	Impacts and risks associated with the civil works on electrical SS and construction of transmission line (soil degradation, water and air pollution, solid	Adequate mitigation measures proposed are included in the EMP of the Supplemental Environment Impact Assessment. Field- based migration monitoring program to	As specified in the EMP, UE has established a well-functioning system of environmental supervision, monitoring, and reporting which

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures	Realized Risks
		<p>waste management, labor safety); bird loss due to collision/electrocution interaction with the transmission lines</p> <p>The compensation for the losses of the leasehold farmers not in compliance with OP4.12</p> <p>The low-income population may not be able to afford the increased tariff (needed to cover the cost of investments)</p>	<p>be started during migration season next spring, and during the project implementation. Hot spots for the migratory bird to be identified.</p> <p>The PMU will include a staff member who will be responsible for RAP implementation. The World Bank team will continue to include a Social Development Specialist to provide training to the PMU in RAP implementation during the project launch as well as ongoing guidance during project implementation support missions.</p>	<p>allowed to see the project activities compliance with the environmental requirements.</p>
Program & Donor	Low	<p>The Talimarjan Clean Power Project, which is funded by the Asian Development Bank (ADB) and Japan International Cooperation Agency (JICA), is at risk if the delays on the implementation of the transmission project will occur.</p>	<p>The Project Implementation Plan takes into account the schedule of the investments financed by ADB and JICA. There is a good collaboration between the teams. The risk of a delayed start of the project will be mitigated by having a significant part of the works (engineering design and approval of the bidding documents for the items that require a long delivery time) ready before the project is submitted to the Board for approval.</p>	<p>Transmission line and SS was put into operation earlier than new Talimarjan CCGT, which was the planned first unit, on August 22, 2016.</p>
Delivery Quality	ML	<p>Financial sustainability of the project would be secured by inclusion of the power transmission infrastructure investment costs and</p>	<p>The assessment of the financial viability of Uzbekenergo will be performed during project implementation by the World Bank team.</p>	<p>The project financial sustainability will be secured through annual revisions of end-user tariffs due to changes in the cost of supply. In particular, the average end-user</p>

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures	Realized Risks
		adequate level of operation and maintenance costs in end-user tariffs, approved by the Ministry of Finance, in accordance with the regulatory principle of cost recovery and return on assets as specified by the Government Decree N430.	Financial audit will be undertaken by an auditing company annually.	electricity tariff increased by the average annual rate of 16.4% during project implementation in 2011-2016. The audit of project financial statements and UE holding company financial statements was carried out every year.

Annex 3. Economic and Financial Analysis

1. **Key assumptions:** The economic and financial appraisal of the project at completion was conducted based on the below key assumptions and inputs.

Table 3. 1. Key Assumption of Economic and Financial Appraisal

Average annual UZS/US\$ exchange rate	2,667	Source: World Bank team estimate
Average end-user tariff (excluding value added tax)	UZS 113 per kWh	Source: World Bank team estimate
Annual tariff growth rate	5%	Source: World Bank team estimate ²
Long-run marginal cost of supply	US\$0.09 per kWh	Source: World Bank team estimate
Annual technical losses without project	305 GWh	Source: UE, 'Sredazenergo-setproekt' Design Institute
Annual technical losses with project	12 GWh	Source: UE, "Sredazenergo-setproekt" Design Institute
Annual growth of technical losses without project	1.0%	Source: World Bank team estimate
Annual growth of technical losses with project	0.1%	Source: World Bank team estimate
Incremental operations and maintenance costs	1.5%	Source: World Bank team estimate based on similar projects
Annual outages in Bukhara-Samarkand energy hub due to transmission network failures	92 hours	Source: UE
Value of energy-not-served (ENS) per kWh	US\$0.20 per kWh	Source: World Bank team estimate
Price of diesel fuel	US\$ 0.65 per L	Source: World Bank team estimate
Estimated annual growth of ENS per kWh	6%	Source: World Bank team estimate
Value added tax rate	20%	
Assessment period	25 years	
Discount rate	10%	

2. The completion stage economic and financial analysis was done only for the investment component of the project, including the cost of the technical supervision consultant, which is consistent with the approach used at appraisal stage. Assessment of economic and financial viability was conducted through a cost-benefit analysis. The economic costs and benefits of the project were calculated exclusive of taxes and subsidies and the assessment of the financial costs and benefits was done inclusive of taxes and subsidies.

² The estimated tariff increase used in financial projections is assumed to neutralize the forecasted average annual inflation. This approach is more conservative than the actual tariff increase trend in 2004–2010.

3. **Economic analysis.** The main economic benefits of the project at completion are similar to the benefits estimated at appraisal stage and include (a) increased power system reliability because of strengthening of the transmission network and (b) transmission loss reduction.

4. The valuation of the main economic benefits was conducted consistent with the methodology used at appraisal stage. In particular, the economic benefit of increased reliability of the power transmission network was estimated by calculating the reduction in total economic cost of ENS due to decrease in duration of power outages caused by transmission failures. The net economic benefit of the ENS was estimated as the difference between the ENS in ‘without project’ and ‘with project’ scenarios. The ENS per kWh was estimated to equal the cost of backup generation using quick-start diesel generators.

5. The economic benefit of loss reduction was estimated based on the results of load flow calculations suggesting that construction of the new transmission line will reduce the technical losses in transmission. The value of reduced transmission losses was calculated at the marginal cost of avoided additional electricity supply (including transmission and distribution costs) needed to make up for those losses in the long term if the project is not implemented. Thus, the long-run marginal cost of electricity supply (US\$0.09) was calculated as the sum of the marginal generation cost of a TPP and the cost of transmission and distribution to deliver electricity to end users.

6. The post-completion economic analysis of the project confirmed that the project was economically viable with NPV equal to US\$400 million and EIRR of 36.6 percent compared to the appraisal stage NPV of US\$381.6 and EIRR of 27.7 percent. The costs involved in achieving the project benefits were efficient. The higher post-completion EIRR of the project is due to 35 percent lower investment cost because of strong competition under the ICB contract for design, supply, and installation of the transmission facilities.

7. **Financial analysis.** The post-completion financial analysis of the project was carried out using the same conceptual approach as during the appraisal. Specifically, the financial analysis of the project was carried out from the perspective of UE and therefore, was limited to the incremental revenues and costs associated with the proposed transmission investments.

8. The main financial benefits of the project at completion included (a) incremental revenue from additional power sales due to elimination of transmission network bottlenecks and reduced outages resulting from increased transmission system reliability; and (b) incremental revenue from increased power sales due to reduction of technical losses in the transmission system.

9. The incremental revenue from additional power sales was valued at the current weighted average end-user tariff for electricity. The main financial costs of the project are the capital expenditures in construction of the new transmission line and SS as well as the incremental operation and maintenance costs.

10. The post-completion financial analysis of the project confirmed that the project was financially viable with NPV equal to US\$212 million and FIRR of 26.3 percent compared to the appraisal stage NPV of US\$188.7 and FIRR of 19.2 percent. The costs involved in achieving the project benefits were efficient. The higher post-completion EIRR of the project is due to 35 percent

lower investment cost due to strong competition under the ICB contract for design, supply, and installation of the transmission facilities.

Annex 4. Bank Lending and Implementation Support/Supervision Processes

(a) Task Team Members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Galina Alagardova	Sr. Financial Management Specialist	GGO21	Financial Management
Bernard Baratz	Consultant	GEEDR	Environmental Specialist
Janis D. Bernstein	Consultant	GFADR	Sr. Social Development Specialist
Iskander Buranov	Senior Energy Specialist	GEE03	Operations Officer
Franz Gerner	Sr. Energy Economist	ECSS2	Sr. Energy Economist
Gulgoren A. Cansiz	Consultant	GEE07	Technical Specialist
Sunil Kumar Khosla	Lead Energy Specialist	GEE03	Task Team Leader
Josephine A. Kida	Program Assistant	ECSSD - HIS	Program Assistant
Elena Klementyeva	Program Assistant	ECCUZ	Program Assistant
Alexandra Onofrei	Program Assistant	ECCRO	Program Assistant
Yukari Tsuchiya	Program Assistant	ECSSD	Program Assistant
Nadia Badea	Operations Analyst	ECSSD	Operations Analyst
Ghada Youness	Sr. Counsel	LEGEM	Sr. Counsel
Nikolai Soubbotin	Sr. Counsel	LEGEM	Sr. Counsel
Joseph Formoso	Sr. Finance Officer	CTRFC	Sr. Finance Officer
Artur Kochnakyan	Senior Energy Economist	GEE03	Economist
Alexandra Livia Onofrei	Program Assistant	ECCRO	Program Assistant
Fasliddin Rakhimov	Procurement Specialist	GGO03	Procurement Specialist
Christopher L. Rytel	HQ Consultant ST	GEEDR	Technical Specialist
Arcadii Capcelea	Sr. Environmental Specialist	GENDR	Environmental Specialist
Koji Nishida	Senior Energy Specialist	GEE03	Technical Specialist
Emil Zalinyan	Energy Specialist	GEE03	Economist
Doina Visa	Senior Operations Officer	ECSEG - HIS	Task Team Leader
Supervision/ICR			
Sunil Kumar Khosla	Lead Energy Specialist	GEE03	Task Team Leader
Galina Alagardova	Sr. Financial Management Specialist	GGO21	Financial Management
Koji Nishida	Senior Energy Specialist	GEE03	Technical Specialist
Emil Zalinyan	Energy Specialist	GEE03	Economist
Fasliddin Rakhimov	Procurement Specialist	GGO03	Procurement Specialist
Mitsunori Motohashi	Senior Energy Specialist	GEE03	
Husam Mohamed Beides	Lead Energy Specialist	GEEE3	Lead Energy Specialist
Iskander Buranov	Senior Energy Specialist	GEE03	Operations Officer
Elena Klementyeva	Program Assistant	ECCUZ	Program Assistant
Arcadii Capcelea	Sr. Environmental Specialist	GENDR	Environmental Specialist
Artur Kochnakyan	Senior Energy Economist	GEE03	Economist
Glazkov Dmytro	Senior Energy Economist	GEE03	ICR Author

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	US\$, thousands (including travel and consultant costs)
Lending		
2010	31.86	159,414.10
2011	53.65	231,069.15
Total:	85.51	390,483.25
Supervision/ICR		
2011	1.43	7,684.66
2012	21.85	86,709.98
2013	18.69	117,210.72
2014	17.32	96,242.49
2015	23.26	118,406.57
2016	10.97	82,873.77
2017	0.70	2,268.94
Total:	94.21	511,397.13

Annex 5. Beneficiary Survey Results

Not applicable.

Annex 6. Stakeholder Workshop Report and Results

Not applicable.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

1. The PDO is to improve the reliability of the electricity supply to residential and business consumers in southwestern Uzbekistan.
2. The Talimarjan Transmission Project is helping to improve and stabilize the power supply, reduce losses in transmission lines, and improve the power supply in the region. Until now the second CCGT unit at the Talimarjan TPP is operational, producing electricity. Upon commissioning the third unit of the CCGT will increase the total generating capacity to 1,700 MW. The 500 kV transmission line from Talimarjan TPP to Sogdiana SS is designed to offer a double backup of generation sources (Syrdarya TPP and Talimarjan TPP) and a dual backup and stable power supply at the Tashkent and Samarkand-Bukhara Energy Hubs, as well as at the Surkhandarya Hub. In addition, it will help reduce power losses as it will improve the reliability of the power supply for Samarkand, Bukhara, Kashkadarya, and Surkhandarya Provinces.
3. The project was carried out from 2011 to 2016. It was implemented using borrowed funds from the World Bank based on the Loan Agreement signed on September 16, 2011 between IBRD and the GoU in the amount of US\$110 million under a state guarantee pursuant to Resolution of the President No.1609 dated August 27, 2016. The actually disbursed loan amount was US\$97 million.
4. The following project components were completed:
 - (a) The construction of a 500 kV overhead transmission line connecting a new 500 kV SS at Talimarjan TPP
 - (b) Construction of a 215.5 km 500 kV single circuit transmission line from Talimarjan TPP to Sogdiana SS
 - (c) OSY extension at Sogdiana SS
 - (d) Connection of the existing Karakul-Guzar line (500kV) to the open switchgear of Talimarjan TPP (in-loop connection).
5. The project required compensations for the use of land from farms in both Kashkadarya and Samarkand regions. Land compensations have been paid during 2010–2013.
6. To reduce avian risks, the markers for the ground wire crossing the Karatepa Water Reservoir was approved on November 27, 2012. The order for delivery was issued in favor of the contractor, ETK. In March 2013 the consultant recommended such markers to be installed in the proximity of forests and irrigation channels, especially in areas where the line will run in parallel to such places.
7. Encouraged by the World Bank, the GoU and Uzbekenergo decided to use advance procurement procedures for implementing the Talimarjan Transmission Project. The flexibility of the World Bank's procurement procedures, which allows the executing agency to begin the procurement process before loan effectiveness, was extremely helpful in fast tracking the project.

8. Construction of the 500 kV Talimarjan Transmission line was successfully completed 14 months ahead of the planned deadline. The line was put into operation in October 2014.

9. The early completion of the World Bank-funded part of the project was the result of the effective and quality team work between the World Bank and Uzbekenergo experts successfully applying advance procurement.

10. The World Bank's team of experts, consisting of highly qualified economists, financial specialists, engineers, and procurement experts, proved to be very effective. This expert assistance from the World Bank at all stages of the project facilitated the efficient and prompt resolution of all issues as they arose.

11. Specialists from Uzbekenergo, together with the consultants engaged for the project, also delivered excellent performance by promptly addressing all technical, commercial, financial, consulting, and translation issues and challenges.

12. The company strictly followed the rules and procedures of the World Bank in conducting the bidding procedures to select (a) suppliers of equipment and materials; (b) consultant for supervision of construction works; and (c) TA components such as wind power assessment of Uzbekistan, to create a boom in wind power development in Uzbekistan.

13. The successful and competitive procurement resulted in huge savings in US\$48.2 million which were further used for modernization of the power system in southwest region of Uzbekistan by purchasing 25 units of autotransformers and transformers 500/220 kV, 300 units of SF6 circuit breakers and other power equipment.

14. The PMU through this project gained experience and capacity in preparation bidding documents for international procurement. It is worth mentioning that for the first time Uzbekenergo followed the World Bank's procurement procedures for implementing its projects.

15. The main lessons that should be considered in future investment projects include the following:

- The key to success was the innovative system of advance procurement introduced in Uzbekistan for the first time and the success was demonstrated through this project by saving six months time of project implementation and substantial savings of twice the cost for all procurement packages. Such an approach should be applied to all World Bank-financed projects in Uzbekistan and developed further as one of the instrument for successful project implementation.
- The PMU personnel had a chance to enhance capacity by attending the procurement capacity-building workshops organized by the World Bank. The World Bank helped a lot in building capacity of PMU staff. Such training should be conducted on regular basis.
- The World Bank should work more actively and continuously with the GoU on harmonization of local procurement policy with World Bank policy. It will help greatly with fast project implementation and higher disbursement.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Not applicable.

Annex 9. List of Supporting Documents

Documents

- Project Information Document (Concept Stage), 28/07/2010
- Integrated Safeguards Data Sheet (Concept Stage), 29/06/2010
- Project Information Document (Appraisal Stage), 15/12/2010
- Integrated Safeguards Data Sheet (Appraisal Stage), 15/12/2010
- Project Appraisal Document, 03/02/2011
- Loan Agreement, 16/09/2011
- Restructuring Project Paper, 28/06/2013
- Restructuring Project Paper, 17/12/2015
- Amendment to loan Agreement, 27/08/2013

Mission Aide-Memoires and Implementation Status Reports

- Implementation Status and Results Report Sequence 1 | Date : 21/09/2011
- Implementation Status and Results Report Sequence 2 | Date : 30/03/2012
- Implementation Status and Results Report Sequence 3 | Date : 28/11/2012
- Implementation Status and Results Report Sequence 4 | Date : 18/06/2013
- Implementation Status and Results Report Sequence 5 | Date : 03/01/2014
- Implementation Status and Results Report Sequence 6 | Date : 16/08/2014
- Implementation Status and Results Report Sequence 7 | Date : 27/01/2015
- Implementation Status and Results Report Sequence 8 | Date : 10/08/2015
- Implementation Status and Results Report Sequence 9 | Date : 17/03/2016
- Implementation Status and Results Report Sequence 10 | Date : 24/06/2016

Other Documents and Reports

Guidelines

- Implementation Completion Report Guidelines, OPCS, August 2006, last updated July 22, 2014
- Guidelines for Reviewing World Bank Implementation Completion and Results Reports, a Manual for Evaluators, Independent Evaluation Group, last updated November 12, 2013

Annex 10. Map (cleared on 12/27/2016)

