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Report No: 55663-UZ

PROJECT APPRAISAL DOCUMENT

ON A

PROPOSED LOAN

IN THE AMOUNT OF
US$110.00 MILLION

TO THE

REPUBLIC OF UZBEKISTAN

FOR THE

TALIMARJAN TRANSMISSION PROJECT

FEBRUARY 16, 2011

Sustainable Development Department
Central Asia Country Unit
Europe and Central Asia Region

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CURRENCY EQUIVALENTS
(Exchange Rate Effective January 12, 2011)

Currency Unit = Uzbekistan Soum (UZS)
UZS 1643.86 = US$1

FISCAL YEAR
January 1 – December 31

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
CAPS	Central Asia Power System
CCGT	Combined Cycle Gas Turbine
CDM	Clean Development Mechanism
CIS	Commonwealth of Independent States
CNR	Construction Norms and Rules
DSCR	Debt Service Coverage Ratio
EBRD	European Bank for Reconstruction and Development
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EPC	Engineering, Procurement, and Construction
GGFR	Global Gas Flaring Reduction Partnership
GOU	Government of Uzbekistan
GOST	Guide to the Organization of Science, Engineering and Technology
IEC	International Electrotechnical Commission
IsDB	Islamic Development Bank
IBRD	International Bank for Reconstruction and Development
IFRS	International Financial Reporting Standards
IPSAS	International Public Sector Accounting Standards
ISA	International Standards of Auditing
JICA	Japan International Cooperation Agency
NGO	Nongovernment Organization
OSY	Open Switch Yard
PCs	Public Consultations
PFS	Preliminary Feasibility Study
PPS	Plant Power Station
PMU	Project Management Unit
ROSC	Report on the Observance of Standards and Codes
SCNP	State Committee for Nature Protection
SNR	Sanitary Norms and Rules
SS	Substation
TPP	Thermal Power Plant
UE	Uzbekenergo
WB	World Bank
WIS	Welfare Improvement Strategy

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Task Team Leader:	Doina Vișa

UZBEKISTAN
TALIMARJAN TRANSMISSION PROJECT

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TALIMARJAN TRANSMISSION PROJECT

PROJECT APPRAISAL DOCUMENT

EUROPE AND CENTRAL ASIA

ECSSD

Date: February 16, 2011 Country Director: Motoo Konishi Sector Director: Peter Thompson Sector Manager: Ranjit J. Lamech Team Leader(s): Doina Vişa Project ID: P119939 Lending Instrument: SIL	Sector: Energy Themes: Infrastructure Services for Private Sector Development (60%) Regulation and Competition Policy (20%) Managing for Development Results (20%) EA Category: B

Project Financing Data:

Proposed terms: The Loan has a final maturity of twenty-five years including a grace period of five years.

[X] Loan [ ] Credit [ ] Grant [ ] Guarantee [ ] Other:

Source	Total Amount (US$M)
Total Project Cost:	171.04
Cofinancing:	
Borrower:	61.04
Total Bank Financing:	110.00
IBRD	110.00
IDA	
New	
Recommitted	

Borrower: Republic of Uzbekistan

Responsible Agency: Uzbekenergo

Contact Person: Batirjan Teshabaev, Chairman
Telephone No.: (998 71) 233 61 28, 236 34 58
Fax No.: (998 71) 236 27 00
Email: sjsc@uzpak.uz

Estimated Disbursements (Bank FY/US$ m)

FY	2011	2012	2013	2014	2015
Annual	0	25	35	25	25
Cumulative	0	25	60	85	110

Project Implementation Period: July 2011- July 2015 Expected effectiveness date: June 30, 2011 Expected closing date: December 31, 2015	
Does the project depart from the CAS in content or other significant respects?	○ No
If yes, please explain:	
Does the project require any exceptions from Bank policies? Have these been approved/endorsed (as appropriate) by Bank management? Is approval for any policy exception sought from the Board?	○ No ○ No ○ No
If yes, please explain:	
Does the project meet the Regional criteria for readiness for implementation?	X Yes
If no, please explain:	
Project Development objective: To improve the reliability of the electricity supply to residential and business consumers in South-Western Uzbekistan.	
(a) Project description: Component 1. **Strengthening power transmission network** by construction of: (a) a 500/220 kV new open switchyard at Talimarjan TPP, (b) about 220 km 500 kV single circuit transmission line from Talimarjan TPP to the Sogdiana substation; c) a connection bay at Sogdiana substation and (d) a 500 kV connection line from the 500/220 kV open switch-yard at Talimarjan thermal power plant to the Karakul-Guzar transmission line. Component 2: **Institutional strengthening** by providing technical assistance (TA) for: (a) Strengthening the Project Implementing Entity's and its subsidiaries' technical and fiduciary capacity; and (b) Strengthening the Project Implementing Entity's capacity for Project management, monitoring, reporting and evaluation, including procurement, financial management and disbursement activities and carrying out the Project and the Project Implementing Entity audit.	
Safeguard policies triggered?	
Environmental Assessment (OP/BP 4.01)	**X YES**
Natural Habitats (OP/BP 4.04)	○ No
Forests (OP/BP 4.36)	○ No
Pest Management (OP 4.09)	○ No
Physical Cultural Resources (OP/BP 4.11)	○ No
Indigenous Peoples (OP/BP 4.10)	○ No
Involuntary Resettlement (OP/BP 4.12)	**X YES**
Safety of Dams (OP/BP 4.37)	○ No
Projects on International Waterways (OP/BP 7.50)	○ No
Projects in Disputed Areas (OP/BP 7.60)	○ No

Conditions and Legal Covenants:		
Loan Agreement Reference	**Description of Condition/Covenant**	**Date Due**
Loan Agreement: Article V, Section 5.01. (a)	The Subsidiary Agreement has been executed.	Effectiveness Condition
Loan Agreement: Article V, Section 5.01. (b)	The PMU established by the Project Implementing Entity is functioning with the composition, resources and terms of references satisfactory to the Bank.	Effectiveness Condition
Loan Agreement: Article V, Section 5.01. (c)	The Borrower and the Project Implementing Entity have adopted the POM satisfactory to the Bank.	Effectiveness Condition
Loan Agreement: Article V, Section 5.01. (d)	Establish a project financial management system including budgeting, accounting, reporting, audit and internal controls satisfactory to the Bank.	Effectiveness Condition
Loan Agreement: Schedule 2, Section I.E.(a); Project Agreement: Schedule Section I.C.(a)	Satisfactory implementation of the Environmental Management Plan (EMP) and Resettlement Action Plan (RAP), monitoring of the migratory birds, and additional avian risk mitigation if required.	As per time frame of activities agreed under EMP and RAP
Loan Agreement: Schedule 2, Section I.E.(b); Project Agreement: Schedule Section I.C.(b)	Prior to the commencement of any construction works under the Project, the owners and users of the land where said works are to be implemented have been fully compensated in accordance with the provisions of the RAP.	
Project Agreement: Schedule Section II.B.3	Maintain DSCR (debt service coverage ratio) of at least 1.2 times the estimated maximum debt service.	Annually

I. Strategic Context

A. Country Context

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

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

3. Economic growth, however, 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 is concerned with the slow pace of poverty reduction and is currently preparing a second Welfare Improvement Strategy for the period 2011-2014, focusing again on the same development issues.

4. The country is rich in energy resources. 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 accounts for about 15 percent of export revenues; in 2008, it reached 25 percent[1]. Since January 2009, the country has been exporting about 150 MW of electricity to Afghanistan. This is expected to increase to 300 MW in future years with further development of Afghanistan's power system.

5. Development of basic infrastructure is one of the key constraints to faster and more widespread growth in the future. Uzbekistan has generally maintained its infrastructure (roads, irrigation network, electricity, gas distribution) in better condition some other former Soviet Union countries and has continued to invest in basic infrastructure projects throughout the transition period. Nonetheless, the infrastructure is now aging and needs large investments. The GoU is going 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.

[1] Asian Development Bank Report. Key Indicators for Asia and Pacific. 2008

B. Sectoral and Institutional Context

6. The power sector of Uzbekistan is a vertically integrated monopoly. Uzbekenergo (UE) is 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 is the legal successor of the former Ministry of Energy and Electrification. UE is the holding company of 54 companies and has 51-100 percent equity ownership. Three of these companies (Uzelektroset – the Grid Operator, Talimarjan Thermal Power Plant, and Energosozlash) are fully owned by UE. The other power generation company, Uzsuvenergo under the Ministry of Agriculture and Water Recourses (MAWR), focuses on development and operation of the small hydropower plants on water reservoirs and irrigation canals managed by the MAWR. UE operates the power generation sector (seven thermal power plants, three heat and power plants, and 28 hydropower plants), the power transmission network, the power distribution and supply (through 14 subsidiaries), coal sector and auxiliary service companies (design institutes, service companies). All subsidiary companies are organized as separate joint-stock companies, but UE's management reports consolidated physical and financial results for the entire sector

7. The Uzbek power network is part of the larger Central Asian power system (CAPS), which is coordinated through a central dispatch coordination center located in Tashkent. In the past, the CAPS encompassed the five Central Asian countries, but is currently operating with only three countries. Turkmenistan and Tajikistan are not currently connected to the CAPS. UE owned and operated power transmission network has 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 is interconnected with neighboring countries with 220 kV and 500 kV transmission lines.

8. Insufficient and unreliable power supply is now ranked 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 IFC Recognizing this, the GoU has assigned priority to developing the power sector and is 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 foot print of the energy sector; and (e) developing opportunities for exporting power to other countries both in the region and South Asia. In order 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 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.

9. **Inefficient and aging power generation assets**. In 2009, Uzbekistan generated 49,000 Giga Watt-hours (GWh) of electric power, imported 885 GWh from its neighbors, and exported about 940 GWh. The total installed power generation capacity is 12,400 MW, but less than 10,000 MW is available. The thermal and hydro generation account for 86 and 14 percent of generation respectively. Natural gas is used for 92 percent of thermal power generation.

10. There is significant potential for power generation efficiency improvements. All thermal power plants (TPPs) presently run on steam cycle technology, which has low efficiency (around 30%). Heavy reliance on fossil fuels combined with inefficient use in power generation creates significant economic costs and negative environmental impacts. Most of the generation assets are also 40–50 years old and require replacement and/or rehabilitation. By 2015, the GoU plans to replace 570 MW of inefficient and old generation capacity by constructing three combined cycle gas turbines (CCGT) power plants with total installed capacity of 1,600 MW. Those new CCGTs would have efficiency of about 57 percent. These plants would generate nearly three times more power with just 30% more gas consumption and would also reduce greenhouse gas emissions per unit of power generation. Construction at the Navoiy TPP began in 2009, and in May 2010, the GoU signed a loan with ADB and JICA to construct two new CCGT units (450 MW each) at the Talimarjan TPP. There is also an agreement with JICA to start a 370 MW CCGT project at the Tashkent TPP.

11. The Southern region of Uzbekistan receives power generated in the North Eastern region, where 70% of total power generation is located. However, over 90% of gas production is located in the South-West, requiring large amounts of gas transportation in the country for conversion to electricity, which is then transmitted back to the consumers in the South. This energy flow problem is intensified by the growing industrialization in the South. The CCGT power plants to be constructed in Talimarjan and Navoiy are located in the South-West, 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.

12. In the short to medium term (2009–2014), the power generation capacity will need to increase considerably to match the projected electricity demand growth. The low elasticity of the electricity demand growth compared to the economic growth is due to the currently high energy intensity of the Uzbek economy and high losses. The construction of new and more efficient CCGTs is consistent with this strategy. The identification of the alternative sources of energy (wind, solar) becomes a new direction to be explored for the medium and long term (2012-2020), as per the GoU's recent initiatives.

13. **Constraints to power transmission.** Given the growth of demand with its associated increase in overloading and the aging infrastructure, the transmission system has been experiencing high losses and frequent, long power outages. In winter, outages are from two to six hours a day in the Southern and Western regions, creating serious bottlenecks for economic and social development. In the South, congestion in the power transmission is acute, where electricity consumption during the winter peak increased by nearly 40 percent from 2,318 MW in 1999 to almost 3,000 MW in 2008. There are also constraints in frequency regulation due to the

predominant thermal mix. Large investments are needed to improve the transmission network required to meet the growth in load demand, reduce losses, and increase the electricity trade.

14. UE has been increasing transmission capacity to reduce bottlenecks as well as to improve system stability and reliability. During the period 2004-2010, the company commissioned more than 600 km of the 500 kV lines: (a) the 2nd circuit of the Sirdarya TPP – Sogdiana substation 217 km line, which allows an increase in the power supply from the Central Uzbekistan Energy Hub to the Samarkand-Bukhara Hub, which experiences power deficits; (b) the 200 km power transmission line from the New-Angren TPP to the new 500 kV substation "Uzbekistan" (in the Fergana Valley); and (c) the 200 km power transmission line connecting Guzar substation in the Samarkand-Bukhara Hub with the Surkhan substation.

15. **Tariffs.** During the period 2002-2004, tariff policy was revised and electricity tariffs underwent significant rebalancing. Tariff levels were simplified, incentives were removed, cross-subsidies were reduced, and rates were increased. The retail tariffs have been regularly adjusted since 2004 when the nominal average electricity tariff, at about US$ 0.018/ kWh, was significantly lower compared to several other countries with a comparable GDP. The tariffs were increased at a rate exceeding the 8 - 10 percent annual rate of inflation. As a result, the current average end-user tariffs at US$ 0.043/kWh (as of December 2010) are now higher than in the other Central Asian countries. These steps have allowed UE to cover operational costs without direct subsidies. The efficiency improvement and/or tariff may need to be further increased to cover the cost of the planned large capital investment program.

16. **Accountability of electricity flows and lower collection rates**. The UE network experiences high technical and commercial losses. The total technical losses are estimated at over 20% of gross power generation. Although the collection rates for power bills improved from 75% in 2007 to 88% in 2009, there is significant room for further improvement. To address this problem, the GoU requested assistance from the Bank in supporting the improvement of the accounting of energy flows to consumers and within the utility through a separate advanced metering project. As part of the Bank's deepening engagement in Uzbekistan's energy sector, the Bank's energy team and UE will identify the areas needing priority attention to make the system more efficient.

17. **Advancement of technical standards and transmission Grid Code**. UE continues to rely on Soviet era technical standards for design and construction of power sector facilities, which limits participation of international suppliers. Adoption of IEC technical standards for construction of the new energy sector facilities in accordance with internationally accepted technical standards will help in promoting increased participation of international bidders in tenders for construction, rehabilitation, or modernization of power sector facilities. In addition, the existing Grid Code would need further improvement to encourage development of an efficient and well coordinated transmission system to allow access to private power developers in future.

18. **Eroding regional collaboration in the Central Asia power system**. Uzbekistan is located at the heart of Central Asia and has a strategic role in the regional power system (CAPS), which was developed under the Soviet Union. Recently, the coordination and synergy of resources in the region have diminished and each country is increasingly developing independent

grid operations and sector strategies to obtain the power needed for their economies and population. With Turkmenistan and Tajikistan not being part of the CAPS, the regional collaboration is at its lowest level since independence of these countries.

19. Two other problems often faced in CAPS operation, the over-withdrawal of power and grid instability, are due to the weak networks and lack of grid discipline in some of the countries. Thus, to strengthen the CAPS' coordinated operations, new technical and regulatory assessments are needed along with greater regional dialogue. Further, stronger power networks and grid management systems must be installed in the participating countries to create the technical capacity to integrate the multi-country operations. Uzbekistan, with its strategic location of transmission network, could play a major role in bringing greater regional cooperation.

20. **High energy intensity of the economy**. Uzbekistan is the most industrialized and energy intensive economy in Central Asia, using 60% more energy for each dollar of GDP than Azerbaijan and Kazakhstan, which is four times more energy than the world average.[2] Therefore, the GoU is focusing on energy efficiency for both demand and supply. On the demand side, the Cabinet of Ministers issued regulations that require power-intensive industries to reduce energy consumption by 20% by 2020. To this end, the Bank is supporting a credit line to help finance energy efficiency investments in the industrial sector through commercial banks.

21. **Reduction of greenhouse gas emissions**. Dialogue on Uzbekistan's participation in the Global Gas Flaring Reduction Partnership (GGFR) and Carbon Financing Mechanisms continues. Uzbekneftegaz, the national Oil and Gas Company, has confirmed its participation in the GGFR Partnership for 2010-12, aiming to reduce gas flaring from its oil production. The company also is preparing a potential Gas Flare Reduction Project within the Clean Development Mechanism (CDM) of the Kyoto Protocol, and has initiated a study on energy sector vulnerability to climate change.

C. Higher Level Objectives to which the Project Contributes

22. The Bank's country assistance strategy (CAS) for Uzbekistan for FY08-11 supports the Government objectives in its Welfare Improvement Strategy (WIS), which is part of a comprehensive framework that includes regional development strategies. The WIS highlights the role of maintaining high rates of sustainable economic growth as a main instrument for poverty reduction. This will 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 is 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.

23. The Bank's engagement in the energy sector is 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 proposed was not contained in the original CAS (June 8, 2008) but was included in the lending program (and set out

[2] World Energy Outlook. International Energy Agency. 2009

in the May 20, 2010 CASPR) to help Government address emerging priorities after completing an assessment of progress with implementing the CAS for two years and with the pertinent policy issues. The CAS progress report signaled Uzbekistan's renewed access to limited IBRD financing for energy investments, which are being tapped for this transmission project.

II. Project Development Objectives (PDO)

A. Project Development Objective

24. The project development objective is "to improve the reliability of electricity supply to residential and business consumers in South-Western Uzbekistan".

B. Project Beneficiaries

25. Project benefits will directly accrue to residential and business consumers of electricity in the South-Western 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 will generate direct benefits in the form of reduced electricity supply outages due to transmission network capacity constraints and increased supply reliability. The project will also generate indirect country-wide benefits in the form of increased transmission network stability due to a reduced number of line outages and down-times caused by the overloading of existing transmission lines feeding the South-Western regions.

C. PDO Level Results Indicators

26. To measure the progress toward achieving the project development objectives, a number of key outcome indicators have been defined:

- Reduced number/duration of electricity outages in the project area
- Increased electricity supplied to consumers in South-Western part of Uzbekistan;
- Reduction in voltage variation range.

III. Project Description

A. Project components

27. The project will have two components: investments in power transmission network, and institutional strengthening of UE. The paragraphs below summarize the project components. More details on specific activities included within each sub-component can be found in Annex 2.

28. **Component 1: Strengthening of Power Transmission Network** (estimated cost US$151.04 million). The investments will include construction of: (a) about 220 km. single-circuit 500 kV transmission line from Talimarjan TPP to Sogdiana substation; (b) 500/220 kV open switch-yard at Talimarjan TPP; (c) a bay extension at Sogdiana substation; and (d) a 500 kV connection line from the 500/220 kV open switch-yard at Talimarjan thermal power plant to the Karakul-Guzar transmission line.

29. The investments will help 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 are expected to be commissioned in 2014-2015. The Karakul- Guzar line interconnection will help in improving the reliability of the power supply in the South-Western part of the country, which will be further enhanced with the commissioning of the new capacity.

30. **Component 2: Institutional Strengthening** of UE through technical assistance (estimated cost US$ 10 million). This component will support:

(a) Strengthening the Project Implementing Entity's and its subsidiaries' technical and fiduciary capacity; and

(b) Strengthening the Project Implementing Entity's capacity for Project management, monitoring, reporting and evaluation, including procurement, financial management and disbursement activities and carrying out the Project and the Project Implementing Entity audit.

B. Project Financing

31. Lending Instrument

The Specific Investment Loan (SIL) will be used. The project will be supported through a standard IBRD loan of US$110.00 million, The Loan has a final maturity of twenty-five years including a grace period of five years.

Project Cost and Financing

Project Components	**Project cost (US$ million)**	**IBRD Financing (US$ million)**	**% of Total IBRD Financing***
Component 1: **Strengthening power transmission network**	151.04	90.0	60%
Component 2: **Institutional strengthening**	10.0	10.0	100%
Total Baseline Costs	**161.04**	**100.0**	**62%**
Physical contingencies	6.33.4	6.3	100%
Price contingencies		3.4	100%
Total Project Costs	170.74	109.7	64%
Interest During Implementation		-	100%
Front-End Fees	0.3	0.3	
Total Financing Required	**171.04**	**110.0**	**64%**

*The remaining share is financed by Uzbekenergo.

C. Lessons Learned and Reflected in the Project Design

32. The project draws extensively upon the lessons of the previous Bank engagement in Uzbekistan and other similar projects implemented by the Bank elsewhere. The design of the project reflects 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 international competitive bidding.

IV. Implementation

A. Institutional and Implementation Arrangements

33. The funds under the project will be borrowed by the Ministry of Finance of the GoU and on-lent to UE, the entity responsible for implementing the project. UE is controlled by the Government through the Company Council and the Board. The implementation of the project as well as overall UE operations will be overseen by the Company Council and the Board.

34. 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 is responsible for preparation and implementation of this project as well as the Talimarjan power generation project. UE has already 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. Financial Manager's duties will be implemented by the Chief Accountant of the Talimarjan GES. The PMU will be 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 prior experience with World Bank procurement guidelines and procedures, UE is also procuring an experienced international engineering consulting firm to support procurement, implementation, and management; third party quality control; and project supervision and monitoring. The consultant will support and supplement the PMU in discharging its role and provide exposure to better international practices.

B. Subsidiary Agreement

35. To facilitate the carrying out of the Project by UE (the Project Implementing Entity), the GoU shall make the proceeds of the Loan available to UE under a subsidiary agreement between the Borrower and the Project Implementing Entity, under terms and conditions agreed with the Bank.

C. Anti-Corruption

36. The Borrower shall ensure that the Project is carried out in accordance with the provisions of the Anti-Corruption Guidelines.

D. Results Monitoring and Evaluation

37. The Board of UE will have the overall responsibility for monitoring project outcomes. UE will provide regular reports on intermediate outcome indicators. Monitoring and evaluation of the project will involve: (a) quarterly progress reports; (b) regular supervision missions; and (c) a midterm review of implementation and outcome progress. The PMU will develop a progress report format (including a monitoring and evaluation plan) as part of the Project Operational Manual (POM), and will be responsible for daily monitoring of project implementation progress. The implementation support consultant will provide support and hands on training to PMU staff for project monitoring, evaluation, and reporting.

E. Sustainability

38. UE has a good track record in operating and maintaining its transmission assets. Sustainability of the project will be secured through the inclusion of power transmission infrastructure investment costs and the costs for an adequate level of Operation and Maintenance (O&M) 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 (adopted on September 16, 2004).

V. Key Risks and Mitigation Measures

39. An operations risk assessment framework (ORAF) details the risks and mitigation measures for the project (see Annex 4). The proposed risk ratings for the project are assessed to be: 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 Bank financed projects.

VI. Appraisal Summary

A. Economic and Financial Analysis

40. **Economic analysis**. The main economic benefits of the project include: (a) increased power availability, (b) improved power system reliability, and (c) transmission loss reduction due to strengthening of the transmission network.

41. The economic benefit of increased power availability and improved reliability of transmission network was estimated as the reduction in total economic cost of Energy-Not-Served (ENS) due to the decrease in power outages caused by transmission failures. The ENS was estimated as the operating cost of the back-up quick-start diesel generation (estimated at US$ 0.23/kWh). The economic benefit of loss reduction was estimated on the basis of load flow calculations carried out by the design institute under UE. 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.

42. The main economic costs are the investments in construction of the new transmission line, the open switchyard, and the bay extension as well as the incremental operation and maintenance (O&M) costs. The economic analysis of the project yielded an NPV equal to US$381.6 million and an Economic Internal Rate of Return (EIRR) of 27.7%.

43. Sensitivity Analysis. The results of the sensitivity analysis suggest that even in case of substantial variation (+/- 20%) of the project investment costs and total benefits, the project remains economically viable. Specifically, under the worst-case scenario, when the investment costs increase by 20% and the total economic benefits simultaneously are reduced by 20 percent, the project will have an EIRR of 22.8 % (see Annex 7 for details).

44. **Financial analysis.** The main financial benefit of the project is the incremental revenue from additional electricity sales due to elimination of transmission network bottlenecks and reduction of technical losses.

45. The incremental revenue from additional electricity sales was valued at the current weighted average end-user tariff. The main financial costs of the project are the capital expenditures as well as the incremental O&M costs. The financial analysis of the project yielded an NPV equal to US$188.7 million and a Financial Internal Rate of Return (FIRR) of 19.2%.

46. Sensitivity Analysis. The results of the sensitivity analysis suggest that even in the case of significant variation in investment costs and total financial benefits, the project financial viability remains robust. Specifically, under the worst-case scenario, when the investment costs increase by 20% and the total financial benefits simultaneously are reduced by 20%, the project will have an FIRR of 13.7% (see Annex 7 for details).

47. **Current financial performance of UE**. In 2007-2009, the overall financial performance of UE was sound with some deterioration in the availability of highly liquid current assets and receivables turnover as well as a small decrease in profitability (see Table 1 below)**.**

48. **Projected financial performance of UE and sustainability of investments**. UE's financial performance will significantly depend on improvement of efficiency and tariff increases implemented.[3] Overall, the company's financial performance is expected to be sound with some deterioration of liquidity and gearing (due to increase in long-term debt and debt service obligations), which is expected to improve during the period 2014-2016 (See Annex 7 for details) if the company does not incur additional substantial debts without appropriate increase in revenues. The projections of the key financial ratios of UE are presented in the Table 1 below.

Table 1: Key Financial Ratios of UE in 2007-2016

	Actual			Forecast			
Ratios	**2007**	**2008**	**2009**	**2010**	**2012**	**2014**	**2016**
Current ratio	1.17	1.25	1.40	1.14	0.99	0.91	0.98
Average collection period of total receivables (days)[4]	215	272	323	290	264	244	227
Total asset turnover	0.90	0.83	0.72	0.59	0.49	0.49	0.52
Operating profit margin	14.5%	15.4%	13.8%	10.9%	12.6%	12.6%	12.6%
Net profit margin	11.4%	12.3%	12.1%	8.0%	9.5%	9.5%	9.4%
Return on equity	26.6%	27.1%	22.5%	16.2%	16.6%	14.5%	13.0%
Cash flow from operations-to-revenue	5%	4%	2%	1%	3%	5%	10%
Debt-to-equity	16.7%	23.6%	40.6%	116.4%	147.7%	111.4%	72.8%
Debt service coverage ratio	11.5	11.2	12.5	5.3	3.5	3.2	3.2
Cash flow coverage of debt service	3.7	2.8	1.8	0.7	0.7	1.2	2.5

B. Technical

49. UE has 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 South-Western Uzbekistan, who suffer from significant electricity supply shortfall and have high demand growth rate, two new CCGT generation units with total capacity of 900 MW will be constructed at Talimarjan TPP, increasing the total available generation capacity to 1,700 MW. The first unit will be completed in 2014, and the second - by the end of 2015.

50. On the basis of the load flow analysis and a pre-feasibility study conducted by SredAzEnergoSetProject (SAESP) design institute, UE has decided to strengthen the transmission system to meet the additional electricity demand in the South-Western region. A 500 kV

[3] The projections of the company's financial performance for 2010- 2016 are based on the assumption that the nominal tariffs would be increased to neutralize the negative impact of inflation and ensure reasonable returns to cover costs.

[4] The long average collection period of total receivables is the result of significant size of payments owed by subsidiaries and associated companies related to non-core business activities.

transmission line from Talimarjan TPP to Sogdiana substation is designed to offer a dual back-up of generation sources (Syrdarya TPP and Talimarjan TPP) to the Tashkent, Samarkand-Bukhara, and Surkhandarya energy hubs.

51. The proposed transmission line will help reduce losses and improve the reliability of electricity supply for these regions. If the proposed 500 kV transmission line and 500/220 kV open switchyard are not 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. Three alternative line routes were considered for the transmission lines. The Alternative 1 route (218 km), though not the shortest was chosen due to lowest total cost among the three options studied. The Alternative 2 (196 km), would have been a straighter and shorter route, but was found costlier as more than 30% of the line would have passed through mountains. Besides cost, this alternative would also require a longer construction period. The third alternative had a longer route and also passed through the mountainous area.

52. The pre- feasibility study prepared by SAESP, an institution having more than 50 years of experience in the design of high voltage transmission lines and substations, was reviewed by the Bank team. Poor supply conditions were also observed during field visits. The design of the project is relatively simple and UE has experience in carrying out similar projects, as well as operating and maintaining them thereafter. The loan will be used for procurement of the main equipment for the project, such as, transformers, reactors, control and protection equipment, conductor, OPGW, insulators, etc. Smaller equipment, concrete products (for foundation) and small- sized metal roll and hardware would be procured locally and financed by UE from its own source. Construction activities would also be financed by UE and carried out by well-established general contractors having long experience in construction of transmission lines and switchyard. Given UE's proposal to implement the project through multi package procurement and no prior experience of implementing the procurement following Bank guidelines and procedures, UE is procuring an experienced international third party quality control engineering consulting firm to support procurement, monitoring of the project implementation and management activities.

C. Financial Management

53. Financial Management assessment has been conducted by the Bank team to determine whether the financial management (FM) arrangements of the project, including flow of funds, budgeting, accounting, reporting, and auditing, meet the Bank's minimum requirements. It has been established that FM arrangements of the PMU, established within the UE, are generally acceptable, but need to be enhanced further by customizing the automated accounting system to support project accounting and reporting, and training of financial management staff to enhance their skills. A time-bound action plan (see Annex 3) aimed at further strengthening of the PMU financial management capacity has been elaborated and agreed with the client.

54. UE has recruited a full time disbursement specialist and a chief accountant to manage the project related financial management and disbursement work in the PMU. The UE Chief Accountant and the disbursement specialist will have the ultimate responsibility for accounting, reporting flow of funds and disbursement functions of the Project. UE is customizing a standard accounting system software widely used in Uzbekistan and other Central Asian countries to

support project accounting and reporting. The system shall have functionality of automatic generation of reports for the Uzbekenergo as well as SOEs and IFRs required for reporting to the Borrower and the World Bank. The system shall have adequate security safeguards for reliable reporting and data integrity.

55. It is planned to provide focused training to all financial management staff during project launch and hands-on training during implementation. The Financial Management Manual, which is part of the project operational manual, has been elaborated with the help of a financial management consultant, and describes budgeting, audit arrangements, internal control and accounting policies and procedures to be followed for this project.

56. Disbursements from the IBRD Loan Account will follow the transaction-based method, i.e., traditional Bank procedures: including advances to the designated account, direct payments, Special Commitments and reimbursement (with full documentation and against Statements of Expenditures (SOEs). For payments above the minimum application size, as specified in the Disbursement Letter, PMU may submit withdrawal applications to the Bank for payments to suppliers and consultants directly from the Loan Account.

57. Retroactive financing will be available for expenditures incurred on or after March 1, 2011 on eligible goods and services for the project, which are procured following the Bank's procurement guidelines. The retroactive payment will be limited to US$ 15 million.

D. Procurement

58. An assessment of the implementing agency's capacity to implement project procurement has been conducted by the Bank during appraisal. Although the procurement risk for the project is assessed as 'Substantial', based on the current progress and the proposed mitigation measures, the team has rated the residual risk as 'Moderate' (see details in Annex 3). The PMU has already hired a procurement specialist. PMU Staff have been provided training in Bank procurement guidelines and procedures. In addition, an implementation support consultant is under procurement to help the PMU prepare bidding documents, evaluate proposals, and contract negotiations, etc.

59. The GoU has agreed to start advance procurement for this project. Typically, procurement is not initiated until the financing has been approved. For this project, two out of the seven supply packages and one consultancy package is under procurement following the Bank procurement guidelines. The procurement arrangements envisaged for the project are described in Annex 3. A draft procurement plan has been prepared and discussed with the Bank. For each contract to be financed, the procurement or consultant selection method, the need for pre-qualification, estimated costs, prior review requirements, and time frame have been agreed between the Borrower and the Bank and described in the Procurement Plan, which will be updated at least annually or as required to reflect the actual project implementation needs.

60. There is currently no post review package envisaged under the Bank financing. In case such packages are identified, at least 20% of these contracts shall be subject to post review. It is planned that a supervision mission in the field will be conducted every six months when post

reviews will be conducted. More than 10% of the post review contracts, if concluded during the review period, will be physically inspected.

E. Social

61. The overall social impact of the proposed project will be positive because the investment addresses the urgent need for both the urban and rural populations in South-Western 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.

62. Some of the main concerns expressed by residents about the electricity supply include: (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 due to the lack of street lighting. Moreover, an analysis of gender issues revealed that women, who are the main users of electricity in the home, are more negatively affected by the power outages in the household than men, given their roles as homemakers and family caregivers.

63. Based on a broader assessment of social impacts, the project presents the following potential risk. The risk is 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 will be acquired from 90 leasehold farms; in Samarkand Oblast, land will be taken from 24 leasehold farms. The large majority of farms grow cotton and wheat. The land to be acquired will not exceed more than 4 percent of the total holdings for any one farm, and most of the land will be 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 Bank's policy requirement, UE prepared a Resettlement Action Plan (RAP) in consultation with the affected farmers that describes the measures that will 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 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. A summary of the RAP is provided in Annex 9.

64. The investment is not expected to have a major impact on end-user tariffs. Transmission costs account for only a modest share of the average end-user tariff (around seven percent) and there is only a very small increase expected for O&M, depreciation, and debt service expenses to cover inflation, as well as provision for a return on the new asset. Moreover, the existing tariff structure provides protection for those who have electricity as the only source of energy to cover

the basic needs (cooking). Specifically, the residents of high-rise apartment buildings who are not connected to gas service (due to safety considerations) and are using electricity for basic needs (e.g. cooking), pay a preferential tariff rate of UZS35.3/kWh (approximately US$0.02/kWh). In addition, there is empirical evidence that the average end-user tariff increased in 2007-2009 and did not have a significant impact on customers' ability and willingness to pay, as confirmed by the increasing average bill collection rates and the relatively stable share of power consumed by residential customers. During project implementation, however, UE will address this issue as part of its periodic social monitoring. In the event there are any tariff increases not anticipated during project preparation, the Bank team will initiate discussions with the client as necessary to ensure that the existing social assistance system accommodates any possible hardships imposed on lower income households. This issue also will be addressed as part of the Bank's broader dialogue with the Government on energy sector reform.

F. Environment

65. The project is in full compliance with the environmental regulations of the GoU and the World Bank's safeguard policy regarding Environmental Assessment (EA, OP 4.01). In general, the project presents well-defined and well-understood environmental issues of narrow scope. Most of the expected impacts are minor, of limited duration, influence a relatively small area, and occur primarily during the construction phase. Based on the avian risk assessment prepared by the international avian risk expert and the draft Supplemental EIA report prepared for the project, the project environmental Category was formally established as 'Category B,' reduced from the tentative 'Category A' initially agreed during the concept review, pending the outcome of the Avian Risk Assessment. Nonetheless, the EA procedures followed the requirements of a Category A project because the avian risk level (outcome of the Avian Risk Assessment) was not known during the earlier stages of project preparation.

66. Uzbekistan Environmental Assessment Regulations required an Environmental Impact Assessment (EIA) for the project. Uzbekenergo prepared the EIA and it was approved on March 12, 2010 by the State Committee for Nature Protection. Because the government approved EIA did not contain sufficient information to satisfy a World Bank EIA for a Category A project, UE engaged the services of an independent consultant to prepare an EIA Supplement. The government approved EIA, taken together with the EIA Supplement, constituted all the information required for a World Bank 'Category A' EA document. The EIA Supplement covered the following aspects not included in the Uzbek approved EIA: (i) an Executive Summary; (ii) a description of Uzbek environment policy, legal, and administrative framework; (iii) a due diligence review of the environmental performance of the existing Talimarjan TPP (connected project); (iii) an analysis of alternative transmission line routes; and (iv) an Environmental Management Plan (EMP). The Avian Risk Assessment (ARA) provides mitigating recommendations which were incorporated into the EMP Section of the EIA Supplement prepared by the independent consultant.

67. The Borrower held two public consultations to discuss TORs for the EIA Supplement and two public consultations to discuss the draft EIA Supplement. A first round of public consultations to discuss the TORs of the EIA Supplement was conducted by the independent consultant on July 1, 2010 in Kashkadrya Oblast and on July 2, 2010, in Samarkand Oblast. A

second round of public consultations to discuss the EIA Supplement was conducted by the independent consultant on July 27, 2010 in Samarkand Province and on July 28, 2010 in Kashkadarya Province. All the environmental impact assessment documents, viz. EIA, EIA Supplement, ARA and an Executive Summary have been disclosed in Uzbek, Russian and English language in Uzbekistan (UE website) and the Bank's InfoShop.

68. There are no significant environmental issues during construction of the open switch-yard and the transmission line other than the normal issues associated with the movement of men, machines, and materials (e.g. dust, noise and disposal of construction wastes, worker health and safety etc.). 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 are 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 comprises agricultural areas but no sites with rare plant species.

Annex 1: Results Framework and Monitoring

Results Framework

Project Development Objective (PDO): To improve the reliability of electricity supply to residential and business consumers in South-Western Uzbekistan.

PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
Indicator One: Reduced number/ duration of electricity outages in the project area	☐	hours per year	92	92	92	92	92	48	Annually	UE reports on implementation progress	UE	Progress in reduction number/ duration of electricity outages
Indicator Two: Increased electricity supplied to consumers in South-Western part of Uzbekistan;	☐	GWh/ annum	16,333	16,333	16,333	16,333	16,333	22,200	Annually	UE reports on implementation progress	UE	Progress with increasing power supply in project area
Indicator Three: Reduced voltage variation **range**	☐	%	10	10	10	10	10	5	Annually	UE reports on implementation progress	UE	Improvement of the quality of electricity supplied
INTERMEDIATE RESULTS												
Intermediate Result (Component One):												
Intermediate Result indicator One: Concluded contracts for long time delivery items		No of contracts	0	0	2	2	2	2	Annually	UE Copies of the contracts	UE	Progress of contracts concluded
Intermediate Result indicator Two: Construction of 500 k V Open Switch Yard (OSY)	☐	Unit	0	0	0	0	1	1	Annually	UE reports on implementation progress Commission Certificate	UE	No of OSY
Intermediate Result indicator Three: Commissioning of 500 kV OSY	☐	Unit	0	0	0	0	0	1	Annually	UE reports on implementation progress	UE	No of OSY

PDO Level Results Indicators*	Core	Unit of Measure	Baseline	Cumulative Target Values**					Frequency	Data Source/ Methodology	Responsibility for Data Collection	Description (indicator definition etc.)
				YR 1	YR 2	YR3	YR 4	YR5				
Intermediate Result indicator Four: New constructed 500 kV transmission line	☐	Km	0	0	0	0	50	220	Annually	UE reports on implementation progress	UE	No of km of new line constructed and ready to energized
Intermediate Result (Component Two):												
Intermediate Result indicator One: Transition from GOST to IEC Standards	☐	No	0	0	2	5	5	5	Annually	SAESP	SAESP and UE	Technical Specification for five key equipment prepared according to IEC Standards
Intermediate Result indicator Two: Enhanced capacity of Internal Audit Departments'	☐					UE Internal Audit Reports (IAR) complying with IIAS	UE IAR complying with IIAS	UE IAR complying with IIAS	Annually	UE	UE	Internal audit reports generated complying with IIAS
Intermediate Result indicator Three: Identification of areas with wind power potential						Development of wind atlas for the country completed	Wind assessment study for 2 demonstration projects completed		Annually	UE reports on implementation progress	UE	Wind atlas development

***Please indicate whether the indicator is a Core Sector Indicator (see further http://coreindicators)**
****Target values should be entered for the years data will be available, not necessarily annually.**

Annex 2: Detailed Project Description

The main purpose of the project is to improve the reliability of the electricity supply to residential and business consumers in South-Western Uzbekistan. The benefits will accrue to residential and business consumers of electricity in South-Western regions of Uzbekistan (Samarkand, Kashkadarya, Navoyi and Bukhara regions) with total population of over 4 million people located in Samarkand-Bukhara energy hub.

The new 500 kV transmission line will help to increase the electricity supply to customers in the South-Western regions of Uzbekistan, reduce the technical losses in the transmission network, and increase the reliability of electricity supply. The project will enable supply more electricity to consumers in South-Western Uzbekistan from Talimarjan TPP and reduce the need to transmit electricity from far away generation units located in Northern Uzbekistan. Specifically, the project will enable supply to customers around 4.8 billion kWh/year of the electricity generated at the two new CCGT power plants at Talimarjan TPP, which are financed by the ADB and JICA and expected to be commissioned in 2014-15. Moreover, the construction of the new transmission line will help eliminate over loading of the existing 500 kV transmission line from Talimarjan TPP to Guzar substation. The proposed capacity of the new transmission line is also planned considering the need to evacuate the electricity generated at Syrdarya TPP in case Talimarjan TPP is not operating or vice-versa, which will help to increase the overall reliability of the electricity supply. The new 500 kV transmission line from Talimarjan TPP to Sogdiana sub-station will also be connected to 500 Guzar – Karakul transmission line.

The first unit of Talimarjan TPP with capacity 800 MW and 220 kV voltage open switchyard was commissioned in 2004. The plant regularly supplies 600 – 700 MW. However, due to the load growth in Samarkand-Bukhara region, the power shortfall is increasing every year. Presently, all capacity of the existing unit is consumed within the Samarkand- Bukhara energy hub.

In the recent years, several changes have taken place in the CAPS and some of these have adversely affected the South-Western region. Mary TPP (Turkmen electric power system) was disconnected from 500 /220 kV Karakul SS. Currently, 500/220 kV Karakul SS is connected to Syrdarya TPP. This causes the additional loading of 500 kV lines, increases the transmission losses and affects the stability of power supply to the region. The load flow study analysis indicates the necessity of increasing the generation capacity and expansion of 500 kV Grid for the reliable electric power supply to the South-Western region by 2014.

According to the feasibility studies on energy system development, the following strengthening of the electric power system has been identified:

Construction of 500 kV Open Switchyard (OSY) at Talimarjan TPP; and connection with 500 kV Karakul-Guzar power transmission line (PTL).

In case of disconnection (out of service) of the existing 800 MW units in Talimarjan TPP, the voltage level and frequency of the electricity system drops significantly. In summer 2006, the operational conditions of Samarkand- Bukhara energy hub were difficult to be maintained, due to the planned maintenance of Talimarjan TPP and emergency shutdown of Navoi TPP. Due to the lack of generation capacity in the hub, 500 kV voltages drop to 457.6 kV at Karakul substation (SS), 460.6 kV at Sogdiana SS, 459 kV at Guzar SS, 472.8 kV at Surkhan SS.

In case of a failure of the connection between Talimarjan TPP with Guzar SS, the evacuation of generated output is impossible; therefore, to provide reliable evacuation from the extended TPP, the construction of additional 500 kV PTL from Talimarjan TPP to the grid is essential.

To provide the power supply security to the grid, the transmission capacity of 500 kV TL Talimarjan TPP – Sogdiana SS is planned considering also the evacuation of Syrdarya power plant (10x300MW) generation to the grid in case of any outage occurs in TalimarjanTPP and vice versa.

The proposed project has two components:

Component 1: Strengthening power transmission network (estimated cost US$ 151.04)

This component consists of three sub-components; (a) the construction of 500 kV, about 220 km single circuit transmission line from Talimarjan TPP to Sogdiana substation; (b) the construction of a 500/220 kV new open switchyard at Talimarjan TPP; (c) construction of a bay extension at the Sogdiana substation; and (d) construction of a 500 kV connection line from the 500/220 kV open switch-yard at Talimarjan thermal power plant to the Karakul-Guzar transmission line.

Sub-component (a) 500 kV, about 220 km transmission line from Talimarjan TPP to Sogdiana substation.

The objective of this component is to provide adequate transmission system for reliable transfer of power to the South-Western area. In addition, this will help to maintain system stability and security of the combined grid under most operating conditions. Furthermore, this will increase the power transmission capacity of the Uzbekistan grid system.

Three routes were considered for the transmission lines. Alternative 1 route (218 km) was chosen due to lowest total costs (investment cost and the social and environment impact costs), which is mainly due to better topography of the selected line route. Alternative 2 (196 km), would have been a straighter and shorter route, but more than 30% of the line would have passed through mountains. It would have made it difficult to transport the line material and would also have increased the construction period and the costs. Similarly, alternative 3 (227 km) would run along the existing 500kV transmission line of Karakul-Guzar-SS Sogdiana, but more than 70% of the route would pass through mountains causing even longer construction period and higher cost.

The estimate of construction period takes into account conditions of the line route and the length of the line (tight terrain along the HV line, drilling and blasting operations on the construction of roads, sites and the stand foundation areas). The system construction period, in general, is scheduled over approximately 32 months with consideration of difficult construction conditions.

The project aims to ensure a reliable power evacuation from the Talimarjan TPP after commissioning of the two new 450 MW CCGT units each. This requires additional construction of high voltage power transmission line from Talimarjan TPP into the power

supply system due to the switching of 500 kV transmission line Talimarjan TPP - SS Guzar cannot evacuate the output power of extended Talimarjan TPP.

Without implementation of this project, the transmission system would impose constraints on generation from the new CCGT power plant.

Sub-component (b) and (c) 500/220 kV new open switchyard at Talimarjan TPP and a bay at the Sogdiana substation.

When the extension of two CCGT units, 800 MW, capacity is put in to operation and commissioned at Talimarjan TPP, it will be essential to provide power evacuation from the power plant to the grid. To ensure this, it is necessary to build a 500 kV Open (outdoor) Switchyard.
The construction of 500 kV power transmission line (PTL) from Talimarjan TPP to Sogdiana substation and new outdoor switchyard (OSY) at Talimarjan TPP and a bay extension at Sogdiana substation intends to:

- enhance the stability of the power system,
- remove the constraints on power delivery into the Samarkand-and-Bukhara energy hub,
- reduce the transmission losses;
- help to meet the current peak shortages in the Uzbek power system.

SAESP prepared preliminary feasibility study (pre-FS) for the construction of 500 kV transmission line, Talimarjan TPP to Sogdiana SS, and outdoor switchyard Talimarjan TPP. The detailed project components are defined in pre-FS. The 220kV and 500kV bus bars are connected through one autotransformer group. The group consists of four autotransformers with 167mVA (three operating and one reserved). Coupling autotransformers are installed at the 500kV OSY. . In addition, Design Institute reviewed 500 kV grid operation system in minimal load of transmission lines and analyzed to determine the quantity, location and connection scheme of shunt reactors.

It is planned to install 3 single phase 500/220 kV, 167 MVA auto- transformers with a back-up auto transformer; and six shunt reactors at 500 kV line from Sogdiana to Talimarjan at TPP side and three reactors at Sogdiana end.

The Bank will finance the main elements, which are transformers, reactors, power equipment, large size of metal roll and hardware for tower construction, relay protection equipment, materials for the line (conductor, OPGW, insulator) of the transmission line and open switchyard by international competitive bidding process. Locally available concrete products (for foundation) are proposed to be financed by UE's own sources. In addition, the construction and erection of 500/220 kV open switchyard and the installation of 500 kV single circuit high voltage transmission line will be financed by UE and done by the general contractor, which is very experienced on high voltage system construction in Uzbekistan.

Sub-component (d) 500 kV short transmission connection of Karakul-Guzar line with the new open switchyard.

A connection with the nearby 500kV Karakul to Guzar line with the new 500/220 kV OSY at Talimarjan is envisaged to provide redundancy in the transmission system to account for possible failures /maintenance in any of the transmission lines in this region. This 500 kV connection would also help improve the flows to the South-Western region, even in the absence of new generating units being installed.

Component 2: Institutional strengthening by providing technical assistance (TA) to build Uzbekenergo capacity (estimated cost US$ 10.00 million). This component will support:

(a) Strengthening the Project Implementing Entity's and its subsidiaries' technical and fiduciary capacity; and

(b) Strengthening the Project Implementing Entity's capacity for Project management, monitoring, reporting and evaluation, including procurement, financial management and disbursement activities and carrying out the Project and the Project Implementing Entity audit.

Further details are provided below:

(a) Strengthening the Project Implementing Entity's and its subsidiaries' technical and fiduciary capacity

i) Strengthen the fiduciary capacity of UE (estimated cost USD 0.8 mln)

This activity will cover strengthening of the internal audit capacity of UE and its subsidiaries and improve internal control, transparency and disclosure of financial information in line with international standards. It will support UE to develop internal audit procedures, establish an internal audit unit directly reporting to the board and capable of designing audit plans, conduct audits and prepare internal audit reports complying with International Internal Audit Standards.

ADB has allocated resources for strengthening the capacity of UE in corporate governance and reporting, internal control and enterprise risk management within TA component of Talimarjan TPP expansion project. The sub-component will leverage the support provided by the ADB in building capacity for accounting, reporting and internal control, including internal audit.

ii) Strengthen the technical capacity of UE (estimated cost USD 2.5 mln)

The technical capacity building sub-component will support acquisition of GIS software, software for transmission network system design, planning, financial and economic analysis; adoption of IEC technical standards for transmission lines and switchyard/substation equipment, and training.

A technical study tour will be organized to familiarize UE team with the implementation of such practices on the ground.

iii) Assessment of the renewable energy development potential (estimated cost USD 1 mln)

This activity aims to support the borrower in assessment of wind power potential and designing an institutional framework for its further development. It would include carrying out an inventory of the winds; wind atlas development and definition of two demonstration areas for further detailed study; detailed measurements of wind speed and air density in two demonstration areas.

iv) Monitoring and management of avian risk during the project design, implementation and operation (estimated cost USD 0.5 mln)

The capacity building of UE is envisaged to undertake both the preconstruction and post construction monitoring. During post construction mortality monitoring, instructions and training will be provided in developing standardized approaches for collision and electrocution monitoring of transmission lines and towers. If the results of post construction monitoring recommend additional avian risk mitigation, then the data collected needs to be comparable and corrected for the monitoring biases that exist in avian mortality monitoring (e.g., scavenger removal, searcher efficiency, habitat, and other potential biases).

An international avian risk assessment expert would help develop and implement this capacity building training. Specific details for this capacity building will be developed by the international avian risk assessment expert in consultation with UE and World Bank environmental specialists in the initial phase of project implementation.

(b) Strengthening the Project Implementing Entity's capacity for Project management, monitoring, reporting and evaluation, including procurement, financial management and disbursement activities and carrying out the Project and the Project Implementing Entity audit.

(i) Project Implementation Support Consultant (estimated cost USD 2 mln)

UE is planning to procure the required equipment and services to implement the project through multi package procurement and using local construction organization. The coordination of several agencies is a challenging job. In order to smoothly implement the 500 kV PTL Talimarjan TPP - Sogdiana Substation and 500/220 kV Open Switchyard at Talimarjan TPP, Uzbekenergo will procure a relevant experienced short-listed International Engineering Consulting firm for the third party quality control to undertake the supervision and the management of the project; and to support PMU in supervision and monitoring of the project including providing support on the Bank's procurement rules and procedures during the bidding periods for the equipment and materials. The following preliminary scope for the consultancy services is provided to UE:

B**efore the construction period:** The consultant will advise and assist Uzbekenergo during the procurement process of the equipment and provide on-the-job-training for the PMU staff in preparation of the reports and other documents requested by the Bank.

Construction phase and post construction period: The consultant will assist UE in supervising the works being executed by the selected contractors and suppliers for the different project packages under the two sub-components.

ii) Project and UE financial audits (USD 3.2 mln) to help UE and its subsidiaries to migrate progressively to financial audits in accordance with internationally accepted auditing standards during the project life.

Annex 3: Implementation Arrangements

The Board of UE will have the overall responsibility for implementing the project and monitoring the outcomes. UE will provide regular reports on intermediate outcome indicators. Monitoring and evaluation of the project will involve: (a) semi-annual progress reports; (b) quarterly compliance certificates by general contractor; and (c) a midterm review of implementation and outcome progress; UE will have the full responsibility for project implementation. The project preparation and implementation activities will be carried out by the Project Management Unit (PMU) established under the State Joint Stock Company Uzbekenergo. The PMU shall implement the project(s) financed by IBRD and as well by the ADB/JICA. The PMU is planned to be staffed by 23 people including the Director and various specialists, interpreters, engineers, environmental, procurement, financial management specialists, etc. The PMU will be assisted by the Project Implementation Consultancy Company to be hired under the project.

A draft Project Operational Manual (POM) has been prepared by the PMU, and describes the procedures and responsibilities for project implementation activities, data collection and reporting. The PMU is supported by the SAESP and Uzelectroset (high voltage grid operator) for the technical issues.

Financial Management

According to the findings of the Country Integrated Fiduciary Assessment report for Uzbekistan and UZ Accounting & Auditing ROSC report the capacity in the accounting profession in the country is still low as there is no critical mass of professionally qualified accountants. Knowledge of internationally recognized accounting and auditing standards, such as IFRS, IPSAS, ISA, is limited, in both the public and private sectors. As such the UE does not have any accountants with internationally recognized accounting qualifications. However, the accountants are quite knowledgeable about National Accounting Standards that, in most cases, are based on international standards.

Most Bank-financed projects in the country are implemented through stand-alone project implementing agencies that install parallel accounting systems to those used in the respective line ministries. Audit of Bank-financed projects in the country has been performed by private sector firms that meet the Bank's eligibility criteria. In 2009 the Bank conducted a review of local audit firms to determine their capacity to audit Bank-financed projects, and only one firm was qualified for entity audits such as would be required under the project.

The PMU established by UE will be responsible for implementation of the financial management (FM) function of the project including the flow of funds, budgeting, accounting, reporting, and auditing. However, all payments made from IBRD funds will be approved by the UE Chairman and verified by the UE Chief Accountant. The FM arrangements of the PMU have been reviewed and it was established that the PMU's financial management capacity needs to be enhanced. UE has assigned its own accounting staff to maintain financial management system of the project. However, as UE does not have prior experience in implementation of Bank financed projects the accounting system does not fully meet the requirements for Bank-financed projects. The accounting staff assigned to the PMU lacks knowledge of FM and disbursement procedures related to WB financed projects. A draft POM

has been developed, describing procedures for budgeting, accounting, reporting, internal control and audit.

The following Action Plan has been agreed to be implemented to strengthen the financial management capacity of PMU. Satisfactory implementation of the action will ensure existence of satisfactory financial management arrangements that meet Bank requirements:

Action Plan

Actions for capacity building	Responsible	Completion Date
1. Install automated accounting system that will be utilized by the PMU for project accounting, budgeting and reporting. The accounting system shall have functionality of automatic generation of reports for Uzbekenergo as well as SOEs and IFRs for the Project, and with inbuilt controls to ensure data security, integrity and reliability.	UE	By Effectiveness
2. Organize training on the WB FM and disbursement policies and procedures for the PMU FM staff	UE and the World Bank	By October 31, 2011
3. POM finalized and adopted by management of the implementing agency (UE)	UE	By Effectiveness

The overall residual FM risk of the Project is Substantial.

Budgeting and Planning: The annual budget of the project will be based on the final procurement plan that is to be discussed and agreed with the PMU Director, and approved by the World Bank. All changes to the procurement plan will be reviewed by the PMU director and approved by the World Bank. The director, the financial manager and the procurement specialist will be involved in the preparation of the annual budget. The Financial Manager will take overall responsibility for the compilation of the budget, its approval and entry into the accounting system. The final plans and budget shall be submitted to the Uzbekenergo for approval.

Accounting and maintaining of accounting records: The project accounting will be maintained on the cash basis. For reporting purposes, cash basis and World Bank guidelines for investment projects will be used under the project. The Financial Management Chapter of the POM which was elaborated by a Consultant properly reflects accounting policies and procedures applicable to the Project. The PMU will utilize 1- C accounting system specially designed to meet the WB financed projects requirements including ability to generate IFRs, withdrawal applications, statement of expenditures (SOEs), annual financial statements, etc. Accounts/records for the proposed Project will be maintained by the PMU in the same 1-C accounting system. The system shall have the safeguards against the input of inaccurate data using appropriate security profiles. In addition, regular back up of the accounting data shall be made by the accounting staff. The accounting system at the PMU will be linked with accounting software at Talimarjan GES.

The Project's financial management function will be the responsibility of the Financial Manager of the PMU, assisted by the Disbursement Specialist and Chief Accountant. UE has already recruited full time Chief Accountant and Disbursement Specialist, but they do not have prior work experience on projects financed by the World Bank and will be trained accordingly. The assigned FM staff gained some understanding of the FM issues applicable to the Project as they participated in the workshop conducted by the WB specialists during the Project launch of the Energy Efficiency Project for Uzbekistan.

Internal controls: For the purposes of the current project sound internal control system will be maintained and all expenditures will be authorized by the PMU Director and verified for the eligibility and accuracy by the Financial Manager. Project related payments made from the Loan funds will be approved by the UE Chairman and verified by the UE Chief Accountant, while payments from own funds will be approved by the PMU Director.

Project related specific internal control activities have been described in the Financial Management Chapter of the POM including: procedures over cash transactions including maximum allowed daily cash operations, expenditure authorization, invoices approval and payments processing procedures; data back-up arrangements; reconciliation procedures of project records with Client Connection, safeguards of assets, including cash. This section of the POM also reflects the policies and procedures that clearly define conflict of interest and related party transactions (real and apparent) and provides safeguards to protect the organization from associated risks. The bank account reconciliation will be prepared by the disbursement specialist and reviewed and approved by the Financial Manager. Project related transactions will be recorded by the PMU chief accountant.

Financial Reporting: Project management-oriented Interim Un-audited Financial Reports (IFRs) will be prepared under the Project. The PMU will produce a full set of IFRs every three months throughout the life of the project to minimize the financial reporting risk. The format of IFRs has been agreed during the assessment, and includes: (a) Project Sources and Uses of Funds, (b) Uses of Funds by Expenditure Type, (c) Designated Account Statements, and (d) SOE Withdrawal Schedule. IFRs will be produced by the accounting software, and will be submitted to Bank within 45 days of the end of each quarter.

External audit: For each operation supported by a Bank loan, the Bank requires the borrower to maintain financial management arrangements that are acceptable to the Bank and that, as part of the overall arrangements that the borrower has in place for implementing the operation, provide assurance that the proceeds of the loan are used for the purposes for which the loan was granted.

Local audit firms carry out regular audits of the unconsolidated financial statements of UE and its subsidiaries as required by the Uzbekistan Law. Unqualified audit opinion on the UE financial statements have been issued for the past three years. However, these local audit firms are not in the list of audit firms that are eligible to conduct audit of Bank-financed projects and are, therefore, not considered acceptable to the Bank for the audit of the project and entity financial statements required under this project.

It has been agreed that the project and entity (i.e. UE) audits will be conducted (i) by independent private auditors acceptable to the World Bank, on terms of reference (TOR) acceptable to the World Bank; and (ii) according to the International Standards on Auditing

(ISA) issued by the International Auditing and Assurance Standards Board of the International Federation of Accountants (IFAC). The TORs will include activities involving (a) audits of financial statements, (b) assessments of the accounting system and (c) a review of the internal control mechanisms. The annual audited project entity financial statements together with the management letter will be provided to the World Bank within six months of the end of each fiscal year and also at the closing of the project.

The following table lists the audit reports to be prepared by the project implementation agency and their due date for submission to the World Bank:

List of the audit reports

Audit Report	Due Date
Continuing entity's financial statements	Within 6 months of the end of each fiscal year and also at the close of the project
Project Financial Statements (PFS) The PFS include Project Balance Sheet, Sources and Uses of Funds, Uses of Funds by Expenditure type SOE Withdrawal Schedule, Designated Account Statement, Notes to the financial statements, and Reconciliation Statement.	Within 6 months of the end of each fiscal year and also at the closing of the project

The audited financial statements will be publicly disclosed in a manner acceptable to the Bank and, following the Bank's formal receipt of these statements from the borrower, the Bank makes them available to the public in accordance with The World Bank Policy on Access to Information.

Flow of funds and disbursement arrangements

Disbursements from the IBRD Loan Account will follow the transaction-based method, i.e., traditional Bank procedures: including Advances to the Designated Account (established in a bank acceptable to the World Bank), Direct Payments, Special Commitments and Reimbursement (with full documentation and against Statements of Expenditures (SOEs). For payments above the minimum application size, as specified in the disbursement letter, PMU will submit withdrawal applications to the Bank for payments to suppliers and consultants directly from the Loan Account.

Retroactive financing up to $ 15 million will be available for eligible expenditure on goods and services, needed for the project implementation, which are contracted in accordance with the Bank procurement guidelines, incurred after March 1, 2011 before the date of signing of Loan Agreement.

Supporting documentation should be provided against payments to contracts for works and goods exceeding US$500,000, US$100,000 for contracts with consulting firms and US$50,000 for individual consultant services contracts. Disbursements below these thresholds will be made according to certified SOEs. Full documentation in support of SOEs would be retained by PMU for at least two years after the Bank has received the audit report for the fiscal year in which the last withdrawal from the Loan Account was made. This information will be made available for review during supervision by Bank staff and for annual audits which will be required to

specifically comment on the propriety of SOE disbursements and the quality of the associated record-keeping.

Counterpart funding contribution will be provided by the UE itself and will be managed by the Talimarjan GES.

Procurement

Procurement for the Project will be carried out in accordance with the World Bank's "Guidelines: Procurement under IBRD Loans and IDA Credits" published May 2004 and revised in October 2006 and May 2010 (Procurement Guidelines); and "Guidelines: Selection and Employment of Consultants by World Bank Borrowers" published May 2004 and revised in October 2006 and May 2010 (Consultant Guidelines) and the provisions stipulated in the Loan Agreement. The various procurement actions under different kinds of procurement are described in general below. For each contract to be financed under the project, the various procurement or consultant selection methods, the need for pre-qualification, estimated costs, prior review requirements, and time frame have been agreed between the Borrower and the Bank in the Procurement Plan (PP). The PP (Annex 8) will be updated at least annually or as required to reflect the actual project implementation needs and improvements in institutional capacity. A General Procurement Notice (GPN) was published on July 20, 2010 in UNDB on-line and in its printed version as well as in dgMarket online. Specific Procurement Notices (SPN) will be published for all ICB procurement and Consulting contracts as per Guidelines as the corresponding bidding documents and RFPs become ready and available.

The bidding document for the first package, which is the longest delivery item, 'Autotransformers and reactors' (BD1) has been prepared by PMU and cleared by the Bank on October 4, 2010. The SPN was issued on October 22, 2010. The pre-bid conference on this package took place on November 5, 2010. The date of bid opening was December 20, 2010. The short list of consulting firms has been selected based on expressions of interest; and the RfP (QCBS-1), has been issued on November 29, 2010. Bidding document for second package has been prepared, which is under the review by the Bank team.

The Tender Committee has been established on October 20, 2010.

Assessment of the Agency's capacity to implement procurement

A Country Procurement Assessment Report (CPAR) was prepared in February 2003. Country Integrated Fiduciary Assessment (CIFA) was conducted early 2010. An assessment of the implementing agency's capacity to implement project procurement has been conducted by the Bank during the pre-appraisal mission and completed on October 29, 2010.

Procurement risk assessment

The risks were reviewed and the following procurement risks were identified and are summarized as per the table below.

Summary Risk Assessment

Description of risk	*Rating*[a] *of risk*	*Mitigation measures*	*Rating*[a] *of residual risk*
Contract registration requirements are arduous and take long time which may seriously impact timeliness of procurement and project implementation	S	The Bank team would work with the PMU and the responsible government agencies especially MFERIT, to reduce the steps and time needed for the contract registration	S
Staff of implementing agency has no experience in implementing the Bank-financed projects, thus lack knowledge of the Bank's procurement procedures	S	PMU staff and some members of the evaluation committee have been provided basic procurement training. Similar trainings are envisaged in the future. UE has started procurement process for two supply packages and one Consultancy package, following the Bank procurement guidelines with help from the Bank team. This exposure and working with other lenders, e.g. EBRD, IsDB and ADB is progressively raising UE capacity to implement international competitive procurement guidelines and procedures of the World Bank. The Bank team will work to provide such training opportunities and technical advice. Also the Implementation Consultants to be hired shall support the UE on the procurement issues.	M
There is risk that the government officials may influence the procurement decisions under the project	S	The POM shall clearly define the responsibilities of the project stockholders in the procurement process. Roles and responsibilities of the Tender committee, Evaluation Committee and the PMU shall be clearly defined there. The Bank's procurement procedures shall be followed strictly. Complaint system shall be in place.	M
Average	S		M

H: High; S: Substantial; M: Moderate and L: Low

Procurement implementation and arrangements

Procurement activities will be carried out by the Project Management Unit (PMU). At least two members of the PMU should have expertise on procurement. Five staff of UE, including PMU managers and procurement consultant, were trained to apply the Bank's guideline on procurement mentioned above and further trainings are envisaged.

The Bank's ICB SBD, SRFP documents will be used. Domestic preference in accordance with clause 2.55 and Appendix 2 of the guidelines will apply to goods contracts.

The Tender Committee has been established according to order of the Prime Minister dated October 20, 2010. It consists of 15 members, including the Chairperson, Mr. Ganiev, Minister, Ministry of Foreign Economic Relations, Investment and Trade (MFERIT), and deputy ministers and heads of departments of the Cabinet of Ministers (COM), Ministry of Economy (MOE), Ministry of Finance (MOF), etc. The Tender Committee would designate Evaluation Committee (EC) for certain procurement packages and would endorse the EC's reports and proposed decisions. The PMU and the procurement expert of the Project Implementation Consultant shell provide technical assistance to the evaluation committee

Procurement of Works: Although works contracts will be financed mainly by UE certain works would be also financed out of the loan. The implementation support consulting company will assist the PMU in supervision of civil, installation and commission works.

Procurement of Goods: Goods contracts to be procured under this project will include autotransformers and reactors, power equipment, metal-roll and hardware, concrete products, materials and items for line 500kV, relay protection equipment, technological and low voltage equipment.

Selection of Consultants: Consultants' services contracts to be procured under this project will include project implementation consultant, capacity building of UE to strengthen the fiduciary and technical capacity, technical assistance to UE in elaboration the renewable energy development program.

The loan proceeds shall also cover the cost for hiring independent consultants for the financial auditing of UE and the project expenditures, annually.

Technical issues as part of procurement decisions: Talimarjan TTP, PMU, SJSC Uzbekenergo will be responsible for developing related technical specifications and TORs in collaboration with the relevant staff of SAESP and Uzelectoset, countrywide HV Grid Operating Company .

Filing and records keeping: The Project Management Unit (PMU) will be responsible for filing and records keeping. The records have to be kept up to five years after the project completion.

Procurement Plan: The Talimarjan PMU, SJSC Uzbekenergo developed Procurement Plan (PP) for the entire project scope consistent with the implementation plan, which provides information on procurement packages, methods and Bank review method. The Procurement

Plan agreed between UE (latest update dated January 28, 2011 and attached to the PAD, Annex 8) and the Project Team is available at UEPMU and is published in the Bank's website by The Procurement Plan will be updated in agreement with the Project Team to reflect the actual project implementation needs and improvements in the implementing agency's institutional capacity, etc.

Frequency of Procurement Supervision

There is currently no post review package envisaged under the Bank financing. In case such packages are identified, at least 20 percent of these contracts shall be subject to post review. It is planned that a supervision mission in the field will be conducted every six months during which post reviews will be conducted. As a minimum one post review report which will include physical inspection of sample contracts including those subject to prior review will be prepared each year. All the main contracts will be physically inspected on a sample basis.

Environmental and Social

An Environmental Management Plan (EMP) acceptable to the Bank has been prepared as part of the EIA Supplement and Uzbekenergo has agreed to implement the EMP.

The EMP includes mitigation measures to reduce avian risk for collision with and electrocution by the OHTL project component. The avian risk assessment was a desk study based upon existing literature. However, the avian risk management plan includes a field based monitoring program during the migratory season prior to construction of the OHTL and additional monitoring of avian collisions/electrocutions after the OHTL is energized. Uzbekenergo has agreed to: (a) implement both monitoring programs and (b) implement any additional avian risk mitigating measures if the field monitoring programs indicate further actions are required.

The EMP includes comprehensive monitoring plans for both the OSY and the OHTL components during construction and operation phases. The EMP also includes a detailed description of institutional responsibilities for monitoring and reporting.

No environmental risks in addition to those described and discussed above are foreseen.

UE prepared a resettlement action plan (RAP) to comply with OP 4.12. The PMU assigned a staff member who will be dedicated to ensuring that the RAP is implemented as designed, that all grievance procedures are in place, and that a consultant is hired after implementation to ensure that all affected parties received their compensation in accordance with the RAP. The Bank supervision missions will include a social development specialist to ensure that the RAP procedures are being implemented as planned and that the affected parties have received compensation prior to any construction activities.

Some of the main concerns expressed by residents about the electricity supply include: (a) frequent voltage changes in the power lines damage electric equipment resulting in the need to replace them; (b) family members suffering from vision impairment due to poor lighting; (c) school children unable to use their computers and other educational technology to complete their homework; (d) school children not having sufficient lighting to complete their homework; (e) family members unable to watch television news, (f) poor hygiene due to family members' inability to use sanitary facilities due to lack of heating or hot water; (g) households spending increasing amounts on candles and flashlights, (h) families having increased costs for important

ceremonies such as weddings because they must celebrate these events at restaurants that have their own power generators; (i) residents' increasing vulnerability to robbery and other threats to personal security due to the lack of street lighting; (j) family members' increased health problems due to the inability to keep some medicines cold; and (i) the general increase in the incidence of accidents and depression.

An analysis of gender issues revealed that women, who are the main users of electricity in the 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 for obtaining local and international news and information. In light of these considerations, women will clearly benefit from a 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 proposed project, will include measures to promote gender equality and women's 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.

During the early stage of implementation, UE will hire an independent social science research firm or consultant to carry out a social survey to obtain input from consumers on the performance of their electricity system (for example, general satisfaction with the power supply, number of hours of outage per day and per week), and the number of days per month when they experience power outages.

As noted in the section on social issues, this project is associated with two related investments (ADB-financed Talimarjan Power Station 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 is not expected to result in major changes in the tariff structure.

Annex 4: Operational Risk Assessment Framework (ORAF)

Negotiations and Board Package Version

Project Development Objective(s)	
To improve the reliability of electricity supply to residential and business consumers in South -Western Uzbekistan.	
PDO Level Results Indicators:	• Reduction in the number/duration of electricity outages in the project area ;
	• Increased electricity supplied to consumers in South-Western part of Uzbekistan (in GWh/year);
	• Reduction of voltage variations range.

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures
Project Stakeholder Risks	Medium- L	The stakeholders may consider alternative sources to finance the project The risk is that a sharp increase of the exported power will reduce the availability of electricity to domestic market	Continued engagement and awareness of sensitive issues by the country team, advocacy and in-depth consultations. 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.
Implementing Agency Risks (including FM & PR Risks)	Medium-I	There are risks of non-compliance with Bank procedures and requirements, and possible delays in project implementation due to the fact that UE has no prior experience with World Bank financed projects.	Training of the UE staff on fiduciary aspects was provided to UE staff during 2010. Additional support will be provided by the Implementation Support Consultancy Company, as well as under the Technical Assistance to improve the FM capacity. The POM includes the procedures to be followed during project implementation.
Project Risks			
Design	Low	The risk that the approved design will not meet the technical standards.	The Implementation Support Consultancy Company to be hired under the project will assist UE for the project implementation

Risk Category	Risk Rating	Risk Description	Proposed Mitigation Measures
Social & Environmental	Medium-I	Higher than average bird loss due to collision/electrocution interaction with the transmission lines. The compensation for the losses of the leasehold farmers .not in compliance with OP4.12 The low income population may not afford the increased tariff (needed to cover the cost of investments)	Mitigation measures proposed are included in the EMP of the Supplemental EIA Field based migration monitoring program to be started during migration season next spring, and during the project implementation. Hot spots for the migratory bird to be identified, The PMU will include a staff member who will be responsible for RAP implementation. The 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.
Program & Donor	Low	The Talimarjan Clean Power project, which is funded by ADB and JICA is at risk if the delays on the implementation of the transmission project will occur.	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-up 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
Delivery Quality	Medium-L	Financial sustainability of the project would be secured by inclusion of the power transmission infrastructure investment costs and adequate level of Operation and Maintenance (O&M) 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.	The assessment of the financial viability of Uzbekenergo will be performed during the project implementation by the Bank team. Financial audit will be undertaken by an auditing company annually.

Overall Risk Rating at Preparation	Overall Risk Rating During Implementation	Comments
Medium- L	Medium-I	

Low: Low Impact/ Low Likelihood; Medium-L: Low Impact/ High Likelihood; Medium-I: High Impact/ Low Likelihood; High: High Impact/ High Likelihood

Annex 5: Implementation Support Plan

The proposed project is the first significant engagement with GoU on power sector and is the first IBRD project in the current CAS. The implementing agency Uzbek Energo (UE) has borrowed money from other IFIs, Asian Development Bank, Islamic Development Bank and JICA in the past, but being the first project with the World Bank, there is a steep learning curve for both institutions, the World Bank and UE. UE management is committed to catch up quickly with the good/ best international practices in collaboration with the World Bank on various areas like International Procurement, Environment and Social management, project planning and implementation, Financial Management etc. The Bank on its part is committed to work with UE and GoU on smoother transition to these practices. GoU and UE agreed to the Banks suggestion, to start procurement activities much in advance of the loan approval, which is the first time for such projects in Uzbekistan.

Strategy and approach for implementation support: The implementation support strategy was developed considering the risks and mitigation measures identified in the ORAF and targets provision of flexible and efficient implementation support to the client. The task team will provide the following detailed inputs to support project implementation:

- **Technical inputs**: Power engineer will help UE to review the technical specifications of the contract bid documents for supply of power equipment, autotransformers and reactors, relay protection equipment, technological and low voltage equipment as well as the materials and items for the 500 kV PTL.

- **Procurement:** The procurement related implementation support will include: (a) timely advice from the country office based procurement officer and regional procurement manager office, if necessary, on various procurement related issues and guidance on the Bank's Procurement Guidelines; (b) monitoring of procurement progress against the procurement plan.

- **Financial management**: An accredited Financial Management Specialist will participate in the provision of implementation support as well as in the supervision of the operation. With regard to the implementation support of the operation, the Bank will conduct risk-based financial management supervisions, initially after every six months and later at appropriate intervals based on assessed risk. During project implementation, the Bank will supervise the Project's financial management arrangements in the following ways: (a) review the project's quarterly interim financial reports as well as the annual audited financial statements and auditor's report and remedial actions recommended in the auditor's management letters; and (b) during the Bank's on-site supervision missions, review the following key areas: project accounting and internal control systems; budgeting and financial planning arrangements; and disbursement management and financial flows, as applicable.

- **Environmental and social safeguards**: The Bank's environmental and social specialists will provide regular support in tackling safeguards related issues during the project implementation and will closely monitor implementation of the agreed EMP. The Bank's safeguards specialist will regularly supervise the implementation of the RAP and

the bird migration monitoring program during the migration season and provide needed advice.

- **Operation**: The operations officer for the project is based in the country office and will conduct daily supervision of the project and coordinate with the client and other project team members to provide timely guidance and support to the client.

Staff and Time for project implementation

Time	Focus	Skills Needed	Resource Estimate
First twelve months	Technical review of the bidding documents for sub-station	Power engineer	5 SWs
	Procurement review of the bidding documents	Procurement specialist	4 SWs
	FM supervision	Financial management specialist	3SWs
	Environmental supervision	Environmental specialist	3 SWs
	Social supervision	Social development specialist	3 SWs
	Support with project supervision coordination	Operations officer	6 SWs
	Review of the financial performance of UE	Infrastructure Economist/Financial Analyst	2 SWs
	Task management	Operations officer	8 SWs
12-48 months	Technical advice from the power engineer	Power engineer	8 SWs
	Procurement review of the bidding documents under the TA component	Procurement specialist	6 SWs
	Environmental supervision	Environmental specialist	4 SWs
	Social supervision	Social development specialist	4 SWs
	Financial management	Financial management specialist	4 SWs
	Support with project coordination and economic/financial analysis inputs	Operations officer	18 SWs
	Review of the annual financial performance of UE	Infrastructure economist/Financial analyst	4 SWs
	Task management	Operations officer	20 SWs

Skills Mix Required

Skills Needed	Number of Staff Weeks	Number of Trips	Comments
Task team leader	28	Field trips as required	HQ /Field based
Operations officer	24	Field trips as required	Country office based
Power engineer	13	Field trips as required	HQ /Field based
Infrastructure economist/Financial analyst	6	Field trips as required	Region-based
Environmental specialist	7	Four	HQ/Field based
Social specialist	7	Four	HQ /Field based
Procurement specialist	10	Field trips as required	Region-based
Financial management specialist	7	Field trips as required	Region-based

Annex 6: Team Composition

World Bank staff and consultants who worked on the project:

Name	**Title**	**Unit**
Doina Visa	Sr. Operations Officer/Team Leader	ECSS2
Sunil Kumar Khosla	Sr. Energy Specialist/ Program Team Leader, Central Asia	ECSS2
Fasliddin Rakhimov	Procurement Specialist	ECSC2
Franz Gerner	Sr. Energy Economist	ECSS2
Iskander Buranov	Operations Officer	ECSS2
Bernard Baratz	Consultant (Environment)	ECAVP
Janis D. Bernstein	Sr. Social Development Specialist	ECSS4
Ghada Youness	Sr. Counsel	LEGEM
Nikolai Soubbotin	Sr. Counsel	LEGEM
Joseph Formoso	Sr. Finance Officer, CTRFC	CTRFC
Galina Alagardova	Financial Management Specialist	ECSC3
Arthur Kochnakyan	ET Consultant	ECSS2
Elena Klementyeva	Program Assistant	ECCUZ
Alexandra Onofrei	Program Assistant	ECCRO
Josephine A. Kida	Program Assistant	ECSSD
Yukari Tsuchiya	Program Assistant	ECSSD
Nadia Badea	Operation Analyst	ECSSD
Gulgoren Cansiz	Consultant (Technical)	AFTEG
Christopher Rytel	Consultant (Technical)	SASDE

Annex 7: Economic and Financial Appraisal

The Annex provides details of the economic and financial appraisal of the proposed project and the analysis of the current as well as the projected financial performance of UE.

Key assumptions: The economic and financial appraisal of the project relies on the following key assumptions:

Table 1: Key assumption of economic and financial appraisal

Estimated average annual UZS/US$ exchange rate	1,631	Source: Bank team estimate
Estimated average end-user tariff in 2011	UZS 68/kWh	Source: Bank team estimate
Estimated annual tariff growth rate	8%	Source: Bank team estimate[5]
Estimated long-run marginal cost of generation	UZS 53/kWh	Source: Bank team estimate
Annual technical losses w/o project	305,002,092 kWh	Source: UE, "Sredazenergosetproekt" Design Institute
Annual technical losses w/ project	223,982,496 kWh	Source: UE, "Sredazenergosetproekt" Design Institute
Estimated annual growth of technical losses w/o project	1.0%	Source: Bank team estimate
Estimated annual growth of technical losses w/ project	0.1%	Source: Bank team estimate
Incremental O&M costs	1.5%	Source: Bank team estimate based on similar projects
Estimated annual outages in Bukhara-Samarkand energy hub due to transmission network failures	92 hours	Source: UE
Estimated value of ENS per kWh	US$ 0.23/kWh	Source: Bank team estimate
Price of diesel fuel	US$ 0.8/L	Source: Bank team estimate
Estimated annual growth of ENS per kWh	6%	Source: Bank team estimate
VAT rate	20%	
Assessment period	25 years	
Discount rate	10%	

The economic and financial analysis was done only for the investment component of the project. Assessment of economic and financial viability was conducted through cost-benefit analysis. The economic costs and benefits of the project were calculated exclusive of taxes and subsidies (both explicit and implicit) and the assessment of the financial costs and benefits was done inclusive of taxes and subsidies.

Economic analysis: The main economic benefits of the project include: (a) increased power system reliability due to strengthening of the transmission network; (b) transmission loss reduction.

[5] 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.

The economic benefit of increased reliability of power transmission network was estimated by calculating the reduction in total economic cost of Energy-Not-Served (ENS) due to decrease in duration of power outages caused by transmission failures. According to the most recent data from UE, the electricity outages caused by transmission line failures amount to 92 hours per year. The net economic benefit of the ENS was estimated as the difference between the ENS in case of "without project" and "with project" scenarios. The ENS per kWh was estimated to equal the cost of back-up generation using quick-start diesel generators (estimated at US$ 0.23/kWh).

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$ 0.035) was calculated as the sum of the marginal generation cost of a thermal power plant plus the cost of transmission and distribution to deliver electricity to end-users in the Samarkand-Bukhara energy hub.

The main economic costs are the investments in construction of the new transmission line and sub-station as well as the incremental operation and maintenance (O&M) costs. The economic analysis of the project yielded NPV equal to USD 381.6 million and EIRR of 27.7 percent.

Sensitivity Analysis: The sensitivity analysis for the economic appraisal was conducted for three scenarios: (a) 20 percent increase in investment costs; (b) 20 percent decrease in total economic benefits and (c) simultaneous 20 percent increase of investment costs and 20 percent decrease of total economic benefits. The results of the sensitivity analysis suggest that under all of the above scenarios, the project remains economically viable. The impact of defined variation in the above parameters is presented in the table below.

Table 2: Sensitivity analysis for economic appraisal

	Base case	**+ 20% investment cost**	**- 20 % economic benefits**	**+ 20% investment cost and - 20% economic benefits**
NPV (million US$)	381.6	364.1	297.9	280.5
EIRR (%)	27.7	25.3	25.0	22.8

Financial analysis: The financial analysis of the project was carried out from the perspective of UE and, therefore, is limited to the incremental revenues and costs associated with the proposed transmission investments.

The main financial benefits of the project include: (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.

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 sub-station as well as the

incremental operation and maintenance (O&M) costs. The financial analysis of the project yielded NPV equal to USD 188.7 million and FIRR of 19.2 percent.

Sensitivity Analysis: The sensitivity analysis for financial appraisal was conducted for three scenarios: (a) 20 percent increase in investment costs; (b) 20 percent decrease in total financial benefits and (c) simultaneous 20 percent increase of investment costs and 20 percent decrease of total financial benefits. The results of the sensitivity analysis suggest that the project financial viability remains robust under all of the above three scenarios. The impact of defined variation in the above parameters is presented in the table below.

Table 3: Sensitivity analysis for financial appraisal

	Base case	**+ 20% investment cost**	**- 20 % financial benefits**	**+ 20% investment cost and - 20% financial benefits**
NPV (million US$)	188.7	164.8	98.4	74.4
FIRR (%)	19.2	17.3	15.5	13.7

Assessment of UE financial performance: The assessment of UE's financial performance is based on: (a) audited financial statements for 2007-2009;[6] (b) information and data on tariffs, debts, and projected electricity generation provided by UE; (c) the pre-feasibility study for Talimarjan CCGT power plant; and (d) the information obtained during the discussions with UE staff and management.

Analysis of the current financial performance of UE: In 2007-2009, the overall financial performance of UE was sound with some deterioration in availability of highly liquid current assets, receivables turnover and small decrease in profitability. Although the solvency of the company improved as measured by current and quick ratios, the company's cash ratio is still low at 0.013. The low cash ratio is primarily due to build up of receivables and extensive investment activities. The share of receivables in the company's current assets increased from 67 percent to 73 percent and the company's average collection period of total receivables increased from 215 days in 2007 to 323 in 2009. This increase is driven by build-up of non-core business related receivables from subsidiaries and associated entities. However, the dynamics of trade receivables, the payments owed to UE for the supplied electricity and heat, is stable. The average collection period of trade receivables was around 46-52 days in 2007-2009.

The company's operational performance and profitability recorded small decrease since 2007. Specifically, the operating profit margin was 13.8 percent in 2009 – down from 14.5 percent in 2007. The decline in the profitability was largely due to increasing share of the sales costs in the total revenues and increasing operating expenses driven by higher inflation rates in the country. Specifically, inflation accelerated from 12.3 percent in 2007 to 14.1 percent in 2009 as measured by the Consumer Price Index (CPI).[7]

The company's reliance on debt has significantly increased in 2007-2009. Specifically, in 2007, the book value of the company's long-term debt (net of current maturities) amounted to UZS 45 billion (about US$ 27 million), whereas in 2009, it increased to UZS 195 billion (around US$ 130 million). The company's debt-to-equity ratio increased from 16.7 percent in 2007 to

[6] The audit reports are prepared in accordance with Uzbekistan National Accounting Standards.
[7] "World Economic Outlook." IMF. April 2010.

40.6 percent in 2009. Although the company's debt-service coverage ratio is quite robust at 12.5 times, the cash flow coverage of debt service obligations has deteriorated. The higher levels of long-term debt are fueled by increased borrowing from International Financial Institutions (IFIs) and domestic financial institutions to finance large investment programs. The total book value of the long-term borrowing, given the projects approved in 2009-2010, is projected to exceed US$ 1.2 billion, which is close to the limit after which additional borrowing will jeopardize long-term financial sustainability of the company if the end-user tariffs are not revised accordingly.

Projected financial performance of UE and sustainability of investments: The financial performance of UE was forecasted using the Percentage of Sales method. UE's financial performance will significantly depend on improvement of efficiency and tariff increases implemented. Overall, the company's financial performance is expected to be sound with some deterioration of liquidity and gearing (due to increase in long-term debt and debt service obligations), which will improve by 2014-2016 if the company does not incur additional substantial debts without appropriate increase in revenues. The company is estimated to generate sufficient cash flow to provide timely co-financing for the project.

The company has sizeable investment program aimed primarily at increase and modernization of energy generation capacity and expansion of the electricity transmission network. The rapid increase of long-term borrowings will have negative consequences for net cash flow and net income due to steep increase of interest expenses. The total long-term debt of the company is estimated to increase from UZS 195 billion (around US$ 130 million) in 2009 to UZS 2,230 billion (US$ 1,37 billion) in 2011, which will significantly increase the debt service expenses. Specifically, UE's debt service coverage ratio is expected to reduce from 12.5 in 2009 to 5.3-3.5 in 2010-2012. The company's liquidity is expected to deteriorate in the next few years, as measured by the quick and cash ratios, with gradual improvement by 2015-2016 (see Table 5 below for more details).

Table 4: Key Financial Ratios of UE in 2007-2016

	Actual			Forecast						
Ratios	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**
Current ratio	1.17	1.25	1.40	1.14	1.07	0.99	0.93	0.91	0.93	0.98
Quick ratio	1.16	1.24	1.39	1.13	1.06	0.99	0.92	0.90	0.92	0.97
Cash ratio	0.001	0.001	0.013	0.002	-0.012	-0.024	-0.040	-0.027	0.025	0.109
Total receivables turnover	0.42	0.34	0.28	1.26	1.33	1.38	1.44	1.49	1.55	1.61
Average collection period of total receivables (days)	215	272	323	290	275	264	254	244	235	227
Total asset turnover	0.90	0.83	0.72	0.59	0.46	0.49	0.50	0.49	0.52	0.52
Gross profit margin	16.6%	16.8%	15.6%	12.6%	12.5%	14.4%	14.4%	14.4%	14.4%	14.4%
Operating profit margin	14.5%	15.4%	13.8%	10.9%	10.7%	12.6%	12.6%	12.6%	12.6%	12.6%
Net profit margin	11.4%	12.3%	12.1%	8.0%	7.9%	9.5%	9.5%	9.5%	9.5%	9.4%
Return on equity	26.6%	27.1%	22.5%	16.2%	15.2%	16.6%	15.4%	14.5%	13.7%	13.0%
Cash flow from operations-to-revenue	5%	4%	2%	1%	1%	3%	3%	5%	8%	10%
Debt-to-equity	16.7%	23.6%	40.6%	116.4%	196.0%	147.7%	121.4%	111.4%	86.0%	72.8%
Debt-to-assets	6.5%	8.9%	15.7%	33.7%	46.9%	40.8%	37.0%	35.8%	30.7%	27.7%
Debt service coverage ratio	11.5	11.2	12.5	5.3	5.4	3.5	3.1	3.2	3.3	3.2
Cash flow coverage of debt service	3.7	2.8	1.8	0.7	0.5	0.7	0.7	1.2	1.9	2.5
Cash flow coverage of fixed financial costs	9.2	12.3	3.9	0.1	0.3	0.6	0.8	1.9	3.7	5.1
Cash flow-to-long term debt	126.5%	108.8%	17.9%	3.0%	1.2%	3.5%	4.3%	7.1%	14.3%	22.5%

Table 5: Economic analysis

		2011	2012	2015	2019	2023	2027	2031	2034	2035
COSTS										
Investments	US$	16,666,667	25,000,000							
Incremental O&M	US$	208,333	520,833	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000	1,250,000
Total costs	**US$**	**16,875,000**	**25,520,833**	**1,250,000**	**1,250,000**	**1,250,000**	**1,250,000**	**1,250,000**	**1,250,000**	**1,250,000**
BENEFITS										
Transmission losses w/o project	kWh	305,002,092	308,052,113	317,386,400	330,273,561	343,683,992	357,638,940	372,160,515	383,437,351	387,271,724
Transmission losses w/ project	kWh	305,002,092	308,052,113	223,982,496	224,430,797	224,879,995	225,330,093	225,781,091	226,119,932	226,232,992
Net economic value of reduced transmission losses	**US$**	**0**	**0**	**3,367,351**	**3,815,791**	**4,283,063**	**4,769,933**	**5,277,198**	**5,671,529**	**5,805,688**
ENS w/o project	kWh	24,300,000	25,029,000	27,349,864	30,782,513	34,645,990	38,994,366	43,888,503	47,958,152	49,396,897
Economic value of ENS w/o project	US$	5,589,000	5,924,340	7,055,984	8,908,017	11,246,166	14,198,026	17,924,680	21,348,581	22,629,496
ENS w/ project	kWh	24,300,000	25,029,000	540,000	607,775	684,056	769,911	866,541	946,893	975,300
Economic value of ENS w/ project	US$	5,589,000	5,924,340	143,494	203,895	289,720	411,671	584,955	761,293	831,180
Net economic benefit from reduced ENS	**US$**	**0**	**0**	**6,912,490**	**38,913,382**	**79,199,944**	**129,899,064**	**193,675,715**	**252,067,397**	**273,865,712**
TOTAL ECONOMIC BENEFITS	**US$**	**0**	**0**	**10,279,841**	**42,729,172**	**83,483,007**	**134,668,996**	**198,952,913**	**257,738,926**	**279,671,400**
NET ECONOMIC BENEFITS	**US$**	**-16,875,000**	**-25,520,833**	**9,029,841**	**41,479,172**	**82,233,007**	**133,418,996**	**197,702,913**	**256,488,926**	**278,421,400**
NPV	**US$**	**381,621,612**								
EIRR	**%**	**27.7%**								

Table 6: Financial Analysis

		2011	2012	2015	2019	2023	2027	2032	2034	2035
COSTS										
Investments	US$	20,000,000	30,000,000	20,000,000						
Incremental O&M	US$	300,000	750,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000	1,800,000
Total financial costs	**US$**	**20,300,000**	**30,750,000**	**21,800,000**	**1,800,000**	**1,800,000**	**1,800,000**	**1,800,000**	**1,800,000**	**1,800,000**
BENEFITS										
Estimated annual unserved demand w/o project	kWh	24,300,000	25,029,000	27,349,864	30,782,513	34,645,990	38,994,366	45,205,158	47,958,152	49,396,897
Estimated annual unserved demand w/ project	US$	24,300,000	25,029,000	0	0	0	0	0	0	0
Incremental cash flow from additional electricity supply		**0**	**0**	**1,206,117**	**6,403,440**	**12,253,073**	**18,836,887**	**28,240,555**	**32,408,823**	**34,587,205**
Transmission losses w/o project	kWh	305,002,092	308,052,113	317,386,400	330,273,561	343,683,992	357,638,940	375,882,120	383,437,351	387,271,724
Transmission losses w/ project	kWh	305,002,092	308,052,113	223,982,496	224,430,797	224,879,995	225,330,093	225,893,982	226,119,932	226,232,992
Incremental cash flow from reduced transmission loses	**US$**	**0**	**0**	**4,119,072**	**21,959,675**	**42,051,776**	**64,489,850**	**95,986,630**	**109,699,454**	**116,801,193**
ENS w/o project	kWh	24,300,000	25,029,000	27,349,864	30,782,513	34,645,990	38,994,366	45,205,158	47,958,152	49,396,897
Financial value of ENS w/o project	US$	1,007,161	1,103,768	1,329,544	1,703,999	2,183,915	2,798,996	3,816,897	4,321,094	4,597,644
ENS w/ project	kWh	24,300,000	25,029,000	540,000	607,775	684,056	769,911	892,538	946,893	975,300
Financial value of ENS w/ project	US$	1,007,161	1,103,768	27,038	34,653	44,413	56,922	77,622	87,876	93,500
Incremental cash flow from reduced outages	**US$**	**0**	**0**	**1,302,506**	**7,401,213**	**15,217,568**	**25,235,331**	**41,813,786**	**50,025,592**	**54,529,736**
TOTAL INCREMENTAL CASH FLOW	**US$**	**0**	**0**	**5,421,578**	**29,360,888**	**57,269,343**	**89,725,181**	**137,800,416**	**159,725,046**	**171,330,929**
TOTAL NET CASH FLOW	**US$**	**-20,300,000**	**-30,750,000**	**-16,378,422**	**27,560,888**	**55,469,343**	**87,925,181**	**136,000,416**	**157,925,046**	**169,530,929**
NPV	**US$**	**188,692,791**								
FIRR	**%**	**19.2%**								

Annex 8: Procurement Plan

Procurement Plan – Procurement of Goods and Works

Talimarjan Transmission Project at Talimarjan TPP"

Procurement Plan - Goods and Works

Date of PP 28.01.2011 ; Update № Date of WB NoI

Package number	Description	Plan vs. Actual	Amount of lots	Estimated Cost (US$ equivalent)	Procu. Method	WB Review (Prior/ Post)	Date of Draft BD to WB	WB No-objection to BD	Date of Invitation to Bids	Date of Bid Opening	Bid Evaluation Report	WB No-objection to Contract Award	Date of Contract Signing	Date of Contract Completion	Remarks
TPP/ICB /2010-1	Autotransformers and reactors	Plan	1	22, 492,451	ICB	Prior	17.09.2010	27.09.2010	23.09.2010	02.12.2010	21.12.2010	02.02.2011	04.01.2011	15.08.2012	
		Actual					23.09.2010	04.10.2010	05.10.2010	20.12.2010	14.01.2011				
TPP/ICB /2010-2	Power equipment	Plan	2	12, 172,142	ICB	Prior	24.12.2010	18.01.2011	19.01.2010	02.03.2011	16.03.2011	30.03.2011	30.04.2011	26.12.2011	
		Actual					26.01.2011								
TPP/ICB /2010-3	Metal-roll and hardware	Plan	2	18,582,212	ICB	Prior	28.01.2011	14.02.2011	15.02.2011	29.03.2011	18.04.2011	18.05.2011	18.06.2011	02.11.2011	
		Actual													
TPP/ICB /2010-5	Materials and items for line 500kV	Plan	2	20,475,637	ICB	Prior	14.02.2011	28.02.2011	01.03.2011	12.04.2011	26.04.2011	26.05.2011	26.06.2011	19.04.2012	
		Actual													
TPP/ICB /2010-6	Relay protection equipment	Plan	2	14,519,308	ICB	Prior	28.02.2011	14.03.2011	15.03.2011	26.04.2011	12.05.2011	12.06.2011	12.07.2011	02.09.2012	
		Actual													
TPP/ICB /2010-7	Technological and low voltage equipment	Plan	2	1, 256, 981	ICB	Prior	10.03.2011	10.04.2011	11.04.2011	30.05.2011	14.06.2011	14.07.2011	14.08.2011	01.02.2013	
		Actual													
	Total			**89,498,731**											

Uzbekistan
Talimarjan Transmission Project

PROCUREMENT PLAN - CONSULTANTS

(Date of PP: _28.01.2011_____; Update No. _____; Date of WB NOL: _____)

Contract Ref.	Contract Description	Plan vs Actual	Estimated Cost (US$ equivalent)	Select. Method	WB Review (Prior/ Post)	Request for Exp. Of Interest	Draft RFP (incl. TOR, Short List)	WB No-objection to RFP (full package)	RFP Issued	Date of Proposal Submission	Tech. Evaluation Report (TER)	WB No-objection to TER	Combined Tech & Fin Eval. Report	Draft Final Contract	WB No-objection to Draft Contract	Date of Contract Signing	Date of Contract Completion	Remarks
TPP/QCBS-2010-1	Project implementation consultant	Plan	1,600,000	QCBC	Prior	26.07.2010	23.09.2010	14.11.2010	15.11.2010	25.12.2010	02.02.2011	16.02.2011	17.02.2011	01.03.2011	14.03.2011	14.04.2011	10.02.2014	
		Actual				26.07.2010	14.11.2010	25.11.2010	29.11.2010	18.01.2011								
TPP/CS-2	Base line study of avian risk	Plan	50,000	SSS*		Not applicable	15.02.2011	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	15.03.2011	22.03.2011	30.03.2011	30.06.2011	
		Actual																
TPP/CS-3	Project and Uzbekenergo financial audits	Plan	600,000	LCS		8/17/2011	9/17/2011	10/3/2011	10/4/2011	11/4/2011	11/18/2011	12/2/2011	Not applicable	12/16/2011	12/30/2011	1/30/2012	12/30/2016	
		Actual																
TPP/CS-4	Assesment of the renewable development potential	Plan	500,000	QCBC		01.06.2012	01.07.2012	14.07.2012	15.07.2012	15.08.2012	29.08.2012	14.09.2012	17.09.2012	01.10.2012	15.10.2012	15.11.2012	02.05.2014	
		Actual																

*Subject to submission of the justification for SSS

Uzbekistan

Talimarjan Transmission Project

THRESHOLDS FOR PROCUREMENT METHODS AND BANK PRIOR REVIEW

Expenditure Category	Contract Value Threshold (US$)	Procurement Method	Contracts Subjects to Prior Review (US$)
Goods	>=200,000	ICB	All ICB contracts
	<200,000	NCB	First 2 NCB contracts
	<100,000	Shopping	First Shopping contract
	NA	DC	All DC contracts
Works	>=1,000,000	ICB	All ICB contracts
	<1,000,000	NCB	First 2 NCB contracts
	<100,000	Shopping	First Shopping contract
	NA	DC	All DC contracts
Consultant Services (including training)	>=200,000	QCBS/QBS/LCS/FBS a/ b/	>=100,000 for firms; all SSS contracts; all TORs
	<200,000	CQS	
	NA	SSS	
	NA	IC	>=50,000 for individuals

Notes: a/ Shortlist may compose entirely of national consultants for assignments of less than US$100,000 equivalent per contract.
b/ As appropriate, these methods may be adopted for assignments costing less than $200,000.

ICB – International Competitive Bidding
NCB – National Competitive Bidding
DC – Direct Contracting
QCBS – Quality and Cost Based Selection
QBS – Quality Based Selection
LCS – Least Cost Selection
FBS – Fixed Budget Selection
CQS – Selection Based on Consultants' Qualifications
SSS – Single Source Selection
IC – Individual Consultants

Annex 9: Summary of Resettlement Action Plan

The proposed project triggers the World Bank's Safeguard Policy on Involuntary Resettlement (OP 4.12) because constructing and putting into operation the new power transmission line (500kV) will require acquisition of 171.45 ha of land from 114 leasehold farmers; 90 farms in Kashkadarya Oblast and 24 farms in Samarkand Oblast; 12.03 ha will be acquired on a permanent basis and 159.42 ha on a temporary basis. In Kashkadarya Oblast, 8.32 ha will be acquired on a permanent basis and 96.29 ha on a temporary basis. In Samarkand Oblast, 3.71 ha will be acquired on a permanent basis and 63.13 ha on a temporary basis. Each of the affected farms will lose land on both a permanent and temporary basis, with the majority of land to be acquired on a temporary basis. The total amount of land to be acquired would constitute no more than 4 percent of the total holdings of any one leasehold farm. Land acquisition also will not involve any displacement of households or businesses, or any loss of jobs. The following summarizes the main objectives of and principles applied in preparing the Resettlement Action Plan (RAP), the means by which the affected farmers will be compensated for their losses, and the associated institutional procedures and costs.

Main Objectives and Principles Applied. In complying with the requirements of OP 4.12, UE prepared a Resettlement Action Plan (RAP), the main objectives of which are to: (a) ensure construction, rehabilitation, and rehabilitation/repair works required for project implementation are implemented in accordance with the policies and principles outlined in this document; (b) provide a basis for consultations with relevant stakeholders; (c) provide farmers with clear knowledge of their entitlements and responsibilities; (d) provide guidance to affected groups on how to launch any grievances through appropriate channels; and (e) ensure monitoring of arrangements for compensating project affected parties. In formulating the RAP, the following principles were applied:

- Project implementation will avoid or minimize land acquisition to the extent possible.
- Affected persons are entitled to be compensated at full replacement cost (that is, excluding depreciation) for their lost assets, including temporary losses or impacts, regardless of the legal status of the land and land use.
- Compensation will enable affected persons to restore their pre-project incomes and standard of living following the implementation of the RAP.
- Affected persons will be consulted within the course of the preparation and implementation of the RAP.
- Affected persons will be fully informed of their compensation options.
- Temporary adverse impacts on land will be minimized through careful implementation of construction/rehabilitation works; additional measures will be taken to inform the farmers well before construction takes place so that damage on standing crops can be minimized.
- Land-for-land swap is the preferred compensation for lost agricultural land, if it is available, unless the affected person chooses cash compensation for lost income.
- All costs for transferring the property are waived or borne by the investor, including taxes, fees, documentation, and court appeals.
- Compensation will be provided giving equal consideration to women and men.
- Lack of a formal lease or land use agreement does not bar affected persons from entitlements or assistance required to achieve the objectives of the policy.

- Compensation or other assistance will be fully provided before land can be acquired for civil works or demolition.
- Wherever the laws of the Republic of Uzbekistan are inconsistent with the World Bank's policy on involuntary resettlement (OP 4.12), the policy of the World Bank will take precedence.

Land Acquisition Process. The acquisition of land will be carried out in accordance with the legislation of the Republic of Uzbekistan and the World Bank Operational Policy on Involuntary Resettlement (OP 4.12). The RAP will be introduced by district/oblast authorities mainly with support of the oblast administration, construction contractors, and local authorities. Evaluation and compensation matters will be considered by a special Commission established at the district and oblast levels including representatives of district/oblast region administration and other competent bodies related to agriculture, forestry, roads, land resources management, and registration. The deadline for finalizing the list of persons eligible for receiving compensation will be date of the final contractor design acceptance.

Gaps between national legislation and Bank policy on resettlements and mechanisms to eliminate such discrepancies. The analysis of the legal framework governing land acquisition for public purposes indicates that there are no major inconsistencies between the Uzbek legal framework and the World Bank policy regarding the acquisition of land from project-affected leasehold farms. With regard to the timing of compensation, however, there appears to be one gap between national legislation and OP 4.12. Thus, it was agreed that the leasehold farmers, whose land will be acquired for the project, must receive the agreed compensation prior to the start of any project-related construction on the affected land. This will apply to all project construction regardless of the source of funding. Moreover, in the course of project implementation, in the event any unforeseen needs to acquire additional land emerge, and certain categories of land users (for example, those who may be illegally using or occupying land) may be affected, it was agreed that wherever Uzbek Laws and World Bank policies are not in full agreement, the World Bank policies and principles agreed upon in this RAP will be followed, regardless of the source of funding.

Eligibility for Compensation and Assistance. The legislation of GoU foresees two types of compensation for temporary or permanent acquisition of lands for non-agricultural purposes: (a) compensation for damages incurred by land tenants, land users, land lessees, and land owners; and (b) compensation for losses of agricultural and forestry production. Thus, leasehold farmers are eligible for compensation, and their rights for compensation are to be established by the relevant khokim's decision to implement construction works on their plots. The amount of compensation is determined by the Certificate of Agreement for land acquisition. The table below summarizes the compensation and entitlements that will apply to affected farms for loss of permanent or temporary annual or permanent crops.

Matrix of Entitlements and Compensation

Asset	Impact	Affected persons	Compensation/Entitlements
Agricultural land occupied by annual crops (cotton, wheat)	Permanent land loss	Leasehold farmer	• Land as compensation for land with a plot of equal cost and productivity; or • Gross income from all crops grown on affected land for 1 year. Gross income shall be calculated as current prices of crops, based on average production during the last three years and crop area (prices for crops shall be multiplied by crop area, and then multiplied by average production for last three years). Valuation shall be performed separately for each crop, so that an average weighted annual income is obtained. The amount of permanent land with annual crops to be acquired on any one farm is very small. Thus the farmers agreed that no further compensation would be needed. Farmers will be informed in January 2011 about the construction schedule so they will not prepare for planting wheat in February or cotton in April.
Agricultural land occupied by annual crops (cotton, wheat)	Temporary loss of land needed for construction activities	Leasehold farmer	• Gross income from all crops grown on affected land for 1 year. Gross income shall be calculated as current prices of crops, based on average production during the last three years and crop area (prices for crops shall be multiplied by crop area, and then multiplied by average production for last three years). Valuation shall be performed separately for each crop, so that an average weighted annual income is obtained. If construction lasts more than one year, the farmer will be compensated for each year that the land is needed for project construction. • Contractor pays monetary compensation for period of usage in accordance with local commercial rental rate. • Land shall be rehabilitated to original state at the end of the lease period. • Measures to protect the environment shall be taken.

Asset	Impact	Affected persons	Compensation/Entitlements
Agricultural land occupied by annual crops (cotton, wheat)	Limitation of rights on land use	Leasehold farmer	• Gross income from all crops grown on affected land for 1 year (or longer, depending on project needs)
Fruit trees and garden	Permanent loss of trees and garden	Leasehold farmer	• Payment reflecting income substitution. Covers the cost of the trees and any permanent garden crops according to age and estimated market cost of gross income for one year multiplied by number of years in the remaining productive life of the tree. • Payment to cover cost of purchasing new nursery transplants and basic materials for starting new orchard or garden on an alternative plot, or for growing new trees or permanent crops on the same plot after construction, and for lost profit during the period when the tree or garden achieves the age of fruit bearing.

Community Participation and Consultation. Participation of project-affected parties was provided at the earliest stages of project preparation. During the initial assessment of social impacts carried out in September 2009 and February 2010, as well as two rounds of public consultations conducted in July 2010, farmers' opinions were discussed regarding the need to use part of their land holdings on a temporary or permanent basis for the project. The discussions with affected farmers were carried out with representatives of all state structures responsible for land acquisition. During these discussions, the farmers were asked for their preferences regarding: (a) the acceptability of the decision to acquire land from farmers and what consequences this would have for the private farms; (b) preferred alternatives for compensation; and (c) mechanisms for paying compensation. Most farmers, including adult family members that worked on the farms, agreed that measures regarding land acquisition for construction are necessary and unavoidable. Specific forms and sizes of compensation will be agreed with farmers at the stage of final plot selection. Consultations on the draft RAP were carried out with project affected parties in both Kaskadarya and Samarkand Oblasts on July 28, 2010 and July 27, 2010, respectively. The draft RAP was made available on the Uzbekenergo website on September 28, 2010. The final RAP in English, Russian, and Uzbek languages were sent to the Bank's InfoShop on December 22, 2010.

Grievance and Redress Mechanisms. During project preparation, consultations with farmers did not raise concerns regarding the need for land acquisition. Nonetheless, claims regarding valuation, payments, other forms of compensation or assistance, as well as other aspects of project implementation (for example, construction-related impacts) may occur. In such cases, the following mechanisms will be in place to ensure that the authorities consider all claims and take measures to resolve them.

(a) Initially, affected parties may lodge a claim with the district hokimiyat which will register the claim and take measures to resolve it. At this level, there is a committee that includes representatives of the Cadastre, an agronomist, representative of the tax authority, an aksakal (a respected elder of a mahalla or chairman of the mahalla committee or rural citizen's gathering), farmers, and an official from UE. By including farmers on the committee, it is envisaged that the risk of claims would be minimized and the opportunity for reaching a compromise among affected parties would be maximized. After two weeks, if a problem is not resolved, the claim will be referred to the Oblast Hokimiyat.

(b) At the level of the oblast hokimiyat, the claim is considered by a commission similar to that in the district hokimiyat which includes chairs of the respective oblast authorities as well as representatives of Uzbek Energo. The responsible authority in the oblast hokimiyat receives and registers the claim and takes measures to resolve the situation. If the affected person does not receive a satisfactory resolution by the district or oblast hokimiyat on matters related to compensation, he may seek the services of an independent appraiser. The claimant also may appeal to the court.

(c) Reports and the process of dispute resolution will be tracked by the PIU staff responsible for internal monitoring and evaluation. Any persons not satisfied with how his or her claim was handled may contact the PIU directly at any time to request assistance in seeking resolution.

Internal Monitoring and Closure Audit. UE will appoint a specialist on land acquisition internal monitoring who will develop detailed plans and indicators for monitoring the implementation of the RAP to ensure that all affected farms have been compensated as planned. The specialist will submit quarterly reports about work progress for inclusion into the PIU's management information system and project monitoring reports. In addition, UE will be responsible for an external closing audit of RAP implementation. This will require the PIU to hire a third party to ensure that all compensation and any other entitlements were made as planned, that all recipients were satisfied, and that there are no unresolved grievances resulting from the implementation of the RAP, project construction, or other issues. The audit will be carried out when all compensation and other related issues are completed.

Expenditures and Budget. The total cost of implementing the RAP is estimated to be USD 75,048.25. The cost encompasses those for compensating project affected parties; RAP administration and monitoring, including the closure audit; contingencies; and the target reserve fund (15%) to compensate affected party losses that could not be calculated prior to the finalization of the detailed engineering designs.


UZBEKISTAN
KAZAKHSTAN
KAZAKHSTAN
KYRGYZ REPUBLIC
TURKMENISTAN
TAJIKISTAN
AFGHANISTAN
PAKISTAN
Aral Sea
2001 level of Aral Sea
1990 level of Aral Sea
1960 level of Aral Sea
Ustyurt Plateau
Muynak
KARAKALPAKSTAN
Amu Darya
Nukus
Kyzyl Kum
NOVOI
Uchkuduk
Muruntau
Urgench
KHOREZM
Turan Lowland
BUKHARA
Bukhara
Navoi
Zeravshan
SAMARKAND
Samarkand
KASHKADARYA
Qarshi
DZHIZAK
Dzhizak
Gagarin
SYRDARYA
Guliston
TASHKENT
TASHKENT
Syr Darya
Namangan
NAMANGAN
Adelunga Toghi (4301 m)
ANDIZHAN
Andizhan
Kokand
Fergana
FERGANA
SURKHANDARYA
Denau
Termiz
To Atyrau
To Mary
To Kabul
To Khorugh
To Qyzylorda
To Qyzylorda
To Bishkek
To Kashi
55°E
60°E
65°E
70°E
45°N
40°N
0 50 100 150 200 Kilometers
0 50 100 150 Miles
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UZBEKISTAN
SELECTED CITIES AND TOWNS
OBLAST (VILOYATI) CAPITALS
NATIONAL CAPITAL
RIVERS
MAIN ROADS
RAILROADS
OBLAST (VILOYATI) BOUNDARIES
INTERNATIONAL BOUNDARIES
MARCH 2009
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