

# Project Administration Manual

Project Number: 45120  
Loan Numbers: 3058/3059  
Updated May 2016

## Republic of Uzbekistan: Samarkand Solar Power Project

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### **Project Administration Manual Purpose and Process**

1. The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with Government and Asian Development Bank (ADB) policies and procedures. The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.
2. State Joint Stock Company (SJSC) Uzbekenergo, the executing agency, is wholly responsible for the implementation of ADB financed projects, as agreed jointly between the borrower and ADB, and in accordance with Government and ADB's policies and procedures. ADB staff is responsible to support implementation including compliance by the executing agency of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.
3. At Loan Negotiations the borrower and ADB shall agree to the PAM and ensure consistency with the Loan Agreements. Such agreements shall be reflected in the minutes of the Loan Negotiations. In the event of any discrepancy or contradiction between the PAM and the Loan Agreements, the provisions of the Loan Agreements shall prevail.
4. After ADB Board approval of the project's report and recommendations of the President changes in implementation arrangements are subject to agreement and approval pursuant to relevant Government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

## ABBREVIATIONS

ADB	=	Asian Development Bank
ADF	=	Asian Development Fund
BER	=	bid evaluation report
BOP	=	Balance of Plant
CDM	=	Clean Development Mechanism
CSP	=	concentrated solar power
EMMP	=	environmental management and monitoring plan
EA	=	executing agency
GHG	=	greenhouse gas
GIS	=	geographical information system
GOU	=	Government of Uzbekistan
GWh	=	gigawatt hours
ICP	=	international competitive bidding
IEE	=	Initial environmental examination
ISSC	=	integrated solar combined cycle
LARP	=	land acquisition and resettlement plan
MOF	=	Ministry of Finance
Mtoe	=	million tons of oil equivalent
MW	=	megawatt
NDC	=	National Dispatch Centre
OCR	=	ordinary capital resources
PAM	=	project administration manual
PATA	=	policy and advisory technical assistance
PIU	=	project implementation unit
PMU	=	project management unit
PV	=	photovoltaic
QCBS	=	quality-and cost-based selection
RRP	=	report and recommendation of the president
SCADA	=	supervisory control and data acquisition system
SJSC	=	state joint-stock utility company
SPS	=	Safeguard Policy Statement
SWOT	=	strength-weakness-opportunity-threat
ToR	=	terms of reference
TPP	=	thermal power plant
TWh	=	terawatt hours
UE	=	Uzbekenergo
UFRD	=	Uzbekistan Fund for Reconstruction and Development

## I. PROJECT DESCRIPTION

1. The proposed Samarkand Solar Power Project (the project) aims to increase renewable energy (RE) generation and reduce greenhouse gas (GHG) emissions in Uzbekistan. The project has three main components: (i) construction of a 100 megawatt (MW) photovoltaic<sup>1</sup> (PV) power plant including transmission system and support facilities, (ii) institutional capacity development for Uzbekenergo, and (iii) institutional capacity development for solar energy stakeholders.

2. Uzbekistan has among the highest energy and carbon intensities in the world,<sup>2</sup> both over six times the world average, calling for drastic increases in energy efficiency and renewable energy to reduce GHG emissions. Despite the huge potential, renewable energy supplies less than 11% of the country's power demand, and only hydro resources are being tapped. Over 89% of Uzbekistan's 12.6 gigawatts (GW) of installed capacity are conventional thermal power plants fueled by natural gas (76%), fuel oil (7%), and coal (6%). Half of this fossil-based energy is generated in power plants built before 1982, with only 10% generated in power plants built after 1997. Total grid losses is about 20%, due in part to long distance transmission and distribution. While Uzbekistan is almost 100% electrified, the demand–supply gap leaves many provinces, including Samarkand, with intermittent power. In addition, the domestic consumption of gas equals lost export revenues, estimated at over \$900 million for 2012 alone.<sup>3</sup>

3. The first of its kind and scale in Central Asia, the project will bring Uzbekistan closer to its vision of becoming the region's solar technology and knowledge hub. Uzbekistan's solar energy development road map<sup>4</sup> envisions at least 21% renewable capacity by 2031, including at least 4 GW of solar capacity. Through a capacity development technical assistance (TA),<sup>5</sup> the Asian Development Bank (ADB) helped Uzbekistan create the International Solar Energy Institute (ISEI) to link research with industry. Another ADB TA project<sup>6</sup> is conducting feasibility studies for up to six solar projects. Measurements of solar and weather data are ongoing at six sites to validate models based on 12 years of historical satellite data. The TA (i) conducted technical, financial and economic, governance, safeguards, and due diligence for the project; (ii) developed the solar energy development road map; and (iii) assisted ISEI in the design of its photovoltaic certification laboratory and test bed facility. A project preparatory TA (PPTA)<sup>7</sup> is assisting in bidding documents preparation and procurement. The project's expected 159 GW hours (GWh) of energy production will avoid 88,000 tons of carbon dioxide equivalent emissions per year. By supplying electricity where it is consumed, the project will reduce grid losses..

4. The project is aligned with ADB's Strategy 2020,<sup>8</sup> and with a key pillar of the Energy Policy 2009.<sup>9</sup> The project directly supports Uzbekistan's clean energy and energy security

<sup>1</sup> Mono- and polycrystalline silicon could be proposed by the EPC contractor, who will only guarantee the output

<sup>2</sup> International Energy Agency. 2011. *Key World Energy Statistics 2011*. Paris. Energy intensity: Total energy supply in tons of oil equivalent per gross domestic product (GDP) is 1.97. The world average is 0.31. Carbon intensity is a measure of how much GHG an economy emits for every dollar of GDP produced, expressed in kilograms of carbon dioxide equivalent per GDP. The world average is only 0.73, while Uzbekistan's is 4.53.

<sup>3</sup> TA consultant estimates. In 2012, Uzbekenergo's average purchase price was \$1.46 per million British thermal units, against the average international wholesale price of \$3.24 per million British thermal units.

<sup>4</sup> Pending final review and acceptance by the government.

<sup>5</sup> ADB. 2011. *Technical Assistance to the Republic of Uzbekistan for the Design and Strengthening of the Solar Energy Institute*. Manila. ISEI was officially established in March 2013 through Presidential Decree 4512.

<sup>6</sup> ADB. 2011. *Technical Assistance to the Republic of Uzbekistan for Solar Energy Development*. Manila.

<sup>7</sup> ADB. 2013. *Technical Assistance to Prepare the Samarkand Solar Power Project*. Manila.

<sup>8</sup> ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

targets as prioritized under the country partnership strategy, 2012–2016 for Uzbekistan<sup>10</sup> and is included in the country operations business plan, 2012–2014 for Uzbekistan.<sup>11</sup>

## A. Impact and Outcome

5. The plant will be located in the Samarkand Province of Uzbekistan, 13 kilometers (km) southwest of Samarkand city, and 4 km to the north of the regional center of Sazagan. The expected project impact is improved sustainability of the energy supply in Uzbekistan, and the expected outcome is increased renewable energy generation in Uzbekistan

## B. Outputs

6. **Clean and reliable energy.** The project will construct a 100 MW photovoltaic power plant, a transmission line, and support facilities in Samarkand Province. This physical component is divided into two contracts: (i) a turnkey contract for the engineering, procurement, and construction (EPC) of the solar power plant including the provision of operation and maintenance (O&M) services for 3 years; and (ii) a contract for the supply of goods for the transmission line. Uzbekenergo will prepare the site; install the transmission line; and construct the access road, perimeter fence, wells, and raw water supply facilities.

7. **Institutional capacity development for Uzbekenergo.** An implementation consultant, with technical and training specialists, will provide project management and supervision support to Uzbekenergo and provide training on procurement, financial management, governance, construction, solar power grid integration, and O&M. Subject to Uzbekenergo and ADB approval, the capacity development plan prepared under the project preparatory TA will be updated and implemented by the implementation consultant. The plan will be harmonized with the capacity development programs of Uzbekenergo under ongoing ADB TA and loan projects.

8. **Institutional capacity development for solar energy stakeholders.** A solar capacity development plan, to be implemented by the implementation consultant and subject to Uzbekenergo and ADB approval, will support the action plan recommended in the solar energy development road map. The program will cover (i) design, specifications, costing, and grid integration of solar power plants for ISEI and design institutes—Uztyazhneftgazkhimproyekt, Teploelectroproyekt, and Sredazenergosetproyekt; (ii) solar applications, technologies, resource assessments, modeling and simulation, research and development, technology incubation, financing, and business development for scientific institutes and industries including ISEI, Physics Sun, Uzhydromet, academic institutions, government agencies, and private manufacturing industries; (iii) governance, financing, and enabling regulatory and policy frameworks; and (iv) environmental and social safeguards, and social development and gender, including information campaigns. Funding under the project has been earmarked for the necessary equipment, licenses, software, materials, manuals, training, and consulting services.

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<sup>9</sup> ADB. 2009. *Energy Policy*. Manila.

<sup>10</sup> ADB. 2012. *Country Partnership Strategy: Uzbekistan, 2012–2016*. Manila.

<sup>11</sup> ADB. 2012. *Country Operations Business Plan: Uzbekistan, 2012–2014*. Manila.

## II. IMPLEMENTATION PLANS

### A. Project Readiness Activities

Indicative Activities	2013 (Month)					2014 (Month)		Responsibility
	8	9	10	11	12	1	2	
PPTA (consulting services)	X							ADB-PMU
Implementation consulting services							X	EA
Loan negotiations		X						EA
ADB Board approval				X				ADB
Loan signing				X				ADB-GoU
Government legal opinion provided						X		GoU
Government budget inclusion							X	GoU
Loan effectiveness							X	GoU-ADB

ADB = Asian Development Bank, PMU = Project Management Unit, EA = executing agency, GoU = Government of Uzbekistan.

### B. Overall Project Implementation Plan

Task name	Duration	Start	End
PPTA NTP	0 days	02/08/13	02/08/13
Calibrated solar data	0 days	14/02/14	14/02/14
<b>ENGAGEMENT CONSULTING SERV.</b>	<b>215 days</b>	<b>20/12/13</b>	<b>16/10/14</b>
EA post CSRN	10 days	20/12/13	03/01/14
EOI	30 days	03/01/14	14/02/14
EA submitting shortlist to ADB , ADB review	40 days	14/02/14	11/04/14
EA issue RFP	35 days	11/04/14	30/05/14
EA Submission	60 days	30/05/14	22/08/14
Contract award and signing	30 days	22/08/14	03/10/14
Contract registration	10 days	03/10/14	16/10/14
<b>IMPLEMENTATION AND CAPACITY BUILDING</b>	<b>640 days</b>	<b>01/08/14</b>	<b>12/01/17</b>
Notice to proceed	0 days	01/08/14	01/08/14
Implementation	640 days	01/08/14	12/01/17
Capacity building	640 days	01/08/14	12/01/17
Signing loan agreement between ADB and MOF	2 days	21/11/13	22/11/13
Signing project agreement between ADB and UE	2 days	21/11/13	22/11/13
<b>BIDDING TRANSMISSION</b>	<b>290 days</b>	<b>02/08/13</b>	<b>11/09/14</b>
Mobilization	5 days	02/08/13	08/08/13
Inception	15 days	09/08/13	29/08/13
<b>Bidding document preparation</b>	<b>90 days</b>	<b>30/08/13</b>	<b>02/01/14</b>
<b>Bidding Period</b>	<b>60 days</b>	<b>03/01/14</b>	<b>27/03/14</b>
Bidding period	60 days	03/01/14	27/03/14
<b>Bid Evaluation</b>	<b>120 days</b>	<b>28/03/14</b>	<b>11/09/14</b>
<b>Technical evaluation</b>	<b>55 days</b>	<b>28/03/14</b>	<b>12/06/14</b>
Evaluation	30 days	28/03/14	08/05/14
Approval Uzbekenergo	15 days	09/05/14	29/05/14
ADB Review	25 days	09/05/14	12/06/14
<b>Economic evaluation</b>	<b>35 days</b>	<b>13/06/14</b>	<b>31/07/14</b>

Task name	Duration	Start	End
Evaluation	10 days	13/06/14	26/06/14
Approval Uzbekenergo	15 days	27/06/14	17/07/14
ADB Review	25 days	27/06/14	31/07/14
<b>Contract award</b>	<b>20 days</b>	<b>01/08/14</b>	<b>28/08/14</b>
Negotiation	15 days	01/08/14	21/08/14
Signing	5 days	22/08/14	28/08/14
Contract Registration	10 days	29/08/14	11/09/14
<b>PROCUREMENT TRANSMISSION</b>	<b>160 days</b>	<b>12/09/14</b>	<b>23/04/15</b>
Procurement	160 days	12/09/14	23/04/15
<b>INSTALLATION TRANSMISSION</b>	<b>80 days</b>	<b>24/04/15</b>	<b>13/08/15</b>
Installation	80 days	24/04/15	13/08/15
<b>SUPPORTING INFRASTRUCTURE</b>	<b>210 days</b>	<b>07/01/14</b>	<b>28/10/14</b>
Compliance with LARP and safeguards	60 days	07/01/14	01/04/14
Road	90 days	01/04/14	05/08/14
PV plant fence	40 days	05/08/14	30/09/14
Telecommunication	60 days	05/08/14	28/10/14
Well, Water supply and treatment	60 days	05/08/14	28/10/14
<b>BIDDING SOLAR</b>	<b>314 days</b>	<b>02/08/13</b>	<b>15/10/14</b>
Mobilization	1 day	02/08/13	02/08/13
Inception	3 days	05/08/13	07/08/13
<b>Bidding document preparation</b>	<b>73 days</b>	<b>08/08/13</b>	<b>18/11/13</b>
Consultant first draft	37 days	08/08/13	27/09/13
Bidding document issued for approval	13 days	30/09/13	16/10/13
Uzbekenergo review	23 days	17/10/13	18/11/13
ADB review	15 days	29/10/13	18/11/13
<b>Bidding Period</b>	<b>65 days</b>	<b>02/12/13</b>	<b>28/02/14</b>
Bidding period	65 days	02/12/13	28/02/14
Site Visit	1 day	15/01/14	15/01/14
<b>Bid Evaluation</b>	<b>162 days</b>	<b>03/03/14</b>	<b>15/10/14</b>
<b>Technical evaluation</b>	<b>36 days</b>	<b>03/03/14</b>	<b>22/04/14</b>
Evaluation	21 days	03/03/14	01/04/14
Approval Uzbekenergo	5 days	01/04/14	08/04/14
Approval ADB	25 days	18/03/14	22/04/14
<b>Economic evaluation</b>	<b>41 days</b>	<b>12/05/14</b>	<b>07/07/14</b>
Bid Opening	1 day	12/05/14	12/05/14
Evaluation	10 days	13/05/14	26/05/14
Approval Uzbekenergo	10 days	27/05/14	09/06/14
Approval ADB	35 days	20/05/14	07/07/14
<b>Contract award</b>	<b>71 days</b>	<b>08/07/14</b>	<b>15/10/14</b>
Negotiation and signing	17 days	08/07/14	31/07/14
Contract Registration	10 days	19/08/14	01/09/14
Signing loan agreement between UFRD and UE	2 days	02/09/14	03/09/14
NTP	0 days	15/10/14	15/10/14
<b>Pre-implementation works (Uzbekenergo)</b>	<b>37 days</b>	<b>02/08/13</b>	<b>24/09/13</b>
Land acquisition	0 days	24/09/13	24/09/13



Task name	Duration	Start	End
Topographical survey	0 days	02/08/13	02/08/13
Geotechnical survey	0 days	02/08/13	02/08/13
Water rights	0 days	24/09/13	24/09/13
Grid connection rights	0 days	24/09/13	24/09/13
<b>EPC Solar</b>	<b>1155 days</b>	<b>28/10/14</b>	<b>31/03/19</b>
Detailed Engineering Solar	100 days	28/10/14	17/03/15
Procurement	140 days	09/12/14	23/06/15
<b>Construction:</b>	<b>313 days</b>	<b>20/01/15</b>	<b>01/04/16</b>
Civil Works	80 days	20/01/15	12/05/15
Installation	140 days	12/05/15	24/11/15
Civil Works finishing	40 days	27/10/15	22/12/15
Training	31 days	22/12/15	03/02/16
Commissioning	40 days	04/02/16	31/03/16
O&M Services	780 days	01/04/16	31/03/19

### III. PROJECT MANAGEMENT ARRANGEMENTS

#### A. Project Stakeholders – Roles and Responsibilities

##### Project Implementation Management Roles and Responsibilities

##### Organizations

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Asian Development Bank (ADB)	Lender <ul style="list-style-type: none"> <li>➤ Project financier</li> <li>➤ Implementation supervision</li> </ul>
Government of Uzbekistan (GoU)	Borrower <ul style="list-style-type: none"> <li>➤ Project financier (VAT and taxes)</li> <li>➤ External borrowing representation</li> <li>➤ Electricity regulations</li> <li>➤ Designated National Authority for Clean Development Mechanism (CDM)</li> </ul>
Uzbekistan Fund for Reconstruction and Development (UFRD)	Counterpart Financer
Uzbekenergo (UE)	Project financier
	Executing agency <ul style="list-style-type: none"> <li>➤ Establish PMU</li> <li>➤ Obtain ADB approvals for Project component finance</li> <li>➤ Ensure compliance with Project covenants.</li> <li>➤ Provide strategic guidance on, and oversee the implementation of, the Project</li> <li>➤ Monitor and review bid process and coordinate with ADB on all approvals</li> <li>➤ Build the needed access roads, supply water and raw water tank, telecommunication Transmission line and components to connect to the existing grid</li> </ul>

	<ul style="list-style-type: none"> <li>➤ procurement</li> <li>➤ Transmission line installation and connection to the existing grid and commissioning</li> <li>➤ Submit withdrawal applications to ADB</li> <li>➤ Retain supporting documents</li> <li>➤ Submit required reports</li> </ul>
Project Management Unit (PMU)	<ul style="list-style-type: none"> <li>➤ Undertake due diligence, procurement, and evaluation.</li> <li>➤ Detailed design and construction supervision</li> <li>➤ Oversee project accounting and auditing</li> <li>➤ Prepare progress reports</li> <li>➤ Monitoring and evaluation of project progress and impacts</li> </ul>
Project Preparation TA (PPTA)	<ul style="list-style-type: none"> <li>➤ Coordinate among government agencies</li> <li>➤ Conceptual system design.</li> <li>➤ Assistance in Preparation of bidding documents and procurement</li> </ul>
EPC	<ul style="list-style-type: none"> <li>➤ Capacity Development Plans</li> <li>➤ Detailed engineering of Solar power plant</li> <li>➤ Procurement and Construction of Solar Power Plant, including PV Modules Structures, Inverters, Electrical Systems Components, SCADA</li> <li>➤ Commissioning and start-up of the Solar Power Plant.</li> </ul>
Transmission line supply	<ul style="list-style-type: none"> <li>➤ 3 years operation and maintenance</li> <li>➤ Detailed engineering and procurement</li> <li>➤ Commissioning and start-up</li> </ul>

## B. Key Persons Involved in Implementation

### Executing Agency

SJSC Uzbekenergo

Mr. Iskandar Basidov

Position: Chairman of the Board

Telephone: +99871-236-2262

Fax: +99871-236-2262

Email address: Samarkand.pmu@gmail.com

Office Address:

6 Khorezmskaya St., Tashkent, 100000, Uzbekistan

Samarkand Solar Power Station,

Samarkand, Samarkand Province, Uzbekistan

### ADB

Division Director

Mr. Rune Stroem

Position: Director, Energy Division, Central and West Asia Department (CWRD/CWEN)

Telephone No.: +632-632-5645

Email address: [rstroem@adb.org](mailto:rstroem@adb.org)

Mission Leader

Ms. Cindy Tiangco

Position: Energy Specialist. CWEN

Telephone No.: +632-683-1856

Email address: [ctiangco@adb.org](mailto:ctiangco@adb.org)

### C. Project Organization Structure

9. Uzbekenergo will establish a dedicated full-time project management unit (PMU) responsible for management of the Samarkand Solar Power Project. The PMU will manage the procurement and consulting contracts on behalf of Uzbekenergo. It will be responsible for preparing project plans, bid evaluation reports, progress reports, withdrawal applications of funds, and any other required reports to ADB. The PMU will include the following positions: project manager, power plant engineer, electrical/control and instrumentation engineer, civil engineer, O&M engineer, procurement specialists, chief accountant, environmental engineer, financial economist, equipment engineer, social safeguards and gender specialist, and, capacity development specialist.

10. The PMU Project Manager will report directly to the Chairman of Uzbekenergo. The PMU will be the main point of contact for working communication between Uzbekenergo and ADB. The PMU will coordinate the consultants and contractors.

11. The PMU, assisted by the consultants, will submit the necessary project plans, tender evaluation reports, progress reports, applications for withdrawal of funds, and any other required reports to ADB.

12. The PMU Project Manager and PMU staff will have appropriate academic qualifications with experience of working on large investment projects. The Project Manager will be senior power plant and transmission engineers with experience in construction and/or operations. The power plant engineer, electrical/control and instrumentation engineer, civil engineer, O&M engineer, chief accountant, environmental engineer, financial economist, equipment engineer, social safeguards and gender specialist, and, capacity development specialist will have relevant experience and academic qualifications in their specialty area. The procurement specialists will have required academic qualifications with experience in procurement of consultants and contractors.

13. The Terms of Reference of the PMU Project Manager and PMU staff are as follows:

<b>Position</b>	<b>Terms of Reference</b>
Project Manager	<ul style="list-style-type: none"> <li>• Provide overall direction and management of PMU.</li> <li>• Ensure project is delivered on schedule to budget and specification</li> <li>• Manage relationships with financiers, consultants, and contractors</li> <li>• Ensure appropriate reporting to financiers</li> <li>• Ensure Chairman Uzbekenergo is apprised of project developments on ongoing basis</li> <li>• Manage implementation consultants and contractors</li> <li>• Manage PMU staff</li> </ul>
Power Plant Engineer	<ul style="list-style-type: none"> <li>• Act as deputy project manager In his absence</li> <li>• Ensure project is implemented on schedule through monitoring of all technical issues particularly on the solar field</li> <li>• Review submission by consultants in area of specialty</li> </ul>
Electrical/Control and Instrumentation engineer	<ul style="list-style-type: none"> <li>• Monitor consultants and contractors progress and delivery to contract relating to the transmission, electrical systems, and grid connections</li> <li>• Review submission by consultants in area of specialty</li> <li>• Prepare progress reports</li> </ul>
Civil Engineer	<ul style="list-style-type: none"> <li>• Monitor consultants and contractors progress and delivery to contract relating to civil and pre-construction works</li> </ul>

<b>Position</b>	<b>Terms of Reference</b>
	<ul style="list-style-type: none"> <li>• Review submission by consultants in area of specialty</li> <li>• Prepare progress reports</li> </ul>
O&M Engineer	<ul style="list-style-type: none"> <li>• Act as O&amp;M counterpart to the EPC and Implementation consultant</li> <li>• Ensure compliance to standards and O&amp;M manuals</li> <li>• Ensure compliance with spares holding strategy and safety measures</li> </ul>
Chief Accountant	<ul style="list-style-type: none"> <li>• Maintain project accounts</li> <li>• Manage disbursement related issues and the withdrawal applications</li> <li>• Prepare project financial reports</li> <li>• Manage external audit of project financial statements</li> <li>• Coordinate external audit for entity</li> </ul>
Financial Economist	<ul style="list-style-type: none"> <li>• Assist Project Accountant in maintenance of project accounts and preparation of project financial reports</li> <li>• Monitor cashflow movement and prepare trend analysis of key operating and financial ratios</li> <li>• Monitor loan covenants</li> </ul>
Procurement Specialists	<ul style="list-style-type: none"> <li>• Manage consultant recruitment</li> <li>• Manage the turnkey contract</li> <li>• Prepare Request for Proposals for consultant services</li> <li>• Prepare bid evaluation reports</li> <li>• Monitor compliance of consultants and contractors with contract requirements</li> <li>• Prepare overall project progress report</li> <li>• Prepare contract award and disbursement projections</li> </ul>
Equipment Engineer	<ul style="list-style-type: none"> <li>• Monitor consultants and contractors progress and delivery to contract</li> <li>• Review submission by consultants in area of specialty</li> <li>• Prepare progress reports</li> </ul>
Social Safeguards and Gender Specialist	<ul style="list-style-type: none"> <li>• Oversee and ensure the effective and efficient implementation of the resettlement plan, social and gender elements</li> </ul>
Environmental Engineer	<ul style="list-style-type: none"> <li>• Ensure the implementation of the environmental management plan</li> </ul>
Capacity Development Specialist	<ul style="list-style-type: none"> <li>• Monitor and evaluate the capacity development activities to ensure compliance with the plans, schedule, outputs, and effectiveness</li> </ul>

14. The capacity development component of the project will be led by the Deputy Chairman (Finance) of Uzbekenergo as an integral part of the overall capacity development package for Uzbekenergo. For this project, a program manager will be appointed to implement the capacity development plans and coordinate with other capacity development activities under ADB's proposed Takhiatash Power Plant Efficiency Improvement Project, Talimarjan Power Project, proposed Advanced Metering 2 Project and the World Bank's Talimarjan Transmission Line Project. The existing capacity development officer under the Talimarjan Power Project will assist and be responsible for the administrative activities of all capacity development programs undertaken by Uzbekenergo.

#### **IV. COSTS AND FINANCING**

15. The Project costs consist of: (i) EPC contract for the solar PV power plant, and support facilities (ii) Supply contract for the transmission system, (iii) project supervision consulting services, (iv) capacity development, (v) land acquisition, (vi) taxes and duties (vii) financial charges. Uzbekenergo will separately finance the cost of PMU from outside the Project costs.

- (i) **Solar PV EPC Contract:** The EPC contract comprises detailed design engineering, Solar PV mechanical and equipment, civil works and other mechanical equipment. It also includes O&M services for the initial 3 years of operation after commissioning of the power plant.<sup>12</sup> This will be financed by ADB ADF loan proceeds and UFRD. The EPC contract will be financed by ADB and UFRD on a pro-rata basis determined by the ratio described in the loan agreement.
- (ii) **Supply contract for transmission line.** The transmission line supply contract and the installation of the transmission system will be financed Uzbekenergo.
- (iii) Uzbekenergo will provide support infrastructure and the services needed for plant operation. These services, enumerated below are included in project costs:
  - a. Wells and raw water
  - b. Road access (road shall be suitable for equipment transportation)
  - c. Telecommunications
  - d. Perimeter fence for the solar power plant
- (iv) **Project Supervision Consulting Services and Capacity Development Component:** Project Implementation Consultant (a firm) will be recruited by Uzbekenergo to assist PMU in project management and in the implementation of the institutional capacity development plans. This contract will be financed by ADB ADF loan proceeds.
- (v) **Land Acquisition and Resettlement:** This will be financed by Uzbekenergo. Any environmental management costs that are not included in the turnkey and supply contracts will be financed by Uzbekenergo.
- (vi) **Taxes and Duties:** Taxes and duties will be covered under government contribution as their share of the project cost.
- (vii) **Financial Charges:** Uzbekenergo will finance the financial charges including interest during construction without capitalizing them into respective loans.

16. **Recurrent costs** of the PMU to be financed by Uzbekenergo are listed in the table below. However, these costs will be subject to audit and will be covered under the audited financial statement.

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<sup>12</sup> After the initial 3-years operation, Uzbekenergo will take over the O&M of the solar power plant.

### Project Management Expenditure

(\$ thousand)

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
	2014	2015	2016	2017	2018	2019	Cost
<b>A. Staff Costs</b>							
PMU Project Manager	10,618	11,892	13,319	14,917	16,707	18,712	86,164
Accountant	7,526	8,430	9,441	10,574	11,843	13,264	61,078
Finance Specialist	6,720	7,526	8,430	9,441	10,574	11,843	54,534
Procurement Specialists (3)	22,378	25,063	9,441	10,574	11,843	0	79,299
Mechanical Engineer	7,795	8,731	9,778	10,952	12,266	13,738	63,260
Power Plant Engineer (primary)	7,795	8,731	9,778	10,952	12,266	13,738	63,260
Power Plant Engineer (secondary)	6,854	7,677	8,598	9,630	10,786	12,080	55,625
Control and Instrumentation Engineer	6,854	7,677	8,598	9,630	10,786	12,080	55,625
Civil Works Engineer	7,795	8,731	9,778	10,952	12,266	13,738	63,260
Environmental Specialist	6,720	7,526	8,430	9,441	10,574	11,843	54,534
Social and Gender Specialist	6,720	7,526	8,430	9,441	10,574	11,843	54,534
Translator (2)	13,440	15,053	16,859	18,882	21,148	23,686	109,068
Office Manager	3,226	3,613	4,046	4,532	5,076	5,685	26,176
Driver	4,301	4,817	5,395	6,042	6,767	7,579	34,902
<b>Subtotal (A)</b>	<b>118,742</b>	<b>132,991</b>	<b>130,321</b>	<b>145,960</b>	<b>163,475</b>	<b>169,828</b>	<b>861,317</b>
<b>B. Other Costs</b>							
Copier and Computers	25,100	-	-	-	-	-	25,100
Vehicle Maintenance	7,200	7,200	7,200	7,200	7,200	7,200	43,200
Office Consumables	1,200	1,200	1,200	1,200	1,200	1,200	7,200
Office Utilities	1,200	1,200	1,200	1,200	1,200	1,200	7,200
Travel Expenses	8,250	8,250	8,250	8,250	6,200	4,875	44,075
External translation services	2,000	2,000	2,000	2,000	2,000	2,000	12,000
<b>Subtotal (B)</b>	<b>44,950</b>	<b>19,850</b>	<b>19,850</b>	<b>19,850</b>	<b>17,800</b>	<b>16,475</b>	<b>138,775</b>
<b>C. Project Financial Statement Audit</b>	<b>50,000</b>	<b>50,000</b>	<b>50,000</b>	<b>50,000</b>			
<b>D. Contingencies</b>		<b>50,000</b>	<b>50,000</b>	<b>67,485</b>			
<b>Total (A+B)</b>	<b>213,692</b>	<b>252,841</b>	<b>250,171</b>	<b>283,295</b>	<b>181,275</b>	<b>186,303</b>	<b>1,000,092</b>

Source: Asian Development Bank estimates.

**A. Detailed Cost Estimates by Expenditure Category**

(\$million)

Item	Total Cost	% of Total Base Cost
<b>A. Investment Costs</b>		
1 Solar Photovoltaic Turnkey Contract	200.0	74.4%
2 Transmission Line Procurement & Installation	14.8	5.5%
3 Supporting Infrastructure *	1.7	0.6%
4 Land Acquisition & Resettlement	0.3	0.1%
5 Consulting Services	7.0	2.6%
6 Taxes and Duties	44.0	16.4%
<b>Subtotal (A)</b>	<b>267.8</b>	<b>99.6%</b>
<b>B. Recurrent Costs</b>		
1 Project Management	1.0	0.4%
<b>Subtotal (B)</b>	<b>1.0</b>	<b>0.4%</b>
<b>Total Base Cost (A) + (B)</b>	<b>268.8</b>	<b>100.0%</b>
<b>C. Contingencies**</b>		
1 Physical	19.4	7.2%
2 Price	13.6	5.1%
<b>Subtotal (C)</b>	<b>33.0</b>	<b>12.3%</b>
<b>(A+B+C)</b>	<b>301.8</b>	<b>112.3%</b>
<b>D. Financing Charges During Implementation</b>		
1 Interest During Implementation	8.2	3.1%
<b>Subtotal (D)</b>	<b>8.2</b>	<b>3.1%</b>
<b>Total Project Cost (A+B+C+D)</b>	<b>310.0</b>	<b>115.3%</b>

\* Includes access road, raw water, telecommunications, heat water pipelines, fencing, security, etc.

\*\*Physical contingencies computed at 10% for the turnkey contract. Price contingencies computed at 1.9% on foreign exchange costs and 10.1% on local currency costs; includes a provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

Sources: Asian Development Bank and PPTA consultants estimate.

**B. Allocation and Withdrawal of Loan Proceeds**

<b>ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Samarkand Solar Power Project) – Regular Term</b>			
<b>CATEGORY</b>			<b>ADB FINANCING</b>
<b>Number</b>	<b>Item</b>	<b>Total Amount Allocated for ADB financing (SDR) Category</b>	<b>Basis for Withdrawal from the Loan Account</b>
1	Turnkey contract **	90,000,000	45 percent of total expenditure *
2	Unallocated	11,100,000	
	Total	<b>101,100,000</b>	

\* Exclusive of taxes and duties imposed within the territory of the Borrower.

\*\*Subject to the execution and effectiveness of the subsidiary loan agreement between the Government and Uzbekenergo and subject to the execution and effectiveness of the loan agreement between UFRD and the eligible commercial bank and the related subsidiary loan agreement between such bank and Uzbekenergo.

<b>ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS (Samarkand Solar Power Project) - Hard Term</b>			
<b>CATEGORY</b>			<b>ADB FINANCING</b>
<b>Number</b>	<b>Item</b>	<b>Total Amount Allocated for ADB financing (SDR) Category</b>	<b>Basis for Withdrawal from the Loan Account</b>
1	Consulting Services **	7,000,000	100 percent of total expenditure *
2	Unallocated	1,900,000	
	Total	<b>8,900,000</b>	

\* Exclusive of taxes and duties imposed within the territory of the Borrower.

\*\*Subject to the execution and effectiveness of the subsidiary loan agreement between the Government and Uzbekenergo.



## C. Detailed Cost Estimates by Financier

(\$ million)													
	ADB	% of Cost	ADF	% of Cost	ADF (Hard Term)	% of Cost	UFRD	% of Cost	UzEnergy	% of Cost	GoU	% of Cost	Total Cost
	Amount (A)+(B)	Category	Amount (A)	Category	Amount (B)	Category	Amount** (C)	Category	Amount (D)	Category	Amount (E)	Category	Cost (F)
<b>A. Investment Costs</b>													
1 Solar Photovoltaic Turnkey Contract	90.0	45%	90.0	45.0%	0.0	0.0%	110.0	55.0%	0.0	0.0%	0.0	0.0%	200.0
a Detailed Engineering	5.6	45%	5.6	45.0%	0.0	0.0%	6.8	55.0%	0.0	0.0%	0.0	0.0%	12.4
b PV Mechanical and Equipment	66.2	45%	66.2	45.0%	0.0	0.0%	80.9	55.0%	0.0	0.0%	0.0	0.0%	147.1
1 Modules	31.1	45%	31.1	45.0%	0.0	0.0%	38.0	55.0%	0.0	0.0%	0.0	0.0%	69.0
2 Inverters	13.2	45%	13.2	45.0%	0.0	0.0%	16.1	55.0%	0.0	0.0%	0.0	0.0%	29.3
3 Structure	11.3	45%	11.3	45.0%	0.0	0.0%	13.8	55.0%	0.0	0.0%	0.0	0.0%	25.0
4 Assembling structure	8.6	45%	8.6	45.0%	0.0	0.0%	10.5	55.0%	0.0	0.0%	0.0	0.0%	19.1
5 Electrical system components (DC)	1.6	45%	1.6	45.0%	0.0	0.0%	1.9	55.0%	0.0	0.0%	0.0	0.0%	3.5
6 Spare parts, initial stock	0.5	45%	0.5	45.0%	0.0	0.0%	0.7	55.0%	0.0	0.0%	0.0	0.0%	1.2
c Initial 3 years O&M	2.3	45%	2.3	45.0%	0.0	0.0%	2.8	55.0%	0.0	0.0%	0.0	0.0%	5.1
d Civil Works	5.4	45%	5.4	45.0%	0.0	0.0%	6.6	55.0%	0.0	0.0%	0.0	0.0%	12.0
e Other Mechanical and Equipment	10.5	45%	10.5	45.0%	0.0	0.0%	12.9	55.0%	0.0	0.0%	0.0	0.0%	23.4
1 HV Substation	7.1	45%	7.1	45.0%	0.0	0.0%	8.7	55.0%	0.0	0.0%	0.0	0.0%	15.8
2 Electrical system components (AC)	2.5	45%	2.5	45.0%	0.0	0.0%	3.1	55.0%	0.0	0.0%	0.0	0.0%	5.6
3 BOP & Common Systems	0.9	45%	0.9	45.0%	0.0	0.0%	1.1	55.0%	0.0	0.0%	0.0	0.0%	2.0
2 Transmission Line Procurement & Installation	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	14.8	100.0%	0.0	0.0%	14.8
a Transmission Line Procurement	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	9.6	100.0%	0.0	0.0%	9.6
b Transmission Line Installation	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	5.2	100.0%	0.0	0.0%	5.2
3 Supporting Infrastructure *	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.7	100.0%	0.0	0.0%	1.7
4 Land Acquisition & Resettlement	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.3	100.0%	0.0	0.0%	0.3
5 Consulting Services	7.0	100%	0.0	0.0%	7.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	7.0
a Implementation Consultant	5.0	100%	0.0	0.0%	5.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	5.0
b Capacity Development	2.0	100%	0.0	0.0%	2.0	100.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	2.0
6 Taxes and Duties	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	44.0	100.0%	44.0
a VAT	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	43.8	100.0%	43.8
b Import duties	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	0.2	100.0%	0.2
<b>Subtotal (A)</b>	<b>97.0</b>	<b>36%</b>	<b>90.0</b>	<b>33.6%</b>	<b>7.0</b>	<b>2.6%</b>	<b>110.0</b>	<b>41.1%</b>	<b>16.8</b>	<b>6.3%</b>	<b>44.0</b>	<b>16.4%</b>	<b>267.8</b>
<b>B. Recurrent Costs</b>													
1 Project Management	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	1.0	100.0%	0.0	0.0%	1.0
<b>Subtotal (B)</b>	<b>0.0</b>	<b>0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>1.0</b>	<b>100.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>1.0</b>
<b>Total Base Cost</b>	<b>97.0</b>		<b>90.0</b>		<b>7.0</b>		<b>110.0</b>		<b>17.8</b>		<b>44.0</b>		<b>268.8</b>
<b>C. Contingencies***</b>													
1 Physical	8.5	44%	7.5	38.8%	1.0	5.2%	10.9	56.0%	0.0	0.0%	0.0	0.0%	19.4
2 Price	4.5	33%	3.6	26.4%	0.9	6.6%	9.1	67.0%	0.0	0.0%	0.0	0.0%	13.6
<b>Subtotal (C)</b>	<b>13.0</b>	<b>39%</b>	<b>11.1</b>	<b>33.7%</b>	<b>1.9</b>	<b>5.8%</b>	<b>20.0</b>	<b>60.5%</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>33.0</b>
<b>(A+B+C)</b>	<b>110.0</b>		<b>101.1</b>		<b>8.9</b>		<b>130.0</b>		<b>17.8</b>		<b>44.0</b>		<b>301.8</b>
<b>D. Financing Charges During Implementation</b>													0.0
1 Interest During Construction	0.0	0%	0.0	0.0%	0.0	0.0%	0.0	0.0%	8.2	100.0%	0.0	0.0%	8.2
<b>Subtotal (D)</b>	<b>0.0</b>	<b>0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>0.0</b>	<b>0.0%</b>	<b>8.2</b>		<b>0.0</b>	<b>0.0%</b>	<b>8.2</b>
<b>Total Project Cost (A+B+C+D)</b>	<b>110.0</b>		<b>101.1</b>		<b>8.9</b>		<b>130.0</b>		<b>26.0</b>		<b>44.0</b>		<b>310.0</b>
<b>% Total Project Cost</b>	<b>35.5%</b>		<b>32.6%</b>		<b>2.9%</b>		<b>41.9%</b>		<b>8.4%</b>		<b>14.2%</b>		<b>100.0%</b>

\* Includes access road, raw water, telecommunications, heat water pipelines, fencing, security, etc.

\*\* Subject to approval of Government

\*\*\* Physical contingencies computed at 10% for the turnkey contract. Price contingencies computed at 1.9% on foreign exchange costs and 10.1% on local currency costs; includes a provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate

Source: Asian Development Bank and PPTA consultants estimates.

## D. Detailed Cost Estimates by Outputs/Components

(\$ million)

Item	Total Cost	Solar Plant	% of Cost	ICD Uzbekenergo	ICD Solar energy stakeholders		% of Cost
		Amount	Category	Amount	Amount	Category	Category
<b>A. Investment Costs</b>							
1 Solar Photovoltaic Turnkey Contract	200.0	200.0	100%	0.0		0.0	
2 Transmission Line Procurement & Installation	14.8	14.8	100%				
3 Supporting Infrastructure *	1.7	1.7	100%				
4 Land Acquisition & Resettlement	0.3	0.3	100%				
5 Consulting Services	7.0	0.0		5.0	71%	2.0	29%
6 Taxes and Duties	44.0	42.6	97%	1.0	2%	0.4	1%
<b>Subtotal (A)</b>	<b>267.8</b>	<b>259.4</b>	<b>97%</b>	<b>6.0</b>	<b>2%</b>	<b>2.4</b>	<b>1%</b>
<b>B. Recurrent Costs</b>							
1 Project Management	1.0					1.0	100%
<b>Subtotal (B)</b>	<b>1.0</b>	<b>0.0</b>		<b>0.0</b>		<b>1.0</b>	<b>100%</b>
<b>Total Base Cost (A) + (B)</b>	<b>268.8</b>	<b>259.4</b>	<b>97%</b>	<b>6.0</b>	<b>2%</b>	<b>3.4</b>	<b>1%</b>
<b>C. Contingencies**</b>							
1 Physical	19.4	19.4	100%				
2 Price	13.6	13.6	100%				
<b>Subtotal (C)</b>	<b>33.0</b>	<b>33.0</b>	<b>100%</b>	<b>0.0</b>		<b>0.0</b>	
<b>(A+B+C)</b>	<b>301.8</b>	<b>292.4</b>	<b>97%</b>	<b>6.0</b>	<b>2%</b>	<b>3.4</b>	<b>1%</b>
<b>D. Financing Charges During Implementation</b>							
1 Interest During Construction	8.2	7.9	96%	0.2	2%	0.1	1%
<b>Subtotal (D)</b>	<b>8.2</b>	<b>7.9</b>	<b>96%</b>	<b>0.2</b>	<b>2%</b>	<b>0.1</b>	<b>1%</b>
<b>Total Project Cost (A+B+C+D)</b>	<b>310.0</b>	<b>300.3</b>	<b>97%</b>	<b>6.2</b>	<b>2%</b>	<b>3.5</b>	<b>1%</b>

ICD = institutional capacity development

\* Includes access road, raw water, telecommunications, heat water pipelines, fencing, security, etc.

\*\* Physical contingencies computed at 10% for the turnkey contract. Price contingencies computed at 1.9% on foreign exchange costs and 10.1% on local currency costs; includes a provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate

Sources: Asian Development Bank and PPTA consultants estimate.

## E. Detailed Cost Estimates by Year

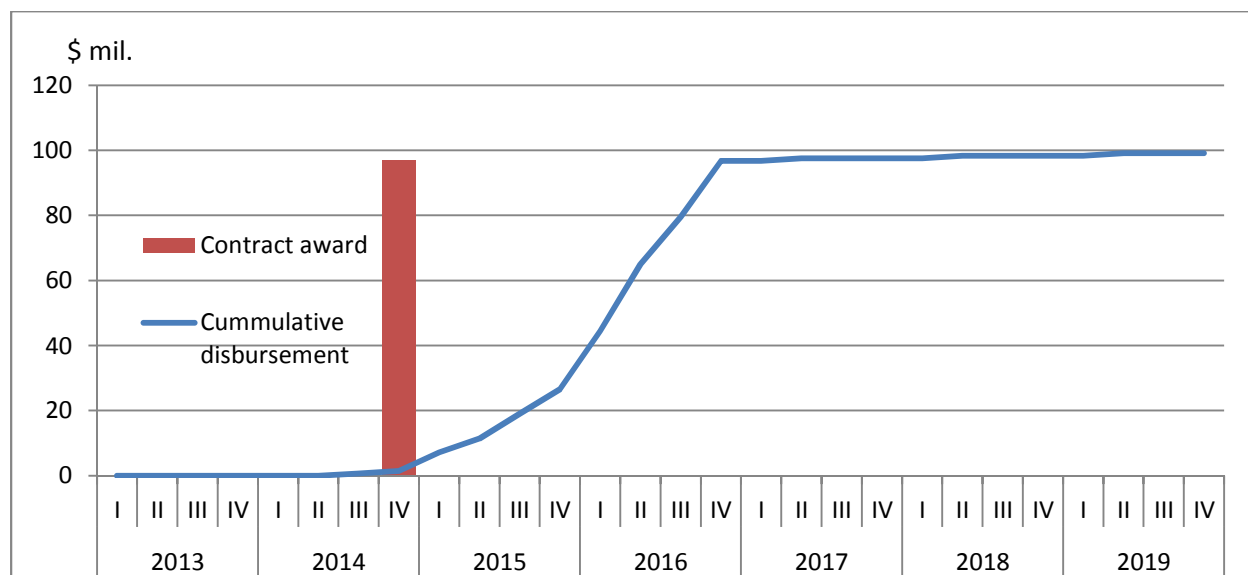
Item	(\$ million)							
	Total Cost	2013	2014	2015	2016	2017	2018	2019
<b>A. Investment Costs</b>								
1 Solar Photovoltaic Turnkey Contract	200.0	-	-	47.8	147.1	1.7	1.7	1.7
2 Transmission Line Procurement & Installation	14.8	-	0.5	2.1	12.2	-	-	-
3 Supporting Infrastructure *	1.7	-	0.2	0.7	0.9	-	-	-
4 Land Acquisition & Resettlement	0.3	-	0.3	-	-	-	-	-
5 Consulting Services	7.0	-	1.4	2.8	2.8	-	-	-
6 Taxes and Duties	44.0	-	-	9.0	35.0	-	-	-
<b>Subtotal (A)</b>	<b>267.8</b>	<b>-</b>	<b>2.4</b>	<b>62.3</b>	<b>198.0</b>	<b>1.7</b>	<b>1.7</b>	<b>1.7</b>
<b>B. Recurrent Costs</b>								
<b>Subtotal (B)</b>	<b>1.0</b>	<b>-</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>0.3</b>	<b>-</b>	<b>-</b>
<b>Total Base Cost</b>	<b>268.8</b>	<b>-</b>	<b>2.6</b>	<b>62.6</b>	<b>198.2</b>	<b>2.0</b>	<b>1.7</b>	<b>1.7</b>
<b>C. Contingencies**</b>								
1 Physical	19.4	-	-	1.7	6.0	11.6	-	-
2 Price	13.6	-	0.0	2.2	10.0	1.4	-	-
<b>Subtotal (C)</b>	<b>33.0</b>	<b>-</b>	<b>0.0</b>	<b>3.9</b>	<b>16.1</b>	<b>13.0</b>	<b>-</b>	<b>-</b>
<b>(A+B+C)</b>	<b>301.8</b>	<b>-</b>	<b>2.7</b>	<b>66.5</b>	<b>214.3</b>	<b>15.0</b>	<b>1.7</b>	<b>1.7</b>
<b>D. Financing Charges During Implementation</b>								
1 Interest During Construction	8.2	-	-	0.7	2.5	5.0	-	-
<b>Subtotal (D)</b>	<b>8.2</b>	<b>-</b>	<b>-</b>	<b>0.7</b>	<b>2.5</b>	<b>5.0</b>	<b>-</b>	<b>-</b>
<b>Total Project Cost (A+B+C+D)</b>	<b>310.0</b>	<b>-</b>	<b>2.7</b>	<b>67.2</b>	<b>216.8</b>	<b>20.0</b>	<b>1.7</b>	<b>1.7</b>
<b>% Total Project Cost</b>		<b>0.0%</b>	<b>0.9%</b>	<b>21.7%</b>	<b>69.9%</b>	<b>6.4%</b>	<b>0.5%</b>	<b>0.5%</b>

\* Includes access road, raw water, telecommunications, heat water pipelines, fencing, security, etc.

\*\* Physical contingencies computed at 10% for the turnkey contract. Price contingencies computed at 1.9% on foreign exchange costs and 10.1% on local currency costs; includes a provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate

Sources: Asian Development Bank and PPTA consultants estimate.

## F. Contract and Disbursement S-curve



For ADB loans only.

Excludes unallocated proceeds of loans adjusted to attain 90% of the loan amount.

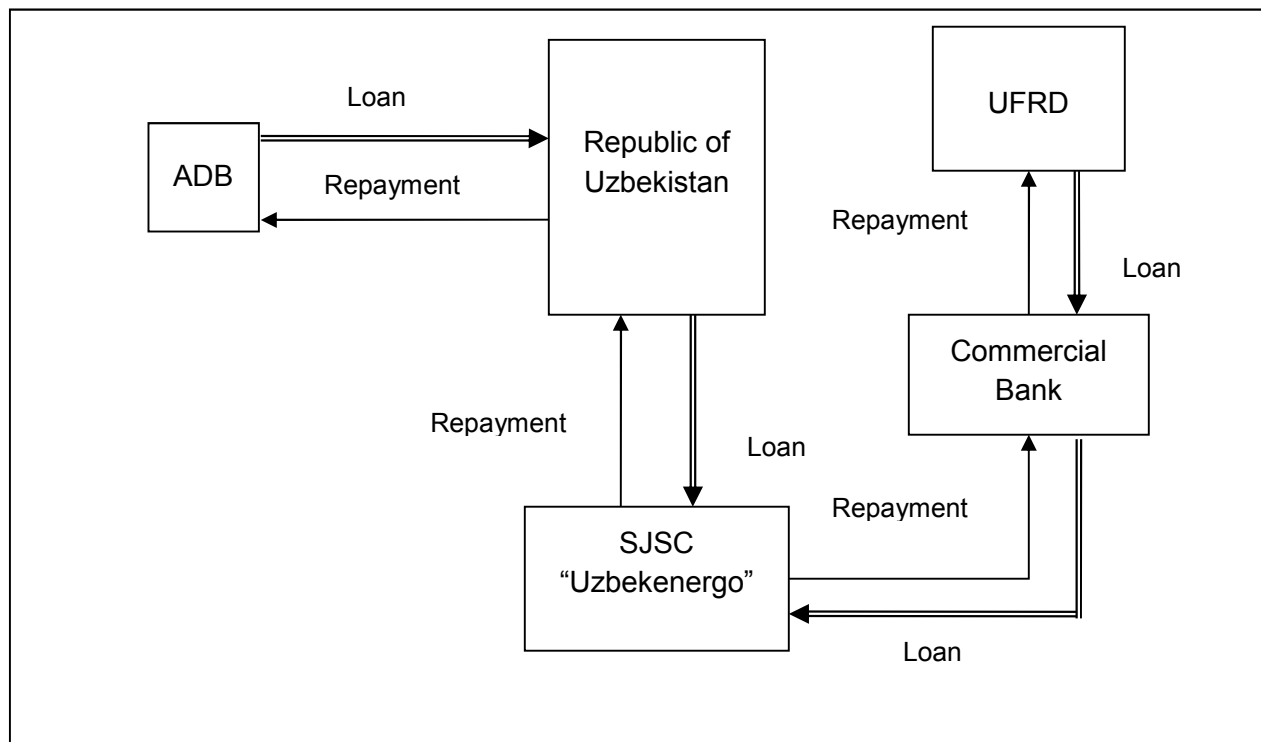
Source: Asian Development Bank estimate.

	Contract Awards (in USD million)					Total Disbursements (in USD million)				
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total
2013	-	-	-	-	-	-	-	-	-	-
2014	-	-	-	97.0	97.0	-	-	0.7	0.7	1.4
2015	-	-	-	-	-	5.7	4.3	7.7	7.4	25.1
2016	-	-	-	-	-	17.9	20.6	14.6	15.1	68.1
2017	-	-	-	-	-	-	0.8	-	-	0.8
2018	-	-	-	-	-	-	0.8	-	-	0.8
2019	-	-	-	-	-	-	0.8	-	-	0.8

Excludes unallocated proceeds of loans adjusted to attain 90% of the loan amount.

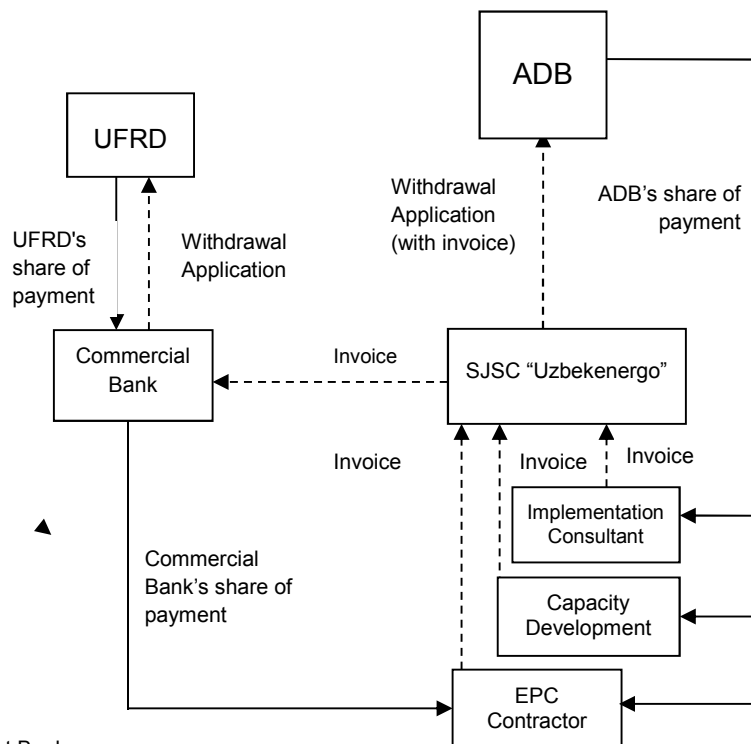
Source: Asian Development Bank estimate.

**G. Fund Flow Diagram**



ADB = Asian Development Bank, UFRD = Fund for Reconstruction and Development of the Republic of Uzbekistan.  
 Source: Asian Development Bank.

**H. Disbursement Mechanism**



Source: Asian Development Bank.

## V. FINANCIAL MANAGEMENT

### A. Financial Management Assessment

17. A financial management assessment by the ADB on the executing agency Uzbekenergo was conducted as part of the Talimarjan Power Project<sup>13</sup> in 2009 and an update of this FMA was undertaken in 2011 by the ADB as part of the Advanced Electricity Metering Project<sup>14</sup> while the World Bank also conducted a review of Uzbekenergo's financial management in March 2012<sup>15</sup>. These reports were reviewed as part of this assessment in order to identify major changes/ deviations in accordance with ADB's guidelines

18. Uzbekenergo needs to further strengthen its financial management capacity. An external audit based on International Standards on Auditing of its financial statements for the fiscal year ending 31 December 2011 indicate the need for further improvements, among others, in the classification methods and impairment provisions on account receivables, the scope of account consolidation, and accounting system improvement.

19. The pre-mitigation risk level of Uzbekenergo's financial management capacity is considered high. Uzbekenergo has initiated and implemented a series of mitigation measures including the establishment of an internal audit function which reports to the Council of the Uzbekenergo on 1 April 2013. In addition, it has adopted ISA for the external audit of the entity financial statements. Implementation of other financial management capacity development programs including but not limited to IFRS compliance and automation of accounting and financial reporting processes is in progress and through the proposed changes, it is expected that there will be positive changes in the accounting procedures, financial reporting and management reporting systems of Uzbekenergo In the next three years

20. Uzbekenergo is a 100% state-owned holding company for power generation, transmission, and distribution in Uzbekistan. It was established in August 2001 after public sector reorganization and is the legal successor of the former Ministry of Energy and Electrification. Incorporated as an open joint-stock company, Uzbekenergo has 54 subsidiaries with its shares ranging from 51% to 100% in each subsidiary. These subsidiaries include power generation, transmission, and distribution and supply companies. Most of those subsidiaries are incorporated as separate joint-stock companies.

21. Uzbekenergo's accounting policies, procedures and financial reporting are in compliance with the current National Accounting Standards of Uzbekistan. Under Presidential Resolution 48 article 442 of 2010, Uzbekenergo is required to adopt international auditing standards for external auditing of its financial statements during the period 2011-15. Uzbekenergo undertook an external audit on its financial statements of fiscal year ending 31 December 2011 based on International Standards of Auditing. For the fiscal year ending 31 December 2012, Uzbekenergo has started to adopt IFRS conversion with the plan for full conversion to cover all subsidiaries for the fiscal year ending 31 December 2013. The consolidation of financial information of the subsidiaries remains to be undertaken manually due to inadequate information systems. The capacity development program under the Takhiatash

<sup>13</sup> ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to the Republic of Uzbekistan for the Talimarjan Power Project*. Manila.

<sup>14</sup> ADB. 2011. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Republic of Uzbekistan for the Advance Electricity Metering Project*. Manila.

<sup>15</sup> World Bank. Report No: 66259-UZ. Project Appraisal Document on a proposed loan in the amount of S\$180 million to the Republic of Uzbekistan for the Advanced Electricity Metering Project. 1 March 2012.

project and other ADB loan project will address the training of IFRS specialists as well as the strengthening of information systems of Uzbekenergo with the objective to improve its financial management capability.<sup>16</sup> Financial management risk of Uzbekenergo after mitigation measures is moderate.

22. Uzbekenergo is expected to operate profitably throughout the period under the loans. With improving collection rate and commissioning of new generation facilities as well as other rehabilitated infrastructure, Uzbekenergo's financial situation will continue to improve. The financial performance of Uzbekenergo however is highly sensitive to the gas price changes. Such changes shall be factored into electricity tariff adjustments in order to ensure adequate cashflow for business operation and financing of investments. The capacity development component of the project will provide the tariff methodology study and training which aims to develop the skills required to improve tariff determination model and to ensure cost recovery tariff setting.

## **B. Disbursement**

23. The Loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2012, as amended from time to time),<sup>17</sup> and detailed arrangements agreed upon between the Government and ADB.

24. The Project primarily uses direct payment method and commitment letter procedure for the EPC contract. Each claim by the EPC contractor will be financed on a pro rata basis by respective financiers in accordance with the ratio determined in the loan agreements. For the consulting services, direct payment method procedure may be used.<sup>18</sup> PMU, assisted by project supervision consultants, will prepare disbursement projections, collect supporting documents, and prepare and send withdrawal applications to ADB. The EA will ensure necessary budgetary allocations for counterpart funds.

25. Before the submission of the first withdrawal application, the borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is US\$100,000, unless otherwise approved by ADB. The borrower is to consolidate claims to meet this limit for reimbursement. Withdrawal applications and supporting documents will demonstrate, among other things that the goods, and/or services were produced in or from ADB members, and are eligible for ADB financing.

26. Withdrawal applications to ADB will be prepared by PMU, approved by Uzbekenergo Chairman, before submission to ADB Uzbekistan Resident Mission. Supporting documents will be retained at PMU.

27. Disbursement Conditions are set forth as below:

- Loans proceeds will not be disbursed for the turnkey contract and the consulting services contract until a subsidiary loan agreement between the government and Uzbekenergo for the relending of the ADB loan has been signed and become effective in

<sup>16</sup> ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loans to the Republic of Uzbekistan for the Talimarjan Power Project*. Manila.

<sup>17</sup> Available at: [http://www.adb.org/Documents/Handbooks/Loan\\_Disbursement/loan-disbursement-final.pdf](http://www.adb.org/Documents/Handbooks/Loan_Disbursement/loan-disbursement-final.pdf)

<sup>18</sup> Available at: [http://www.adb.org/documents/handbooks/loan\\_disbursement/chap-06.pdf](http://www.adb.org/documents/handbooks/loan_disbursement/chap-06.pdf)

accordance with its terms.

- In addition, no disbursement for the turnkey contract will be made until a loan agreement between UFRD and an eligible commercial bank, and a related subsidiary loan agreement between such bank and Uzbekenergo, both for the purposes of the project and in form and substance satisfactory to ADB, have been signed and become effective in accordance with their terms.

### **C. Accounting**

28. The EA will cause PMU to maintain separate books and records by funding source for all expenditures incurred on the project. The PMU will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

29. At the PMU a project finance specialist would assist with recording the project costs, preparation of loan disbursements and preparation of progress reports to ADB.

### **D. Auditing and Public Disclosure**

30. The EA will cause the detailed consolidated project financial statements to be audited in accordance with International Standards on Auditing and with the Government's audit regulations, by an independent auditor acceptable to ADB. The audited financial statements (AFS) for the EA and audited project financial statements (AFPS) will be submitted in the English language to ADB within six months of the end of the fiscal year by the EA.

31. The annual audit report will include an audit management letter and audit opinions which cover (i) whether the project financial statements present a true and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether loan and grant proceeds were used only for the purposes of the project or not; and (iii) the level of compliance for each financial covenant contained in the legal agreements for the project.

32. Compliance with financial reporting and auditing requirements will be monitored by review missions and during normal program supervision, and followed up regularly with all concerned, including the external auditor.

33. The Government, EA and PMU have been made aware of ADB's policy on delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.<sup>19</sup> ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the recipient, or for additional support to be provided to the

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<sup>19</sup> ADB Policy on delayed submission of audited project financial statements:

- When audited project financial statements are not received by the due date, ADB will write to the executing agency advising that (i) the audit documents are overdue; and (ii) if they are not received within the next six months, requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters will not be processed.
- When audited project financial statements have not been received within 6 months after the due date, ADB will withhold processing of requests for new contract awards and disbursement such as new replenishment of imprest accounts, processing of new reimbursement, and issuance of new commitment letters. ADB will (i) inform the executing agency of ADB's actions; and (ii) advise that the loan may be suspended if the audit documents are not received within the next six months.
- When audited project financial statements have not been received within 12 months after the due date, ADB may suspend the loan.



auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

34. Public disclosure of the project financial statements, including the audit report on the project financial statements, will be guided by ADB's Public Communications Policy (2011)<sup>20</sup>. After review, ADB will disclose the project financial statements for the project and the opinion of the auditors on the financial statements within 30 days of the date of their receipt by posting them on ADB's website. The Audit Management Letter will not be disclosed.

## VI. PROCUREMENT AND CONSULTING SERVICES

### A. Procurement of Goods, Works and Consulting Services

35. All procurement of goods and works will be undertaken in accordance with ADB's *Procurement Guidelines* (2013, as amended from time to time).

36. **EPC contract.** The Executing Agency will employ two contractors. The EPC firm will be responsible for detailed design, procurement and construction of the Solar Power Plant, including: PV modules, Structures, Inverters, DC System and SCADA, including Civil Works, AC system, high voltage substation, BOP and common systems within the solar power plant boundaries plus provision of O&M services for the first three years of operation after commissioning. For the bidding, ADB's User's Guide and extended Standard Bidding Documents for *Plant: Design, Supply, Install* will be used and the turnkey contract shall use the International Federation of Consulting Engineers Conditions of Contract for *Design, Build and Operate Projects* (General Conditions, Particular Conditions, and Sample Forms). The transmission line supply contract will use Government of Uzbekistan procedures. Uzbekenergo will be responsible for contracting and monitoring EPCs activities. Uzbekenergo shall install the transmission system and construct all peripheral structures including fences, access roads, telecommunications, wells and raw water supply.

37. The Implementation consultant will be recruited according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).<sup>21</sup> Quality- and cost-based selection (QCBS) method will be the default method for recruiting the consulting firm. A quality-cost ratio of 90:10 will be used given that the project is pioneering, highly technical, and large scale. Consultants with strong qualifications are needed to effectively transfer technology and build local capacity to enable replication. The terms of reference for the Implementation Consultant are detailed in the Appendix.

38. A 12-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages, is in Section B.

39. The project envisages advance contracting for goods, works, and services.

40. **Project implementation consultant.** The executing agency will employ a project implementation consultant (an international engineering firm with experience in solar PV technology). This consultant will provide technical, financial and administrative support to the PMU during entire project implementation period and one year of operation. The consultant

<sup>20</sup> Available from <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>

<sup>21</sup> Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: <http://www.adb.org/documents/handbooks/project-implementation/>

shall provide due diligence oversight and participate in the review of any subcontractors and subcontracting arrangements. ADB ADF loan proceeds will cover the cost of the project implementation consultant. The consultant will also develop and implement capacity development plans for Uzbekenergo, relevant agencies, research and design institutes, and industries, on solar project management, operation, maintenance, and all technical, financial, regulatory, and safeguards issues on solar energy development. The capacity development program will be financed through ADB's ADF loan proceeds.

## B. Procurement Plan

### a) Basic Data

<b>Project name:</b> Samarkand Solar Power Project	<b>Executing Agency:</b> UZBEKENERGO
<b>Country:</b> Uzbekistan	<b>Loan Number:</b> TBD
<b>Loan Amount:</b> \$110 million	<b>Date of this Procurement Plan:</b> 8 October 2013
<b>Date of First Procurement Plan:</b> 20 June 2013	

41. The project envisages advance contracting for works, goods, and services as approved by ADB management.

### b) Process Thresholds, Review and 12-Month Procurement Plan

42. Except as ADB may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works	
Method	Threshold
International Competitive Bidding for Goods	Greater than or equal to \$500,000
International Competitive Bidding for Works	Greater than or equal to \$2,000,000

#### 1. ADB Prior or Post Review

43. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Procurement Method	Prior or Post	Comments
<b>Procurement of Goods and Works</b>		
ICB Goods and Works	Prior	Yes
<b>Recruitment of Consulting Firms</b>		
Quality- and Cost-Based Selection (QCBS)	Prior	Yes

#### 2. Goods and Works Contracts Estimated to Cost More Than \$1 Million

44. The following table lists goods and works contracts for which procurement activity is either ongoing or expected to commence within the next 24 months.

General Description	Contract Value (US \$ million)	Procurement Method	Prequalification of Bidders (y/n)	Advertisement Date (quarter/year)	Comments
Procurement of Solar PV Plant – design, supply and install	200	ICB	N	4th quarter of 2013	To be financed by ADB and UFRD
Transmission line supply	9.6	Government Procedures	N	4th quarter of 2013	To be financed by Uzbekenergo

### 3. Consulting Services Contracts Estimated to Cost More Than \$100,000

45. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value	Recruitment Method	Advertisement Date (quarter/year)	International or National Assignment	Comments
Implementation Consultant	\$7 million	QCBS with quality : cost ratio 90:10	4th quarter of 2013	International and National	To be financed by ADB

### 4. Consulting Services Contracts Estimated to Cost Less Than \$100,000

46. There are no smaller-value consulting service contracts envisaged in this project.

### 5. ADB Review of Contract Modification

47. ADB will review contract modifications accordance with the procedures set forth in the financing agreement between the Beneficiary and ADB.

### 6. Indicative List of Packages Required Under the Project

48. The following table provides an indicative list of all procurement (goods, works and consulting services) over the life of the project. Contracts financed by the Borrower and others should also be indicated, with an appropriate notation in the comments section.

General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Goods and Civil Works	\$200 million	One (1)	ICB		
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Domestic Preference Applicable	Comments
Goods	\$9.6 million	One (1)	Government Procedures		To be financed by Uzbekenergo
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Type of Proposal	Comments
Implementation Consultant	\$7 million	One (1)	QCBS	Full Technical Proposal	

## VII. SAFEGUARDS

49. Government through the Uzbekenergo will ensure that all safeguard requirements prescribed for Project that have been prepared are implemented. The Project, in accordance to ADB SPS 2009, was categorized as “B” project for environment, as “B” project for Involuntary Resettlement, and as “C” project for Indigenous People impacts. Therefore, the following safeguard documents were prepared during project preparation:

- (i) The initial environmental examination (IEE) including its environmental management plan (EMP) was prepared. This report identified potential impacts related with the Project and proposed mitigation measures and monitoring plan presented in the EMP.
- (ii) The land acquisition and resettlement plan (LARP) for construction of solar power plant, transmission line, and access road to the plant.

50. The Government through Uzbekenergo obliges to implement recommendations from these two safeguard reports that were prepared with adequate consultation with people living around the project areas. The following paragraphs describe briefly the activities to be implemented during project implementation and operation.

### A. Environment

51. Uzbekenergo will ensure that the design, construction, and operation and maintenance of the facilities under Project are carried out in accordance with ADB’s SPS (2009), applicable laws and regulations in Uzbekistan, and recommendation from IEE and its EMP. Uzbekenergo will ensure that potential adverse environmental impacts arising from the Project are minimized by implementing all mitigation and monitoring measures as presented in the EMP included in the IEE. Uzbekenergo will ensure that:

- (i) The PMU will engage the environment specialist as part of its team to implement and record the implementation of the EMPs prepared for the Project.
- (ii) If the detailed designed will be changed, the updated EMP has to be prepared, and all necessary Government’s permits and license, including Ecological Expertise Opinion, to construct the power plant and its supporting facilities will be obtained. The updated EMP will have to ensure the inclusion of mitigation measures to address all impacts associated with construction of access road and transmission line.
- (iii) Detailed engineering designs, civil works and other contracts for the project incorporate applicable environmental measures identified in the IEE and its EMP.
- (iv) Bidding document for supervision consultant/engineer will include necessary requirement to enable them to assist in implementing IEE and its EMP.
- (v) All bidding document for civil works/turnkey contract will include all safeguards requirement as describe in the IEE and its EMP.
- (vi) The most responsive bidder will have adequate resources to implement safeguards requirement.
- (vii) EMP is updated prior to implementation of civil works.
- (viii) Starting from project commencement, the PMU will submit annual environmental reports on implementation of EMP, and semi-annual environmental monitoring report after commencement of civil works. The report will include, among other things, a review of progress made on environmental measures detailed in the IEE and EMP, and problems encountered or un-expected impacts encounter

during implementation and remedial measures taken to address those problems. The report will also include any complaint received and action to resolve the complaint under the grievance redress mechanism.

- (ix) The PMU will take responsibility as the secretariat for grievance redress mechanism for both environment and social aspects of the project.
- (x) Civil works contractors are supervised and monitored to ensure compliance with the requirements of the IEE and EMP.
- (xi) If unexpected or unforeseen environmental impacts occur, the environment specialist from PMU together with the supervision consultant, and contractor will take corrective measures promptly.

## **B. Land Acquisition and Resettlement**

52. Uzbekenergo will ensure that land acquisition will be carried out in accordance with ADB's SPS (2009), and applicable laws and regulations in Uzbekistan, and has been formulated and developed in the LARP. Uzbekenergo will ensure that LARP will be implemented, and monitored to ensure that no affected people will suffer by unattended impacts associated with land acquisition.

53. The present LARP indicated that land acquisition will have 17 affected households (AH) with 109 people, out of which 3 AHs are severely impacted by land acquisition for the power plant. Compensation eligibility is limited by a cut-off date for Pstdargom district is 6 June 2013 and for Nurobod district 10 July 2013. Briefly the strategy to address the impacts associated with land acquisition will include compensation for permanent land acquisition of agricultural land on a "land for land" basis, Such land will be of equal value/productivity in a nearby location and with comparable associated services/facilities, or compensation to provide such services. Transaction costs, registration fees, if any, will be borne by Uzbekenergo. Alternatively, monetary compensation for agricultural land at replacement cost will be provided. Buildings (registered or not) will be compensated at full replacement cost without application of depreciation. For partial impacts (structure wall, fences etc), monetary compensation at replacement rates will be paid to restore the remaining structure to its original state. Unaffected portions of a structure will also be compensated if they become unlivable after impact occurs. Lost income from crops planted on the affected land will have monetary compensation.

54. The grievance redress mechanism was established to assist affected households, in case a complaint arises that needs to be resolved. The implementation of the LARP will be monitored and recorded, and reports will be submitted to ADB for disclosure. The current LARP indicated that total costs for LARP implementation will be around \$240,000.00. For implementing this LARP Uzbekenergo will ensure that:

- (i) The PMU will recruit social development specialist to implement LARP and address other social concerns of the project, if any.
- (ii) The LARP will be updated if the detail design completed. The updated LARP report will be carried out with adequate consultation with affected people. The report should at least indicate any change on land acquisition from the detail designed, change on affected people, and change on budget for LARP implementation. However, no change should be made on entitlement matrix with clear guidance on entitlements for compensation.
- (iii) The updated LARP has to be submitted to ADB to receive a concurrence prior to implementation.
- (iv) The updated LARP will be disclosed to affected people.

- (v) If the detailed design will not cause any change on land acquisition, the PMU has to provide ADB with written information that updated LARP is not required, and the existing LARP report will be implemented.
- (vi) The awarding civil work contract will be done only after affected people receive full payment of compensation, and report on full payment of compensation needs to be submitted to ADB. The advance payment to the contractor only can be released by ADB after the report on full payment received by ADB.
- (vii) Report on monitoring the implementation of LARP including any grievance will be submitted to ADB in quarterly basis until the payment of compensations to affected parties fully paid.
- (viii) The social development specialist of PMU will also observe any unanticipated impacts due to land acquisition, and take necessary measures in accordance to the provision describe in the LARP.

55. The project areas will not involve any territory, habitat, or common property that is managed by any ethnic minority or indigenous people, and the project is not expected to generate impacts to indigenous people as describe in ADB SPS 2009, because there is no such community living in surrounding project areas. Therefore, no arrangement address indigenous people impacts as describe in ADB SPS 2009 was prepared. However, during implementation of the Project, the social development specialist of PMU is obliged to observe any concerns related with this aspect.

### **C. Indigenous Peoples**

56. Classified as category C under ADB's SPS (2009). The project is not expected to affect indigenous peoples. According to official statistic there are no indigenous people in project area.

## **VIII. GENDER AND SOCIAL DIMENSIONS**

57. The project is classified with "some gender elements" (SGE). Social and Gender and Development actions and measures as described in the SPRSS will be implemented and monitored by the PMU. Some gender elements will include: gender and development capacity building activities/training for key stakeholders and beneficiaries; information campaigns to ensure/increase women's participation/representation; collection and analysis of sex-disaggregated information including data on related diseases. Separate toilet facilities for men and women will be constructed in the power plant facility.

58. In accordance with the minimum requirements of ADB's Public Communications Policy (2011), the project shall implement a communication strategy that includes: (i) designation of a focal point for regular contact with project-affected people and other stakeholders; (ii) identification of mechanisms for feedback during design and implementation; (iii) details of types of information to be disclosed, mechanisms for public notice including language and timing, and responsibility for implementing and monitoring disclosure and dissemination.

## IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

### A. Project Design and Monitoring Framework

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> Improved sustainability of energy supply in Uzbekistan</p>	<p>Total domestic power generated increased from 52 TWh (2010) to 65 TWh in 2020</p> <p>Sustained outage decreased from 7 times per year in 2011 to 3 times per year in 2020</p> <p>Total GHG emission intensity reduced from 4.53 kg CO<sub>2</sub>e/GDP (2009) to 3 kg CO<sub>2</sub>e/GDP in 2020</p>	<p>Uzbekenergo's annual performance report Central Dispatch Center statistics</p> <p>IEA key world energy statistics</p>	<p><b>Assumptions</b> Stable economic growth and power demand grows by 2%–3% per annum</p> <p>Electricity tariffs regularly adjusted to cover costs</p> <p>Global and country investment climate remains robust</p>
<p><b>Outcome</b> Increased renewable energy generation in Uzbekistan</p>	<p>At least 159 GWh of solar power generated by 2017</p> <p>At least 88,000 tons CO<sub>2</sub>e emissions avoided by 2017</p>	<p>Uzbekenergo annual report</p>	<p><b>Assumptions</b> Gas-fired power plants continue to dominate energy mix and provide base-load power</p>
<p><b>Outputs</b></p> <p>1. Solar power plant, transmission and support facilities operational</p> <p>2. Institutional capacity of Uzbekenergo developed</p> <p>3. Institutional capacity of solar energy stakeholders developed</p>	<p>Grid-connected 100 MW solar photovoltaic plant commissioned by 2016</p> <p>A solar power project pipeline developed and 3 project designs prepared by 2017</p> <p>At least five capacity development training and seminars for at least 100 Uzbekenergo staff and experts, including 100% of Uzbekenergo women staff in relevant departments conducted by 2017</p> <p>At least 10 solar capacity development (training, workshops, and technical visits) for at least for at least 150 participants from 10 solar energy stakeholders, including at least 10% women trained</p>	<p>Contractor as-built drawings and commissioning report</p> <p>Uzbekenergo annual reports</p> <p>Training reports</p> <p>Training reports, Uzbekenergo annual reports</p>	<p><b>Assumptions</b> All trained staff are retained at least throughout the duration of project implementation</p> <p>9 kilometer road linking the project access road to the main road is rehabilitated by government as planned</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks																							
	by 2017  At least 3 solar related training workshops for at least thirty participants from 10 manufacturing industries																									
	and entrepreneurs, involving at least 10% women participants, conducted by 2017  At least two safeguards and gender awareness workshops conducted for at least 20 staff and experts and two information campaigns to increase women's participation in solar energy development conducted by 2017																									
<b>Activities with Milestones</b>			<b>Inputs</b>																							
<ol style="list-style-type: none"> <li>1. Solar Power Plant, transmission and support facilities operational               <ol style="list-style-type: none"> <li>1.1 Executing agency recruits and mobilizes implementation consultant (January–September 2014)</li> <li>1.2 Executing agency procures contractors for the construction and installation of the solar power plant and transmission line supply (November 2013–November 2014)</li> <li>1.3 Contractor completes detailed engineering design for the solar power plant and associated facilities (October 2014–March 2015)</li> <li>1.4 Procurement of equipment and materials (September 2014–June 2015)</li> <li>1.5 Uzbekenergo constructs, installs, and commissions the transmission line and support infrastructure (July–October 2015)</li> <li>1.6 Contractor constructs, installs, and commissions the solar power plant (January 2015–March 2016)</li> <li>1.7 Contractor provides operation and maintenance services (April 2016– March 2019)</li> </ol> </li> <li>2. Institutional capacity of Uzbekenergo developed               <ol style="list-style-type: none"> <li>2.1 ADB and the executing agency approve the capacity development plan (December 2013)</li> <li>2.2 Project preparatory TA consultant conducts trainings and produces manuals consistent with the approved capacity development plan (December 2013–March 2014)</li> <li>2.3 Implementation consultants provide project management and supervision support to the executing agency (September 2014– March 2017)</li> <li>2.4 Implementation consultant updates and implements capacity development plans (September 2014– March 2017)</li> </ol> </li> <li>3. Institutional capacity of solar energy stakeholders developed               <ol style="list-style-type: none"> <li>3.1 ADB and the executing agency approve the solar capacity</li> </ol> </li> </ol>		<table border="0"> <tr> <td>ADB</td> <td>\$110</td> </tr> <tr> <td>million</td> <td></td> </tr> <tr> <td>• ADF</td> <td>\$101.1</td> </tr> <tr> <td>million</td> <td></td> </tr> <tr> <td>• ADF hard term</td> <td>\$8.9</td> </tr> <tr> <td>million</td> <td></td> </tr> <tr> <td>Government</td> <td>\$44</td> </tr> <tr> <td>million</td> <td></td> </tr> <tr> <td>Uzbekenergo</td> <td>\$26</td> </tr> <tr> <td>million</td> <td></td> </tr> <tr> <td>UFRD</td> <td>\$130</td> </tr> <tr> <td>million<sup>22</sup></td> <td></td> </tr> </table>	ADB	\$110	million		• ADF	\$101.1	million		• ADF hard term	\$8.9	million		Government	\$44	million		Uzbekenergo	\$26	million		UFRD	\$130	million <sup>22</sup>	
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<sup>22</sup> Subject to approval of Government.



Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
development plan (December 2013) 3.2 Implementation consultant updates and ADB and the executing agency approve the solar capacity development plan (September-December 2014) 3.3 Implementation consultant implements the capacity development plans (December 2014– March 2017)			

ADB = Asian Development Bank, ADF = Asian Development Fund; IEA = International Energy Agency; PPTA = project preparatory technical assistance, UFRD = Fund for Reconstruction and Development of the Republic of Uzbekistan.

## B. Monitoring

59. **Project performance monitoring:** the following indicators will be updated in the quarterly progress reports and at the time of semi-annual meetings and the midterm review expected in two years from the date of loan effectiveness.

- Installed generation capacity (MW)
- Installed transmission line by kV (km)
- Power supply by power plants and consumption by region and type (GWh/year)
- System losses (commercial and technical, and transmission and distribution) (%)
- Power transformer capacity (MVA)
- Power tariff structure and level (sum/kWh)
- Power trade volume (GWh/year) and amount (\$ million) by country
- Uzbekenergo annual report and financial statements (including balance sheet/cash-flow/income statement)

60. The status of the DMF targets/indicators and others indicated below will be updated in the quarterly progress reports and at the time of semi-annual meetings and the midterm review expected in two years from the date of loan effectiveness for the Samarkand Solar Power Project.

- Annual power generated (GWh)
- Annual water consumption (m<sup>3</sup>)
- Forced outage (hour)
- Scheduled maintenance (hour)
- CO<sub>2</sub> emission (tCO<sub>2</sub>e)

61. **Compliance monitoring:** Loan covenants — policy, legal, financial, economic, environmental, and others — will be monitored through semi-annual project meeting and the midterm review.

62. **Safeguards monitoring:** Executing agency's quarterly progress reports, EMP, semi-annual environmental reports throughout the project implementation period. For LARP implementation, the executing agency's quarterly report will also cover (i) payment of compensation and other entitlements, and (ii) monitoring of the land acquisition impacts. In addition, the executing agency is required to submit a report on full payment of compensation and other entitlements to affected people prior to contract awards for the turnkey and supply contracts,

63. **Poverty and Social and Gender action plans:** Executing agency's quarterly progress reports, and through semi-annual project meeting and the midterm review

## C. Evaluation

64. Within 6 months of physical completion of the project, the executing agency will submit a project completion report to ADB.<sup>23</sup>

## D. Reporting

65. The executing agency will provide ADB with (i) quarterly progress reports, which include Environmental Management Plan, in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan and (d) updated implementation plan for next 12 months; and (iii) a project completion report within 6 months of physical completion of the Project. To ensure projects continue to be both viable and sustainable, project accounts and the executing agency AFSs, together with the associated auditor's report, should be adequately reviewed.

## E. Stakeholder Communication Strategy

66. Project information will be strategically disseminated through media (including local television programs and local newspaper articles) at main milestones including loan signing, EPC and supply contract awards and project completion. A grievance redress mechanism will be established at the project site gate, by phone and email, and through public consultation events. In compliance with the minimum requirements of ADB's Public Communications Policy (2011), the Samarkand branch of Uzbekenergo will designate an officer as focal point for regular contact with project-affected people and other stakeholders. The designated officer will be responsible for obtaining the information from the complainant to identify source of problem and verify the complaint. The PMU shall provide project performance updates on progress every six months. The Samarkand branch of Uzbekenergo shall conduct information campaigns to describe ongoing and future activities during project implementation.

### ADB Public Communications Strategy

Project Documents	Means of Communication	Responsible Party	Frequency	Audience(s)
Project Information Document (PID)	ADB's website	ADB	initial PID no later than 30 calendar days of approval of the concept paper; quarterly afterwards	General Public
Design and Monitoring Framework (DMF)	ADB's website	ADB	draft DMF after post fact-finding mission	Project-affected people
Environmental Impact Assessment	ADB's website	ADB	at least 120 days before Board consideration	General Public, project-affected people in particular
Resettlement Planning Documents	ADB's website	ADB	post fact-finding mission	General Public, project-affected people in particular

<sup>23</sup> Project completion report format available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>.

<b>Project Documents</b>	<b>Means of Communication</b>	<b>Responsible Party</b>	<b>Frequency</b>	<b>Audience(s)</b>
Report and Recommendation of the President	ADB's website	ADB	within 2 weeks of Board approval of the loan	General Public
Legal Agreements	ADB's website	ADB	no later than 14 days of Board approval of the project	General Public
Initial Poverty and Social Assessment	ADB's website	ADB	within 2 weeks of completion	General Public, project-affected people in particular
Documents Produced under Technical Assistance	ADB's website	ADB	within 2 weeks of completion	General Public
<b>Project Documents</b>	<b>Means of Communication</b>	<b>Responsible Party</b>	<b>Frequency</b>	<b>Audience(s)</b>
Project Administration Manual	ADB's website	ADB	After loan negotiations	General Public
Social and Environmental Monitoring Reports	ADB's website	ADB	routinely disclosed, no specific requirements	General Public, project-affected people in particular
Major Change in Scope	ADB's website	ADB	within 2 weeks of approval of the change	General Public
Progress Reports	ADB's website	ADB	within 2 weeks of Board or management approval	General Public
Completion Report	ADB's website	ADB	within 2 weeks of circulation to the Board for information	General Public
Evaluation Reports	ADB's website	ADB	routinely disclosed, no specific requirements	General Public
Performance of the investment program with clearly defined information requirements and indicators, policy construction and reconstruction, business opportunities, bidding process and guidelines, results of bidding process, and summary progress reports of ongoing projects.	The borrower's Website	The borrower (Executing Agency)	per project progress, no longer than monthly	General Public

## **X. ANTICORRUPTION POLICY**

67. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the Project.<sup>24</sup> All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all Project contractors, suppliers, consultants and other service providers. Individuals/entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the Project.<sup>25</sup>

68. To support these efforts, relevant provisions are included in the loan agreements/regulations and the bidding documents for the Project. Procurement for the EPC will follow ADB's Procurement Guidelines (2013, as amended from time to time), consultant selection will adopt ADB's Guidelines on the Use of Consultants (2013, as amended from time to time), and disbursement will be made in accordance with ADB's disbursement policies, guidelines, practices, and procedures.

<sup>24</sup> Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

<sup>25</sup> ADB's Integrity Office web site is available at: <http://www.adb.org/integrity/unit.asp>

## XI. ACCOUNTABILITY MECHANISM

69. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism. For further information, see <http://www.adb.org/Accountability-Mechanism/default.asp>.<sup>26</sup>

## XII. RECORD OF PAM CHANGES

- June 2013: 1<sup>st</sup> version completed.

<b>Date Updated</b>	<b>PAM Section</b>	<b>Change</b>	<b>Appendix</b>
11 August 2015	VI.B. Procurement Plan	Updated to reflect contract award for Project management and supervision consultant	2
2 December 2015 18 March 2016	IV.F. Contract and Disbursement S-Curve	Updated after midterm review mission Updated after decision to conduct post-qualification for contract for PV power plant	3
3 December 2015	IX.A. Project Design and Monitoring Framework	Updated target dates after midterm review mission	4
14 March 2016	V.D. Auditing and Public Disclosure (para 30)	Combined submission of audited project financial statements for FY 2014 and 2015	5

<sup>26</sup> For further information see: <http://compliance.adb.org/>.

## OUTLINE TERMS OF REFERENCE FOR PROJECT IMPLEMENTATION CONSULTANT

### A. Background

70. The Samarkand 100 MW Solar Photovoltaic Power Plant project (the Project) aims to increase renewable energy generation and reduce greenhouse gas emissions (GHG) in Uzbekistan. The Project has three main components: (i) construction of a 100 megawatt (MW) grid-connected crystalline photovoltaic power plant with fixed tilt assembly; (ii) institutional capacity development for Uzbekenergo, and, (iii) institutional capacity development for solar energy stakeholders. Construction will be done by a turnkey engineering, procurement and construction (EPC) contractor for the solar power plant. The contract scope will cover detailed design, selection of equipment, installation and commissioning. A supply contract will be procured for the transmission line.

71. The project is a priority project identified by State Joint-Stock utility company (SJSC) Uzbekenergo (UE). The first of its kind in Central Asia, the project will bring Uzbekistan closer to its vision of becoming the region's solar technology and knowledge hub. Targeting 21% renewable by 2031, Uzbekistan has an ambitious plan to install at least 4 GW of solar capacity. An ADB capacity development technical assistance (TA) helped Uzbekistan create the International Solar Energy Institute<sup>27</sup> to link research with industry. An ADB policy and advisory TA (PATA) is conducting feasibility studies for six solar power projects,<sup>28</sup> this Project being the first. Onsite measurements of solar and weather data are ongoing in the six sites. Energy yield models based on 12-year historical satellite data and validated by ground data are used for the feasibility studies. The PATA is conducting technical, financial and economic, governance, poverty, social, and environmental safeguards due diligence for this project following ADB's policies and guidelines. The PATA also formulated a solar energy development roadmap and proposed enabling policy and regulatory frameworks. While Uzbekistan is almost 100% electrified, the demand-supply gap leaves many provinces, including Samarkand, with intermittent power. In addition, the domestic consumption of gas equals lost export revenues, estimated at over \$900 million for 2012 alone.

72. The solar energy development roadmap for Uzbekistan envisions the integration of various solar power technologies to supply, in the optimistic scenario, up to 17% of the country's power mix by 2031. To support and enable the achievement of this vision, the capacity of different players and stakeholders need to be developed and enhanced. Institutional capacity development will enable creation sustainable and clean technology industries, support local manufacturing, strengthen knowledge and expertise in solar energy research, project development and financing, and increase deployment of renewable energy. This will provide linkages among stakeholders including academic institutions and industries, enable the growth of a solar components manufacturing industry enable export of local technologies and expertise in the region and globally, as well as safeguard environment, and demonstrate international best practices and standards. Infrastructure development and the investment commitment by the Government combined with institutional capacity building will enable Uzbekistan to achieve its vision of becoming the regional leader in solar energy development. The holistic development of the solar sector will serve as a benchmark for development of other key economic sectors of Uzbekistan.

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<sup>27</sup> ADB. 2011. *Technical Assistance to the Republic of Uzbekistan for the Design and Strengthening of the Solar Energy Institute*. Manila. ISEI was officially established in March 2013

<sup>28</sup> ADB. 2011. *Technical Assistance to the Republic of Uzbekistan for Solar Energy Development*. Manila.

73. SJSC Uzbekenergo intends to procure an EPC turnkey contractor to construct the solar PV power plant, and associated support facilities. The contractor will be responsible for design, supply, delivery, erection, testing, commissioning of the power plant, and support facilities. A supply contract will be procured for the transmission line, with installation by Uzbekenergo. The contractors are scheduled to be mobilized in the second quarter of 2014. The EPC contract shall include an operation and maintenance contract for three years from commissioning. A project preparation consultant has been recruited under ADB technical assistance<sup>29</sup> funding to assist SJSC Uzbekenergo in preparing the conceptual system design and technical specifications of the solar power plant, prepare bidding documents, conduct tender evaluation, and other pre-implementation works. This project implementation consulting firm will supervise and monitor the implementation of the project, including the construction and commissioning works, and, build institutional capacity of SJSC Uzbekenergo, relevant research institutes (including the International Solar Energy Institute and Physics Sun), design institutes, and government financial and technical agencies, institutions, local manufacturing industries, and local solar experts on solar power development and grid integration from technical, financial, regulatory, project management, and operation and maintenance aspects.

## **B. Objective of the Assignment**

74. The assignment will require the services of a multidisciplinary team of consultants. An implementation consulting firm (the Firm) with international and national experts experienced in design of solar PV power plants is required to oversee, monitor and supervise the construction and commissioning work. The Firm will also update and implement the institutional capacity development plans on solar energy development.

75. The Firm will also prepare necessary project plans, progress reports, payment certificates, provisional and final take over certificates, claims evaluation reports, project final report and any other project management documents as required in accordance with good practice and Uzbekenergo and ADB requirements.

76. UE will assist the consultants in the onsite coordination, data gathering and report writing. UE will also provide all necessary assistance to the consultants in liaising with other government ministries and agencies.

77. UE will provide and make available to the consultants, free of charge, the following facilities, services, equipment, materials, documents and information as required by the consultants for carrying out the assignment:

- (i) Counterpart staff/technical support,
- (ii) Office space: sufficient office space for the consultant team, with national and international telephone lines, electricity and air conditioning/heating, and internet connections,
- (iii) Office furniture: desks, office chairs, and bookshelves/cabinets adequate to accommodate the full complement of international and local consultants, and
- (iv) Organizational support: assistance in all arrangements for workshops, meetings, and field visits; and access to required data, maps and other relevant information.

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<sup>29</sup> ADB. 2012. *Technical Assistance to the Republic of Uzbekistan for the Preparation of the Samarkand Solar Power Project*. Manila.

78. The consultants will be responsible for their personal computers and other facilities for producing reports.

79. Any equipment that is procured by the consultant for use during the project implementation period will be transferred to the EA at the time of contract closure.

### **C. Scope of Work**

80. The scope of work is divided into two main parts: (i) project monitoring and supervision, and (ii) capacity development.

#### **1. Project Monitoring and Supervision**

81. The consultant will provide oversight of all aspects of the turnkey contractor's works, including but not limited to the following:

- (i) Review, update and assist UE in executing the procurement and implementation plans based on the bid evaluation and bid evaluation report completed by the project preparatory consultant.
- (ii) Prepare a project implementation manual covering the project organization, payment procedures, and project time schedule and quality assurance program.
- (iii) Develop and implement a construction quality assurance program.
- (iv) Monitor social development (gender), safeguards and environmental management implementation and provide early warning of any potential safeguard risks.
- (v) Ensure that any land acquisition and involuntary resettlement are fully compensated and other requirements stipulated in the Land Acquisition and Resettlement Plan (LARP) are fully implemented before the commencement of works.
- (vi) Assist with the implementation and, if necessary, periodic revisions of the LARP and ensure timely reporting on LARP implementation in the quarterly report. Assist the executing agency and the local government with necessary public consultations. Liaise with the executing agency and local government to ensure that all compensations (social and environmental) are paid in a timely manner and that the right-of-way is cleared.
- (vii) Monitor implementation progress and identify what actions and resources are required to address the EPC needs to achieve the schedule and how the proposed project could be best implemented;
- (viii) Inspect materials before shipment upon arrival and upon erection.
- (ix) Review the contractor's test procedures for compliance with manufacturers' requirements and design criteria. The consultant will witness selected tests and review the test results and submit a report.
- (x) Verify contractor's work and issue certification of payment to the contractor.
- (xi) Prepare quarterly payment reports, ensure claim management, manage project account and analyze the causes of delay, if any.
- (xii) Prepare the overall disbursement plan, monitor costs, and maintain project accounts.
- (xiii) Reconfirm technical specifications and update if deemed deficient.
- (xiv) Review and approve the engineering design drawings, calculations, delivery program, and documents submitted by the contractors.

- (xv) Monitor the execution of the project components in line with the project time schedules and the work programs provided by the contractors.
- (xvi) Certify invoices and assist Uzbekenergo in preparing withdrawal applications, maintaining project accounts, and keeping records of any disbursement under the project. Prepare and regularly update the forecast disbursement schedules.
- (xvii) Prepare project financial statements recording the project expenditures, prepare annual financial reports ready for auditing by independent auditors; manage cash flows and set up financial management information system.
- (xviii) Identify any problem areas during project implementation, proposing remedial actions, and promptly report any outstanding issues to the executing agency.
- (xix) Conduct field visits and appropriate tests at regular and appropriate times during construction, testing and commissioning.
- (xx) In line with the work programs of the contractors, prepare and advise the executing agency on the outage planning of existing facilities during implementation.
- (xxi) Coordinate safety measures between live components in operation and components under construction. Giving advice and, when required, provide training to the executing agency on safety planning and safety measures.
- (xxii) Conduct factory inspections and performance tests within the framework of the supply contracts.
- (xxiii) Review and certify the commissioning test reports submitted by the contractors/suppliers; attend the commissioning phase; establish the list of deficiencies after commissioning; and prepare a time frame for the contractors/suppliers to remedy the deficiencies. Establish a monitoring program for the use of the executing agency.
- (xxiv) Prepare and issue provisional acceptance certificates for the works, as well as for spare parts. Prepare the final taking-over certificates, along with the final payments to be issued by the executing agency after the end of the warranty period and the remedy of all deficiencies.
- (xxv) Monitor Uzbekenergo's compliance with the loan agreement covenants and report to ADB; track project outputs, outcomes and impacts against the project's design and monitoring framework.
- (xxvi) Prepare monthly progress reports, quarterly reports, project completion report, and other reports deemed necessary by the executing agency and/or ADB.
- (xxvii) Compare as-built drawings to design.
- (xxviii) Address shortcomings in any of these areas.
- (xxix) Assist in commissioning activities.
- (xxx) Provide additional services as reasonably requested by Uzbekenergo to complete the project.

## **2. Capacity Development**

82. The consultant will carry out the capacity development component of the project including but not limited to the following tasks:

- (i) Develop and implement an institutional capacity development plan for Uzbekenergo and relevant academic and research institutes (including the International Solar Energy Institute, Physics Sun and Uzhydromet), design institutes (such as Teploelektroproyekt, Sredazenergosetproyekt, and Uztyazhneftegazkhmproyekt) relevant financial, regulatory, and environmental agencies including the Ministry of Finance, Ministry of Economy, State Nature



Protection), commercial investment banks and financing institutions, local solar, social, and environmental specialists, solar engineers and technicians, solar and other advanced manufacturing industries, construction companies, and energy-intensive industries on solar energy development, project management, and grid integration from technological, financial, regulatory, manufacturing, and social and environmental safeguards aspects, including but not limited to the following topics:

- a. Technological
  - i. Solar energy technologies including photovoltaic, concentrating solar power, integrated solar combined cycle, and distributed solar energy.
  - ii. Grid integration
  - iii. Solar energy research and development trends
  - iv. Technology incubation: research, development, demonstration and deployment
  - v. Technology transfer, intellectual property rights, trademarks
  - vi. International collaboration and partnerships (research and manufacturing)
- b. Project and Business Development
  - i. Solar energy resource assessment including modeling, simulation, and forecasting
  - ii. Surveying, civil and other pre-construction works
  - iii. Developing bankable feasibility studies
  - iv. Project structuring, project finance and Public-Private Partnership
  - v. Attracting investors and technology providers
  - vi. Promoting joint ventures
- c. Project Management and Supervision
  - i. Project design
  - ii. Project management
  - iii. Project implementation
  - iv. Operation and maintenance
  - v. Risk management and mitigation
- d. Renewable (Solar) Energy Finance
  - i. Project finance
  - ii. Financing for development
  - iii. Solar energy and solar power financing
  - iv. Financial and Economic Analysis of solar power plants
  - v. GHG calculation and carbon financing, and NAMAs
- e. Renewable Energy Legal and Policy Frameworks
  - i. RE Law and associated policies and decrees
  - ii. Renewable energy planning and policy
  - iii. Renewable energy regulatory framework
  - iv. Tools to promote RE: Feed-in-Tariffs, Renewable Energy Portfolio Standards, premiums, renewable energy quota, project bidding
  - v. International design standards, international best practices
  - vi. Forecasting and roadmapping
  - vii. Security of supply
  - viii. Policy development on joint ventures for services or product manufacturing
- f. Safeguards awareness due diligence
  - i. Environmental impact assessment of solar power projects
  - ii. Environmental management of solar power plants

- iii. Social safeguards
  - iv. Gender in solar energy
  - v. Accountability and public consultations
- g. Demand awareness and information campaign (household, special applications, and energy-intensive industries)
  - i. Fuel-switching
  - ii. Information dissemination
  - iii. Special applications on solar heating, pumping, desalination, lighting
  - iv. Self-generation of heat, cold and electricity for domestic and industrial uses
  - v. Remote applications – telecommunications, safety and security, public lighting
- (ii) In addition to the above, the Firm shall develop and implement a capacity development plan for Uzbekenergo and relevant agencies to enhance capacity in project management and supervision, operation and maintenance, procurement, financial management, grid integration, project design and other project specific technical aspects.
- (iii) The capacity development plans should be included in the inception report.
- (iv) The capacity development plans shall use a combination of the following modalities, approaches, and tools in implementing the capacity development plans:
  - a. Seminar workshops including customized case studies
  - b. Hands-on training and laboratory work; software development
  - c. Field work and on-the-job training
  - d. Training trainers
  - e. Development of manuals, handbooks, procedures, and international standards adoption
  - f. Internship and apprenticeship particularly in solar resource assessment and simulation
  - g. Study tours, national and international, preferably including any of the leading solar countries: USA, Germany, Spain, People's Republic of China, India
  - h. Participation in international solar conference
  - i. Organization of an international solar conference in Tashkent and/or in Samarkand
  - j. Research partnerships/collaborations, exchange programs
  - k. Curriculum development for undergraduate, graduate and post-graduate projects including PhD scholarships with research in international research institutes
  - l. Supporting development of new or spin-off companies to development technology manufacturing and supply services
- (v) Provide training and capacity development for procurement, new technology management, operation and maintenance of solar PV plants and safeguards capacity in UE;
- (vi) Provide additional services as reasonably requested by UE to complete the Project.

#### **D. Qualifications and Tasks**

83. The firm shall have experience in (i) Consulting engineering services involving preparation of bidding documents and tender evaluation on preferably three and preferably with an aggregate total of 50 MW on-grid solar PV power plant projects in the last 8 years, at least

one project above 10 MW; (ii) project management and supervisory work on on-grid solar PV power plants, and (iii) capacity building on solar energy and grid integration. The firm shall have the international consultants with expertise in solar PV design and operation, electrical/control and instrumentation of power plant, project management and supervision, and institutional analyses and capacity building. The firm shall have experience in developing countries in the region. Previous experience in the country is preferred. The assignment will be undertaken over a 32-month period until the commissioning of the power plant and transmission system. For all international positions, Russian language skills are desirable and English language skills are compulsory. For all national positions, English language skills are desirable and Russian language skills are compulsory.

84. The expected inputs from the Firm are shown in the following table.

<b>Team Member</b>	<b>Person-month</b>
<b>International Consultants</b>	
1 Project manager/Solar PV power plant expert	24
2 Solar PV and grid integration expert	14
3 Procurement Specialist	12
4 Electrical Engineer/Control & Instrumentation expert	12
5 Civil Engineer	7
6 O & M Engineer	9
7 Environmental Specialist	7
8 Social Safeguards and Gender Specialist	7
9 Commissioning Engineer	3
10 Capacity Development Expert	10
11 Capacity Development Specialist	16
12 Education Specialist	8
<b>Total</b>	<b>131</b>
<b>National Consultants</b>	
1 Power Plant Engineer	30
2 Transmission Engineer	12
3 Procurement Expert	12
4 Environmental Specialist	12
5 Social Safeguards and Gender Specialist	12
6 Civil Engineer	12
7 Finance Specialist	30
8 Capacity Development Specialist	30
9 Education Specialist	12
10 Training coordinator	30
<b>Total</b>	<b>192</b>

#### 1. International Consultants

85. **Project manager/Solar PV power plant expert.** The expert shall have a bachelor or higher degree in engineering and preferably 10 years of team leadership and 8 years' experience in design of on-grid solar PV power plants preferably with an aggregate total of 20

MW capacity. The Engineer should have previous experience in procurement, engineering, business administration; knowledge of international organizations/agencies; previous work experience in projects financed by international financial organization, especially associated knowledge of ADB financed project, disbursement and monitoring procedures. Experience in project implementation of solar PV power plants would be preferred. The Expert will manage the Consultant's team as project manager and be the solar PV power plant expert at the same time. Previous experience in developing countries in the region is desirable. The project manager/solar power plant expert will undertake the following:

- (i) Coordinate with other team members to develop a detailed work plan and implementation schedule.
- (ii) Review and prepare the scope, capital and operating cost estimates, implementation schedule, contracting, and implementation arrangements.
- (iii) Ensure reports are delivered to required quality and schedule.
- (iv) Review the technical specification of the solar PV plant and transmission system, grid and power plant controllers, and support facilities prepared by the project preparatory consultant.
- (v) Lead the updating of the operation and maintenance (O&M) manuals and system design books developed by the project preparatory consultant.
- (vi) Assist procurement specialists on technical related matters.
- (vii) Review and confirm the proposed technical design and configuration of the solar PV power plant and ensure contractor's designs and works are executed following project requirement.
- (viii) Supervise and monitor the project implementation.
- (ix) Develop and maintain a project safety plan and project quality assurance plan and ensure compliance with plan.
- (x) Certify As-Built drawings and progress payments.
- (xi) Prepare quarterly payment reports and analyze causes of delay, if any, and propose remedial measures as necessary.
- (xii) According to area of expertise, provide inputs to the capacity development plan and act as lead resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.

**86. Solar PV and grid integration expert/Deputy project manager).** The Engineer shall have a bachelor or higher degree in engineering and preferably 8 years of experience on solar PV technology and associated grid integration design which shall include at least 20 MW total capacity and transmission system. Previous experience in developing countries in the region is desirable. The Expert will undertake the following:

- (i) Work closely with the team leader in ensuring efficient project implementation, when the team leader is not available, act as deputy team leader;
- (ii) Review the technical specification of the solar PV power plant and transmission system prepared by the project preparatory consultant;
- (iii) Assist procurement specialists on technical related matters;
- (iv) Review and confirm the contractor's design submissions;
- (v) Supervise and monitor the project implementation related to the grid connection, and electrical and transmission system and support facilities;
- (vi) Monitor progress against plan;
- (vii) Certify As-Built drawings and progress payments; and
- (viii) Ensure adherence to project safety plan and quality assurance plan.

- (ix) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.
- (x) Assist the capacity development experts and specialists in the development of the capacity development plans as well as the monitoring and evaluation of the capacity development activities

87. **Procurement Specialist.** The expert will have a bachelor or higher degree in engineering or relevant fields and at least 10 years of relevant experience in procurement in accordance with ADB Procurement Guidelines or similar, preparation of bidding documents and contract documentation or supervision of the execution of works. Previous experience in ADB DMCs and ADB funded projects is desirable. The Engineer will undertake the following:

- (i) Coordinate with other team members and help team leader develop a detailed work plan and implementation schedule.
- (ii) Review proposals and conduct due diligence on the veracity of material information related to past work experience and credentials of bidding companies.
- (iii) Conduct similar due diligence on subcontracting arrangements and potential subcontractors.
- (iv) Supervise and monitor the procurement.
- (v) Ensure adherence ADB Procurement Guidelines (2013, as amended from time to time) and relevant government procedures and regulations.
- (vi) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.
- (vii) Organize and conduct a presentation/seminar on project procurement planning and contracting arrangements, focusing on the external and internal factors affecting the choice of contracting arrangements covering in particular turnkey, design-build, and performance-based operation & maintenance, evaluation of alternative designs, and other matters as may be appropriate and relevant to the implementation of the project.
- (viii) Assist the EA in issuing bidding documents, organizing site visits, pre-bid meetings, and in responding to requests for clarification on bidding documents.
- (ix) Assist the EA in evaluating bids and preparing bid evaluation reports.
- (x) Provide necessary inputs for the preparation of reports.
- (xi) Any other related activity as may be reasonably requested by the EA.

88. **Electrical/Control & Instrumentation Expert.** The expert shall have a bachelor or higher degree in engineering and preferably 8 years of relevant experience in applying design and application of electrical/control & instrumentation system for grid-connected solar PV power plants on at least 20 MW aggregate capacity. Previous experience in developing countries in the region is desirable. The Engineer will undertake the following:

- (i) Coordinate with other team members and help team leader develop a detailed work plan and implementation schedule.
- (ii) Supervise and monitor the project implementation with electrical/control & instrumentation related equipment.
- (iii) Ensure adherence to project safety plan and quality assurance plan.

- (iv) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.

89. **Civil Engineer.** The Engineer should have a bachelor or higher degree in engineering and preferably 8 years of relevant experience in design and implementation of solar power plants which shall include at least two PV power plants with at least 10 MW aggregate capacity. Previous experience in developing countries in the region is desirable. The Engineer will undertake the following:

- (i) Coordinate with other team members and help team leader develop a detailed work plan and implementation schedule.
- (ii) Supervise and monitor the civil works of the Project.
- (iii) Ensure adherence to project safety plan and quality assurance plan.
- (iv) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.

90. **Operation & Maintenance (O&M) Engineer.** The Engineer should have a bachelor or higher degree in engineering and preferably 8 years of relevant experience in O&M of solar PV power plants. Previous experience in developing countries in the region is desirable. The Engineer will assess UE's capacity in PV O&M and recommend capacity building measures as appropriate. The Engineer will also advise maintenance and spares holding strategy. The Engineer will undertake the following:

- (i) Assess solar PV power plant O&M capacity and skills level in UE and recommend necessary institutional and capacity building measures to meet the needs. Capacity building options to be considered shall include (a) specialist training by the solar PV equipment suppliers and electrical control suppliers, (b) need for contractor's specialist staff to provide on the ground and/or remote advisory services, and (c) non-equipment specific O&M training to be provided in UE.
- (ii) Based on actual market, geographic conditions and power plant strategy, recommend appropriate O&M activities to be carried out by UE staff and if any activities should be outsourced.
- (iii) Propose a spares holding strategy.
- (iv) Identify the various maintenance options and recommend the optimal approach.
- (v) Advise on procurement options for training services. Where appropriate, include such scope in the Bidding Document for the EPC contract.
- (vi) Provide trainings, workshops and seminars for the operational personnel to build O&M capacity and ensure smooth operation.
- (vii) Ensure training of client counterpart staff through on-the-job training and classroom training programs.
- (viii) Ensure adequacy of operation and maintenance manuals; and
- (ix) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.

91. **Environmental Specialist.** The Environmental Specialist should have a bachelor or higher degree in environmental engineering and preferably 8 years of relevant experience in

power plant related projects. Previous experience in developing countries in the region is desirable. The specialist will assist in the following:

- (i) Recommend monitoring plans to address identified significant environmental impacts.
- (ii) Ensure that the cost of implementing mitigation measures for identified environmental management and monitoring plans, and any strengthening measures, are included in the proposed Project's cost.
- (iii) Monitor safeguards and EMP implementation to ensure the safeguards and EMP are properly implemented.
- (iv) Ensure the environmental safeguard compliance during construction of the solar PV power plant and transmission system and support facilities.
- (v) Prepare the updated IEE which meets both the Government's requirements and *ADB's Environmental Assessment Guidelines*.
- (i) Assist UE with capacity building on environmental safeguards. According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.

92. **Social Safeguards and Gender Specialist.** The Social Safeguards and Gender Specialist should have a bachelor or higher degree in sociology, anthropology, social science and preferably 8 years of relevant experience in similar projects. Previous experience in developing countries in the region is desirable. The specialist will assist in the following:

- (i) Recommend monitoring plans to address identified significant safeguards issues.
- (ii) Assist with the implementation and, if necessary, periodic revisions of the LARPs and ensure timely reporting on LARP implementation in the quarterly report. Assist the executing agency and the local government with necessary public consultations. Liaise with the executing agency and local government to ensure that all compensations are paid in a timely manner and that the right-of-way is cleared.
- (iii) Ensure that the cost of implementing mitigation measures for identified environmental management and monitoring plans, and any strengthening measures, are included in the proposed Project's cost.
- (iv) Monitor social safeguards and gender interventions (including construction of separate toilet facilities and medical aid unit in all departments) are properly implemented.
- (v) Ensure gender and social safeguard compliance during construction of the solar PV power plant and transmission system and support facilities.
- (vi) Prepare and conduct before and after surveys to assess project gender impacts.
- (vii) Conduct regular field trips to monitor gender impacts of the project, collect sex-disaggregated data and prepare progress reports.
- (viii) Assist UE with capacity building on social safeguards and gender.
- (ix) Conduct gender awareness training for key stakeholders with 30% of women participation in Samarkand Solar Power Plant.
- (x) Establish network with the relevant women's organizations.
- (xi) Improve and strengthen existing sex-disaggregated statistics.
- (xii) Develop monitoring tool and regular reporting system.
- (xiii) Conduct regular monitoring and reporting.

- (xiv) According to area of expertise, provide inputs to the capacity development plan and act as resource person/trainer/facilitator in the development of Uzbekistan institutional capacity on solar energy.

93. **Commissioning Engineer.** The Commissioning Engineer should have a bachelor or higher degree in mechanical engineering with preferably 8 years of relevant experience in commissioning solar power plants. The Engineer should have commissioned at least 2-projects in last five years having 20 MW or higher capacity. The Engineer will undertake the following:

- (i) Coordinate and finalize all commissioning schedules with the EPC contractor.
- (ii) Develop an inspection and testing plan covering factory and site tests.
- (iii) Review and approve all final commissioning procedure/methodology in line with relevant International standards.
- (iv) Supervise testing and commissioning as required.
- (v) Inspect and verify calibrations/certifications of the testing equipment as per relevant standards.
- (vi) Monitor and verify all guaranteed values as per contract terms.
- (vii) Ensure adherence to project safety plan and quality assurance plan.
- (viii) Prepare the impact reports and remedies in case of any test failures.
- (ix) Prepare report for the Client to issue final acceptance certificate.

94. **Capacity Development Specialist/Program manager.** The Capacity Building expert should have a bachelor or higher degree in engineering and preferably 10 years of relevant experience in training, capacity development, and continuing education, preferably with 5 years experience in managing technical training centers. Previous experience in developing countries in the region is desirable. The expert shall provide overall supervision and management of the implementation of the capacity development component. The expert will lead the refinement of the capacity development plans, organize the various topics and tools to ensure the most efficient program for building institutional capacity. Lead in the organization of experts and resource persons, including targeted training programs for highly technical topics. The Program Manager will coordinate with other capacity development programs under Uzbekenergo.

95. **Capacity Development Specialist.** The Capacity Development Specialist should have a bachelor or higher degree in Engineering or Education preferably with experience in organizing capacity development programs and in managing training centers. The Specialist will oversee lead the implementation of the capacity development program under the guidance of the Program Manager. The Specialist shall manage the administration, logistics, scheduling and arrangements related to the training programs and will be assisted by the national Capacity Development Specialist.

96. **Education Specialist.** The Education Specialist should have a bachelor or higher degree in Education, or Engineering, preferably with a Masters or PhD degrees in higher education or continuing education. The Specialist shall lead in the development of curriculum for undergraduate, graduate, and postgraduate degrees with specialization in solar energy. The Specialist will ensure that each capacity development program is efficient and will lead in the monitoring and evaluation of the effectiveness of the training programs.

## 2. National Consultants

97. National consultants shall be hired including one power plant engineer, one transmission engineer, one procurement expert, one civil engineer, one environmental



specialist, one social safeguards and gender specialist, one finance specialist, one capacity building specialist, one education specialist, and one training coordinator. The duties of the national consultants are to provide assistance to the international power plant engineer, the photovoltaic and grid integration engineer, the international procurement specialist, the international commissioning engineer, the international environmental, and safeguards specialists, and the international civil engineer to (i) monitor the Project implementation; (ii) collect data and prepare documents; (iii) visit the Project site, talk to government agencies and participate in public consultation, if required by the team leader; (iv) assist with procurement process; (v) assist in monitoring waste management and safeguard implementation; and (vi) assist with payment analysis. The national capacity development specialist, education specialist, and training coordinator shall assist the international capacity development and education specialists in the organization, implementation, monitoring and evaluation of the capacity development plans.

98. The national consultants/engineers shall have a bachelor or higher degree in engineering and at least 10 years of relevant experience of major power plant projects. The national Financial Expert should have a qualification in finance (preferably a professional accountancy qualification). The consultants should have work on projects financed by international financial organization, especially ADB-funded projects.

#### **E. Reporting Requirements**

99. The Firm will prepare and submit to ADB and Uzbekenergo capacity development plans, and reports as follows:

- (i) The inception report shall be submitted to Uzbekenergo and ADB within the first month of the commencement of fieldwork. The inception report shall outline the proposed work program and any apparent barriers to prevent the successful completion of the project. The inception report shall include the updated capacity development plans: a broad institutional capacity development plan on solar energy targeting all relevant institutions, and a targeted capacity development plan for Uzbekenergo and affiliated agencies on specific project-related topics
- (ii) Quarterly training and capacity development reports including post-training evaluation reports after each capacity building activity.
- (iii) Quarterly progress reports shall be submitted to Uzbekenergo and ADB to address the progress and related issues that arose during the project implementation on a quarterly basis.
- (iv) In addition to the quarterly progress reports, regular monthly monitoring reports should be sent to Uzbekenergo and ADB to inform the progress and related issues of the project. Uzbekenergo and ADB will review the progress of project implementation as well as monitor achievement of development objectives.
- (v) Draft final draft report will be submitted after completion of the project, including executive summary. Within one month of its submission to Uzbekenergo and ADB, a tripartite meeting comprising ADB, Uzbekenergo, and the Consultants will be held to discuss the draft final report and review its findings.
- (vi) And the final report will be submitted within one month of receipt of comments from Uzbekenergo and ADB.

100. The assignment will be undertaken over a 32-month period on an intermittent basis (September 2014 to March 2017), including during one year of the initial operation.

## UPDATED PROCUREMENT PLAN AS OF 11 AUGUST 2015

### A. Methods, Thresholds, Review and 18-Month Procurement Plan

#### 1. Procurement and Consulting Methods and Thresholds

Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding for Goods	US\$ 500,000 and Above	
Government Procedure for Goods	US\$ 9,600,000 and Above	Applies to transmission line supply to be financed by the Government
International Competitive Bidding for Works	US\$ 2,000,000 and Above	

Consulting Services	
Method	Comments
Quality- and Cost-Based Selection for Consulting Firm	

#### 2. Goods and Works Contracts Estimated to Cost \$1 Million or More

The following table lists goods and works contracts for which the procurement activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Procurement Method	Review (Prior/ Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
1	Solar PV Plant - Design, Supply, Install	200,000,000.00	ICB	Prior	1S2E	Q4 / 2014	Prequalification of Bidders: N Domestic Preference Applicable: N Bidding Document: Plant

#### 3. Consulting Services Contracts Estimated to Cost \$100,000 or More

The following table lists consulting services contracts for which the recruitment activity is either ongoing or expected to commence within the next 18 months.

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior/ Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None							

#### 4. Goods and Works Contracts Estimated to Cost Less than \$1 Million and Consulting Services Contracts Less than \$100,000 (Smaller Value Contracts)

The following table lists smaller-value goods, works and consulting services contracts for which the activity is either ongoing or expected to commence within the next 18 months.

Goods and Works								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Advertisement Date (quarter/year)	Comments
None								

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior/Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
None								

## B. Indicative List of Packages Required Under the Project

The following table provides an indicative list of goods, works and consulting services contracts over the life of the project, other than those mentioned in previous sections (i.e., those expected beyond the current period).

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review (Prior/Post)	Bidding Procedure	Comments
None							

Consulting Services							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Review (Prior/Post)	Type of Proposal	Comments
None							

## C. List of Awarded and On-going, and Completed Contracts

The following tables list the awarded and on-going contracts, and completed contracts.

### 1. Awarded and Ongoing Contracts

Goods and Works							
Package Number	General Description	Estimated Value	Awarded Contract Value	Procurement Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
None							

Consulting Services							
Package Number	General Description	Estimated Value	Awarded Contract Value	Recruitment Method	Advertisement Date (quarter/year)	Date of ADB Approval of Contract Award	Comments
2	Implementation Consultant	7,000,000.00	6,598,910.00	QCBS	Q1 / 2014	26-MAY-15	Contract signed 28 May 2015

## D. Non-ADB Financing

The following table lists goods, works and consulting services contracts over the life of the project, financed by Non-ADB sources.

Goods and Works				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Comments
Transmission line supply	9,600,000.00	1	GP	

Consulting Services				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Comments
None				

## REVISED CONTRACT AWARD AND DISBURSEMENT PROJECTIONS

### A. After Midterm Review Mission (November 2015)

Product	Status	Version
Loan ADF UZB [3058]	EFFECTIVE	Version 4 (Current - Dec-07-2015)

	Contract Awards (in USD million)					Disbursements (in USD million)					
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
2014	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2015	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2016	66.600000	0.000000	0.000000	0.000000	66.600000	0.000000	0.000000	6.430500	2.025608	8.456108	
2017	0.000000	0.000000	0.000000	0.000000	0.000000	10.128038	14.179253	5.671701	6.481944	36.460936	
2018	0.000000	0.000000	0.000000	0.000000	0.000000	0.127181	0.127181	0.127181	2.152789	2.534332	
2019	0.000000	0.000000	25.863000	0.000000	25.863000	0.127181	0.127181	0.127181	0.127181	0.508724	
2020	0.000000	0.000000	0.000000	0.000000	0.000000	44.502900	0.000000	0.000000	0.000000	44.502900	
Total Contract Awards:					<b>92.463000</b>	Total Disbursements:					<b>92.463000</b>

Product	Status	Version
Loan ADF UZB [3059]	EFFECTIVE	Version 4 (Current - Dec-07-2015)

	Contract Awards (in USD million)					Disbursements (in USD million)					
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
2014	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2015	0.000000	6.598910	0.000000	0.000000	6.598910	0.000000	0.000000	0.659891	0.108019	0.767910	
2016	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.129962	0.125185	0.362187	0.617334	
2017	0.000000	0.000000	0.000000	0.000000	0.000000	1.412187	0.652197	0.977662	0.000000	3.042046	
2018	0.000000	0.000000	0.000000	0.000000	0.000000	0.503850	1.667770	0.000000	0.000000	2.171620	
2019	0.000000	0.000000	1.537090	0.000000	1.537090	0.000000	0.000000	0.000000	0.000000	0.000000	
2020	0.000000	0.000000	0.000000	0.000000	0.000000	1.537090	0.000000	0.000000	0.000000	1.537090	
Total Contract Awards:					<b>8.136000</b>	Total Disbursements:					<b>8.136000</b>

### B. After Decision to Conduct Post-Qualification for Design-Build-Operate Contract for PV Power Plant (March 2016)

Loan ADB UZB [3058]

	Contract Awards (in USD million)					Disbursements (in USD million)					
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
2014	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2015	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2016	0.000000	0.000000	0.000000	66.600000	66.600000	0.000000	0.000000	0.000000	0.000000	0.000000	
2017	0.000000	0.000000	0.000000	0.000000	0.000000	6.430500	0.000000	2.025608	10.128038	18.584146	
2018	0.000000	0.000000	0.000000	0.000000	0.000000	14.179253	5.671701	6.481944	0.127181	26.460079	
2019	0.000000	0.000000	24.267000	0.000000	24.267000	0.127181	0.127181	2.152789	0.127181	2.534332	
2020	0.000000	0.000000	0.000000	0.000000	0.000000	43.288443	0.000000	0.000000	0.000000	43.288443	
Total Contract Awards:					<b>90.867000</b>	Total Disbursements:					<b>90.867000</b>

Loan ADB UZB [3059]

	Contract Awards (in USD million)					Disbursements (in USD million)					
	Q1	Q2	Q3	Q4	Total	Q1	Q2	Q3	Q4	Total	
2014	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	
2015	0.000000	6.598910	0.000000	0.000000	6.598910	0.000000	0.000000	0.659891	0.069020	0.728911	
2016	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.000000	0.047206	0.047206	0.094412	
2017	0.000000	0.000000	0.000000	0.000000	0.000000	0.064981	0.064981	0.062592	0.000000	0.192554	
2018	0.000000	0.000000	0.000000	0.000000	0.000000	0.043104	0.181094	0.181094	0.706094	1.111386	
2019	0.000000	0.000000	1.409090	0.000000	1.409090	0.706094	0.326099	0.326099	0.000000	1.358292	
2020	0.000000	0.000000	0.000000	0.000000	0.000000	4.522445	0.000000	0.000000	0.000000	4.522445	
Total Contract Awards:					<b>8.008000</b>	Total Disbursements:					<b>8.008000</b>

**REVISED DESIGN AND MONITORING FRAMEWORK AFTER MIDTERM REVIEW MISSION  
(NOVEMBER 2015)**

<b>Design Summary</b>	<b>Performance Targets / Indicators</b>	<b>Data Sources / Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
<p><b>Impact</b></p> <p>Improved sustainability of the energy supply in Uzbekistan</p>	<p>Total domestic power generated increased from 52 TWh (2010) to 65 TWh in 2020</p> <p>Sustained outage decreased from seven times per year in 2011 to three times per year in 2020</p> <p>Total GHG emission intensity reduced from 4.53 kg CO<sub>2</sub>e/GDP (2009) to 3 kg CO<sub>2</sub>e/GDP in 2020</p>	<p>Uzbekenergo's annual performance report</p> <p>Central Dispatch Center statistics</p> <p>IEA key world energy statistics</p>	<p><b>Assumptions</b></p> <p>Stable economic growth and power demand grows by 2%–3% per annum</p> <p>Electricity tariffs regularly adjusted to cover costs</p> <p>Global and country investment climate remains robust</p>
<p><b>Outcome</b></p> <p>Increased renewable energy generation in Uzbekistan</p>	<p>At least 159 GWh of solar power generated by 2017</p> <p>At least 88,000 tons CO<sub>2</sub>e emissions avoided by 2017</p>	<p>Uzbekenergo annual report</p>	<p><b>Assumptions</b></p> <p>Gas-fired power plants continue to dominate the energy mix and provide base-load power</p>
<p><b>Output</b></p> <p>1. Solar power plant, transmission, and support facilities operational</p> <p>2. Institutional capacity of Uzbekenergo developed</p> <p>3. Institutional capacity of solar energy stakeholders developed</p>	<p>Grid-connected 100 MW solar photovoltaic plant commissioned by 2017</p> <p>A solar power project pipeline developed and three project designs prepared by 2017</p> <p>At least five capacity development training and seminars for at least 100 Uzbekenergo staff and experts, including 100% of Uzbekenergo women staff in relevant departments, conducted by 2017</p> <p>At least 10 solar capacity development activities (training, workshops, and technical visits) for at least 150 participants from 10 solar energy stakeholders, including at least 10%</p>	<p>Contractor as-built drawings and commissioning report</p> <p>Uzbekenergo annual reports</p> <p>Training reports</p> <p>Training reports, Uzbekenergo annual reports</p>	<p><b>Assumptions</b></p> <p>Nine kilometer road linking the project access road to the main road is rehabilitated by government as planned</p> <p><b>Assumptions</b></p> <p>All trained staff are retained at least throughout the duration of project implementation</p>

<b>Design Summary</b>	<b>Performance Targets / Indicators</b>	<b>Data Sources / Reporting Mechanisms</b>	<b>Assumptions and Risks</b>
	<p>women, conducted by 2017</p> <p>At least three solar-related training workshops for at least 30 participants from 10 manufacturing industries and entrepreneurs, involving at least 10% women participants, conducted by 2017</p> <p>At least two safeguards and gender awareness workshops for at least 20 staff and experts, and two information campaigns to increase women's participation in solar energy development conducted by 2017</p>		

<b>Activities with Milestones</b>	<b>Inputs</b>																								
1. Solar power plant, transmission, and support facilities operational																									
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2. Institutional capacity of Uzbekenergo developed		
Activity	Scheduled Start	Scheduled Finish
2.1 ADB and the executing agency approve the capacity development plan	Aug 01, 2015	Jan 31, 2016
2.2 Consultant conducts trainings and produces manuals consistent with the approved capacity development plan	Mar 01, 2016	Mar 31, 2017
2.3 Implementation consultants provide project management and supervision support to the executing agency	Jul 29, 2015	Feb 24, 2018
2.4 Implementation consultant updates and implements capacity development plans	Mar 01, 2016	Sep 30, 2017
3. Institutional capacity of solar energy stakeholders developed		
Activity	Scheduled Start	Scheduled Finish
3.1 ADB and the executing agency approve the solar capacity development plan	Aug 01, 2015	Jan 31, 2016
3.2 Implementation consultant updates, and ADB and the executing agency approve the solar capacity development plan	Aug 01, 2016	Sep 30, 2016
3.3 Implementation consultant implements the capacity development plans	Oct 01, 2016	Sep 30, 2017

## COMBINED SUBMISSION OF AUDITED PROJECT FINANCIAL STATEMENTS FOR FY 2014 AND 2015



14 March 2016

Mr. Iskandar Basidov  
 Chairman  
 Joint Stock Company Uzbekenergo  
 Tashkent, Uzbekistan  
*c/o ADB Uzbekistan Resident Mission (URM)*

Dear Mr. Basidov:

**Loans 3058/3059-UZB: Samarkand Solar Power Project**  
**— No Objection to Extend the First Financial Reporting Period for Audited Project**  
**Financial Statements (APFS)**

1. We have no objection to your request of 3 March 2016 to extend the submission deadline for the APFS for the first financial reporting period ending 31 December 2014, as there were no loan disbursements for this period, and limited financial activity under the government's counterpart funding (ref. Uzbekenergo's letter of 10 March 2016).
2. We look forward to receiving the APFS, with the auditor's opinion and Management Letter, covering from loan effectiveness (4 February 2014) until 31 December 2015, by 30 June 2016. The APFS should include all expenditures, including those under counterpart funding.

Sincerely,



F. Cleo Kawawaki      
 Director  
 Energy Division      
 Central and West Asia Department

cc: K. Shamsiev, Deputy General Manager, UzElektroset  
 S. Isaev, Officer-in-Charge, Samarkand Solar Power Project  
 T. Konishi, Country Director, ADB Uzbekistan Resident Mission  
 C. Tiangco, Energy Specialist, CWEN



O'ZBEKISTON RESPUBLIKASI  
"O'ZBEKENERGO"

AKSIYADORLIK JAMIYATI

O'zbekiston Respublikasi  
100000, Toshkent sh., Istiqlol ko'chasi, 6  
Tel.: (998-71) 233-98-25, Faks: (998-71) 236-27-00  
e-mail: info@uzbekenergo.uz



REPUBLIC OF UZBEKISTAN  
"UZBEKENERGO"

JOINT-STOCK COMPANY

6, Istiqlol str., 100000, Tashkent  
Republic of Uzbekistan  
Ph.: (998-71) 233-98-25, Fax: (998-71) 236-27-00  
e-mail: info@uzbekenergo.uz

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№ УБ-01-21/362

To: Ms.Cleo Kawawaki,  
Director  
Energy Division  
Central and West Asia  
Department  
Asian Development Bank

Директору  
Отдела энергетики  
Департамента Центральной  
и Западной Азии  
Азиатского Банка Развития  
Г-же Клео Кававаки

Subject: Loans 3058/3059UZB, Project  
"Construction of 100MW Solar Photovoltaic Power  
Plant in Samarkand region"

Касательно: Займы 3058/3059: Проект  
«Строительство солнечной фотоэлектрической  
станции мощностью 100 МВт в Самаркандской  
области»

Dear Ms.Cleo Kawawaki,

Уважаемая г-жа Клео Кававаки,

Having considered letter from ADB dated  
February 16, 2016 regarding submission of audited  
financial statements under the Project "Construction  
of 100 MW PV station in Samarkand Region " we  
hereby kindly request You to postpone the  
submission deadline till June 30, 2016 .

Рассмотрев письмо АБР от 16 февраля 2016  
года в части предоставления аудированной  
финансовой отчетности проекта  
«Строительство солнечной фотоэлектрической  
станции мощностью 100 МВт в Самаркандской  
области», просим Вас перенести срок  
предоставления отчета до 30 июня 2016 года.

Chairman  
of the Board

I. Basidov

Председатель  
правления

И. Басидов