

Project Administration Manual

Project Number: 51182-001

Loan and/or Grant Number(s): LXXXX; LXXXX; GXXXX

April 2019

Kingdom of Cambodia: National Solar Park Project

ABBREVIATIONS

ADB	–	Asian Development Bank
DDR	–	due diligence report
DMS	–	detailed measurement survey
EDC	–	Electricite du Cambodge
EMP	–	environmental management plan
EPC	–	engineering, procurement, and construction
GS6	–	grid substation 6
ICS	–	individual consultant selection
IEE	–	initial environmental examination
kV	–	kilovolt
LARP	–	land acquisition and resettlement plan
MW	–	megawatt
RRP	–	Report and Recommendation of the President to the Board of Directors
PAM	–	project administration manual
PIC	–	project implementation consultant
PV	–	photovoltaic
RCS	–	replacement cost study
SBD	–	standard bidding document
SCADA	–	Supervisory control and data acquisition
SEPRO	–	Social, Environment and Public Relations Office
SCF	–	Strategic Climate Fund
SPS	–	Safeguard Policy Statement
TOR	–	terms of reference
WA	–	withdrawal application

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Project Administration Manual Purpose and Process

The project administration manual (PAM) describes the essential administrative and management requirements to implement the project on time, within budget, and in accordance with the policies and procedures of the government and Asian Development Bank (ADB). The PAM should include references to all available templates and instructions either through linkages to relevant URLs or directly incorporated in the PAM.

The Electricite du Cambodge (EDC) is wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by EA of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower, EDC, and ADB shall agree to the PAM and ensure consistency with the loan and grant 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 legal agreements, the provisions of the loan and grant agreements shall prevail.

After ADB Board approval of the project's report and recommendation of the President (RRP), 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.

I. PROJECT DESCRIPTION

1. The project will support the expanded deployment of solar photovoltaic power plants in Cambodia and address the country's need to: (i) expand low-cost power generation, (ii) diversify the power generation mix with an increase in the percentage of clean energy, in line with its stated greenhouse gas emissions reductions targets,¹ and (iii) expand the use of competitive tenders and other global best practices in the energy sector. The project will support the national electricity utility, Electricite du Cambodge (EDC), to construct a 100 megawatt (MW) capacity solar power park (comprising civil works including access roads, fencing, and drainage systems) and associated substation in Kampong Chhnang Province and a transmission interconnection system to the Phnom Penh demand center to supply power to the national grid.² Through a transaction advisory services agreement between the Asian Development Bank's (ADB's) Office of Public-Private Partnership and EDC, the project also aims to assist EDC to design and conduct a competitive tender for procuring an independent power producer (IPP) to build the first solar power plant within the park.³

2. Building on the Bavet project, the National Solar Park Project aims to demonstrate the ability of large-scale solar parks to produce solar energy at a competitive price, while also providing technical benefits to the national grid⁴, and substitute for planned fossil-fuel and hydropower generation in the future. This project will build awareness of the costs, operational and supply chain requirements, and actual performance of solar photovoltaic plants. This awareness will inform further policy development and give EDC knowledge and experience in (i) structuring transparent, competitive procurement for private power projects; and (ii) negotiating with private developers using standardized documents. These projects will also build experience in managing intermittent power produced by solar photovoltaic projects.

3. **Impact and outcome.** The impact of the project will be cost of electricity in Cambodia lowered.⁵ Its outcome will be increase in private sector investments in solar photovoltaic plants facilitated.

4. **Outputs.** The project will have the following outputs:

- (i) **Output 1: Solar park and transmission interconnection constructed.** The project will support EDC in constructing a 100 MW solar power park in Kampong Chhnang Province and a transmission interconnection system to grid substation 6 (GS6) near the Phnom Penh demand center to supply power to the national grid. The park will consist of 100 hectares (ha) of land, and associated construction works (i.e., fencing, roads, drainage systems), to accommodate 60 MW of solar photovoltaic plant capacity. The transmission interconnection infrastructure⁶

¹ Electricity Authority of Cambodia. 2018. *Report on the Power Sector of the Kingdom of Cambodia, 2018 Edition*. Phnom Penh.

² The project is included in ADB. 2017. *Country Operations Business Plan: Cambodia, 2018–2020*. Manila.

³ The solar power plants will be tendered to IPPs in two phases. The first phase is for 60 MW. The second phase will procure 40 MW, for a total of 100 MW.

⁴ Technical or ancillary benefits include: (i) voltage support during peak loading periods, (ii) reduction of loading levels on transformers, (iii) and reduction of the amount of power that needs to be generated from distant sources (hydro and coal, in particular), and therefore reduction of losses in the transmission system.

⁵ Government of Cambodia. 2015. *Cambodia Industrial Development Policy 2015–2025: Market Orientation and Enabling Environment for Industrial Development*. Phnom Penh.

⁶ EDC is considering a 10 MW (2-hour) battery storage system for output smoothing to counterbalance intermittent solar power generation. ADB will support EDC to apply grants to support this component, which would then be

comprises (i) the 100 MW capacity pooling substation at the solar park with two 50-megavolt-ampere transformers (and room for two additional transformers); switchgear; an ancillary system; and controls; (ii) a supervisory control and data acquisition system compatible with EDC's requirements, advanced forecasting tools and expanded information and communication technology applications; (iii) a dedicated 40-kilometer 230-kilovolt double circuit overhead transmission line between the solar park substation and GS6; and (iv) two new bays with switchgear at GS6.

- (ii) **Output 2: Capacity of Electricite du Cambodge in solar power plant construction and operation, project design and supervision, grid integration, and competitive procurement strengthened.**⁷ The project will strengthen EDC's capacity to design, construct, and operate solar photovoltaic plants and solar parks (including management of environmental and social safeguards issues). The project will also strengthen EDC's capacity to procure solar photovoltaic generation capacity through the private sector, and to adopt energy storage systems and other measures to integrate intermittent renewable energy into the national grid.

processed as additional financing. The transmission line will be rated at 230 kilovolts but will be initially operated at 115 kilovolts.

⁷ Activities will include other energy-sector stakeholders in Cambodia, such as the Electricity Authority of Cambodia.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Indicative Activities	2018								2019							Responsible Agency
	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	
Fact-finding mission																ADB, EDC, MEF
Staff review meeting																ADB
Advance contracting actions																ADB, EDC
Loan negotiations																ADB, MEF
ADB Board approval																ADB
Loan signing																ADB, MEF
Government legal opinion provided																MEF
Government budget inclusion																MEF, EDC
Loan effectiveness																ADB, MEF

ADB = Asian Development Bank, EDC = Electricite du Cambodge, MEF = Ministry of Economic and Finance
Source: ADB staff estimates.

B. Overall Project Implementation Plan

Activity	2018				2019				2020				2021				2022			
	Quarter				Quarter				Quarter				Quarter				Quarter			
	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Advance action for PIC contract																				
Advance action for EPC contract																				
Project outputs																				
Output 1: Solar park and transmission interconnection constructed																				
(i) complete land acquisition process																				
(ii) release of bidding documents for solar park and transmission																				
(iii) award solar park and transmission EPC contract																				
(iv) construct and commission solar park																				
Output 2: Capacity of EDC in solar power plant construction and operation, project design and supervision, grid integration and competitive procurement strengthened																				
(i) issue request for expression of interest for PIC																				
(ii) award PIC contract																				
(iii) mobilize and complete consulting services																				
Project performance monitoring and reporting																				
(i) safeguards monitoring																				
(ii) periodic project review																				
(iii) progress reports																				
(iv) audited project/financial statements																				
(v) project closing activities																				

DMF = design and monitoring framework; EPC = engineering, procurement, and construction, MW = megawatt; PIC = project implementation consultant; PV = photovoltaic

Source: ADB staff estimates.

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
Ministry of Economy and Finance (Borrower)	<ul style="list-style-type: none"> • Sign legal agreements between the government and ADB • Provide subsidiary loan and subsidiary grant agreements to EDC • Ensure compliance with all loan and grant covenants • Approve exemption of taxes and duties related to the project • Submit withdrawal applications to ADB
Electricite du Cambodge (Executing Agency)	<ul style="list-style-type: none"> • Responsible for overall supervision and monitoring of the project implementation • Establish the PMO with sufficient staff and appropriate qualification • Ensure implementation of the safeguards planning document is compliant with the loan and grant covenants • Provision of counterpart staff, operational support and budget for project activities • Ensure compliance with all loan and grant covenants
Project Management Office (within EDC)	<p>In coordination with PIC</p> <ul style="list-style-type: none"> • Responsible for day-to-day project management and supervision • Implement project in accordance with the legal agreements • Coordinate with line ministries to ensure smooth and efficient implementation of the project • Responsible for procurement of goods, works and services • Secure technical and safeguard approvals for all civil works prior to contract award • Ensure compliance with all loan and grant covenants • Implement/comply with safeguards requirements detailed in the safeguard documents • Responsible for submission of reports, including submission of summary of financial and project accounts and annual financial statements, and safeguards monitoring report • Prepare and submit withdrawal applications to MEF
SEPRO	<p>In coordination with PMO and PIC</p> <ul style="list-style-type: none"> • Ensure compliance with ADB safeguards requirements • Ensure compliance and consistency of safeguards documents with the government policy, legal and administrative framework across all jurisdictions--national, state and local • Responsible for overall coordination and reporting for various project activities • Responsible for overall implementation of safeguards requirements
Project Implementation Consultants	<p>In coordination with PMO</p> <ul style="list-style-type: none"> • Procurement process/implementation and contract management • Supervision of construction, final testing and commissioning • Responsible for preparation of safeguards documents • Ensure compliance with safeguards requirements through effective implementation and monitoring of social and environmental safeguards

Project Implementation Organizations	Management Roles and Responsibilities
	<ul style="list-style-type: none"> • Project performance monitoring and evaluation, including preparation of progress reports and completion report
Asian Development Bank	<ul style="list-style-type: none"> • Ensure technical and financing support and oversight according to the project administration manual and legal agreements • Administer cofinancing • Review all documents that require ADB approval • Undertake project reviews • Monitor and require the compliance of all loan covenants • Process withdrawal applications and disburse the loan proceeds • Monitor and require the compliance of financial audit recommendations • Review and approval of updates of safeguards documents and monitoring of safeguards implementation • Regularly post on ADB website the updated project information and documents for public disclosure

ADB = Asian Development Bank, EDC = Electricite du Cambodge, PIC = Project Implementation Consultants, PMO = Project Management Office; SEPRO = Social, Environment and Public Relations Office
Source: ADB

B. Key Persons Involved in Implementation

Executing Agency

Electricite du Cambodge

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Asian Development Bank

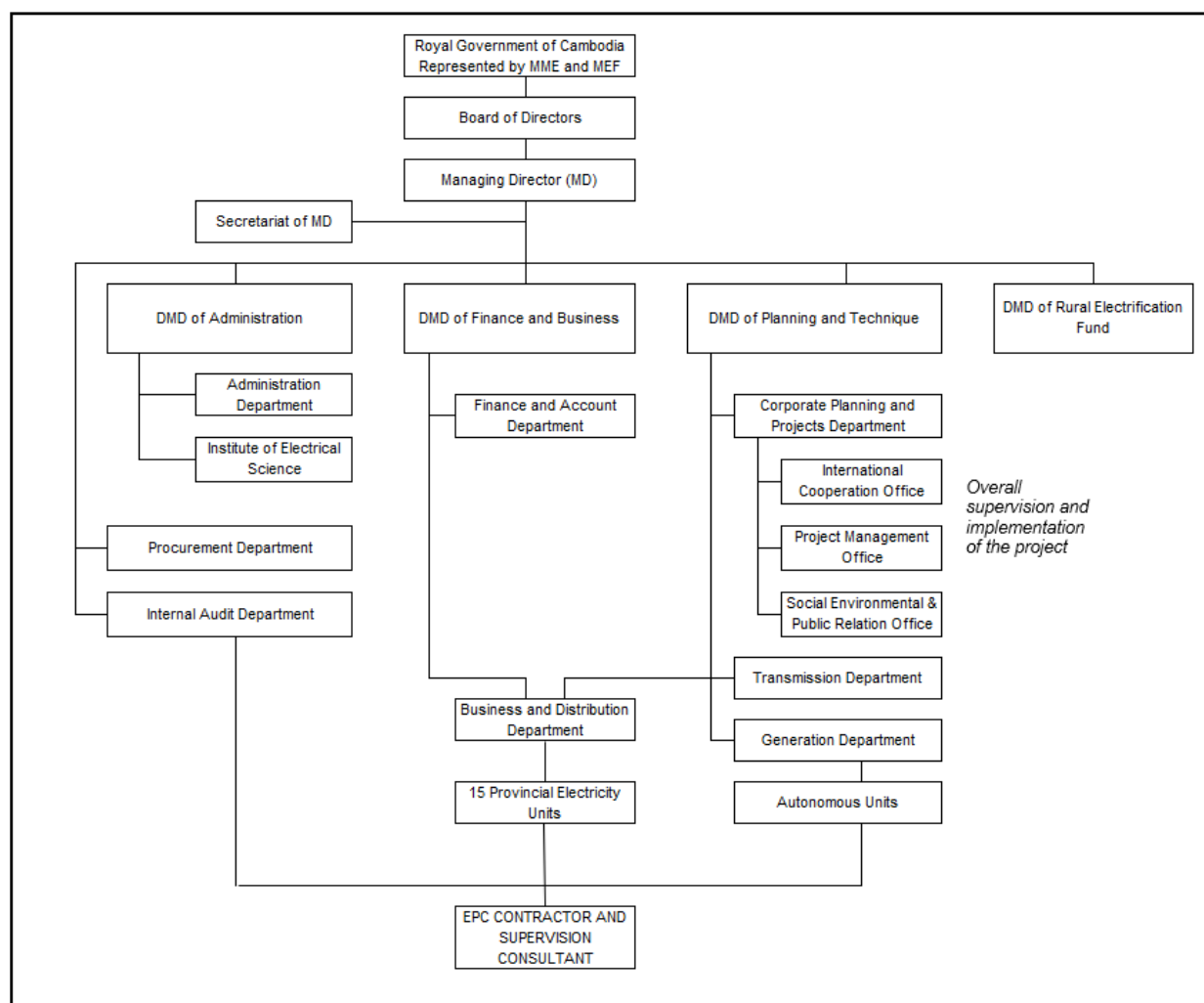
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C. Project Organization Structure



MEF = Ministry of Economy and Finance; MME = Ministry of Mines and Energy

IV. COSTS AND FINANCING

5. The project is estimated to cost \$26.71 million (Table 1).⁸ The project will finance the common infrastructure for the solar park, including the civil works, pooling substation, GS6 upgrading, transmission line, project implementation consultants, environmental and social impact mitigation, financial charges during implementation, and physical and price contingencies.

⁸ Costs do not include any battery storage component (footnote 6).

Table 1: Summary Cost Estimates
(\$ million)

Item	Amount
A. Base Cost^a	
1. Output 1: Solar park and transmission interconnection constructed	22.04
2. Output 2: Capacity of EDC in solar power plant construction and operation, project design and supervision, grid integration and competitive procurement strengthened	1.50
Subtotal (A)	23.54
C. Contingencies^{b,c}	2.83
D. Financing Charges During Implementation^d	0.34
Total (A+B+C)	26.71

EDC = Electricity du Cambodge

^a Includes taxes and duties of \$2.94 million to be financed by the government through exemptions.

^b In mid-2018 prices as of November 2018.

^c Physical contingencies computed at 10% of the base costs. Price contingencies reflect inflation expectations; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest charges. Interest during construction for the ADB concessional loan has been computed at 1.00% plus an effective contractual spread of 0.65%. Interest during construction for Strategic Climate Fund concessional loan has been computed at 0.10% plus an effective contractual spread of 1.05%.

Source: Asian Development Bank estimates.

6. The government has requested a concessional loan of \$7.64 million from ADB's ordinary capital resources (OCR) to help finance the project. The loan will have a 32-year term, including a grace period of 8 years, an interest rate of 1.0% per year during the grace period and 1.5% per year thereafter, and such other terms and conditions set forth in the draft loan and project agreements. The ADB Strategic Climate Fund (SCF) will provide loan cofinancing of \$11.00 million and grant cofinancing of \$3.00 million, to be administered by ADB. The ADB SCF loan will have a 40-year term, including a 10-year grace period and a service charge of 0.1% per annum on the disbursed and outstanding loan amount. The interest during construction of the ADB loan and the service charge of the ADB SCF loan will be capitalized. The ADB and ADB SCF loans will be relented from the Ministry of Economy and Finance (MEF) to EDC under a subsidiary agreement on terms and conditions satisfactory to ADB. In addition to the interest rate and service charge, the subsidiary loans will include an on-lending margin of 0.65% for the ADB loan and 1.05% for the SCF loan. The government will provide counterpart financing of \$2.94 million to finance taxes and duties through exemptions and EDC will provide financing of \$2.13 million for land acquisition and resettlement costs. Since ADB is administering cofinancing resources in the form of loan and grant from SCF, universal procurement will apply to the procurement of works accordingly.⁹ The summary financing plan is in Table 2.

⁹ ADB. 2013. *Blanket Waiver of Member Country Procurement Eligibility Restrictions in Cases of Cofinancing for Operations Financed from Asian Development Fund Resources*. Manila.

Table 2: Financing Plan

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary Capital Resources (concessional loan)	7.64	29
Strategic Climate Fund (concessional loan) ^a	11.00	41
Strategic Climate Fund (grant) ^a	3.00	11
Government ^b	2.94	11
Electricite du Cambodge ^c	2.13	8
Total	26.71	100

^a Under the Scaling Up Renewable Energy in Low-Income Countries Program. Administered by the Asian Development Bank.

^b Includes taxes and duties through exemptions.

^c Includes land acquisition and resettlement-related expenses.

Source: Asian Development Bank estimates.

A. Cost Estimates Preparation and Revisions

7. The project cost estimates were prepared by EDC, in conjunction with the project preparatory consultant, based on an assessment of unit quantities and recent tender prices received for similar works. Contingencies and financing charges during implementation were estimated by ADB. The detailed project cost breakdown is presented in the Appendix. During project implementation, project cost estimates are normally revised after contracts are awarded, using the Contract Price, and updated from time to time for quantity and price variations and the Final Contract Price. The revised cost estimates and contract prices are reflected during periodic updating of the Procurement Plan.

B. Key Assumptions

8. The following key assumptions underpin the cost estimates and financing plan:

A. Exchange rate: KR4,015.00 = \$1.00 (as of 13 April 2018).

B. Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 3: Escalation Rates for Price Contingency Calculation

Item	2018	2019	2020	2021	2022	2023	Average
Foreign rate of price inflation	1.5%	1.5%	1.5%	1.6%	1.6%	1.6%	1.55%
Domestic rate of price inflation	3.2%	3.2%	3.5%	3.5%	3.5%	3.5%	3.40%

Source: Asian Development Bank.

C. Detailed Cost Estimates by Expenditure Category

(\$ million)							
Item			Total Cost	% of Total Base Cost	Local Currency	Local Component Share %	Foreign Component Share %
A. Base Costs							
1	Turn key contract		16.98	72.12	6.08	35.84	64.16
2	Land acquisition and resettlement		2.13	9.04	2.13	100.00	-
3	Implementation consultant		1.50	6.37	0.45	30.00	70.00
4	Taxes and duties ^a		2.94	12.48	1.85	62.91	37.09
	Subtotal (A)^b		23.55	100.00	10.51	44.64	55.36
B. Contingencies^c							
1	Physical	10%	1.99	8.47	0.89	44.64	55.36
2	Price	4%	0.83	3.53	0.37	44.64	55.36
	Subtotal (B)		2.82	12.00	1.25	44.64	55.36
C. Financing Charges During Implementation^d							
1	Interest During Construction		0.16	0.68	-	-	100.00
2	Service Charges		0.18	0.76	-	-	100.00
	Subtotal (C)		0.34	1.44	-	-	100.00
Total Project Cost (A+B+C)			26.71	113.44	11.77	44.07	55.93

Notes: Numbers may not sum precisely because of rounding.

^a Includes taxes and duties of \$2.94 million to be financed by the government through exemptions.

^b In mid-2018 prices as of November 2018.

^c Physical contingencies computed at 10% of the base costs. Price contingencies reflect inflation expectations; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest charges. Interest during construction for the ADB concessional loan has been computed at 1.0% plus an effective contractual spread of 0.65%. Interest during construction for Strategic Climate Fund concessional loan has been computed at 0.1% plus an effective contractual spread of 1.05%.

Sources: Asian Development Bank and Electricite du Cambodge estimate.

D. Allocation and Withdrawal of Loans and Grant Proceeds

Allocation and Withdrawal of ADB Loan Proceeds

Number	Item	Amount Allocated USD (\$)	Percentage and Basis for Withdrawal from Loan Account
	Category		
1	Works (turnkey contract)*	3,150,000	18.58% of total expenditure claimed**
2	Consulting services	1,500,000	100% of total expenditure claimed**
3	Interest charges	160,000	100% of amount due
4	Unallocated	2,830,000	
	Total	7,640,000	

*Subject to the condition for withdrawal described in paragraph 6 of Schedule 3 of the Loan Agreement.

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

Allocation and Withdrawal of SCF Loan Proceeds

Number	Item	Amount Allocated USD (\$)	Percentage and Basis for Withdrawal from Loan Account
	Category		
1	Works (turnkey contract)*	10,820,000	63.75% of total expenditure claimed**
2	Service charges	180,000	100% of amount due
	Total	11,000,000	

*Subject to the condition for withdrawal described in paragraph 6 of Schedule 3 of the Loan Agreement.

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

Allocation and Withdrawal of SCF Grant Proceeds

Number	Item	Amount Allocated USD (\$)	Percentage and Basis for Withdrawal from Grant Account
	Category		
1	Works (turnkey contract)*	3,000,000	17.67% of total expenditure claimed**
	Total	3,000,000	

*Subject to the condition for withdrawal described in paragraph 5 of Schedule 1 of the Grant Agreement.

**Exclusive of taxes and duties to be imposed within the territory of the Recipient.

E. Detailed Cost Estimates by Financier

(\$ million)

Item	<u>ADB Loan</u>		<u>SCF (Loan)</u>		<u>SCF (Grant)</u>		<u>Government</u>		<u>EDC</u>		Total cost	Taxes and duties
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category		
A. Base Costs												
1 Turn key contract	3.15	18.58	10.82	63.75	3.00	17.67	-	-	-	-	16.98	2.77
2 Land acquisition and resettlement	-	-	-	-	-	-	-	-	2.13	100.00	2.13	-
3 Implementation Consultant	1.50	100.00	-	-	-	-	-	-	-	-	1.50	0.15
4 Taxes and duties ^a	-	-	-	-	-	-	2.94	100.00	-	-	2.94	-
Subtotal (A)^b	4.65	19.77	10.82	45.97	3.00	12.74	2.94	12.48	2.13	9.04	23.55	2.94
B. Contingencies^c												
1 Physical	1.99	100.00	-	-	-	-	-	-	-	-	1.99	-
2 Price	0.83	100.00	-	-	-	-	-	-	-	-	0.83	-
Subtotal (B)	2.83	100.00	-	-	-	-	-	-	-	-	2.83	-
C. Financing Charges During Implementation^d												
1 Interest During Construction	0.16	100.00	-	-	-	-	-	-	-	-	0.16	-
2 Service Charges	-	-	0.18	100.00	-	-	-	-	-	-	0.18	-
Subtotal (C)	0.16	47.51	0.18	52.49	-	-	-	-	-	-	0.34	-
Total Project Cost (A+B+C)	7.64	28.61	11.00	41.19	3.00	11.23	2.94	11.00	2.13	7.97	26.71	

^a Includes taxes and duties of \$2.94 million to be financed by the government through exemptions.

^b In mid-2018 prices as of November 2018.

^c Physical contingencies computed at 10% of the base costs. Price contingencies reflect inflation expectations; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest charges. Interest during construction for the ADB concessional loan has been computed at 1.0% plus an effective contractual spread of 0.65%. Interest during construction for Strategic Climate Fund concessional loan has been computed at 0.1% plus an effective contractual spread of 1.05%.

Sources: ADB and EDC estimates.

F. Detailed Cost Estimates by Output

Item	Total cost ^a	Output 1 Solar park and transmission interconnection constructed.		Output 2 Capacity of EDC in solar power plant construction and operation, project design and supervision, grid integration and competitive procurement strengthened	
		Amount	% of Cost Category	Amount	% of Cost Category
A Base Costs					
1 Turn key contract	16.98	16.98	100.00		
2 Land acquisition and resettlement	2.13	2.13	100.00		
3 Implementation Consultant	1.50	-	-	1.50	100.00%
4 Taxes and duties ^a	2.94	2.94	100.00		
Subtotal (A)^b	23.54	22.04	93.63	1.50	6.37%
B Contingencies^c					
1 Physical	1.99	1.99	100.00		
2 Price	0.83	0.83	100.00		
Subtotal (B)	2.83	2.83	93.63		
C Financing Charges During Implementation^d					
1 Interest During Construction	0.16	0.16	100.00		
2 Service Charges	0.18	0.18	100.00		
Subtotal (C)	0.34	0.34	100.00		
Total Project Cost (A+B+C)	26.71	25.20	94.38	1.50	5.62%

^a Includes taxes and duties of \$2.94 million to be financed by the government through exemptions.

^b In mid-2018 prices as of November 2018.

^c Physical contingencies computed at 10% of the base costs. Price contingencies reflect inflation expectations; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d Includes interest charges. Interest during construction for the ADB concessional loan has been computed at 1.0% plus an effective contractual spread of 0.65%. Interest during construction for Strategic Climate Fund concessional loan has been computed at 0.1% plus an effective contractual spread of 1.05%.

Sources: ADB and EDC estimates.

H. Detailed Cost Estimates by Year

(\$ million)				
Item	Total cost ^a	Year 1 2019	Year 2 2020	Year 3 2021
A. Base Costs				
1 Turn key contract	16.98	2.41	4.51	10.06
2 Land acquisition and resettlement	2.13	2.13	-	-
3 Implementation Consultant	1.50	0.45	0.45	0.60
4 Taxes and duties ^a	2.94	0.88	0.88	1.17
Subtotal (A)^b	23.54	5.87	5.84	11.84
B. Contingencies^c				
1 Physical	1.99	0.50	0.49	1.00
2 Price	0.83	0.21	0.21	0.42
Subtotal (B)	2.83	0.70	0.70	1.42
C. Financing Charges During Implementation^d			-	
1 Interest During Construction	0.16	0.02	0.04	0.10
2 Service Charges	0.18	0.03	0.05	0.11
Subtotal (C)	0.34	0.05	0.09	0.21
Total Project Cost (A+B+C)	26.71	6.62	6.63	13.46

^a Includes taxes and duties of \$2.94 million to be financed by the government through exemptions.

^b In mid-2018 prices as of November 2018.

^c Physical contingencies computed at 10% of the base costs. Price contingencies reflect inflation expectations; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

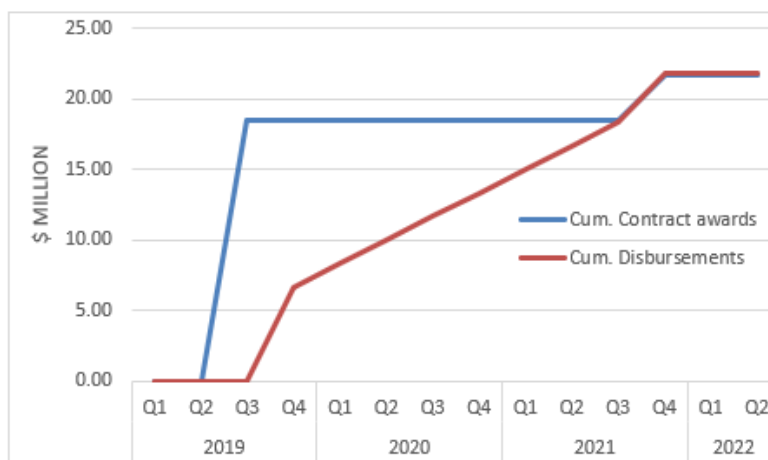
^d Includes interest charges. Interest during construction for the ADB concessional loan has been computed at 1.0% plus an effective contractual spread of 0.65%. Interest during construction for Strategic Climate Fund concessional loan has been computed at 0.1% plus an effective contractual spread of 1.05%.

Sources: ADB and EDC estimates.

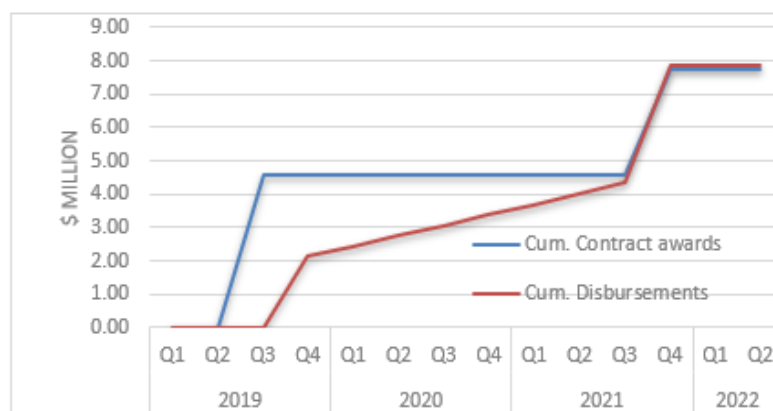
I. Contract and Disbursement S-Curve

9. The tables below show quarterly contract awards and disbursements projections over the life of the project. The s-curve is for ADB financing and ADB administered co-financing, which will be recorded in the ADB's systems and reported through e-Ops. Counterpart funds are excluded. The projection for contract awards includes contingencies (unallocated funds) but excludes service charges and interest during construction.

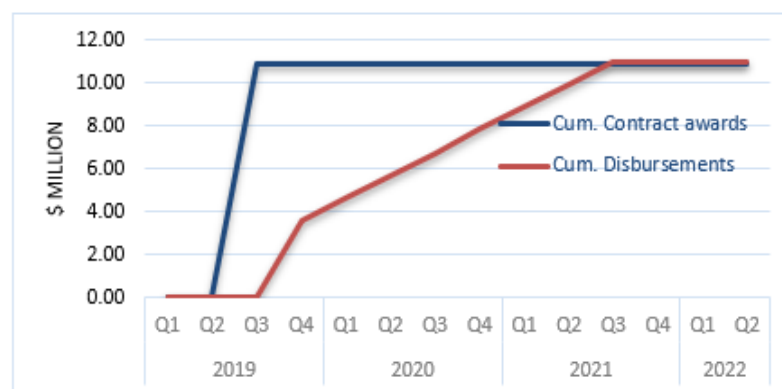
Combined S-Curves for Loans and Grant



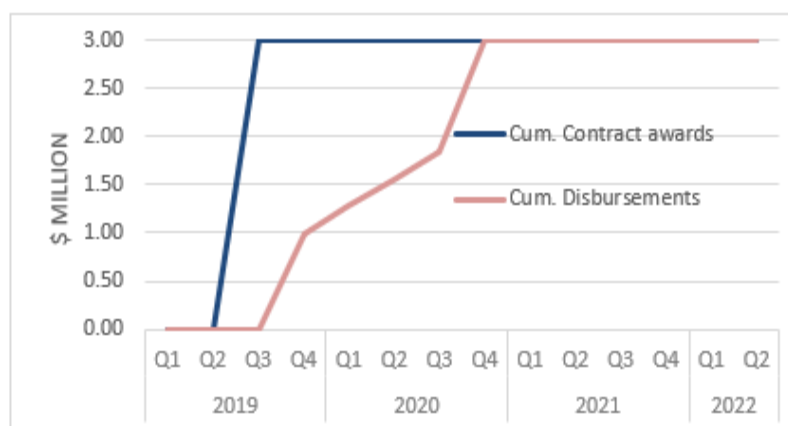
S-Curves for ADB Concessional Loan



S-Curves for SCF Concessional Loan



S-Curves for SCF Grant



Total Contract Awards and Disbursements (\$ million)*

Total Contract Awards and Disbursements (\$ million)											
Year	Contract Awards					Disbursements					
	QI	QII	QIII	QIV	Total	QI	QII	QIII	QIV	Total	
2019	-	-	18.48	-	18.48	-	-	-	6.68	6.68	
2020	-	-	-	-	-	1.68	1.68	1.69	1.69	6.73	
2021	-	-	-	2.83	2.83	1.69	1.70	1.71	3.13	8.23	
2022	-	-	-	-	-	-	-	-	-	-	
Total contract awards					21.30	Total disbursements					21.64

*numbers may not sum up precisely because of rounding.

ADB Loan (\$ million)*

Year	Contract Awards					Disbursements				
	QI	QII	QIII	QIV	Total	QI	QII	QIII	QIV	Total
2019	-	-	4.65	-	4.65	-	-	-	2.11	2.11
2020	-	-	-	-	-	0.34	0.34	0.34	0.35	1.37
2021	-	-	-	2.83	2.83	0.35	0.35	0.35	3.12	4.16
2022	-	-	-	-	-	-	-	-	-	-
Total	7.55					7.64				

*numbers may not sum up precisely because of rounding.

SCF Loan (\$ million)*

Year	Contract Awards					Disbursements				
	QI	QII	QIII	QIV	Total	QI	QII	QIII	QIV	Total
2019	-	-	10.82	-	10.82	-	-	-	3.59	3.59
2020	-	-	-	-	-	1.05	1.05	1.05	1.06	4.21
2021	-	-	-	-	-	1.06	1.06	1.06	0.01	3.19
2022	-	-	-	-	-	-	-	-	-	-
Total	10.82					11.00				

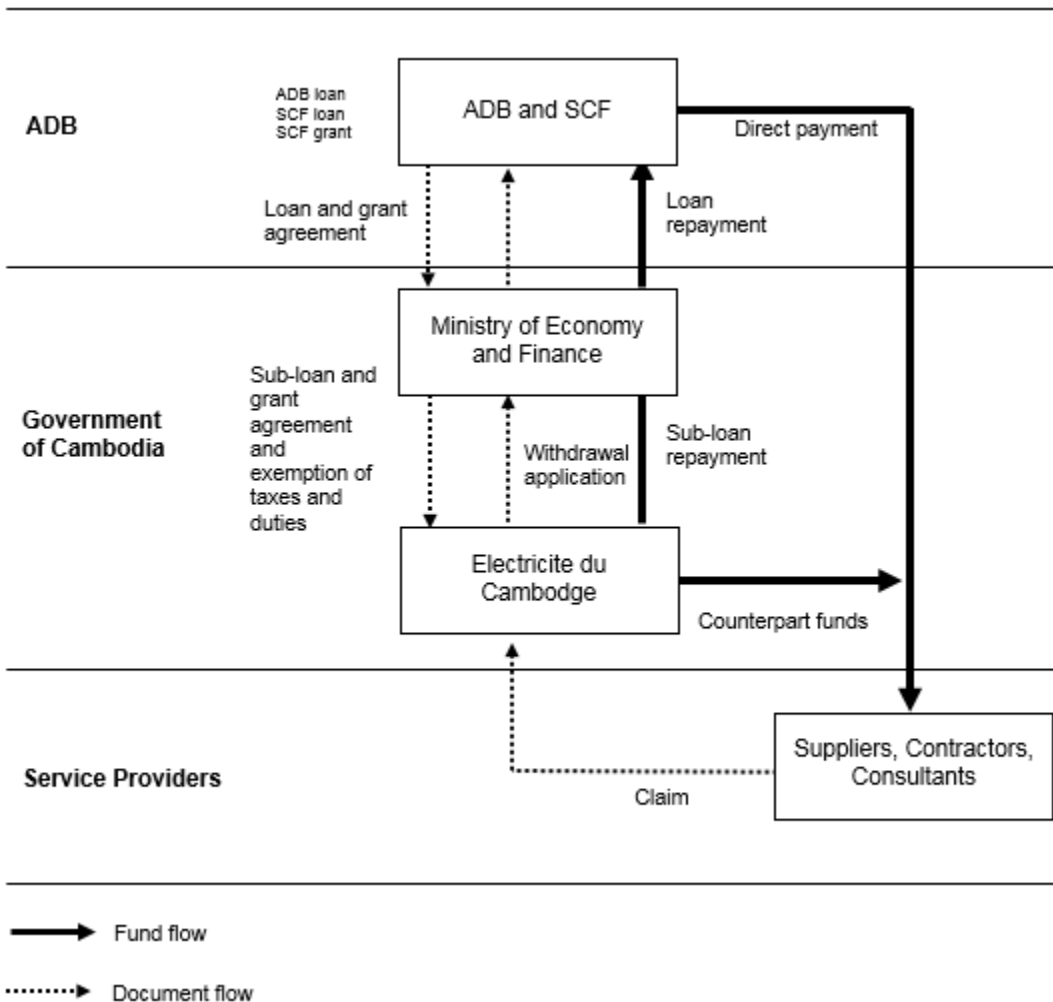
*numbers may not sum up precisely because of rounding.

SCF Grant (\$ million)*

Year	Contract Awards					Disbursements				
	QI	QII	QIII	QIV	Total	QI	QII	QIII	QIV	Total
2019	-	-	3.00	-	3.00	-	-	-	0.98	0.98
2020	-	-	-	-	-	0.29	0.29	0.29	0.29	1.15
2021	-	-	-	-	-	0.29	0.29	0.29	0.00	0.87
2022	-	-	-	-	-	-	-	-	-	-
Total	3.00					3.00				

*numbers may not sum up precisely because of rounding.

J. Fund Flow Diagram



V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

10. The financial management assessment (FMA) was conducted in accordance with ADB's Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: A Methodology Note. The FMA considered the capacity of the EDC, including funds-flow arrangements, staffing, accounting policies and procedures, financial reporting and monitoring systems, financial information systems, and internal and external auditing arrangements. The review of EDC's existing financial management, based on the Financial Management Assessment Questionnaire, has concluded that there are no significant concerns. EDC has established appropriate financial management systems and processes, a trained and experienced accounting department and an internal audit function. However, there is a need to complete the automation of accounting and financial information systems and to extend the scope of the internal auditing department to include externally-financed projects. A summary of the assessment is provided in para 11 to 16. The detailed financial management assessment of EDC is accessible from the list of supplementary linked documents in Appendix 2 of the RRP.

11. **Funds flow.** The proposed funds flow and disbursement arrangements have been satisfactorily implemented by EDC in previous and ongoing ADB funded projects. EDC has demonstrated its capacity to properly manage funds flow and disbursements through the completed and ongoing projects. Therefore, the control risks associated with the funds flows is assessed as being low.

12. **Staffing.** EDC's accounting department is currently fully staffed. All staff members have appropriate qualifications and experience and are employed on a full-time basis with low rates of turnover. The accounting staff are familiar with Asian Development Bank requirements being responsible for implementing two ADB-financed projects: the Cambodia Rural Energy Project (Grant 0036-CAM) and the Medium-Voltage Sub-Transmission Expansion Sector Project (Loan 2979-CAM). The department has previously implemented the Greater Mekong Subregion Transmission Project (Loan 2052-CAM) and the Provincial Power Supply Project (Loan 1794-CAM). Project Completion Reports for these two latter projects rated EDC's performance as *satisfactory* and identified no concerns with EDC's financial management. All these projects have been implemented under a direct payment mechanism as is proposed for this project.

13. **Accounting and financial reporting systems.** EDC has established appropriate accounting systems and processes including implementing a full chart of accounts. Monthly reconciliation of actual and reported bank and cash balances takes place and annual reconciliation of physical inventories. All invoices are checked against purchase orders and receiving reports before being approved for payment. Withdrawals from EDC's bank accounts must be authorized by either the Managing Director or Deputy Managing Director.

14. **Financial information systems.** EDC has introduced a commercial accounting software package (ACCPAC by SAGE) at the level of corporate headquarters. However, a number of provincial branches still operate manual accounting systems due to a lack of secure communications—which EDC intends to address. Financial statements and project accounts are prepared manually using MS Excel with data obtained from EDC's financial information systems. Together with continued manual accounting at branch level, this does introduce the potential for errors and omissions.

15. **Internal and external auditing arrangements.** EDC's financial statements are currently audited by KPMG Cambodia and follow Cambodian International Financial Reporting Standards for Small and Medium-Sized Entities. The auditors have identified no matters of concern in their opinions attached to the audited financial statements for the most recent four years (2013 to 2016) for which these are available. EDC has operated an internal audit department since its establishment which reports to the Managing Director (EDC has no separate audit committee) and currently has 21 staff. The internal audit department conducts regular audits of all EDC branches as well as targeted audits where concerns are identified. It does not audit individual projects. This exclusion includes current and previous ADB projects on the basis that, under the direct payment mechanisms, both MEF and ADB review and approval are necessary before any payments are made. This does represent a potential weakness of the internal audit department's coverage. The internal audit department is supplemented by an MOU with the Anti-Corruption Commission allowing this entity to receive complaints relating to EDC for investigation in its own right and to protect the anonymity of informants.

16. **Financial management, internal control and risk assessment.** The results of the internal control and risk assessment are summarized in Table 4. Financial management risks need to be considered and updated throughout the life of the project. Risk mitigation measures shall also be updated accordingly. Table 5 addresses the issues identified in Table 4.

Table 4: Financial Management, Internal Control, and Risk Assessment

Table 4. Financial Management, Internal Control, and Risk Assessment				
Risk Description	Impact	Likelihood	Risk Assessment	Mitigation Measures in Risk Management Plan
Inherent Risk				
1. Country-level risks ADB has identified that “corruption continues to be regarded as a main area of concern for the business environment and overall governance in Cambodia”. (Country Partnership Strategy 2014–18)	Moderate	Likely	Substantial	ADB and other donors are supporting various capacity-building and good governance initiatives as well as implementing appropriate risk management procedures. ADB support includes: <ul style="list-style-type: none">• implementing mitigation measures for all projects;• tightening project procurement• conducting joint investigations of irregularities; and• supporting further development of the government’s Standard Operating Procedures, Procurement Manual, and Financial Management Manual
2. Entity-specific EDC is very familiar with managing ADB and other donor projects	Low	Unlikely	Low	
Overall Inherent Risk			Moderate	
Control Risk				

Risk Description	Impact	Likelihood	Risk Assessment	Mitigation Measures in Risk Management Plan
1. Implementing Entity EDC's Finance and Accounting Department is headed by a Director who reports to the Deputy Managing Director (DMD) (Finance and Business). The DMD is one of four DMDs reporting directly to the Managing Director. ¹⁰ Only the Managing Director sits on the Board of Directors which otherwise comprises representatives of Government, employees and the Chamber of Commerce of Cambodia	Moderate	Unlikely	Low	
2. Funds Flow EDC is financially strong. A direct payments procedure will be applied for ADB payments	Moderate	Unlikely	Low	
3. Staffing The Finance and Accounting Department is fully-staffed. All staff members have appropriate qualifications and experience and turnover is low.	High	Unlikely	Moderate	
4. Accounting Policies and Procedures EDC has established appropriate accounting systems and processes. Accounting staff are familiar with ADB requirements from implementing previous loans.	Low	Unlikely	Low	
5. Internal Audit EDC has an internal audit department with 21 staff members, reporting directly to the Managing Director. Regular audits of branches and units are conducted. Individual projects are not audited as these are understood to be sufficiently supervised by MEF and ADB reviews and approvals prior to payments being made.	High	Likely	Substantial	Internal Audit Department to include proposed project in its scope of activities Training to be provided to Internal Audit Department in ADB guidelines and procedures by December 2018
6. External Audit EDC's financial statements are currently audited by KPMG Cambodia. No matters of concern have been identified in the statements reviewed.	Moderate	Unlikely	Low	
7. Reporting and Monitoring	High	Unlikely	Low	

¹⁰ The Managing Director is formally the Royal Government of Cambodia Delegate in Charge of Managing EDC. The term "Managing Director" is used here for conciseness.

Risk Description	Impact	Likelihood	Risk Assessment	Mitigation Measures in Risk Management Plan
All invoices are subject to verification against purchase orders and receiving reports. Monthly reconciliations of cash balances and annual reconciliations of physical inventories take place.				
8. Information Systems EDC uses a commercial accounting package at corporate headquarters, but some provincial branches still use manual accounting systems due to a lack of secure communications.	Substantial	Likely	Substantial	Rollout of accounting software package to all EDC branches and automation of financial statements is underway
Overall Control Risk			Moderate	
Overall (Combined) Risk			Moderate	

ADB = Asian Development Bank; EDC = Electricite du Cambodge; MEF = Ministry of Finance

Table 5: Time-Bound Action Plan

Weakness	Mitigation Action	Responsibility	Timeframe
1. EDC has an internal audit department with 21 staff members, reporting directly to the Managing Director. Regular audits of branches and units are conducted. Individual projects are not audited as these are understood to be sufficiently supervised by MEF and ADB reviews and approvals prior to payments being made.	Internal Audit Department to include proposed project in its scope of activities. Training to be provided to Internal Audit Department in ADB guidelines and procedures.	ADB/EDC	Dec 2018
2. EDC uses a commercial accounting package at corporate headquarters, but some provincial branches still use manual accounting systems due to a lack of secure communications.	Rollout of accounting software package to all EDC branches and automation of financial statements.	EDC	Dec 2019

ADB = Asian Development Bank, EDC = Electricité du Cambodge, MEF = Ministry of Economy and Finance

17. **Conclusion.** The FMA has identified no concerns regarding the capabilities of EDC to manage the proposed project in compliance with ADB's requirements. EDC has successfully implemented two previous ADB loan projects and is currently implementing a further two projects. Reviews of its performance under these projects have rated it as satisfactory. No concerns have been expressed by its auditors with regards to either its corporate financial statements or project-level statements. A review of internal financial management systems, processes and resources has concluded that these are adequate for requirements under the proposed project. Therefore, the overall financial management risk of EDC is assessed as *moderate*.

B. Disbursement

1. Disbursement Arrangements for ADB and SCF Funds

18. The loans and grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, as amended from time to time),¹¹ and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.¹² Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

19. Payment for goods, works and consulting services will be disbursed by ADB through direct payment procedure. EDC/PMO will be responsible for (i) preparing disbursements projections, (ii) collecting and retaining supporting documents, and (iii) preparing and sending withdrawal applications to MEF for onwards submission to ADB. Each withdrawal application must include the claim and invoice from the contractor or consultant and approved by the EDC's authorized representative.

20. Before the submission of the first withdrawal application (WA), MEF should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the government, together with the authenticated specimen signatures of each authorized person. The minimum value per WA is stipulated in the *Loan Disbursement Handbook* (2017, as amended from time to time). Individual payments below such amount should be paid (i) by the EDC and subsequently claimed to ADB through reimbursement, unless otherwise accepted by ADB. EDC should ensure sufficient category and contract balances before requesting disbursements.

21. The government and EDC have agreed with ADB on the following condition for disbursement: no withdrawals shall be made from the loan (ADB loan, SCF loan) and grant (SCF grant) accounts for turnkey contract until all land acquisition and resettlement activities for the construction of 60 MW capacity of solar park under the project is completed, including all payments of the required compensation and entitlements, and satisfaction of all requirements and actions set out in the LARP, as completed and certified as such by the independent external party referred to in the loan and grant agreements.

2. Disbursement Arrangements for Counterpart Fund

22. Counterpart fund will finance the costs for (i) land acquisition and resettlement (EDC) and (ii) taxes and duties (MEF). Taxes and duties will be through exemption. Disbursement and liquidation of counterpart fund will follow government procedures.

C. Accounting

23. EDC will maintain, or cause to be maintained, separate books and records by funding source for all expenditures incurred on the project following international accounting principles and practices. EDC will prepare project financial statements in accordance with the government's accounting laws and regulations which are consistent with international accounting principles and practices.

¹¹ The handbook is available electronically from the ADB website (<http://www.adb.org/documents/loan-disbursement-handbook>)

¹² Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning

D. Auditing and Public Disclosure

24. EDC will cause the detailed project financial statements to be audited in accordance with International Standards on Auditing by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of the fiscal year by the EDC.

25. The audited entity financial statements, together with the auditor's report and management letter, will be submitted in the English language to ADB within 1 month after their approval by the relevant authority.

26. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the proceeds of the loan and grant were used only for the purpose(s) of the project; and (iii) whether the borrower or executing agency was in compliance with the financial covenants contained in the legal agreements (where applicable).

27. 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.

28. The government has been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.¹³ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of the borrower), or for additional support to be provided to the 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.

29. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy 2011.¹⁴ After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.¹⁵

¹³ ADB's approach and procedures regarding delayed submission of audited project financial statements:

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

¹⁴ Public Communications Policy: <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>

¹⁵ This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

VI. PROCUREMENT AND CONSULTING SERVICES

30. Implementation of the National Solar Park Project involves public and private sector procurements as follows:

- i) **Public procurement:** The solar park common facilities comprising civil works, park substation, transmission line, and upgrades to the receiving substation are funded under the ADB loan. The goods and works contracts and the consulting services contracts are procured in accordance with ADB Procurement Policy (2017, as amended from time to time)¹⁶ and Procurement Regulations for ADB Borrowers (2017, as amended from time to time)¹⁷. Open competitive bidding procedures will be used for EPC contract for solar park civil works, substation, transmission line, and GS6 upgrade.
- ii) **Private sector procurement:** The financing, construction and operation of the first solar photovoltaic power plant to be located within the perimeter of the solar park will be carried out by an IPP to be selected competitively under procurement guidelines of the Government.

31. This Procurement Plan covers only the goods and works contracts and consulting services contracts. It does not address the procurement of an IPP for the solar photovoltaic power plant.

A. Procurement Capacity Assessment

32. A procurement capacity assessment was carried out to assess the procurement capacity of EDC. In general, the procurement risks are in the range between *Low* and *High* but with the support provided by ADB, the risks are unlikely to affect the procurement process. The procurement risk assessment and management plan are provided in Table 6 below.

Table 6: Procurement Risk Assessment and Management Plan

Risk	Risk Assessment			Risk Management
	Impact	Likelihood	Risk	
PUBLIC PROCUREMENT: SOLAR PARK INFRASTRUCTURE				
Effectiveness of the document management system used by Procurement Department will support reliable storage and retrieval of contract documents and communications.	Moderate	Moderate	Moderate	Mitigation: <ul style="list-style-type: none">• PIC will be appointed to provide project management and contract administration services.
Environmental and social safeguards breaches	Low	Low	Low	Mitigation: <ul style="list-style-type: none">• Resettlement, biodiversity and other impacts of the project is low.• Impact studies, compensations and mitigations are conducted in accordance with ADB standards

¹⁶ Available at <https://www.adb.org/documents/adb-procurement-policy>

¹⁷ Available at <https://www.adb.org/documents/procurement-regulations-adb-borrowers>

Risk	Risk Assessment			Risk Management
	Impact	Likelihood	Risk	
Failure of EPC contractor to meet completion date for solar park infrastructure could leave EDC liable for liquidated damages under the PPA.	Moderate	Low	Low	Mitigation: <ul style="list-style-type: none"> Choice of post-qualification criteria to ensure sound contractor; Build in adequate float between the completion dates of the solar park infrastructure and the solar PV power plant.
Delay in construction of solar park infrastructure due to unforeseen conditions could leave EDC liable for liquidated damages under the PPA.	Moderate	Low	Low	Mitigation: <ul style="list-style-type: none"> Build in adequate float between the completion dates of the solar park infrastructure and the IPP solar PV power plant.
Occurrence of natural force majeure events	Moderate	Low	Low	Mitigation: <ul style="list-style-type: none"> Probability of occurrence of usual natural force majeure events such as earthquake and flooding are low and the vulnerability of the solar park and transmission assets is moderate. Force majeure risks are allocated fairly between the parties under the EPC park infrastructure contract.
IPP PROCUREMENT: SOLAR PV POWER PLANT				
EDC has no experience with competitive IPP bidding	High	Low	Moderate	Mitigation: <ul style="list-style-type: none"> ADB funding technical, legal and transaction advisors to assist EDC. Previous Bavet bid lay groundwork to this bid. Capacity building to be provided to EDC staff on procurement and contract management of IPP bids.
IPP interest in solar IPPs in Cambodia is largely untested. Interest may be low and prices high.	High	Low	Moderate	Mitigation: <ul style="list-style-type: none"> Interest has been high and prices low in recent solar IPP bids in Asia. Previous Bavet bid confirms interest in the Cambodian market.
Exchange rate risk of energy purchases from the solar park is borne by EDC, leaving it vulnerable to currency realignments.	High	Low	Moderate	Mitigation: <ul style="list-style-type: none"> Prudent macroeconomic management.
IPP fails to complete on time, leaving the solar park idle.	Moderate	Low	Low	Mitigation: <ul style="list-style-type: none"> Structure of IPP transactions, lender due diligence and the

Risk	Risk Assessment			Risk Management
	Impact	Likelihood	Risk	
				<p>simplicity of solar PV technology minimizes the likelihood of delays in the IPP plant.</p> <ul style="list-style-type: none"> • PPA delay liquidated damages.
Under-production of solar PV power plant	Low	Low	Low	<p>Mitigation:</p> <ul style="list-style-type: none"> • Additional solar radiation data is being collected and will provide a basis for reliable estimates of energy production. • Risk is taken by the IPP and not EDC, although poor performance will affect future IPP interest, resulting in higher tariff bids.
Occurrence of natural force majeure events	Moderate	Low	Low	<p>Mitigation:</p> <ul style="list-style-type: none"> • Probability of occurrence of usual natural force majeure events such as earthquake and flooding are low and vulnerability of the solar PV assets is moderate. • Lenders will ensure force majeure risks are allocated between the parties under the IPP agreements in a way that will protect the solar plant.
Terms of the concession covering the GS6 substation are not compatible with those of the IPP power plant concession.	Low	Low	Low	<p>Mitigation:</p> <ul style="list-style-type: none"> • EDC's rights, obligations and risks under the solar PV concession to be checked for compatibility with those under the GS6 concession.
Insolvency of IPP	Moderate	Low	Low	<p>Mitigation:</p> <ul style="list-style-type: none"> • Specification of appropriate post qualification criteria during bidding will minimize risk of insolvency. • Terms of the PPA and implementation agreement to facilitate swift termination, allowing the substitution of a solvent IPP.

EDC = Electricite du Cambodge; EPC = engineering, procurement, and construction; GS6 = grid substation 6; IPP = independent power producer; PIC = project implementation consultant; PPA = power purchase agreement; PV = photovoltaic

B. Advance Procurement

33. All advance procurement will be undertaken in conformity with ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time) using ADB Standard Bidding Documents, issued May 2018.

34. The issuance of invitations to bid under advance contracting will be subject to ADB approval. The borrower and EDC have been advised that approval of advance contracting does not commit ADB to finance the project.

35. Advance procurement will be undertaken for goods, works, and consulting services. The steps to be concluded in advance will include (i) prequalification of contractors, tendering, and bid evaluation for civil works packages; (ii) preparation of tender documents to procure materials and equipment; (iii) evaluation of bids; (iv) recruitment of consultants.

36. The following contract packages have been identified for advance contracting to undertake procurement for the key contracts before the loan agreement is signed so that project implementation can commence immediately following loan effectiveness:

- a. Project Implementation Consultant
- b. EPC contract for solar park civil works, substation, transmission line, and GS6 upgrade.

37. Contracts procured under advance action will be signed after loan effectiveness.

D. Procurement Plan

Basic Data

Project Name: National Solar Park Project		
Project Number: 51182-001	Approval Number:	
Country: Cambodia	Executing Agency: Electricite du Cambodge	
Project Procurement Classification: B	Implementing Agency: Electricite du Cambodge	
Procurement Risk: Moderate		
Project Financing Amount: \$26.71 million ADB Financing: \$7.64 million Cofinancing (ADB Administered): \$14.0 million Non-ADB Financing: \$5.07 million	Project Closing Date: December 2021	
Date of First Procurement Plan: May 2018	Date of this Procurement Plan: 8 April 2019	
Procurement Plan Duration (in months): 18	Advance Contracting: Yes	e-GP: No

1. Methods, Review and 18-Month Procurement Plan

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

Procurement of Goods, Works and Non-Consulting Services	
Method	Comments
Open Competitive Bidding (OCB) for Goods	Internationally advertised
Limited Competitive Bidding for Goods	

Procurement of Goods, Works and Non-Consulting Services	
Method	Comments
Request for Quotation for Goods	
Electronic Reverse Action for Non-Consulting Services	
Open Competitive Bidding (OCB) for Works	
Limited Competitive Bidding for Works	
Request for Quotation for Works	

Consulting Services	
Method	Comments
Quality and Cost Based Selection (QCBS)	Quality:Cost ratio of 80:20
Direct Contracting for Consulting Firm	
Competitive for Individual Consultant	
Direct Contracting for Individual Consultant	

2. Lists of Active Procurement Packages (Contracts)

39. 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 (USD mill)	Procurement Method^a	Review [Prior / Post/Post (Sampling)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments
W01	EPC contract for solar park civil works, substation, transmission line, and GS6 substation upgrade	16.98	OCB w/o prequalification	Prior	1S-1E	Q2/2019	

^a Universal procurement will apply.

40. A single EPC contract structure (using Plant SBD) is adopted for the solar park infrastructure (comprising civil works, park substation, transmission line, and upgrades to the receiving substation civil works, substation, and transmission line) to eliminate contract interfaces and ensure coordinated completion of all infrastructure in advance of the commercial operation date of the IPP solar photovoltaic power plant.

41. 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 (US\$ mill)	Selection Method	Review (Prior / Post)	Type of Proposal	Advertisement Date (quarter/year)	Comments
C01	Project Implementation Consultant	1.50	QCBS	Prior	FTP	Q1/2019	Quality: cost = 80:20

FTP = Full Technical Proposal; QCBS = quality and cost-based selection

3. List of Indicative Packages (Contracts) Required Under the Project

42. The following table lists goods, works, non-consulting services, and consulting services contracts for which procurement activity is expected to commence beyond the procurement plan duration and over the life of the project (i.e., those expected beyond the current procurement plan duration).

Goods, Works and Non-Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement Method	Review [Prior /Post /Post (Sampling)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments

Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments

43. The goods, works and consulting services contracts listed under Section A provide for the first phase of the development of the solar park. Other photovoltaic power plants will be financed, constructed and operated by the private sector in the solar park under Phase 2 of the development.

4. Indicative List of Packages Required Under the Project

44. The following table lists the awarded and completed contracts for goods, works and consulting services.

Goods and Works							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Review [Prior / Post/Post (Sampling)]	Bidding Procedure	Comments

Consulting Services							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Review (Prior/Post)	Type of Proposal	Comments

5. Non-ADB Financing

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

Goods, Works and Non-consulting services				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement Method	Comments

46. The project involves the development of solar PV power plants within the perimeter of the park by the private sector. The electricity generated by these plants will be transformed, stored and transmitted to EDC's 230 kV grid by the infrastructure provided under ADB-financing.

Consulting Services				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Recruitment Method	Comments

E. Consultant's Terms of Reference

47. Background and Objective. The project will support the construction of solar photovoltaic (PV) power plants in Cambodia and address the country's need to: (a) expand low-cost power generation, (b) diversify the power generation mix and increase the percentage of clean energy in its generation mix in line with its stated greenhouse gas emissions (GHGs) reductions targets, and (c) expand the use of competitive tenders for independent power producer (IPP) projects and other global best practices in the sector.

48. The national electricity utility, Electricite du Cambodge (EDC) is establishing a solar park to support the development of solar PV power plants by the private sector. The solar park is designed to accommodate solar PV power plants with an aggregate output of 100 MW. With the assistance of the ADB and its Transaction Technical Assistance (TRTA) consultant, EDC will award an engineering, procurement and construction contract (“EPC Contract”) for the development of the solar park’s civil works, substation and transmission interconnection (“solar park infrastructure”). EDC, at the same time, will engage an IPP through a competitive bidding process to develop the first of the solar park’s IPP solar PV power plants, a facility of 60 MW capacity, under a Build-Own-Operate (BOO) arrangement.¹⁸

49. The project implementation consultant (PIC) will be engaged to assist EDC with the implementation of the project and, in particular, to: (a) update, as necessary, the Initial Environmental Examination (IEE), Environmental Management Plan (EMP), Land Acquisition and Resettlement Plan (LARP), and, after obtaining ADB’s approval, oversee their implementation; and (b) supervise the design, supply, installation, and commissioning of the solar park infrastructure works by the EPC contractor. The PIC will be responsible for building EDC’s capacity in financial management, contract administration, social and environmental monitoring and reporting. The PIC will recruit and manage a local registered firm, who will work with EDC to prepare and submit an Initial Environmental Impact Assessment (IEIA) or full EIA for the solar park infrastructure to the Ministry of Environment (MOE) for clearance and approval, as required, prior to any civil works contract award.¹⁹

50. **Team composition.** The services of a multidisciplinary team will be required for thirty (30) months and will involve the participation of international specialists (31 person-months) and national specialists (52 person-months). The envisaged composition of the PIC is as follows:

Positions	Number	Person–Months
International		
Transmission and Substation Engineer - Team leader	1	10
Solar PV Power Specialist	1	2
Substation Engineer	1	5
Civil Engineer	1	5
SCADA/Communication Engineer	1	1
Communication Specialist / Report Editor	1	2
Environmental Specialist	1	3
Resettlement / Social Development Specialist	1	3
Sub-total		31
National		
Transmission & Substation Engineer	1	18
Civil Engineer	1	12
Procurement / Contract Management Specialist	1	6
Environmental Specialist	1	8
Resettlement / Social Development Specialist	1	8
Sub-total		52
Total		83

¹⁸ The land on which the power plants would be constructed would be returned to EDC at the end of the PPA period.

¹⁹ It is a requirement under *Prakas on Registration of Consulting Firm for Studying and Preparing Environmental and Social Impact Assessment Report*, 215 BRK.MOE, (19 May 2014) that the IEIA/EIA is prepared by a Consulting Firm registered with the Ministry of Environment (MOE). The consultant shall include a budget line item for a local subcontractor/sub consultant to prepare the IEIA/EIA for the Solar Park Infrastructure. The subcontractor/sub consultant does not need to be identified at the time of proposal submission.

51. **Scope of work.** The PIC will be responsible for delivering the project on time, within the stated budget and in compliance with specified scope and quality requirements. The PIC team will be based in the EDC office in Phnom Penh and will visit the site on a regular basis. International and national specialists will work on an intermittent basis, with national specialists assisting the international specialists in delivering the required outputs.

52. The PIC will work closely with EDC and its Project Management Office (PMO), the Ministry of Mines and Energy (MME), Ministry of Economy and Finance (MEF), and the Ministry of Environment (MOE) in the implementation of the solar park infrastructure works and IPP solar PV power plants. The tasks to be performed as part of the PIC's scope of work will include the following (amongst others):

53. **Pre-Construction Phase**

Task 1: Prepare and submit national IEIA or EIA to MOE for approval

Responsibility: Team leader, environmental specialists, resettlement/social development specialists and communication specialist

- (i) Recruit and manage a local registered firm which will prepare and submit an Initial Environmental Impact Assessment (IEIA) or full EIA, including inventory of losses (IOL) and Resettlement Action Plan (RAP), for the Solar Park and Transmission Line Infrastructure to the Ministry of Environment (MOE) for clearance and approval, prior to civil works commencement.

Deliverables: final (and draft) IEIA or EIA and IOL, RAP reports in Khmer and English approved by the MOE. Comments matrices in English on feedback from MOE, Khmer and English versions approved by MOE.

Task 2: Safeguards monitoring

Responsibility: Team leader, environmental specialists, resettlement/social development specialists and communication specialist

Tasks: Assist EDC/PMO in updating the social and environmental management plans and reports, and implementing them; in particular to:

- (i) Update the IEE and EMP to take account of detailed designs and engineering of the solar park infrastructure and solar plant, factoring any new details and developments into the mitigation and monitoring plans, budget and capacity development needs of EDC. Ensure that all relevant requirements of the EMP, including any updates, are adequately addressed and included in the EPC Contract and in the project agreements signed by the IPP responsible for the solar PV power plant. Ensure design and pre-construction mitigation measures as set out in EMP Table 2 are addressed.
- (ii) Following completion of the detailed design update and complete census of the affected person, detailed measurement of the affected land/assets, and socioeconomic survey, conduct consultations including with vulnerable groups, update the Project Information Booklet and distribute to the affected persons, and based on this, finalize the draft LARP.
- (iii) Obtain EDC and ADB approval for the updated IEE, EMP, and final LARP.
- (iv) Implement the updated IEE, EMP, and final LARP.

- (v) Ensure that compensation and resettlement plan are carried out in accordance with LARP, including provision of special assistance to female headed households with dependents for any loss of livelihood and income.
- (vi) Prepare LARP Implementation Compliance Report immediately after completion of the compensation payment; obtain ADB's approval of the report and its disclosure.
- (vii) Draft, implement and monitor a Stakeholder Communication Plan, based on the prepared Stakeholder Communication Strategy, including nominating a focal point for communication with stakeholders, ensuring delivery of relevant project information (including job opportunities available during construction to women and low-income households) to stakeholders and obtaining feedback from them, and fostering an understanding and acceptance of the project.
- (viii) Assist with the establishment and maintenance of a database of affected households and institutions, including information on the socio-economic situation of the affected households, their affected assets, and their compensation entitlements and payments.
- (ix) Ensure that a Grievance Redress Mechanism (GRM) is in place and that affected people / households, institutions and other relevant stakeholders are informed about it and procedures to place a complaint for any social or environmental issues. Assist EDC with: (a) building capacity of the grievance committee members; (b) maintaining adequate recording of the complains (grievance logs and forms); (c) responses to complaints from affected people/ households and institutions and ensure their resolution in a timely manner; and (d) establishing and regularly updating a database of complaints received and status of their resolution and any bottlenecks, and summarizing the status of the GRM in the periodic and safeguards monitoring reports to be submitted to ADB.
- (x) Assist with information disclosure, consultations, and participation with the public, ensuring at least 40% women's participation overall and conducting separate consultations with women, on an ongoing basis throughout project implementation.
- (xi) Assist EDC in preparing monitoring reports for submission to the Government and ADB, including information on progress in implementation of gender measures.

Deliverables: updated and approved IEE, EMP, and LARP; Stakeholder Communication Plan; documents reporting satisfactory implementation of approved IEE, EMP, final LARP, and gender measures; implementation/monitoring reports to the government and ADB; established database of the affected people/households (by sex) and institutions.

54. **Implementation Phase.**

Task 3: Construction supervision of solar park EPC contractor.

Responsibility: Team leader, transmission & substation engineers, substation engineer, SCADA/communication engineer, civil engineers; procurement/contract management specialist, environment specialists, and resettlement/social development specialists.

Tasks: support EDC/PMO in the following:

- (i) Administration of the solar park EPC infrastructure contract: assisting with the approval of designs and drawings, certification of invoices, award of extensions of time, certification of completions, processing of variation orders, evaluation of claims, settlement of disputes and the like.

- (ii) Witness factory inspections and performance tests within the framework of the contracts.
- (iii) Conduct regular site visits and monitor construction, installation, testing, and commissioning of the works; identify any issues / problems during project implementation; propose remedial actions and report outstanding issues.
- (iv) Monitor compliance with applicable national labor laws and core labor standards, including but not limited to equal pay for equal work regardless of gender, race or ethnicity, and excluding child labor.
- (v) Coordinate with the EPC contractor and the connecting grid substation concessionaire, in carrying out the upgrades to the connecting grid substation to accommodate the interconnection of the Solar Pak to the EDC grid.
- (vi) Liaise closely with the Independent Engineer engaged to oversee the implementation of the solar PV power plant on behalf of EDC, including participation in regular progress meetings to ensure the Solar Park Infrastructure works and the solar PV power plant works are properly coordinated. The matters to be addressed during such meetings shall include (without limitation):
 - (a) construction and commissioning activities and schedules;
 - (b) issuing, amending, updating or revocation of access authorizations and permits for the site;
 - (c) environment, health and safety matters affecting the Site and the personnel of the Employer, the Contractor, the solar PV power plant EPC contractor and all consultants, subcontractors and agents employed by them; and
 - (d) resolution of any issues or disputes relating to the coordination of the activities of the parties.
- (vii) Review and approved Construction Environmental Management Plans (CEMPs) prior to civil works commencing, supervise and regularly monitor implementation of EMP, community and occupational health and safety measures and GRM by all parties on the site, in particular the solar park EPC contractor and contractors employed by the IPP owner of the solar PV power plant.
- (viii) Review and approve the commissioning test reports submitted by the solar park EPC contractor and attend the commissioning and testing of the solar park infrastructure.
- (ix) Prepare and issue the provisional acceptance certificate and final taking over certificate for sections and the whole of the works. Establish a list of outstanding works and deficiencies before taking over the works and submit it to the EPC contractor together with the time frame in which the outstanding works and deficiencies are to be remedied.
- (x) Review and approve the as-built drawings and O&M manuals produced by the solar park infrastructure contractor.
- (xi) Oversee the completion of the outstanding works and deficiencies and close out the contract on satisfactory completion of the defect's liability period.

Deliverables: Solar park infrastructure commissioning & testing report and completion report.

Task 4: Oversee the implementation of the Solar PV Power Plant.

Responsibility: Team leader, solar PV power specialist, procurement/contract management specialist, substation engineer, SCADA/communication engineer, civil engineers, and environmental specialists.

Tasks:

- (i) Review the IPP's design and construction for technical soundness with respect to its integration within the Solar Park Infrastructure and general compliance with the requirements of the Cambodian laws, EDC standards and other project agreements.
- (ii) Conduct site visits and monitoring during construction, installation, testing, and commissioning of the IPP works; identify any problems during project implementation; propose remedial actions and report outstanding issues to EDC/PMO.
- (iii) Assist EDC in overseeing the commissioning of the solar PV plant by the IPP's contractor(s) and witness testing aimed at demonstrating compliance with the PPA's minimum performance requirements.
- (iv) Oversee the taking over of the solar PV power plant by the IPP.

Deliverables: Review final drafts of construction design; review periodic construction monitoring reports, commissioning and testing report prepared by solar PV plan independent engineer; assist PMO in preparing an independent completion report following commissioning of the solar PV power plant.

Task 5: Implementation of the IEE and EMP.

Responsibility: Team leader, environmental specialists.

Tasks:

- (i) Assist EDC in applying government laws and regulations and ADB SPS 2009 requirements in finalizing and /or updating of IEE and EMP and domestic IEIA/ESIAs.
- (ii) Assist EDC in implementing IEE, EMP, and GRM. Ensure construction mitigation measures as set out in EMP Table 2: Environmental Management Plan and EMP Table 3: Environmental Monitoring Plan (EMOP) are implemented.
- (iii) Assist EDC in drafting and/or updating the Public Information Leaflet /Booklet for anticipated environmental impacts during construction and operation phases, GRM, grievance redress committee (GRC), contact persons and any other details as relevant.
- (iv) Provide training to contractors, relevant PMO personnel and facility operators on EMP implementation, provide training and checklist for monitoring parameters and responsibilities; on conducting consultations with affected people / households and communities on ongoing basis during project implementation.
- (v) Ensure that the solar park EPC contractor and solar PV power plant contractor(s) (for the solar PV power plant) prepare their respective site-specific Construction Environmental Management Plans (CEMPs) based on the updated EMP and on actual site conditions prior to mobilizing.
- (vi) Coordinate with the MOE and the local authorities on all relevant clearances, permits, and environmental regulatory compliance issues.
- (vii) Assist EDC and PMO in conducting environmental baseline surveys for water and soil quality as follows:
 - (a) Surface and ground water quality: once before start of civil works and once at the completion of civil works, at the final solar park site and the nearby reservoir

- (b) Soil quality: once before the start of civil works along the planned transmission line Right of Way (ROW)
- (viii) Assist EDC with the information disclosure, meaningful consultation and participation on an ongoing basis throughout project implementation including dissemination of project information (e.g. project information leaflets / booklets, Frequently Asked Questions (FAQ) flyers, results of environment baseline surveys, environmental safeguards, emergency response plans (ERPs), community health and safety measures and grievance redress mechanism; and integrate public views in project planning.
- (ix) Obtain monthly information from the contractors in a simple report template to report on mitigation activities, environmental issues and corresponding corrective actions proposed or taken, including grievances reported and status of resolution.
- (x) Assist contractors and facility operators in environmental monitoring, preparation of project quarterly progress report and semi-annual safeguard reporting during construction phase.

Deliverables: contribution to the quarterly project progress reports, semi-annual safeguard monitoring reports, and other reports as required.

Task 6: Implementation of Land Acquisition and Resettlement Plan (LARP)

Responsibility: Team leader, resettlement/social development specialists.

Tasks:

- (i) Assist EDC in applying government laws and regulations and ADB's SPS requirements in finalizing and/or updating of Resettlement Plan (to confirm identified impacts) for the Solar Park and transmission line.
- (ii) Assist EDC in drafting and/or updating the Public Information Booklet and devising its contents, including cut-off date, project impacts and entitlement matrix, GRM, GRC and detailed GRM guidelines, contact persons and any other details as relevant.
- (iii) Provide training for personnel responsible for conducting a detailed measurement survey (DMS) of affected assets based on the detailed engineering designs.
- (iv) Prepare the TOR of the specialist that will conduct the replacement cost study (RCS) for affected land and assets.
- (v) Prepare guidelines and train EDC SEPRO and help them in conducting consultations with affected households. This will include public consultations, FGDs and individual consultations with Displaced Persons (DPs) and vulnerable groups.
- (vi) Assist EDC in implementing Resettlement Plan and any corrective actions as relevant, including provision of special assistance to female headed households with dependents for any loss of livelihood and income, and preparing the compliance monitoring and overall safeguards monitoring reports.
- (vii) Assist EDC with the dissemination of public information and results of consultations.
- (viii) Assist EDC in quarterly monitoring of the LARP implementation and results, implementation of gender measures, filed grievances and their assessment, and in preparing LARP implementation compliance and semiannual safeguard monitoring reporting.

Deliverables: DMS, Resettlement Plan, contribution to the quarterly reports, LARP implementation compliance and semiannual safeguard monitoring reports, and other reports as required.

55. **All phases of the Project**

Task 7: Project administration.

Responsibility: Team leader with inputs, as required, from other team members.

Tasks:

- (i) Set up a project performance monitoring and document management system; maintain records of communications between EDC, other government agencies, the contractors, IPP, PIC and ADB.
- (ii) Monitor loan and grant disbursements, scrutinize costs, and maintain project accounts.
- (iii) Monitor project implementation against the project's time schedules and work programs provided by the EPC contractor, the IPP and its contractor(s). Update the time schedules of the project and individual contract, as necessary.
- (iv) Update the PAM as required, taking into account changes in the project organization, disbursement progress and project time schedule.
- (v) Undertake other project-related tasks as can be reasonably inferred for the successful completion of the project.

56. **Reporting:** In addition to those deliverables listed above, the following reports will be submitted in accordance with ADB requirements:

- i) Inception Report focusing on pre-construction activities, to be submitted within two months of the start of the services.
- ii) LARP Implementation Compliance Report to be submitted within 15 days after the completion of LARP implementation. This report will serve a basis for "no objection to civil works.
- iii) Project Quarterly Progress Report to be submitted within 30 days of the end of the quarter, that will include (amongst others):
 - (a) Introduction and basic data
 - (b) Utilization of the ADB loan and counterpart funds
 - (c) Status of project scope/implementation arrangements
 - (d) Changes in the key assumptions, risks, etc.
 - (e) Implementation progress
 - (f) Compliance with the loan assurances
 - (g) Social safeguards compliance, including gender measures
 - (h) Status of involuntary resettlement safeguard implementation to date
 - (i) Major project issues and problems, status of grievance redress mechanism, including grievances filed and resolution status to date
 - (j) Summary of consultations and issues with affected people/households and communities (including specific issues brought up by women, female-headed households, single parents), in the project area of influence.
- iv) Semi-annual environmental and social safeguards monitoring reports to be submitted within 15 days following the end of successive six-month period during construction phase.

- v) Project mid-term review report to be prepared after the mid-term review.
- vi) Project Completion Report

57. **Training and capacity building requirement.** The Consultant will build the capacity of EDC in solar technology, safeguards and solar park operation through:

- i) Formal and informal (on the job) training to strengthen EDC's capacity in managing environment and involuntary resettlement safeguard risks. This among others includes preparing the template and formats for consultations, grievance redress mechanism/procedures guidelines, grievance committee members' roles, record keeping (grievance forms, logs etc.) etc., and training SEPRO staff and relevant project stakeholders (provincial/district/local authorities etc.);
- ii) and standards of conduct (amongst others) as set forth in these terms of reference;
- iii) On-the-job training for PMO personnel and others during the procurement, construction and commissioning of the Solar Park Infrastructure;
- iv) Formal workshops and informal seminars to small groups on key topics including solar power technology, substation protection schemes and relay settings, project management and O&M of the solar park facilities.

The Consultant will ensure that gender targets for capacity building within EDC are met throughout the trainings, workshops, and seminars.

58. **Equipment procurement.** Ownership of office equipment purchased by the Consultant under the PIC budget will revert to EDC on completion of the services.

59. **Qualification Requirements.** International members of the PIC team should hold qualifications and possess experience appropriate to the nature of their tasks. They should be fluent in the English language, both oral and written, have knowledge of the project management systems that apply on ADB-financed projects, and will preferably have worked in Cambodia or in south-east Asia. The following particular requirements will apply:

- i) Team leader / International Transmission and Substation Engineer should have: (a) an engineering degree, preferably post-graduate; (b) at least 15 years' relevant experience in design, construction and commissioning of high voltage (230 kV and above) transmission lines and substations, and associated switchgear, protection, control, automation and measurement systems; and (c) experience as team leader on projects funded by multilateral development banks and a knowledge of project, disbursement and monitoring procedures that apply on ADB-financed projects.
- ii) Solar PV Power Specialist should have: (a) an engineering degree, preferably post-graduate, and (b) at least 8 years' relevant experience in updating solar resource assessments, reviewing energy production estimates, conducting system simulations and designing, constructing and commissioning solar generators, including power electronics and balance of plant.
- iii) Substation Specialist should have: (a) an engineering degree, (b) at least 10 years of relevant experience in the design, installation and commissioning of high voltage substations, control & instrumentation, and protection systems for substations at 115 kV and above; and (c) experience in reviewing and approving system designs and test plans, conducting field tests, and witnessing Factory Acceptance Tests.
- iv) SCADA/Telecommunications Specialist should have: (a) an engineering degree, (b) at least 10 years of relevant experience in the design, installation, programming and commissioning of SCADA systems and RTU for high voltage substations,

- control & instrumentation and fiber optic communication systems and (iii) experience in reviewing and approving system designs and specifications, conducting acceptance tests and certifying completion.
- v) Civil Engineer should have: (a) an engineering degree, and (b) at least 8 years of relevant experience in the design and implementation of civil works for transmission and distribution projects in developing countries, and (c) a knowledge of substation layout design, construction scheduling, cost estimation, testing of construction materials, designing tower and substation foundations and all overseeing the design and construction of all civil works of the transmission line and solar park, and (iv) knowledge of drainage system design and construction, and (v) knowledge about geotechnical investigations and (vi) knowledge on design and construction of roads.
 - vi) Communication Specialist / Report Editor will have: (a) a high proficiency in English; (b) a degree in which effective communication skills are instilled, including writing, document design and preparation of presentations; and (c) at least five years' experience in writing and editing technical correspondence and reports.
 - vii) Environmental Specialist will have a degree in the environmental or engineering, and at least 10 years of relevant experience in: (a) environmental management, planning and implementation; (b) conducting environmental assessments and monitoring construction impacts; (c) preparation of reports; and (iv) working on infrastructure projects, particularly power projects, funded by ADB.
 - viii) Resettlement / Social Development Specialist will have a degree in the social sciences and at least 10 years of relevant experience in: (a) social safeguards management, planning and implementation particularly in South East Asia, and/or Cambodia; (b) preparing methodology and tools to collect field data and conducting social impact assessment, including from a gender perspective, (c) preparing, implementing and/or monitoring implementation of resettlement and indigenous peoples plans, (d) preparation of social safeguards compliance reports, including reporting on implementation of gender measures; and (e) working in infrastructure projects, particularly power projects, funded by ADB.

National members of the PIC team will have a degree in their relevant discipline, at least 5 years of professional experience in their relevant fields and possess good English language skills. Prior ADB experience is not required.

60. **Working Arrangements**

- i) The Project Management Office will be responsible for overall project implementation and management of the project.
- ii) EDC will provide counterpart staff, office space, and other logistical support, as necessary. The consultant will procure office equipment, such as computers, printers, photocopiers, etc. and will transfer ownership to EDC after the completion of the project. EDC will make available relevant reports, documents, and data. It will facilitate interagency coordination.

VII. SAFEGUARDS

61. All safeguards documents have been prepared in accordance with ADB's Safeguard

Policy Statement (SPS 2009).²⁰ In compliance with ADB's information disclosure, consultation and participation requirements, the safeguards documents will be posted on ADB's website.²¹ The safeguards categorization for environment and involuntary resettlement is B and for indigenous peoples is C.

62. Relevant safeguards documents include: (i) the initial environmental examination (IEE); (ii) the environmental management plan (EMP); (iii) the land acquisition and resettlement plan (LARP); (iv) the stakeholder communication strategy; and (v) summary poverty reduction and social strategy (SPRSS).

A. Environment

63. The project is confirmed as environment category B. A draft Initial Environmental Examination (IEE) and Environmental Management Plan (EMP) have been prepared based on the feasibility study and shared with EDC. The identified impacts are site-specific and can be reduced to an acceptable level through effective implementation of mitigation measures. No protected areas, significant migratory bird species and flyways or other particularly sensitive environmental receptors have been identified in the project area of influence. The solar PV plants are classified as 'associated facilities'²² and will need to be developed in accordance with ADB SPS 2009. The IEE and EMP define environmental tender requirements for IPPs which will also be subject to loan covenants.

64. EDC shall ensure that the design and construction of the project components to be financed under output 1 are carried out in accordance with ADB SPS 2009, the applicable laws and regulations of the Government of Cambodia, IEE and EMP.

65. The key institutions involved in the environmental management and monitoring of the project will be the Project Management Office (PMO) within EDC and the project implementation consultant (PIC).

66. The PMO will be responsible for the overall project management and overseeing project compliance with environmental safeguards requirements based on the EMP provisions while the PIC will have primary responsibility for the implementation of EMP and oversight of the engineering, procurement, construction (EPC) contractor(s) or third-party consultants. Overall supervision will be handled by the Social and Environment Public Relations Office (SEPRO).

67. The PMO will be responsible for environmental reporting. The PIC will provide the environment input and prepare the project Quarterly Progress Reports (QPR) for submission to the PMO. The PMO will use the information from the project QPR and prepare an Environmental Monitoring report for submission to ADB semi-annually during construction and annually during operation phase. The environmental monitoring reports will be publicly disclosed on the ADB website.

68. The PIC will be responsible for environmental monitoring. The PIC will coordinate and interact with the PMO on compliance to ADB safeguards requirements and with relevant

²⁰ <http://www.adb.org/documents/safeguard-policy-statement>

²¹ <https://www.adb.org/sites/default/files/institutional-document/32904/files/pcp-2011.pdf>

²² ADB Safeguard Policy Statement (SPS, 2009) defines associated facilities as those that are not funded as part of the project (funding may be provided separately by the borrower/client or by third parties), and whose viability and existence depend exclusively on the project and whose goods and services are essential for successful operation of the project.

government agencies and local authorities on permits and clearances as needed, update and finalize the draft IEE as needed. The PIC will also be responsible in handling complaints and/or grievances filed through the Grievance Redress Mechanism (GRM), if any.

69. The PMO and PIC will ensure that the EPC Contractor(s) will be informed of their responsibility of complying with the EMP and the ADB safeguards requirements. The PIC will monitor the EPC Contractor(s) work plan relevant to EMP implementation. The EPC Contractor(s) will submit monthly progress reports to PIC on EMP implementation, which will form part of the project QPR. The PMO will be responsible for the overall compliance supervision.

B. Involuntary Resettlement

70. The project is classified as Category B for involuntary resettlement in accordance with ADB Safeguard Policy Statement (SPS, 2009). EDC will purchase the land required for the solar park through a Negotiated Settlement and will employ a third-party to prepare a confidential External Validation report of the Negotiated Settlement process. Land acquisition Resettlement Framework (LARF) has been formulated in accordance with the country's laws and regulation and ADB's SPS in case negotiations fail and expropriation is applied. Land acquisition for the transmission line will require a Land Acquisition and Resettlement Plan (LARP), according to ADB safeguards requirements. A Draft LARP has been prepared in accordance with the government laws and regulations and ADB SPS.

71. Based on preliminary assessments and consultations, the project is expected to have land acquisition impacts that are not considered significant. No physical relocation of persons or loss of income is expected from the implementation of the project. The project is not expected to acquire any land from customary landowners. No long-term impacts are expected as the construction and operation will not restrict the community from accessing and using nearby resources. Adverse impacts such as the trimming or loss of trees or crops being farmed on the land, or exposure to potential health hazards because of the entry of non-community workers, are likely to be minor.

72. Information disclosure, consultation and participation process as required according to ADB SPS was initiated in May–June 2018 and will continue during the updating of the LARP and throughout the project life.

73. The Draft LARP needs to be updated after the detailed engineering design for the transmission line is completed. Census and survey of the affected persons along the transmission line will be completed covering 100% of the affected persons. Considering the design and build contract modality, LARP finalization and implementation will be carried out per section based on the final detailed design, to ensure that no physical or economic displacement occurs until (i) compensation at full replacement cost and other entitlements listed in the LARP have been paid to each displaced person; and a comprehensive income and livelihood rehabilitation program supported by an adequate budget is in place for sections that are ready to be constructed.²³

74. An entitlement matrix was prepared and provides the cost of allowances for affected persons. As part of updating the LARP, a Replacement Cost Study will be conducted to determine the full replacement costs of the affected land and assets (land, trees etc.) and therefore, inform the firm budget according the LAR SOP for Externally Funded Projects in Cambodia (Sub Decree No. 22 ANK/BK promulgated on 22 February 2018). An initial estimated budget for land

²³ ADB SPS Appendix 2, para 14, page 46

acquisition and resettlement has been prepared in the draft LARP and includes the compensation for affected lands and assets at full replacement cost, allowances due to affected persons, and other applicable costs. The estimated budget will be updated during the detailed design phase, and the replacement cost study undertaken for the entire transmission line.

75. EDC will ensure that the final LARP for each section (i) adequately addresses all involuntary resettlement issues pertaining to the project, (ii) describes specific mitigation measures that will be taken to address the issues, (iii) ensures the availability of sufficient resources to address the issues satisfactorily. No physical and economic displacement occurs until compensation in full at replacement cost and all other entitlements are paid to the affected persons in accordance with the final LARP.

76. EDC's SEPRO and Procurement Unit will be responsible for updating the Draft LARP, finalizing it based on the detailed engineering design and implementing it before the start of construction activities in the solar park and in each section of the transmission line. Their responsibilities and tasks have been detailed in the Draft LARP. SEPRO will continue to provide information and undertake consultations with project affected persons, especially with the vulnerable groups, following the LARP and the guidance in the Stakeholder Communication Strategy that has been prepared for the project.

77. EDC will document and report all the consultations and compensation procedures and prepare a LARP Implementation Compliance Report as soon as all the procedures have been completed. The LARP Compliance Report concurred by ADB will serve a basis for "no objection" for the civil works and will be disclosed on ADB website.

78. EDC will monitor and document the ongoing impacts in order to avoid potential later grievances; and prepare and submit quarterly progress reports to ADB throughout the project time.

79. EDC will submit the Due Diligence Report on negotiated settlement applied when purchased land for the solar park. The DDR will be submitted to ADB for review and concurrence before the ADB Board review. The approved DDR will serve a basis for ADB's "no objection" for the civil works in relation to solar park common facilities. The report will not be disclosed as it contains sensitive commercial details but will be kept in EDC files.

80. The PIC will assist EDC in applying government laws and regulations and ADB's SPS requirements in all procedures and activities related to the updating, implementation and monitoring of the LARP, including consultations, negotiations and payments to affected persons, potential grievances filed by affected persons and their settlement.

C. Indigenous Peoples

81. Based on the social impact assessment conducted as part of the preparation of draft LARP, the project is identified as category C regarding indigenous peoples/ethnic minorities, because no indigenous/ethnic minority people have been found to be affected by the project. In the project area, less than 0.5% of the total inhabitants are ethnic minorities (Cham) and are integrated into mainstream society.

82. **Prohibited investment activities.** Pursuant to ADB's Safeguard Policy Statement (2009), ADB funds may not be applied to the activities described on the ADB Prohibited Investment Activities List set forth at Appendix 5 of the Safeguard Policy Statement (2009).

VIII. GENDER AND SOCIAL DIMENSIONS

83. The project is categorized as ‘some gender elements’ at entry. EDC/PMO will be responsible for ensuring, monitoring of and reporting on the implementation of the gender-related measures listed in Table 7 below. The PIC will include a social development specialist who will assist EDC/PMO to ensure implementation and monitor progress. Community meetings, consultations, and focus group discussions in all stages of the project will ensure women’s active participation to determine specific issues affecting them during project implementation, and propose effective mitigating measures. Special efforts will be made to ensure poor women are aware about possible job opportunities during construction. Further, women will be encouraged to participate in a specialized and intensive training course on solar PV and grid technologies to be held at an appropriate research facility or utility in the Republic of Korea, which will be provided through the attached technical assistance.²⁴

Table 7: Gender-related Measures

Project outputs	Gender measures
Output 1: Solar park and transmission interconnection constructed	<ul style="list-style-type: none"> • Organization of consultations with women and men in the communities about the project and about employment opportunities that will be created during construction, ensuring at least 40% women’s participation; • Organization of separate FGDs with women as part of project consultations; • Provision of special assistance to female headed households with dependents for any loss of livelihood and income – in addition to other entitlements and allowances; • Job creation for low income households during construction, including women who will be made aware of these opportunities.
Output 2: Capacity of EDC in solar power plant construction and operation, project design and supervision, grid integration and competitive procurement strengthened	<ul style="list-style-type: none"> • At least 8 of the 15 staff trained in increased deployment and use of solar power generation are women.*

* The gender target is also reflected in the DMF.

EDC = Electricite du Cambodge; FGD = focus group discussions

84. The project design includes a pro-poor or poverty reduction measure of employment of low-income households for construction works. The project will comply with applicable national labor laws and core labor standards, including but not limited to equal pay for equal work regardless of gender, race or ethnicity, and excluding child labor.

²⁴ Attached TA for Capacity Development in the Electric Utility Industry (accessible from the list of linked documents in Appendix 2 of the RRP).

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact the Project is aligned with			
Cost of electricity in Cambodia lowered. (Cambodia Industrial Development Policy 2015–2025: Market Orientation and Enabling Environment for Industrial Development). ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome Increase in private sector investments in solar photovoltaic plants facilitated	By 2022: a. Investment for a 60 MW solar plant reaches financial close (2019 baseline: not achieved) b. Investments for an additional 70 MW of solar plant capacity tendered (2019 baseline: not tendered)	a. EDC annual reports	Policy support for solar power is not sustained
Outputs 1. Solar park and transmission interconnection constructed	By Q2 2021: 1a. Solar park infrastructure (including access roads, fencing, drainage) operational (2019 baseline: not operational) 1b. Pooling substation operational (2019 baseline: not operational) 1c. SCADA system established (2019 baseline: not established) 1d. 2 new bays at GS6 constructed (2019 baseline: 0) 1e. 40 km double-circuit overhead transmission line constructed (2019 baseline: 0)	1a-2a. EDC annual reports	Delays in government approvals or land acquisition process.
2. Capacity of Electricite du Cambodge in solar power plant construction and operation, project design and supervision, grid integration and competitive procurement strengthened ^b	By Q4 2021: 2a. At least 15 EDC staff trained in increased deployment and use of solar power generation [at least 8 female staff trained] (2019 baseline: 0)		

<p>Key Activities with Milestones</p> <p>1. Solar park and transmission interconnection constructed</p> <p>1.1 Completed land acquisition process by Q1 2019.</p> <p>1.2 Release bidding documents for solar park and transmission EPC by Q2 2019.</p> <p>1.3 Award park and transmission EPC contract by Q3 2019.</p> <p>1.4 Commission solar park by Q2 2021.</p> <p>2. Capacity of Electricite du Cambodge in solar power plant construction and operation, project design and supervision, grid integration, and competitive procurement strengthened^b</p> <p>2.1 Issue request for expression of interest for PIC by Q1 2019.</p> <p>2.2 Award contract by Q3 2019.</p> <p>2.3 Complete consulting services by Q4 2021.</p>
<p>Project Management Activities</p> <p>Advance action: start recruitment of PIC and release of bidding documents for EPC contract in Q4/2018.</p>
<p>Inputs</p> <p>ADB: \$7,640,000 (loan); \$500,000 (TA grant)</p> <p>Strategic Climate Fund: \$11,000,000 (loan) and \$3,000,000 (grant)</p> <p>Government: \$5,070,000</p>
<p>Assumptions for Partner Financing</p> <p>Private sector sources of finance for first solar plant of 60 MW: \$70,000,000</p> <p>ADB = Asian Development Bank, EDC = Electricite du Cambodge, EPC = engineering, procurement, and construction, GS6 = grid substation 6; km = kilometer; MW = megawatt; MWh = megawatt-hours; PDP = Power Development Plan; PIC = project implementation consultant; PV = photovoltaic; SCADA = supervisory control and data acquisition; TA = technical assistance</p> <p>^a Royal Government of Cambodia. 2015. <i>Cambodia Industrial Development Policy 2015–2025: Market Orientation and Enabling Environment for Industrial Development</i>. Phnom Penh.</p> <p>^b Financed through a combination of (i) the procurement of the PIC and (ii) the attached TA grant: Attached Technical Assistance Report: Capacity Development in the Electric Utility Industry (accessible from the list of linked documents in Appendix 2 of the report and recommendation of the President).</p> <p>Source: Asian Development Bank.</p>

B. Monitoring

85. **Project performance monitoring.** EDC shall establish, within six months from the effective date, a project performance monitoring and evaluation system that shall operate throughout the life of the project. The project implementation consultant services will include qualified consultants to help establish the monitoring and evaluation system. EDC shall ensure that sufficient data is gathered and monitor the indicators set out in the design and monitoring framework for the project. The project performance monitoring and evaluation system will aim to detect any deficiency and discrepancy between the plan and the executing of the project in using the resources efficiently in order to ensure that timely corrections can be made to adjust the design of the project as feasible.

86. Disaggregated baseline data for output and outcome indicators gathered during project processing will be updated and reported quarterly through the EDC's quarterly progress reports and after each ADB review mission. These quarterly reports will provide information necessary to update ADB's project performance reporting system.²⁵

²⁵ ADB's project performance reporting system is available at <http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool>

87. **Compliance monitoring.** EDC will monitor and ensure the compliance of loan assurances—policy, legal, financial, safeguards, and others. All non-compliance issues, if any, will be updated in quarterly progress reports together with remedial actions. Each ADB review mission will also monitor the status of compliance with loan assurances, raise the non-compliance issues with the government and agree on remedial actions.

88. **Safeguards monitoring.** During detailed design stage the draft LARP will be updated per section for which the detailed design is completed by EDC through support from PIC. The updated LARP for each section will be reviewed and concurred by ADB and implemented before commencement of civil works. Implementation shall be monitored internally by EDC. During LARP implementation phase, the monitoring results shall be consolidated into quarterly monitoring reports and shared with ADB for review, clearance and disclosure. Once LARP implementation is completed, semiannual monitoring reports will be prepared and submitted to ADB for review and clearance. Upon clearance of monitoring reports by ADB, these will be disclosed by uploading on EDC and ADB websites. PIC will be adequately staffed with environmental and resettlement/social safeguards specialists. During detailed design stage if any changes or additional mitigation measures are identified, IEE will be updated by EDC through support from PIC. EDC will ensure that (i) environmental management and monitoring activities are executed in accordance with the IEE and EMP, LARP (IPP if relevant and to be confirmed by the social impact assessment) and relevant laws and regulations of Government of Cambodia. The safeguards monitoring results will also be included in the quarterly and annual progress reports.

89. **Gender and social dimensions monitoring.** Gender and social data will be monitored, collated and analyzed to provide an indication of change in the life of female and male beneficiaries, which in turn will be important for recording the outputs and performance of the project. A social development specialist will be recruited as part of the PIC for preparation of social safeguards compliance reports, including monitoring and reporting on implementation of gender measures. Further, EDC will ensure and monitor that contractors comply to the core labor standards and IFC occupational health and safety guidelines at workers' camps.

90. ADB will conduct regular semi-annual review missions to review and discuss project progress and report on the project performance. A midterm review will be carried out to assess likelihood of attainment of the project's immediate objective (purpose in terms of the design and monitoring framework). Within 6 months of physical completion of the project, EDC will submit a project completion report to ADB.²⁶

C. Reporting

91. EDC will provide ADB with (i) quarterly progress reports 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) utilization of funds, (d) changes in the key assumptions, risks, etc., (e) compliance with loan assurances, (f) safeguards compliance and status of implementation, (g) updated procurement plan, and (h) updated implementation plan for the next 12 months; (iii) semi-annual safeguards monitoring reports to be submitted within 15 days following the end of successive six-month period during construction phase; and (iv) a project completion report within 6 months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the executing agency audited

²⁶ Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>

financial statement together with the associated auditor's report, should be adequately reviewed.

D. Meaningful Consultations and Stakeholder Communication Strategy

92. The ADB Public Communications Policy 2011 seeks to encourage the participation and understanding of people and other stakeholders affected by ADB-assisted activities. Public consultation and information disclosure were initiated during the project preparation stage and will be carried out on an ongoing basis throughout project implementation.

93. In accordance with the Stakeholder Communication Plan prepared for the project, EDC shall: (i) ensure timely disclosure of relevant and adequate information that is understandable and readily accessible to the affected persons and other stakeholders; (ii) conduct public meetings, Focus Group Discussions (FGDs) and individual one-on-one consultation if needed, in an atmosphere free of intimidation or coercion, that is gender inclusive and responsive and tailored to the needs of disadvantaged and vulnerable groups; (iii) ensure incorporation of all relevant views of affected persons and other stakeholders into project design making, such as project design, mitigation measures, the sharing of development benefits and opportunities and implementation issues; (iv) ensure that the project displaced persons are informed about: (a) resettlement impacts, asset valuation, entitlements, compensation and payment modalities with timelines, (b) rehabilitation and income restoration measures as budgeted in the LARP, and (c) grievance redress mechanism, procedures and timelines for redress of grievances; and (v) ensure liaison is maintained with affected persons and communities for continued consultation during project implementation to identify and address safeguards issues that may arise such as related to land acquisition, environment and civil works.

94. **Grievance redress mechanism.** EDC shall ensure that (i) efficient grievance redress mechanism is in place and functional to assist the affected persons and other stakeholders in resolving queries, conflicts and complaints, if any, in a timely manner; (ii) all complaints are registered, investigated and resolved in a manner consistent with the provisions of GRM detailed in the LARP and IEE/EMP; (iii) the complainants / aggrieved persons are kept informed about status of their grievances and remedies available to them; and (iv) adequate staff and resources are available for supervising and monitoring the mechanism

95. **Information disclosure.** EDC will ensure that relevant information (whether positive or negative) about social and environmental safeguard issues is made available in a timely manner, in an accessible place, and in a form and language understandable to affected persons and to other stakeholders, including the general public, so they can provide meaningful inputs into project planning, development and implementation. EDC shall (i) ensure that all the safeguards documents including monitoring reports are disclosed by uploading the draft and ADB approved final safeguards documents on EDC and ADB web-sites; (ii) distribute / make accessible the Project Information Booklets containing summary of the projects impacts; and (iii) summarize (draft and final) LARP and (draft and final) IEE and EMP in local language.

X. ANTICORRUPTION POLICY

96. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.²⁷ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the

²⁷ Anticorruption Policy: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

executing agency and all project contractors, suppliers, consultants, and other service providers. Individuals and/or 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.²⁸

97. To support these efforts, relevant provisions are included in the loan, project, and grant agreements and the bidding documents for the project. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and EDC. To ensure transparency and good governance, EDC will publicly disclose on its website information on how loan proceeds are being used. For each procurement contract, EDC will disclose (i) the list of participating bidders, (ii) the name of winning bidder, (iii) basic details on bidding procedures adopted, (iv) the amount of the contract awarded, (v) a list of goods and services purchased, and (vi) the intended and actual utilization of loan proceeds under each contract being awarded.

98. An integrity due diligence was carried out in accordance with Operations Manual Sections C6 (Enhancing the Asian Development Bank's Role in Combating Money Laundering and the Financing of Terrorism) and E1 (Financing Partnerships). The summary of report is accessible from the list of linked documents in Appendix 2 of the RRP.

99. Any individual obtaining information of fraudulent, corrupt or collusive practices shall immediately contact ADB's Office of the Anticorruption and Integrity and report the same:

Contact Office of Anticorruption and Integrity:	<ul style="list-style-type: none"> • By email: integrity@adb.org or anticorruption@adb.org • By phone: +63-2-632-5004 • By fax: +63-2-636-2152 • By mail at the following address (please mark correspondence Strictly Confidential) Office of the Anticorruption and Integrity (OAI), Asian Development Bank ADB Avenue Mandaluyong City 1550 Metro Manila, Philippines http://www.adb.org/OAI/default.asp
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as per the Second Governance and Anticorruption Action Plan²⁹.

XI. ACCOUNTABILITY MECHANISM

100. 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 an effort in good faith 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.³⁰

²⁸ ADB's Integrity Office web site: <http://www.adb.org/integrity/unit.asp>

²⁹ Governance and Anticorruption Action Plan II Guidelines. <http://www.adb.org/Documents/Guidelines/GACAP-II-Guidelines.pdf>. See also Sourcebook: Diagnostics to Assist Preparation of Governance Risk Assessments: <http://www.adb.org/documents/books/Diagnostics-to-Assist-Preparation-of-GRAs/default.asp>.

³⁰ Accountability Mechanism. <http://www.adb.org/Accountability-Mechanism/default.asp>.

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

101. All revisions and/or updates during the course of implementation should be retained in this section to provide a chronological history of changes to implemented arrangements recorded in the PAM, including revision to contract awards and disbursement s-curves.

Detailed Cost Breakdown

Project Cost	Quantity	Unit Price [USD]	Total Price [USD]	Local Component Share %	Local Component amount [USD]
Solar park infrastructure			1,174,606	100%	1,174,606
Engineering & Other Services			151,000	100%	151,000
1 Engineering, PM and other services	1	151,000	151,000	100%	151,000
Construction Works			1,023,606	100%	1,023,606
1 Access Road	1	484,000	484,000	100%	484,000
2 Site Preparation	1	3,200	3,200	100%	3,200
3 Fence and Security System	1	61,360	61,360	100%	61,360
4 Water Reservoir	1	135,046	135,046	100%	135,046
5 Drainage	1	340,000	340,000	100%	340,000
6 Contingencies	1	0	0	100%	0
Substation			4,980,000	28%	1,407,000
Engineering and project management			260,000	29%	76,000
1 Studies, geotechnical study and land survey	1	80,000	80,000	50%	40,000
2 D&E, QA, Procurement, pm	1	120,000	120,000	10%	12,000
3 Health, safety and environmental management	1	60,000	60,000	40%	24,000
Construction works			4,670,000	29%	1,331,000
1 115kV Feeder bay	3	360,000	1,080,000	10%	108,000
2 115kV Transformer Bay	2	140,000	280,000	10%	28,000
3 Power transformers	2	590,000	1,180,000	10%	118,000
4 22kV Switchgear	12	40,000	480,000	10%	48,000
5 Ancillary	1	690,000	690,000	10%	69,000
6 Civil works, building	1	960,000	960,000	100%	960,000
Substation spare parts			50,000	0%	0
1 transformer	1	12,000	12,000	0%	0
2 switchgear	1	15,000	15,000	0%	0
3 protection	1	23,000	23,000	0%	0
GS6 upgrade			592,000	10%	59,200
1 New feeder bay	2	220,000	440,000	10%	44,000
2 Protection panels	2	55,000	110,000	10%	11,000
3 Control Scheme and SCADA upgrade	2	11,000	22,000	10%	2,200
4 Provide HV Connection	2	10,000	20,000	10%	2,000
Transmission line			10,030,000	32%	3,243,000
1 Design per km	40	10,000	400,000	30%	120,000
2 Material	40	120,000	4,800,000	15%	720,000
3 Installation	40	120,000	4,800,000	50%	2,400,000
4 Insurance, Local transport	1	30,000	30,000	10%	3,000
Environmental and social impact mitigation			200,000	100%	200,000
1 Environmental and social impact mitigation	1	200,000	200,000	100%	200,000
Total			16,976,606	36%	6,083,806