

The logo for the Asian Development Bank (ADB), consisting of the letters 'ADB' in a white, serif font inside a black square.

ADB

## Project Concept Paper

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Project Number: 51182-001  
September 2017

# Proposed Loan and Administration of Grant and Loan CAM: National Solar Park Project

Asian Development Bank

## **CURRENCY EQUIVALENTS**

(as of 31 August 2017)

Currency unit	–	riel (KHR)
KHR1.00	=	\$0.00025
\$1.00	=	KHR4,051.68

## **ABBREVIATIONS**

ADB	–	Asian Development Bank
COBP	–	country operations business plan
CPS	–	country partnership strategy
EDC	--	Electricite du Cambodge
kWh	–	kilowatt-hour
MW	–	megawatt
OPPP	–	Office of Public-Private Partnership
PV	–	photovoltaic
SCADA	–	supervisory control and data acquisition
SCF	--	Strategic Climate Fund
TA	–	technical assistance
TAS	–	transaction advisory services

## **NOTE**

In this report, "\$" refers to United States dollars.

<b>Vice-President</b>	S. Groff, Operations 2
<b>Director General</b>	R. Subramaniam, Southeast Asia Department (SERD)
<b>Directors</b>	A. Jeffries, Energy Division, SERD S. Tukuafu, Cambodia Resident Mission, SERD
<b>Team leader</b>	P. Tharakan, Senior Climate Change Specialist, SERD
<b>Team members</b>	J. Almera, Senior Operations Assistant, SERD C. Ellermann, Climate Change Specialist, Sustainable Development and Climate Change Department (SDCC) K. Koiso, Procurement Specialist, Operations Services and Financial Management Department G. O'Farrell, Environment Specialist (Safeguards), SERD M. Paterno, Senior Finance Specialist, SERD C. Samaniego, Associate Project Analyst, SERD A. Samoza, Senior Project Officer, SERD S. Shah, Principal Public-Private Partnership Specialist, Office of Public-Private Partnership C. Pak, Senior Counsel, Office of the General Counsel
<b>Peer reviewer</b>	D. K. Kim, Senior Energy Specialist (Smart Grids), SDCC

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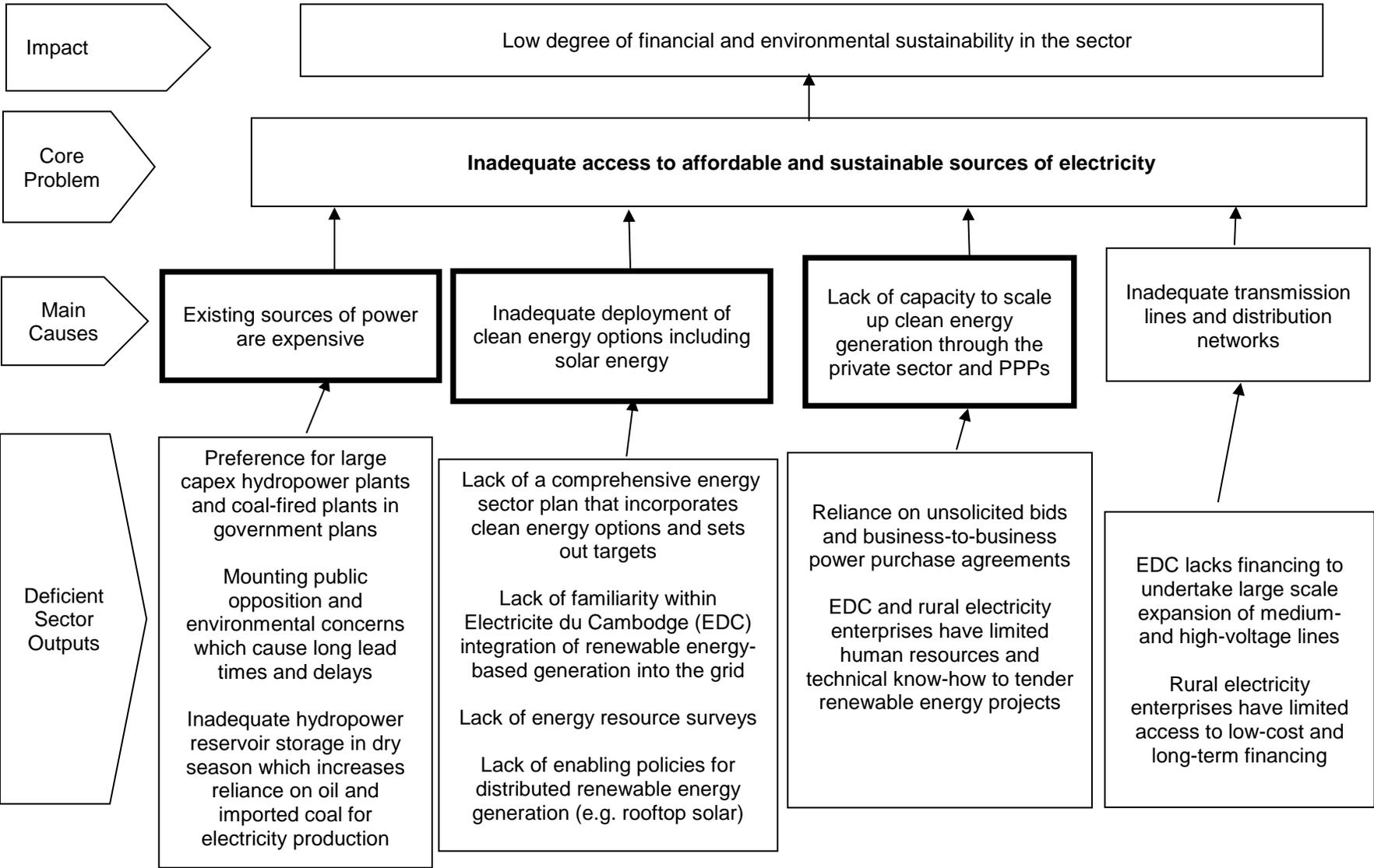
## PROJECT AT A GLANCE

<b>1. Basic Data</b>		<b>Project Number: 51182-001</b>	
<b>Project Name</b>	National Solar Park Project	<b>Department /Division</b>	SERD/SEEN
<b>Country Borrower</b>	Cambodia The Royal Government of Cambodia	<b>Executing Agency</b>	Electricite Du Cambodge
<b>2. Sector</b>	<b>Subsector(s)</b>	<b>ADB Financing (\$ million)</b>	
✓ Energy	Renewable energy generation - solar		20.00
	<b>Total</b>		<b>20.00</b>
<b>3. Strategic Agenda</b>	<b>Subcomponents</b>	<b>Climate Change Information</b>	
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded Eco-efficiency Global and regional transboundary environmental concerns Natural resources conservation	Mitigation (\$ million)	34.00
Environmentally sustainable growth (ESG)		CO <sub>2</sub> reduction (tons per annum)	50,000
		Climate Change impact on the Project	High
<b>4. Drivers of Change</b>	<b>Components</b>	<b>Gender Equity and Mainstreaming</b>	
Governance and capacity development (GCD)	Anticorruption Client relations, network, and partnership development to partnership driver of change Institutional systems and political economy	No gender elements (NGE)	✓
Knowledge solutions (KNS)	Pilot-testing innovation and learning		
Partnerships (PAR)	Bilateral institutions (not client government) Commercial cofinancing International finance institutions (IFI) Private Sector		
Private sector development (PSD)	Conducive policy and institutional environment Promotion of private sector investment Public sector goods and services essential for private sector development		
<b>5. Poverty and SDG Targeting</b>		<b>Location Impact</b>	
Geographic Targeting	No	Nation-wide	High
Household Targeting	No		
SDG Targeting	Yes		
SDG Goals	SDG7		
<b>6. Risk Categorization:</b>	Low		
<b>7. Safeguard Categorization</b>	Environment: B Involuntary Resettlement: B Indigenous Peoples: C		
<b>8. Financing</b>			
<b>Modality and Sources</b>		<b>Amount (\$ million)</b>	
<b>ADB</b>		<b>20.00</b>	
Sovereign Project (Concessional Loan): Ordinary capital resources		20.00	
<b>Cofinancing</b>		<b>14.00</b>	
Strategic Climate Fund - SREP - Grant		3.00	
Strategic Climate Fund - SREP - Loan		11.00	
<b>Counterpart</b>		<b>2.50</b>	
Government		2.50	
<b>Total</b>		<b>36.50</b>	



# PROBLEM TREE

Bold boxes indicate causes directly addressed by the proposed project





## I. THE PROJECT

### A. Rationale

1. The proposed National Solar Park Project will support the construction of solar photovoltaic (PV) power plants in Cambodia, and address the country's need to: (i) expand low-cost power generation, (ii) diversify the power generation mix and increase the percentage of clean energy in its generation mix in line with its stated greenhouse gas emissions reductions targets, and (iii) expand the use of competitive tenders and other global best practices in the sector. The project is the first of its kind in Cambodia, and builds on lessons learnt from the Asian Development Bank (ADB) Private Sector Operations Department's financing of a 10-megawatt (MW) solar farm at Bavet, Svay Rieng Province in 2016. The project will be included in the country operations business plan (COBP), 2018–2020, issued in August 2017, and the Royal Government of Cambodia (RGC) has formally requested financing for the project from ADB. The government has also requested ADB's assistance to access cofinancing for the project through a combination of concessional loan and grant resources from the Strategic Climate Fund (SCF)<sup>1</sup>

2. **Power sector status and projections.** Annual electricity demand growth in Cambodia averaged 18% during 2011–2015. At the end of 2015, the total installed capacity was 1657 MW, of which 930 MW (56%) was hydropower, 403 MW (24%) was coal-fired, 305 MW (18%) was diesel and the rest (about 20 MW or 1%) was biomass.<sup>2</sup> In 2015, only 62% of villages and 56% of households had access to electricity. The electricity supply mix was 36% hydro, 35% coal, 3% diesel, 1% biomass, and 25% power imports from neighboring countries. The hydropower and coal-fired plants are owned by the private sector and operated under long-term power purchase agreements, which were contracted through unsolicited bids, with take-or-pay arrangements. The current Power Development Plan, revised in 2015, projects demand growth to average about 7% through 2030. RGC forecasts meeting ongoing demand growth through further investment in thermal generation (coal-fired in the short term, and either coal or gas in the long term) and large hydropower. Power imports, which have been a significant source of meeting domestic demand since 2007, are being substantially reduced and replaced with domestic generation.

3. Recent developments, however, are initiating a shift in priority from coal and hydropower development to alternate, more sustainable forms of energy from indigenous sources, particularly solar. In 2016, RGC introduced a tariff subsidy scheme for the poor and vulnerable households to alleviate the impact of high residential power tariffs. Customers that consume less than 10 kilowatt-hour (kWh) a month are now being charged 480 riels or about 12 cents/kWh and those that consume less than 50 kWh are being charged 610 riels or about 15 cents/kWh. The current retail tariff for customers above 50 kWh is about 780 riels or about 19.5 cents.<sup>3</sup> Since the initiation of this program, lowering the cost of power has become a major priority of the government. On the other hand, the price of imported coal has gone up during the 2015–2017 period, making coal-fired expansion less advantageous. In addition, the siting of coal and large hydropower plants is

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<sup>1</sup> Under the Scaling Up Renewable Energy in Low Income Countries Program (SREP). SREP is an \$839 million funding window of the SCF within the Climate Investment Funds framework. In 2016, with ADB's assistance, SCF approved Cambodia's Investment Plan and endorsed \$30 million in concessional loans and grants to support a solar energy development program and a biomass power program, implemented by ADB. However, since SREP has been oversubscribed, the funds currently available to RGC total \$14 million. In mid-July 2017, a proposal to revise the Investment Plan was submitted to SCF for approval of the fund allocation, and subsequently approved.

<sup>2</sup> Electricity Authority of Cambodia. 2016. *Report on Power Sector of the Kingdom of Cambodia 2016 Edition*. Phnom Penh.

<sup>3</sup> In comparison, in 2011, prices for households typically ranged from \$0.30 to \$0.80 per kWh, but in the countryside, prices varied between \$0.65 and \$0.90 per kWh.

increasingly facing opposition from local communities and civil society. The government recently announced a moratorium on the construction of large hydropower dams until 2020.

4. RGC's current Power Development Plan does not include a renewable energy target or strategy; as such, Cambodia's uptake of non-large hydro renewable generation to date has been relatively limited. However, the government has prioritized the development of renewable energy in its National Strategic Development Plan 2014–2018 and Rectangular Strategy Phase III (2013–2018), in order to meet the growing demand for electricity in Phnom Penh and address the country's electrification target of 100% of villages by 2020.<sup>4</sup> In addition, the government's Industrial Development Policy 2015–2025<sup>5</sup> identifies the historically high power tariffs in the country as a major impediment to the competitiveness of the country's manufacturing sector, and calls for alternate sources of energy to be developed. Furthermore, Cambodia's Nationally Determined Contribution, enshrined in the 2015 Paris Agreement,<sup>6</sup> commits to a 16% reduction in greenhouse gas emissions from a business as usual scenario by 2030 from the energy sector.<sup>7</sup> Ideally, alternate, clean sources of energy would complement installed and planned hydropower-based generation, which is often inadequate during the dry season, as well as help provide other ancillary benefits to the grid, around the key demand centers.

5. In recent years, RGC, with support from the development partners, has begun to consider solar energy generation seriously. A 2013 technical study for the government and ADB by the Korea Photovoltaic Industry Association helped investigate the scope for development of a 100 MW solar power plant in Cambodia.<sup>8</sup> In 2015, a United States Agency for International Development-funded study explored the viability of using various solar energy applications to enhance Cambodia's energy security.<sup>9</sup> In 2017, at the government's request, ADB developed a preliminary national solar PV grid integration study and roadmap for Electricite du Cambodge (EDC).<sup>10</sup> In this study, low, medium and high solar penetration scenarios were considered. Results show that with currently available technologies, 150 MW of solar can be added to the grid by 2020 (100 MW in Phnom Penh and 50 MW throughout Cambodia), with no major impact on the grid and no additional technical upgrades would be required to the existing transmission system. Solar generation can complement hydropower by helping to meet daytime peak demand and improving hydropower storage performance during the dry season. The study found that uptake of solar will result in savings from avoided thermal generation and imports, as well as the deferred construction or complete avoidance of 300 MW of coal-fired generation by 2030 in medium and high solar PV penetration scenarios.

6. **Ongoing ADB energy sector assistance in Cambodia.** Since 1999, ADB's assistance in the sector has primarily focused on grid expansion into rural areas. Ongoing projects include: (i) financing of 2700 circuit-kilometers of 22 kilovolt sub-transmission lines and household meters in several provinces across the country, (ii) promotion of 90,000 improved cookstoves in rural

<sup>4</sup> Royal Government of Cambodia. 2014. *National Strategic Development Plan 2014–2018*. Phnom Penh, Ministry of Planning; Royal Government of Cambodia. 2013. *Rectangular Strategy Phase III (2013–2018)*. Phnom Penh.

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

<sup>6</sup> The Paris Agreement entered into force on 4 November 2016.

<sup>7</sup> Royal Government of Cambodia. 2015. *Cambodia's Intended Nationally Determined Contribution*. Phnom Penh.

<sup>8</sup> *Pre-feasibility study in the Kingdom of Cambodia: Identification of Feasible Sites and Conditions for the Development of 100 MW Photovoltaic Power Project*, Korea Photovoltaic Industry Association, KC Cottrell Co., Ltd. and Sun Business Development (for the Ministry of Trade, Industry, and Energy, Republic of Korea, and the Asian Development Bank), 2013

<sup>9</sup> *Switching On: Cambodia's Energy Security in a Dynamic Technology Cost Environment*, R. de Ferranti, D. Fulbrook, J. McGinley, S. Higgins, Mekong Strategic Partners, Phnom Penh, January 2016.

<sup>10</sup> This national solar PV grid integration study was prepared by ADB on a confidential basis for EDC.

areas of Kampong Cham Province, and (iii) provision of a \$1 million grant to the Rural Electrification Fund, administered by EDC, to pilot an output-based aid program, wherein rural electricity distribution enterprises that connect poor households will be reimbursed for a portion of the connection costs.<sup>11</sup> In recent years, ADB has also provided technical assistance aimed at institutional strengthening and capacity building in the sector. The rapid reduction in global prices for renewable technologies such as solar, Cambodia's excellent solar potential, and the country's ratification of the Paris Agreement, have prompted the government to pilot large-scale solar power as a viable generation option. In January 2016, the government tendered out a 10 MW solar farm at Bavet in Svay Rieng Province. This project, which is financed by ADB's private sector operations, began commercial operations in October 2017.

7. **ADB support for scaling up renewable energy in Cambodia.** ADB's country partnership strategy (CPS) for 2014–2018, approved in November 2014, reflects the priorities set up in the Rectangular Strategy Phase III, National Development Plan, 2013–2018. The CPS, 2014–2018 identifies two strategic pillars that underpin ADB's forward-looking activities in Cambodia: (i) rural-urban-regional linkages, and (ii) human and social development. Public Sector Management acts as a facilitating cross-cutting strategic pillar. The energy sector directly supports outcomes under the first pillar, but has not been identified as a core sector in the CPS as a pipeline of energy projects, supported by other development partners, has been expected to improve supply and coverage and reduce costs, and as the CPS needs to remain selective in the scope of the strategy and selection of sectors.

8. Going forward, ADB, under the first strategic pillar of the CPS, 2014–2018 rural-urban-regional linkages, is adapting to the evolving requirements in the energy sector of Cambodia and is piloting increased access to clean energy, particularly solar power, through on-grid and off-grid applications. A transaction technical assistance (TA), Increased Access to Sustainable Energy, is scheduled for 2018 to take stock of the sector, and examine further investment opportunities in rural and renewable energy under the next CPS. ADB may also support the government to develop a comprehensive energy sector strategy, including greater use of renewable energy and energy efficiency under the transaction TA.

9. Building on the Bavet project, the National Solar Park Project aims to demonstrate the ability of large-scale solar parks to improve the electricity supply, while also providing technical benefits to the national grid<sup>12</sup>, and substitute for planned fossil-fuel and hydropower generation in the future. This project will build appreciation for the costs, operational requirements, and actual performance of solar PV plants, which will inform further policy development, and give EDC knowledge and experience structuring a transparent, competitive procurement for private sector-led power projects and negotiating with private developers. These early projects will also build experience among grid operators on management of the variable power produced by solar PV projects. Under the regional TA, Demonstration of An Assisted Broker Model for Transfer of Low Carbon Technologies to Asia and the Pacific, a pre-feasibility study of the solar park has been prepared.<sup>13</sup>

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<sup>11</sup> ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Loan to the Kingdom of Cambodia for the Medium-Voltage Sub-Transmission Expansion Sector Project*. Manila; ADB. 2016. *Additional Financing for the Proposed Administration of Grant to the Kingdom of Cambodia for the Medium-Voltage Sub-Transmission Expansion Sector Project*. Manila; and ADB. 2013. *Report and Recommendation of the President to the Board of Directors: Proposed Administration of Grant to the Kingdom of Cambodia for the Rural Energy Project*. Manila.

<sup>12</sup> 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.

<sup>13</sup> This pre-feasibility study was prepared by ADB on a confidential basis for EDC.

## B. Proposed Solution

10. The project will support the national electricity utility, EDC, to construct a solar power park near the Phnom Penh demand center<sup>14</sup> and a transmission interconnection system to a nearby grid substation selected by EDC, to supply power to both rural and urban areas.<sup>15</sup> The Park will consist of 150–200 hectares of land, fencing, drainage, roads, and plant buildings, and will be able to accommodate at least 100 MW of PV plant capacity. The transmission interconnection system expansion will include a solar park substation with 2 transformers (one additional for redundancy), switchgear, controls, and supervisory control and data acquisition (SCADA) system compatible with the EDC's SCADA requirements; a dedicated 30–40-kilometer 115-kilovolt transmission line between the solar park and existing substation; and a new bay with switchgear at the existing substation. Further, EDC will tender out the first solar plant to be established within the solar park to the private sector and execute a long-term power purchase agreement. The tender will be for a 30–50 MW solar PV generating plant, to include crystalline-silicon solar arrays and mounting structures, power conversion units (inverters and associated transformers), direct current and alternating current plant cabling, power controls, and SCADA. The development of the 30–50 MW plant will be financed by the private sector through private sector equity and commercial debt.

11. Under a transaction advisory services (TAS) agreement that has been signed between the two institutions, ADB's Office of Public-Private Partnership (OPPP) will assist EDC to design and conduct a competitive tender for procuring the first power plant (30–50 MW) that would be built by the private sector, and located within the park.<sup>16</sup> As transaction advisor, ADB will perform project due diligence (including legal, technical, financial, environmental and social due diligence) and market sounding, prepare the feasibility study,<sup>17</sup> assist the development of tender documents and power purchase agreements, and support the review and selection process. In this role, ADB will bring to bear its considerable experience with the development of solar parks in India.

12. The project will have two outputs: (i) solar park, transmission facilities and supporting infrastructure constructed; and (ii) EDC's capacity for integration of renewable energy, including advanced technologies such as energy storage, into the national grid strengthened. These outputs will result in the outcome: solar energy power generation in Cambodia increased.<sup>18</sup> The project is aligned with the following impact: Cost of electricity in Cambodia lowered (footnote 6).

## C. Proposed Financing Plans and Modality

13. The project is estimated to cost \$36.5 million (Table 1) and will be financed through a combination of funds from ADB, SCF, and the government. An allocation of \$11 million in concessional loans and \$3 million in grants for the project has been requested from SCF in July 2017. In addition, the Cambodia COBP, 2018–2020 has allocated \$20 million in concessional ordinary capital resources lending funds for the project. Climate mitigation is estimated to cost \$34 million. ADB will finance 59% of mitigation costs.

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<sup>14</sup> EDC has recommended several candidate sites for the solar park for consideration and an initial assessment was carried out under the pre-feasibility study. Final site selection will be based on the results of the feasibility study.

<sup>15</sup> During project preparation, an effort will be made to explore opportunities for increasing access to electricity in communities around the park through an expanded distribution system.

<sup>16</sup> Additional power plants supplying the remaining 50–70 MW are expected to be tendered out to the private sector by EDC in a subsequent phase.

<sup>17</sup> The feasibility study will focus on optimal park site selection and design, and future power plant design.

<sup>18</sup> The design and monitoring framework is in Appendix 1.

**Table 1: Indicative Financing Plan**

<b>Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank		
Concessional ordinary capital resources (loan)	20.0	54.8
Strategic Climate Fund (loan) <sup>a</sup>	11.0	30.1
Strategic Climate Fund (grant) <sup>a</sup>	3.0	8.2
Government	2.5	6.9
<b>Total</b>	<b>36.5</b>	<b>100.0</b>

<sup>a</sup> Under the Scaling Up Renewable Energy in Low-Income Countries Program. Administered by the Asian Development Bank.

Source: Asian Development Bank estimates.

## **D. Implementation Arrangements**

**Table 2: Indicative Implementation Arrangements**

<b>Aspects</b>	<b>Arrangements</b>
Indicative implementation period	September 2018–December 2020
Indicative completion date	December 2020
<b>Management</b>	
(i) Executing agency	Electricite du Cambodge (EDC)
(ii) Key implementing agencies	Electricite du Cambodge (EDC)

Source: Asian Development Bank estimates.

## **II. PROJECT PREPARATION AND READINESS**

14. Project due diligence, including procurement and transaction advisory support, will be conducted using staff and existing TA resources.<sup>19</sup> The Southeast Asia Energy Division and OPPP, through the TAS, will support the project feasibility study and structuring of a tender for the construction of the first solar PV plant. The consulting firm's expenses will be covered by TA 8240-REG: Supporting Regional Project Development for Association of Southeast Asian Nations Connectivity. Any reimbursable costs, as applicable, and a success fee will be paid by EDC under the TAS agreement between EDC and OPPP, signed on 26 June 2017. Formal requests for ADB support for project preparation and financing have been received from the Ministry of Economy and Finance, and from the Ministry of Mines and Energy, and the project, which was added to the pipeline during country programming in 2017, will be included in the COBP, 2018–2020. Land acquisition will be the major prerequisite for financial closure, so EDC has been advised to urgently pursue it. Advance procurement will be initiated for the engineering, procurement, and construction package for the construction of the solar park infrastructure and transmission line in Q3 2018.

## **III. DELIBERATIVE AND DECISION-MAKING ITEMS**

### **A. Risk Categorization**

15. The proposed project risk categorization is “low risk” in accordance with the conditions in Para 5 of Staff Instruction based on Operations Manual Section D11 (Sovereign Operations). The expected safeguards categorizations are B for environment, B for involuntary resettlement, and C for indigenous peoples.

<sup>19</sup> Procurement (including consulting services) to be financed by ADB funds will follow ADB Procurement Policy (2017, as amended from time to time) and Procurement Regulations for ADB Borrowers (2017, as amended from time to time).

## B. Project Procurement Classification

16. The project procurement classification recommendation is “B” as EDC is familiar with undertaking competitive procurement processes consistent with ADB Procurement Guidelines and the contracts will not be particularly complex or high-value.

## C. Scope of Due Diligence

Due Diligence Outputs	To be undertaken by
Development coordination	Staff
Economic analysis	Staff, TA grant
Financial management assessment, financial evaluation, and financial analysis	Staff, TA grant
Gender analysis, collection of baseline data and gender action plan	Staff, TA grant
Safeguard screening and categorization results	Staff, TA grant
Initial poverty and social analysis	Staff
Procurement due diligence	Staff, TA grant
IDD checklist <sup>a</sup>	Staff (IDD)
Project administration manual	Staff, TA grant
Risk assessment and management plan	Staff
Safeguard documents on environment, involuntary resettlement, and/or indigenous peoples	Staff, TA grant
Sector assessment	Staff
Summary poverty reduction and social strategy	Staff, TA grant

IDD = integrity due diligence, TA = technical assistance.

<sup>a</sup> Based on [staff instruction on integrity due diligence for sovereign operations and cofinancing](#).

Source: Asian Development Bank.

## D. Processing Schedule and Sector Group’s Participation

**Table 3: Processing Schedule by Milestone**

Milestones	Expected Completion Date
1. Concept Clearance	September 2017
2. Fact-Finding Mission	April 2018
3. Staff Review Meeting	June 2018
4. Loan Negotiations	September 2018
5. Board Approval	October 2018
6. Loan Signing	December 2018

Source: Asian Development Bank estimates.

## E. Key Processing Issues and Mitigation Measures

**Table 4: Issues, Approaches and Mitigation Measures**

Key Processing Issues	Proposed Approaches and/or Mitigation Measures
1. Delays in government approvals or land acquisition process	Pre-screening and suitability analysis under the pre-FS; EDC has been informed to initiate discussions with potential land owners; tendering of the plant will not be initiated unless land has been procured by EDC
2. National elections are scheduled for July 2018	Loan negotiations are being scheduled prior to elections.
3. Approval of SCF funding	Close coordination with SCF to ensure that all materials are submitted in a timely manner.

EDC = Electricite du Cambodge, FS = feasibility study, SCF = Strategic Climate Fund

## PRELIMINARY DESIGN AND MONITORING FRAMEWORK

<b>Impact the Project is aligned with</b>			
Cost of electricity in Cambodia lowered. (Cambodia Industrial Development Policy 2015–2025: Market Orientation and Enabling Environment for Industrial Development). <sup>a</sup>			
<b>Results Chain</b>	<b>Performance Indicators with Targets and Baselines</b>	<b>Data Sources and Reporting</b>	<b>Risks</b>
<b>Outcome</b> Solar energy power generation in Cambodia increased	By 2023: a. 150 MW of installed solar capacity added (2017 baseline: 10 MW)	a. EDC annual reports	Policy support for solar power is not sustained
<b>Outputs</b> <b>1.</b> Solar park, transmission facilities, and supporting infrastructure constructed  <b>2.</b> EDC's capacity for integration of renewable energy, including advanced technologies such as energy storage, into the national grid strengthened	1a. Solar park operational by Q4/2019 (2017 baseline: not operational)  2a. New national least-cost power development plan with significant additional renewable energy generation, including use of energy storage and other advanced technologies, released by 2020 (2017 baseline: PDP not available)  2b. Piloting of short-term energy storage and output smoothing technologies for renewable energy integration into the grid by 2020 (2017 baseline: not applicable)  2c. Finalized tender documents for an additional 100 MW of grid-connected solar power issued by 2020 (2017 baseline: not prepared)	1a. EDC annual reports  2a–2c. EDC annual reports	Delays and difficulties in acquiring land  Delayed delivery or commissioning of transmission assets

<p><b>Key Activities with Milestones</b></p> <p><b>1.</b></p> <p>1.1 EDC completes land acquisition process by June 2018</p> <p>1.2 EDC advertises bidding documents for park and transmission EPC by June 2018</p> <p>1.3 EDC awards park and transmission EPC contract by October 2018</p> <p>1.4 EDC commissions solar park by Q4/ 2019</p> <p><b>2.</b></p> <p>2.1 EDC prepares draft power development plan for consultation (June 2019)</p> <p>2.2 Final power development plan released (October 2019)</p> <p>2.3 Procurement, installation and 6 months operational test of energy storage to evaluate performance within Cambodian grid (Q4/2020)</p> <p>2.4 EDC prepares feasibility studies and tender documents for an additional 100 MW of solar generating plants (Q4/2020)</p>
<p><b>Inputs</b></p> <p>ADB: \$20,000,000</p> <p>Strategic Climate Fund<sup>b</sup> (loan): \$11,000,000</p> <p>Strategic Climate Fund<sup>b</sup> (grant): \$3,000,000</p> <p>Government: \$2,500,000</p>
<p><b>Assumptions for Partner Financing</b></p> <p>Private sector sources of finance for first solar plant of 30–50 MW: \$55 million</p>

ADB = Asian Development Bank, EDC = Electricite du Cambodge, EPC = engineering, procurement, and construction, MW = megawatt; PDP = Power Development Plan

<sup>a</sup> Royal Government of Cambodia. 2015. *Cambodia Industrial Development Policy 2015–2025: Market Orientation and Enabling Environment for Industrial Development*. Phnom Penh.

<sup>b</sup> Under the Scaling Up Renewable Energy in Low-Income Countries Program

### PROJECT PROCUREMENT CLASSIFICATION

Characteristic	Assessor's Rating:
Is the procurement environment risk for this project assessed to be <i>high</i> based on the country and sector and/or agency risk assessments?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Are multiple (typically more than three) and/or diverse executing agencies and/or implementing agencies envisaged during project implementation? Do they lack prior experience in implementation under an ADB-financed project?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
Are multiple contract packages and/or complex and high-value contracts (compared with recent externally financed projects in the developing member country [DMC]) expected?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
Does the project plan to use innovative contracts (public-private partnership, performance-based, design and build, operation and maintenance, etc.)?	<input checked="" type="checkbox"/> Yes <sup>a</sup> <input type="checkbox"/> No <input type="checkbox"/> Unknown
Are contracts distributed in more than three geographical locations?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
Are there significant ongoing contractual and/or procurement issues under ADB (or other externally) financed projects? Has misprocurement been declared in the DMC?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
Does the DMC have prolonged procurement lead times, experience implementation delays, or otherwise consistently fail to meet procurement time frames?	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Unknown Yes, particularly for consultant recruitment.
Do executing and/or implementing agencies lack capacity to manage new and ongoing procurement? Have executing and/or implementing agencies requested ADB for procurement support under previous projects?	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Unknown
<b>Regional department's overall recommendation (Pradeep Tharakan)</b>	
Overall project categorization recommended	<input type="checkbox"/> Category A <input checked="" type="checkbox"/> Category B
Project procurement risks are assessed as moderate with no significant specific risk. It is anticipated that contracts that will be financed by ADB are very similar to those that were previously undertaken by EDC under ADB-financed projects. The participation of OSFMD staff as member of processing mission(s) to assist the project team is not necessary at this time. Review of draft bidding documents by OSFMD will follow the normal process based on current procedures. The recommended project procurement classification is Category B.	
<b>OSFMD's recommendation (Keiko Koiso)</b>	
We support SEEN's recommendation of Category B. Please note, however, that this project procurement classification is only applicable to procurement under Output 1. Contracts to be financed by sovereign component should not be complex or high-value.	

<sup>a</sup> The public-private partnership modality will be used to procure the solar power plant. The project will support EDC to procure the power plant by providing consulting services which would support the preparation of feasibility studies and tender documents. EDC has prior experience in procurement for a similar private sector project located in Bavet under an ADB complementary financing scheme.

## INITIAL POVERTY AND SOCIAL ANALYSIS

Country:	Cambodia	Project Title:	National Solar Park Project
Lending/Financing Modality:	Loan and Administration of SCF Grant and Loan	Department/Division:	SERD/SEEN

### I. POVERTY IMPACT AND SOCIAL DIMENSIONS

#### A. Links to the National Poverty Reduction Strategy and Country Partnership Strategy

Cambodia is experiencing rapid economic growth, increased urbanization and increased electrification rates, contributing to a surge in electricity demand over the last decade. This trend is expected to continue, such that by 2050, the electricity demand in Cambodia is forecast to increase by 10 times the current consumption.<sup>1</sup> Through improved electricity supply and coverage, Cambodia aims to reduce poverty among its citizens. Cambodia's current policy framework for poverty reduction comprises the government's socioeconomic policy agenda, the Rectangular Strategy Phase III (2014–2018) (RS III), and its implementation plan, the National Strategic Development Plan 2014–2018. As stated in the RS III, the national poverty reduction target is one percentage point reduction per year. In addition, two multi-sector strategies have poverty reduction at their core: the 2011 National Social Protection Strategy for the Poor and Vulnerable and the 2014 National Food Security and Nutrition Strategy. The project contributes to one of four priority areas in the RS III, namely, continued investment in energy infrastructure. As the first utility scale solar public-private partnership in Cambodia, the project aims to expand low-cost energy infrastructure, while strengthening the private sector and promoting investment through an international competitive bidding process. The project will supply renewable electricity at a rate in parity with other sources and will demonstrate to the government, multinational banks, and other international financiers that private sector-led renewable energy development can be undertaken successfully in Cambodia.

A reliable, affordable and sustainable supply of energy will improve the business environment in Cambodia and encourage additional investment and economic growth.<sup>2</sup> Cambodia's Industrial Development Policy 2015–2025 recognizes that current electricity tariffs and interrupted supply are major impediments to the competitiveness of the country's manufacturing sector and calls for alternate sources of energy to be developed.<sup>3</sup> More investment inevitably provides more job opportunities, higher incomes, and improved living conditions for local Cambodians. The Project is aligned with the Asian Development Bank's (ADB's) country partnership strategy for Cambodia 2014–2018, which aims to reduce income poverty, multidimensional poverty, and poverty vulnerability, and to promote inclusive growth by focusing on rural areas and rural–urban–regional linkages.<sup>4</sup>

#### B. Poverty Targeting

General Intervention  Individual or Household (TI-H)  Geographic (TI-G)  Non-Income MDGs (TI-M1, M2, etc.)

The availability of electricity has an indirect but strong link with reducing poverty and promoting economic growth. The classification therefore recognizes that while power itself will not explicitly decrease poverty, it is a critical stepping stone to attracting other means of economic investment and development that will provide the foundation for concrete poverty reduction strategies in the future. This proposed ADB project is expected to contribute to poverty reduction through the improvement of essential infrastructure and provision of reliable energy supply. The continuation of all economic and industrial zones supplied by this energy secures the direct incomes for more than 3,000 workers and supports other direct and indirect local business opportunities.

#### C. Poverty and Social Analysis

1. Key issues and potential beneficiaries.

It is expected that the project will relatively contribute to poverty reduction in the Phnom Penh service area. It is expected that that grid-connected households and industrial zones in the service area, will be the core beneficiaries of this renewable energy project. Moreover, the project will further improve the economic activities of the residents by providing employment opportunities during the construction and operation phases. By increasing generation of power from solar energy, the Project aims to provide industrial, residential, and commercial consumers with reliable energy and low cost of expense. Clean energy will also avoid air emissions from thermal power plants and the associated health impacts, which can differentially impact the poor and vulnerable.

<sup>1</sup> WWF. 2016. Power Sector Vision. Towards 100% Renewable Electricity by 2050 Greater Mekong Region, Cambodia Report. Phnom Penh.

<sup>2</sup> World Bank. 2014. Where have all the poor gone? Cambodia poverty assessment 2013. Second edition.

<sup>3</sup> Royal Government of Cambodia. 2015. *Cambodia Industrial Development Policy 2015–2025: Market Orientation and Enabling Environment for Industrial Development*. Phnom Penh.

<sup>4</sup> ADB. 2014. *Country Partnership Strategy: Cambodia, 2014–2018*. Manila.

## 2. Impact channels and expected systemic changes.

Through increased access to renewable and reliable energy, the proposed project will reduce the cost and improve the supply of electricity for the Phnom Penh service area. Cheaper and more reliable electricity supply will encourage an improved business and investment environment in Phnom Penh. It is expected that national and local economic activities will be extended, offering more direct and indirect spillover in a wider region. For job creation, the project will require unskilled and professional labor during the construction and operation phases.

## 3. Focus of (and resources allocated in) the PPTA or due diligence.

To ensure an accurate and participatory due diligence, and to reduce conflicts with affected people and other stakeholders, the project will employ a multi-stakeholder engagement approach involving all concerned groups through local consultations and dialogues as early as possible. Involuntary Resettlement (IR) and Indigenous Peoples (IP) due diligence and preparation of related safeguards instruments as required under ADB Safeguard Policy Statement (2009), will be conducted.

## 4. Specific analysis for policy-based lending. Not applicable

**II. GENDER AND DEVELOPMENT**

1. What are the key gender issues in the sector/subsector that are likely to be relevant to this project or program? Relevant issues for this project are (i) unequal employment opportunities, and (ii) uneven beneficiaries of electricity supply. The project will aim to hire an equal proportion of female and male workers during construction and operation, by adopting gender-sensitive employment rules and/or checklists, and will provide improved electricity supply to all consumers in the service area equally. The benefits to women of access to reliable sources of electricity will be detailed in the SPRSS.

2. Does the proposed project or program have the potential to contribute to the promotion of gender equity and/or empowerment of women by providing women's access to and use of opportunities, services, resources, assets, and participation in decision-making?

Yes  No

Ensuring equal employment during construction and operation is the best option within the capacity of the project. However, assuring equal beneficiaries is location- and demography-based which cannot be justified by the project.

3. Could the proposed project have an adverse impact on women and/or girls or widen gender inequality?

Yes  No Please explain

No, there is no significant risk identified on women/girls.

4. Indicate the intended gender mainstreaming category:

GEN (gender equity)  EGM (effective gender mainstreaming)

SGE (some gender elements)  NGE (no gender elements)

**III. PARTICIPATION AND EMPOWERMENT**

Who are the main stakeholders of the project, including beneficiaries and negatively affected people? Identify how they will participate in the project design.

The project's primary stakeholders are Electricite du Cambodge (EDC), Ministry of Mines and Energy, Electricity Authority of Cambodia, provincial administration offices, associated districts, communes and villages within the project site and affected households (including those who agree to sell land and/or to exchange for other land or support). The EDC and Ministry of Mines and Energy defined the project through a public-private partnership concession and will ultimately select the project site. Local government officials and local households will participate in project siting through the land sale negotiation process. Other stakeholders will include private sector firms who will bid on the solar generation plants, and will potentially be selected to sell electricity to the grid and provide related services.

2. How can the project contribute (in a systemic way) to engaging and empowering stakeholders and beneficiaries, particularly, the poor, vulnerable and excluded groups? What issues in the project design require participation of the poor and excluded?

The proposed project will need to ensure that Safeguard Policy Statement involuntary safeguards objectives are met and that poor and marginalized groups are meaningfully consulted and covered under project entitlements. Priority and special care shall be given to the poor, female-headed, and/or excluded households, identified through a socio-economic survey of land owners/occupants. Monitoring will be undertaken to verify the extent of the participation and decision-making of affected households.

3. What are the key, active, and relevant civil society organizations in the project area? What is the level of civil society organization participation in the project design?

Stakeholder civil society organizations (CSOs) in potential project areas yet to be identified.

(M) Information generation and sharing  (M) Consultation  (N) Collaboration  (N) Partnership

4. Are there issues during project design for which participation of the poor and excluded is important? What are they and how shall they be addressed?  Yes  No

The preferred approach by EDC is to acquire land needed for the solar park through negotiated settlement. Some poor and excluded households owning/occupying land to be acquired may be invited to sell their property and/or other assets. If negotiated land acquisition is pursued, the households will need clear information regarding the value of the land and regarding the process of willing-buyer, willing-seller. Due diligence will be required to ensure that any negotiated purchases do not result in lower standards of compensation/assistance than would be available through the project entitlement matrix for involuntary resettlement. Working with any identified CSO in the area will help to facilitate two-way flow of information and lower the risk of conflicts since CSO frequently play an active role within communities where they operate.

#### IV. SOCIAL SAFEGUARD

##### A. Involuntary Resettlement Category A B C FI

1. Does the project have the potential to involve involuntary land acquisition resulting in physical and economic displacement?  Yes  No

The proposed project will require at least 150-200 hectares from public, private or communal land in a yet-to-be determined site located in two districts in selected provinces near Phnom Penh. Land acquisition and/or restricted land use may also be required for construction of a substation and transmission line to evacuate power from the solar park to EDC's main grid. EDC's final selection of the solar park will take in to consideration land owners' willingness to sell without resorting to compulsory acquisition. A resettlement plan is expected to be required and potentially a resettlement framework. The Involuntary Resettlement Categorization will be reassessed during the design phase.

2. What action plan is required to address involuntary resettlement as part of the PPTA or due diligence process?

Resettlement plan  Resettlement framework  Social impact matrix  
  Environmental Management Plan  None

##### B. Indigenous Peoples Category A B C FI

1. Does the proposed project have the potential to directly or indirectly affect the dignity, human rights, livelihood systems, or culture of indigenous peoples?  Yes  No

2. Does it affect the territories or natural and cultural resources indigenous peoples own, use, occupy, or claim, as their ancestral domain?  Yes  No

3. Will the project require broad community support of affected indigenous communities?  Yes  No

4. What action plan is required to address risks to indigenous peoples as part of the PPTA or due diligence process?

Indigenous peoples plan  Indigenous peoples planning framework  Social Impact matrix  
 Environmental and social management system arrangement  None

#### V. OTHER SOCIAL ISSUES AND RISKS

1. What other social issues and risks should be considered in the project design?

(L) Creating decent jobs and employment  (L) Adhering to core labor standards  Labor retrenchment  
 Spread of communicable diseases, including HIV/AIDS  Increase in human trafficking  Affordability  
 Increase in unplanned migration  Increase in vulnerability to natural disasters  Creating political instability  
 Creating internal social conflicts  Others, please specify \_\_\_\_\_

2. How are these additional social issues and risks going to be addressed in the project design?

The project Environment Management Plan and civil works contracts will require compliance with Core Labor Standards during construction. The project will extend its support to deliver longer-term benefits through hiring and training local professionals during the construction and operation phase.

#### VI. PPTA OR DUE DILIGENCE RESOURCE REQUIREMENT

1. Do the terms of reference for the PPTA (or other due diligence) contain key information needed to be gathered during PPTA or due diligence process to better analyze (i) poverty and social impact; (ii) gender impact, (iii) participation dimensions; (iv) social safeguards; and (v) other social risks. Are the relevant specialists identified?

Yes  No

2. What resources (e.g., consultants, survey budget, and workshop) are allocated for conducting poverty, social and/or gender analysis, and participation plan during the PPTA or due diligence?

International and national environment specialists will undertake an initial environmental and social examination as part of the feasibility study. International and national social development/safeguards specialists will conduct IR and IP due diligence and prepare required social safeguards instruments.