ADB

Concept Paper

Project Number: 54430-001
October 2021

Proposed Loans
Kingdom of Cambodia: Energy Efficiency Sector Development Program

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 29 September 2021)

Currency unit	–	riel (KR)
KR1.00	=	$0.00025
$1.00	=	KR4,086

ABBREVIATIONS

ADB	–	Asian Development Bank
AFD	–	Agence Française de Développement (French Development Agency)
COVID-19	–	coronavirus disease
EDC	–	Electricité du Cambodge
GHG	–	greenhouse gas
GWh	–	gigawatt-hour
JICA	–	Japan International Cooperation Agency
kV	–	kilovolt
LED	–	light-emitting diode
MW	–	megawatt
OP	–	operational priority
SDP	–	sector development program
TA	–	technical assistance
TASF	–	Technical Assistance Special Fund

NOTE

In this report, “$” refers to United States dollars.

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[a] Outposted to the Thailand Resident Mission.
[b] Outposted to the Cambodia Resident Mission.

CONTENTS

PROGRAM AT A GLANCE

1. Basic Data — **Project Number:** 54430-001

Project Name	Energy Efficiency Sector Development Program	**Department/Division**	SERD/SEEN
Country	Cambodia	**Executing Agency**	Ministry of Economy and Finance
Borrower	Cambodia		
Country Economic Indicators	https://www.adb.org/Documents/LinkedDocs/?id=54430-001-CEI		
Portfolio at a Glance	https://www.adb.org/Documents/LinkedDocs/?id=54430-001-PortAtaGlance		

2. Sector

	Subsector(s)	ADB Financing ($ million)
✓ **Energy**	Energy efficiency and conservation	50.00
	Total	**50.00**

3. Operational Priorities

- ✓ Addressing remaining poverty and reducing inequalities
- ✓ Accelerating progress in gender equality
- ✓ Tackling climate change, building climate and disaster resilience, and enhancing environmental sustainability
- ✓ Strengthening governance and institutional capacity

Climate Change Information

GHG reductions (tons per annum)	78,000
Climate Change impact on the Project	Low

ADB Financing

Adaptation ($ million)	0.00
Mitigation ($ million)	50.00

Cofinancing

Adaptation ($ million)	0.00
Mitigation ($ million)	25.00

Sustainable Development Goals

SDG 1.5
SDG 5.5
SDG 7.3
SDG 8.2
SDG 13.a
SDG 16.6

Gender Equity and Mainstreaming

Some gender elements (SGE) ✓

Poverty Targeting

General Intervention on Poverty ✓

4. Risk Categorization: Low

5. Safeguard Categorization — **Environment:** C **Involuntary Resettlement:** C **Indigenous Peoples:** C

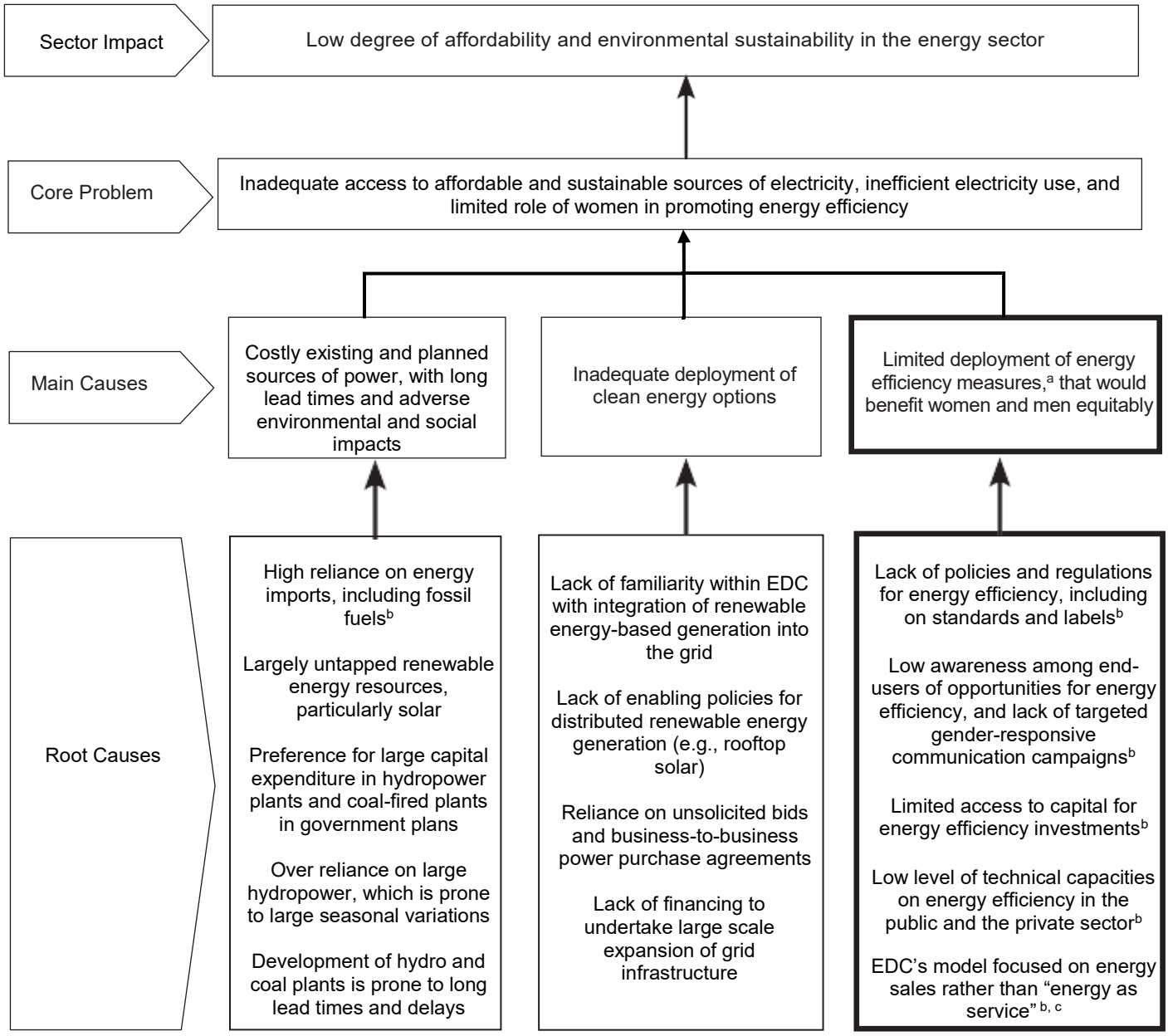
6. Financing

Modality and Sources	Amount ($ million)
ADB	**50.00**
Sovereign SDP - Program (Concessional Loan): Ordinary capital resources	20.00
Sovereign SDP - Project (Concessional Loan): Ordinary capital resources	30.00
Cofinancing	**25.00**
ASEAN Infrastructure Fund - SDP - Project loan (Full ADB Administration)	10.00
Green Climate Fund - SDP - Project loan (Full ADB Administration)	15.00
Counterpart	**5.00**
Government	5.00
Total	**80.00**

Note: An attached technical assistance will be financed on a grant basis by the Technical Assistance Special Fund (TASF-7) in the amount of $1,000,000.

Currency of ADB Financing: US Dollar

PROBLEM ANALYSIS DIAGRAM



EDC = Electricité du Cambodge.

[a] The proposed Energy Efficiency Sector Development Program will address this main cause. Other main causes are being addressed by ongoing programs and projects of the Asian Development Bank and other development partners.

[b] Root cause to be addressed by the proposed Energy Efficiency Sector Development Program.

[c] Under the "energy as service" business model, a service provider offers various energy-related services in addition to supplying electricity, such as energy advisory services, asset installation, and financing and energy management solutions.

Source: Asian Development Bank.

I. THE PROGRAM

A. Rationale

1. **Macroeconomic context.** Prior to the coronavirus disease (COVID-19) pandemic, Cambodia was one of the fastest growing countries in Southeast Asia. From 2010 to 2019, its economy expanded at an average annual rate of 7%. The ongoing pandemic has resulted in a significant contraction of the economy with gross domestic product declining by 3.1% in 2020. The gross domestic product is expected to grow 1.9% in 2021 and 5.5% in 2022.[1]

2. **Electricity sector.** The demand for electricity increased from 2,515 gigawatt-hours (GWh) in 2010 to 11,738 GWh in 2019.[2] This large increase in demand is the result of high rates of economic growth and a lack of investment in energy efficiency measures. While the COVID-19 pandemic has slowed this growth trajectory, pre-pandemic growth patterns are expected to reemerge post-2022 in tandem with economic recovery. Historically, government has met this increase in electricity demand by expanding domestic power generation capacity and importing electricity from neighboring countries. Before 2010, Cambodia's domestic generation was almost entirely based on diesel generators. Since then, however, a more diverse mix has been ushered in. Of the 2,916 megawatts domestically installed as of the end of 2020, hydropower accounted for 45.6%, coal 23.2%, fuel oil 22.1%, solar 8.1%, and biomass 1.0%, while imported power sources totaled 981 megawatts. The current power generation mix poses several persistent challenges to the country. Cambodia has some of the highest electricity tariffs in Southeast Asia, and this lowers the economic competitiveness of its industries and hinders the access of the poor to electricity services.[3] The high cost of electricity and its impact on industrial competitiveness are even more crucial now, as the country prepares for a post-COVID-19 green recovery.

3. **Energy efficiency.** Energy efficiency measures would help to reduce electricity demand, thereby delaying—or avoiding altogether—investments in power generation capacity, transmission, and distribution, and ultimately lead to reduced electricity tariffs. A preliminary Asian Development Bank (ADB) assessment estimated the market potential for energy savings in the country's power sector to be a 17% reduction of power consumption by 2030, in comparison to a business-as-usual scenario. Commercial and public buildings, which accounted for an estimated 34% of the country's total electricity demand in 2020, could significantly contribute to this potential. In particular, leveraging energy efficiency opportunities in public buildings could result in energy savings of as much as 42% in relation to a business-as-usual trajectory by 2030, based on ADB estimates. Similarly, the adoption of public lighting devices using state-of-the art energy efficient technology is another significant opportunity. Street lighting typically accounts for 25%–30% of electricity demand in municipalities and up to 40% of municipal expenditures. In addition, a survey by ADB revealed that Cambodia is largely underserved by street lighting systems, and that expanded coverage could reduce crime rates and road accidents, thereby improving livelihoods and creating new opportunities for commercial activity.

4. **Barriers.** The uptake of energy efficiency in Cambodia, however, faces several barriers. First, there is a lack of an enabling policy and regulatory framework, in particular a national policy on energy efficiency and regulations to enforce minimum energy performance standards for electrical equipment, which would push out less efficient models off the market. Second, the

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[1] ADB. 2021. *Asian Development Outlook 2021: Financing a Green and Inclusive Recovery*. Manila.
[2] Electricity Authority of Cambodia. 2021. *Salient Features of Power Development in the Kingdom of Cambodia Until December 2020.* Phnom Penh.
[3] ADB. 2018. *Cambodia Energy Sector Assessment, Strategy, and Road Map.* Manila.

limited technical capacities of public and private sector actors on energy efficiency constrain their ability to identify, design, and implement energy efficiency projects. For example, the business model of Electricité du Cambodge, the national power utility, is focused on maximizing energy sales rather than providing energy services, which overlooks opportunities for energy efficiency. In addition, there is a general low awareness among end-users about the benefits of energy efficiency, including women who usually are key decision makers in the purchase and use of household appliances. All these factors severely limit the access to financing for energy efficiency.

5. **Government's response.** Notwithstanding these constraints, energy efficiency as a goal is being prioritized by the Government of Cambodia and is well recognized in key policy documents, namely the Rectangular Strategy of the Royal Government of Cambodia (Phase IV), and the Nationally Determined Contributions to the Paris Agreement.[4] Experience from other countries suggests that bringing about large-scale energy efficiency improvements in an economy requires combining (i) the issuance of policies and efficiency standards and guidelines with (ii) a rollout of government-led programs and (iii) demonstration of investment projects at scale.

6. **Strategic alignment.** The proposed sector development program (SDP) is aligned with ADB's country partnership strategy for Cambodia, 2019–2023.[5] The proposed SDP will support the following operational priorities (OPs) of ADB's Strategy 2030.[6] Energy efficiency will help alleviate the poverty of low-income families by lowering their energy bills (OP1) and support the reduction of greenhouse gas (GHG) emissions (OP3). Energy efficiency will also create new job opportunities and can contribute towards gender equality (OP2). Because the SDP implementation will support a strong capacity building program, it is expected to help strengthen the capacities of national institutions (OP6), and mainstream gender in energy efficiency policies and activities (OP2).

7. **Lessons learned.** The SDP will draw on ADB's experience in financing energy efficiency-focused policy-based and project loans in other developing member countries.[7] In these ongoing programs, ADB has been supporting large public procurement programs in energy efficiency, financial intermediation, and the design and installation of keystone projects. These activities have strong demonstration and replicability effects and showcase the leading role of the government in promoting energy efficiency. The proposed SDP will adopt similar activities.

B. Proposed Solutions

8. The proposed SDP will be aligned with the following impacts: transition towards an energy efficient economy accelerated[8] and greenhouse gas emissions from the energy sector reduced (footnote 4). The outcome is: market for energy efficiency technologies and services in Cambodia

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[4] Government of Cambodia. 2020. *Cambodia's Updated Nationally Determined Contributions.* Phnom Penh. The document identifies 10 mitigation projects directly aligned with improvements on energy efficiency.

[5] ADB. 2019. *Country Partnership Strategy: Cambodia, 2019–2023—Inclusive Pathways to a Competitive Economy.* Manila.

[6] ADB. 2018. *Strategy 2030: Achieving a Prosperous, Inclusive, Resilient, and Sustainable Asia and the Pacific.* Manila.

[7] ADB. India: Demand-Side Energy Efficiency Sector Project; ADB. Indonesia: Sustainable and Inclusive Energy Program (Subprogram 1); ADB. Indonesia: Sustainable and Inclusive Energy Program (Subprogram 2); Indonesia: Sustainable and Inclusive Energy Program (Subprogram 3) (forthcoming). ADB. Philippines: Philippine Energy Efficiency Project.

[8] Royal Government of Cambodia. 2018. *Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building a Foundation for Toward Realizing the Cambodia Vision 2050 of the Royal Government of Cambodia of the Sixth Legislature of the National Assembly – Phase IV*. Phnom Penh.

expanded.[9] The SDP encompasses three output areas, and technical training and awareness raising programs on energy efficiency for various government agencies and the utility will be supported as a cross-cutting measure. The SDP modality was chosen to allow support for enabling policies and programs, alongside support for key demonstration-scale investment projects, in a synchronized manner.

9. **Output 1: The policy and regulatory framework for energy efficiency established (policy-based lending component).** The government has prioritized the issuance of a national energy efficiency policy, which will serve as the umbrella framework for more specific policies and regulations on energy efficiency. Other policies and regulations are also under development, including (i) a sub-decree for developing standards and labeling programs for electric appliances and (ii) technical regulations for minimum energy performance standards for air conditioners and refrigerators.[10] The government will also explore setting up a revolving fund to facilitate access to finance by the private sector for energy efficiency projects. Other relevant policies and regulations on energy efficiency will also be considered, such as measures to support sustainable procurement, policies to mobilize private finance in the banking sector, and measures to mainstream gender in the energy efficiency programs of the national government agencies.

10. **Output 2**: **Public buildings upgraded incorporating more energy efficient equipment, materials, and designs (project component 1).** It is estimated that through the demonstration projects at scale implemented under this component of the SDP, up to 50% of the energy efficiency potential of public buildings in Cambodia could be realized over the 5 years from 2023 to 2027. The interventions will, among others, (i) reduce heat transmission losses through building envelopes; (ii) lead to the adoption of more efficient ventilation and air-conditioning systems; and (iii) make use of more efficient lighting and electrical equipment. These interventions could result in cumulative electricity savings of 385 GWh over the 5-year period (2023–2027), corresponding to GHG emission reductions of approximately 215,000 tons of carbon dioxide and $45 million in electricity bill savings. This project component will also explore the application of digital technologies and Internet of Things enabled devices (e.g., smart meters) to support energy management in large public buildings. Concessional loan cofinancing from the Green Climate Fund will be considered to finance retrofitting projects that tend to have quick pay back periods.[11]

11. **Output 3: National public lighting program implemented (project component 2)**. This output will comprise a replacement component and a greenfield component. A national public lighting program will be launched to replace 16,000 conventional lights with light-emitting diode (LED) lamps equipped with a remote monitoring and control system (replacement component). In addition, LED lamps will be installed across municipalities in Cambodia in areas that are not yet served by any public lighting systems (greenfield component). A total of 200,000 LED lamps will be installed nationwide as part of greenfield installations. The regions and municipalities where these LED lamps would be installed will be identified during due diligence. Upon completion, the replacement component of the output will result in annual savings of 11.9 GWh, which correspond to GHG emission reductions of 6,660 tons of carbon dioxide and $1.8 million in electricity bill savings.[12] The SDP will also look at broader environmental and social impacts (e.g., by

[9] The preliminary design and monitoring framework is in Appendix 1.

[10] ADB is providing support for the national energy efficiency policy, sub-decrees, and regulations. ADB. Regional: Technical Assistance for Integrated Resource Planning with Strategic Environmental Assessment for Sustainable Power Sector Development in the Greater Mekong Subregion.

[11] In March 2021, the board of the Green Climate Fund approved a proposal for a program for Green Climate Fund funding, and the associated project pipeline includes the proposed SDP.

[12] The GHG emissions reductions and electricity savings are not calculated for the greenfield component, as there is no baseline from which to calculate such reductions and savings.

considering the positive impact of energy efficiency in street lighting on women and women-led businesses).

12. **ADB's value addition**. ADB has been the lead development partner for the government in the energy sector since 2017. ADB's multi-pronged assistance strategy has combined policy and planning support for a clean energy transition, together with strategic investments in key technology areas such as solar parks, grid strengthening, and large-scale grid-connected battery storage. ADB has also been coordinating efforts with other development partners working on energy efficiency in Cambodia. The establishment of an energy efficiency revolving fund is expected to catalyze the mobilization of private financing in Cambodia, which would help broaden the adoption of energy efficiency measures in the country. The outcome of the proposed SDP is expected to have strong spillover effects for other countries in the region, where opportunities for energy efficiency remain largely untapped.

C. Proposed Financing Plans and Modality

13. The SDP is estimated to cost $80 million (Table 1). The entire financing volume of the SDP qualifies as climate mitigation finance.[13] Other grant funding may also be identified to support implementation of the project component (outputs 2 and 3).

Table 1: Indicative Financing Plan

Source	Amount ($ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (concessional loan)	50.00	56.25
ASEAN Infrastructure Fund (loan)[a]	10.00	12.50
Green Climate Fund (loan)[b]	15.00	25.00
Government	5.00	6.25
Total	**80.00[c]**	**100.00**

ADB = Asian Development Bank, ASEAN = Association of Southeast Asian Nations.
[a] Through the ASEAN Catalytic Green Finance Facility. Administered by ADB.
[b] Through the ASEAN Catalytic Green Finance Facility: Green Recovery Program (forthcoming). To be administered by ADB.
[c] The breakdown of financing between the policy-based lending component and the project component will be finalized during due diligence.
Source: ADB estimates.

D. Implementation Arrangements

14. The indicative implementation arrangements are summarized in Table 2.

Table 2: Indicative Implementation Arrangements

Aspects	Arrangements
Indicative implementation period	January 2021–September 2022 (policy component) January 2023–December 2027 (project component)
Indicative completion date	March 2028
Management	
(i) Executing agency	Ministry of Economy and Finance
(ii) Key implementing agencies	Ministry of Mines and Energy and other related government institutions (Electricity Authority of Cambodia; Ministry of Public Works and Transport; Ministry of Land Management, Urban Planning and Construction; and

[13] As per the Guidance Note on Counting Climate Finance at ADB, all interventions proposed under the SDP qualify as eligible climate mitigation activities (see Appendix 1 of the Guidance Note on Counting Climate Finance at ADB).

Aspects	Arrangements
	municipal governments) may be designated as implementing agencies for the project component.

Source: Asian Development Bank.

15. A steering committee will be established at the beginning of the program to ensure stakeholder coordination and effective implementation of the project activities. The SDP will follow ADB's Procurement Policy and Procurement Regulations (2017, as amended from time to time), with advance contracting and invitation for bids before Board consideration.[14]

II. ATTACHED TECHNICAL ASSISTANCE

16. An attached technical assistance (TA) grant of $1 million, to be financed by ADB's Technical Assistance Special Fund 7, is proposed. This TA will support (i) the development of a set of subsequent energy efficiency related policies and programs and (ii) the cost of a management contract for the energy efficiency fund for 2 years. Because of the specific nature of the advisory services, the need to integrate best practices from around the region, and the need for close ADB supervision of the work, a TA grant modality is proposed.

III. PROGRAM PREPARATION AND READINESS

17. The TA for Southeast Asia Energy Sector Development, Investment Planning and Capacity Building Facility[15] will be utilized to conduct due diligence and prepare the program document in accordance with ADB's requirements (Appendix 4). The scope of due diligence is described in Table 3 below. Advance contracting for the recruitment of the program implementation consultant with an estimated cost of $1.5 million will be applied to ensure timely program implementation.

IV. DELIBERATIVE AND DECISION-MAKING ITEMS

A. Risk Categorization

18. The SDP is categorized as low risk because (i) the amount of the policy-based loan is less than or equal to $50 million and (ii) the safeguard categorization is C for environment, involuntary resettlement, and indigenous people. In addition, the SDP will draw on ADB's experience in financing energy efficiency-focused projects in other developing member countries (footnote 7).

B. Program Procurement Risk Classification

19. The procurement risk classification is proposed to be medium. Because the implementing agency is new, ADB will provide support on strategic procurement planning during the preparation stage of the project component and facilitate discussions on adopting sustainable procurement practices during project implementation. Key risks and mitigation measures are specified in Appendix 3.

[14] A separate strategic procurement plan and procurement capacity assessment will be prepared during due diligence. ADB. 2017. *Procurement Regulations for ADB Borrowers*. Manila.

[15] ADB. 2018. *Technical Assistance for Southeast Asia Energy Sector Development, Investment Planning and Capacity Building Facility.* Manila.

C. Scope of Due Diligence

20. The SDP will support the completion of the government's policy actions prior to Board consideration. The scope of the remaining due diligence activities is in Table 3.

Table 3: Scope of Due Diligence

Due Diligence Output	To Be Undertaken By
Preparation of cost estimate, financing plan, and economic analysis	Staff and/or TRTA
Financial management assessment, financial evaluation, and financial analysis	Staff and/or TRTA
Strategic procurement planning	Staff and/or TRTA
Poverty and social assessment, including gender mainstreaming (to be reflected in the summary poverty reduction and social strategy)	Staff and/or TRTA
Integrity due diligence checklist[a]	Staff and/or TRTA
Program administration manual, including risk assessment and management plan	Staff
Safeguard documents on the environment, involuntary resettlement, and/or indigenous peoples	Staff and/or TRTA
Attached TA	Staff

TA = technical assistance, TRTA = transaction technical assistance.
[a] Based on staff instruction on integrity due diligence for sovereign operations and cofinancing.
Source: Asian Development Bank.

D. Processing Schedule and Sector and Thematic Group's Participation

21. The SDP team is collaborating closely with the Sustainable Development and Climate Change Department on funding from the Green Climate Fund (footnote 11) and program design inputs from the Energy Sector Group. The processing schedule by milestone is in Table 4.

Table 4: Processing Schedule by Milestone

Milestones	Expected Completion Date
1. Staff review meeting	15 June 2022
2. Loan negotiations	15 July 2022
3. Loan approval	30 September 2022
4. Loan signing	30 November 2022

Source: Asian Development Bank estimates.

E. Key Processing Issues and Mitigation Measures

22. Issues, approaches, and mitigation measures are summarized in Table 5.

Table 5: Issues, Approaches, and Mitigation Measures

Key Processing Issues	Proposed Approaches and/or Mitigation Measures
1. Lower electricity demand growth as a result of the coronavirus disease pandemic may reduce the government's commitment to energy efficiency.	ADB will continuously engage with the government on the need to prioritize energy efficiency, as the impacts of the program would be realized post-2022, when electricity demand growth is expected to return to pre-pandemic levels.
2. Risk of delay due to possible changes in project scope and financing plan because of government reluctance to use loan funds for retrofitting public buildings.	ADB will demonstrate the benefits of investing in public building retrofits, including the quick payback periods, as well as the demonstration and replicability effects of such interventions.

ADB = Asian Development Bank.
Source: ADB.

PRELIMINARY DESIGN AND MONITORING FRAMEWORK

Impacts the Program is Aligned with
Transition towards an energy efficient economy accelerated (Rectangular Strategy, Phase IV);[a]
Greenhouse gas emissions from the energy sector reduced (nationally determined contributions to the United Nations Framework Convention on Climate Change)[b]

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
Outcome Market for energy efficiency technologies and services in Cambodia expanded	**By 2028:** a. Electricity consumption reduced by at least 10% in relation to business-as-usual projections (2021 baseline: TBD during due diligence) (OP 3.2, OP 3.3)	a. Annual reports of EAC and EDC	R: Monetary savings from energy efficiency are used to consume more electricity through larger or additional appliances.
	b. Greenhouse gas emissions reduced by at least 30,000 tons of carbon dioxide per year (2021 baseline: TBD during due diligence) (OP 3.3)	b. Annual reports of EAC and EDC	R: Decarbonization of the power generation mix may lower greenhouse gas emission reduction contributions from energy efficiency interventions.
	c. Number of companies providing services in the energy efficiency space in Cambodia increased and jobs on energy efficiency created (2021 baseline: 0 for companies providing services in the energy efficiency space in Cambodia; 0 for jobs on energy efficiency) (OP 1.2)	c. Market surveys and questionnaires	
Outputs 1. Policy and regulatory framework for energy efficiency established	**By 2022:** 1a. Gender responsive National Energy Efficiency Policy[c] issued (2021 baseline: no policy issued) (OP 3.1, OP 6.1, O.P 2.1)	1a–1g. Formally issued policies and regulations	R: Declining electricity demand growth as a result of the COVID-19 pandemic may shift government priorities away from energy efficiency.
	1b. Sub-decree for the introduction of standards and labeling programs on energy efficiency for electric appliances issued (2021 baseline: no sub-decree issued) (OP 3.1, OP 6.1)		R: Issued regulations and policies are weakly enforced.
	1c. Standards and labeling regulation (*prakas*) for air		R: Risk of payment default may delay the re-flows of financing to the energy efficiency revolving fund.

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
	conditioners issued (2021 baseline: no *prakas* for air conditioners issued) (OP 3.1, OP 6.1) 1d. Standards and labeling regulation (*prakas*) for refrigerators issued (2021 baseline: no *prakas* for refrigerators issued) (OP 3.1, OP 6.1) 1e. Standards and labeling regulation (*prakas*) for fans or other appliance type TBD issued (2021 baseline: no *prakas* for fans or other appliance type issued) (OP 3.1, OP 6.1) 1f. Regulation to set up an energy efficiency revolving fund issued (2021 baseline: no regulation to set up an energy efficiency revolving fund issued) (OP 1.2, OP 3.1, OP 6.1) 1g. Training to mainstream gender in energy efficiency policies and activities conducted and attended by at least 60% of the employees of the relevant agencies (2021 baseline: 0 trainings provided) (OP 2.1)		
2. Public buildings upgraded with more energy efficient equipment, materials, and designs	**By 2027:** 2. Investments in retrofits and more energy efficient equipment made in at least 20 public buildings (2021 baseline: 0) (OP 3.1, OP 3.3)	2. Monitoring and verification reports of the SDP	R: Energy efficiency interventions in public buildings may not be perceived as a priority by building owners, operators, line ministries, and municipalities unfamiliar with the benefits of energy efficiency.
3. National public lighting program implemented	3a. 16,000 streetlights in the project municipalities replaced with LED lamps	3a–3b. Monitoring and verification reports of the SDP	R: Municipalities may delay investments in public lighting devices

Results Chain	Performance Indicators	Data Sources and Reporting Mechanisms	Risks and Critical Assumptions
	with remote control and monitoring (2021 baseline: 0) (OP 3.1, OP 3.3) 3b. A total of 200,000 LED lamps with remote control and monitoring installed in municipal areas lacking public lighting (2021 baseline: 0) (OP 3.1, OP 3.3)		because of the lack of capacities of local staff.

Key Activities with Milestones

1. Policy and regulatory framework for energy efficiency established

1.1 Issue the national energy efficiency policy (Q4 2021)
1.2 Issue the sub-decree for the introduction of standards and labeling programs on energy efficiency for electric appliances (Q4 2021)
1.3 Issue the standards and labeling regulation (*prakas*) for air conditioners (Q4 2021)
1.4 Issue the standards and labeling regulation (*prakas*) for refrigerators (Q4 2021)
1.5 Issue the standards and labeling regulation (*prakas*) for fans or other equipment TBD (Q3 2022)
1.6 Issue the regulation to set up a revolving fund to support energy efficiency (Q3 2022)
1.7 Conduct training to mainstream gender in energy efficiency policies and activities (Q4 2022)

2. Public buildings upgraded with more energy efficient equipment, materials, and designs

2.1 Identify public buildings for energy efficiency investments and prepare investment plans (Q1 2023)
2.2 Issue invitation to bid for selected energy efficiency interventions (Q2 2023)
2.3 Issue request for proposals (Q3 2023)
2.4 Finalize proposal evaluation and mobilize contractors (Q4 2023)
2.5 Start implementation of energy efficiency interventions (Q4 2023)
2.6 Complete implementation of energy efficiency interventions (Q4 2027)

3. National public lighting program implemented

3.1 Identify municipalities for the street lighting program and assess investment needs (Q1 2023)
3.2 Issue invitation to bid for LED lamps (Q2 2023)
3.3 Issue request for proposals (Q3 2023)
3.4 Finalize proposal evaluation and mobilize contractors (Q4 2023)
3.5 Start installation of more energy efficient public lighting devices (Q4 2023)
3.5 Complete installation of more energy efficient public lighting devices (Q4 2027)

Program Management Activities

TBD

Inputs

Asian Development Bank: $50,000,000 (loan)
ASEAN Infrastructure Fund: $10,000,000 (loan)
Green Climate Fund: $15,000,000 (loan)
Government: $5,000,000

ASEAN = Association of Southeast Asian Nations, COVID-19 = coronavirus disease, EAC = Electricity Authority of Cambodia, EDC = Électricité du Cambodge, LED = light-emitting diode, OP = operational priority, Q = quarter, R = risk, SDP = sector development program, TBD = to be decided.

[a] Royal Government of Cambodia. 2018. *Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building a Foundation Toward Realizing the Cambodia Vision 2050 of the Royal Government of Cambodia of the Sixth Legislature of the National Assembly – Phase IV*. Phnom Penh.

[b] Government of Cambodia. 2020. *Cambodia's Updated Nationally Determined Contribution*. Phnom Penh.

[c] A gender-responsive policy takes into account both women's and men's interests and needs. For this purpose, a gender consultant will be engaged during due diligence to identify gender mainstreaming opportunities in the national energy efficiency policy.

Contribution to Strategy 2030 Operational Priorities:

In the RRP, the expected values and methodological details for all OP indicators to which this operation will contribute results will be detailed in the Contribution to Strategy 2030 Operational Priorities linked document.

Source: Asian Development Bank.

SECTOR ASSESSMENT (SUMMARY): ENERGY

A. Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. **Significant development leading to lower middle-income status in 2015.** As of 2019, Cambodia's population was about 15.3 million and continues to increase by 1.3% on average each year.[1] Per capita gross national income grew from $950 in 2013 to $1,530 in 2019.[2] Strong economic growth was mainly driven by urban-based industries such as garment exports, tourism, and, more recently, construction and real estate. The government aspires to attain middle-income status by 2030. However, because of the coronavirus disease 2019 (COVID-19) pandemic, the gross domestic product contracted by 1.3% from 2019 to 2020 (footnote 2).

2. **Economic growth propels electricity demand**. Electricity consumption in Cambodia has been increasing significantly. In 2019, per capita consumption of electricity reached 480 kilowatt-hours, growing at an average of 18% year-on-year during 2010–2019.[3] Per capita power consumption growth is expected to persist at these levels in the short term but moderating as the country approaches universal electricity access. Other major drivers underpinning electricity consumption growth are population expansion, accelerated economic activity, and urbanization. Electricity demand increased from 2,515 gigawatt-hours (GWh) in 2010 to 12,499 GWh in 2020.[4] There has been a rapid growth in demand, with an annual average growth rate of 18.8% during 2015–2019. While the COVID-19 pandemic has led to a deceleration of this growth trajectory, pre-crisis growth patterns are expected to reemerge post-2022 in tandem with economic recovery. According to forecasts of the Asian Development Bank (ADB) prepared in the scope of Cambodia's Power Development Master Plan, 2021–2040, power demand could reach 24,184 GWh in 2025 under a medium-growth scenario.[5]

3. **Electricity supply to enhance economic productivity.** The total capacity of power generation sources in Cambodia, including both domestic capacity and imports, was 3,897 megawatts (MW) at the end of 2020. Of the 2,916 MW domestically installed at the end of 2020, hydropower accounted for a share of 45.6%, coal 23.2%, fuel oil 22.1%, solar 8.1%, and biomass 1.0%. Imported power totaled 981 MW, sourced mostly from Viet Nam and Thailand and marginally from the Lao People's Democratic Republic. Domestic capacity increased 12-fold from 2006 to 2020, which helped reduce the reliance on electricity imports. Nonetheless, in 2020, electricity imports stood at 26% of electricity delivered to the national power system. While hydro accounts for the largest share of domestic capacity, in 2020, hydroelectricity was lower than that generated by coal-fired sources, because hydro output in Cambodia is highly prone to seasonal fluctuations. Renewable energy capacity is still marginal but has been increasing, which saw the addition of the first grid-connected solar photovoltaic facility in 2017, with 10 MW capacity. The project is in Bavet, Svay Rieng Province, and was financed by ADB's Private Sector Operations

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[1] Government of Cambodia. 2019. *General Population Census of the Kingdom of Cambodia*. Phnom Penh.
[2] ADB. 2015. *Basic Statistics 2015*. Manila; and ADB. 2021. *Basic Statistics 2021*. Manila.
[3] ADB analysis in preparation of Cambodia's Power Development Master Plan, 2021–2040, based on World Bank data.
[4] Electricity Authority of Cambodia. 2021. *Salient Features of Power Development in the Kingdom of Cambodia until December 2020*. Phnom Penh.
[5] ADB. 2020. *Power Development Master Plan, 2020–2040 Demand Forecasts (June 2020)*. Unpublished. This study is being conducted under ADB. Regional: Southeast Asia Energy Sector Development, Investment Planning and Capacity Building Facility.

Department. The project was developed by Singapore-based Sunseap Group as a result of Cambodia's first large-scale solar power tender. It received a 20-year power purchase agreement to sell electricity to Electricité du Cambodge (EDC) at a fixed tariff of $0.091 per kilowatt-hour.[6] As of the end of 2020, installed solar capacity stood at 237 MW and contributed to 3.3% of domestic electricity generation.[7]

4. **The scope for energy efficiency in Cambodia remains largely untapped**. This area was identified by the government as an opportunity to enhance the competitiveness of its industries in response to the COVID-19 crisis. Energy efficiency could also help reduce energy demand, thereby delaying—or avoiding altogether—investments in power generation capacity and ultimately lead to reduced electricity tariffs. To help harness these opportunities, in January 2020, ADB launched a demand side energy efficiency market assessment study to identify opportunities for energy efficiency interventions in Cambodia. ADB's country partnership strategy for Cambodia, 2019–2023 recognizes the importance of the energy sector to Cambodia's development.[8] Investments in energy infrastructure are therefore identified as a priority in the strategy, with a number of projects already under development or included in the investment pipeline of the country operations business plan for Cambodia, 2021–2023.[9] Such investments include this sector development program on energy efficiency, expected to involve an ADB investment of $80 million.

2. Government's Sector Strategy

5. The current energy sector organization in Cambodia was established pursuant to the enactment of the Electricity Law in 2001 and its subsequent amendments in 2007 and 2015. The law provides the governing framework for electric power supply and services throughout Cambodia. It covers all activities related to the supply of electricity, provision of services, use of electricity, and other associated activities of the power sector. Key components include (i) establishing the principles for operation of the power sector; (ii) establishing favorable conditions for competition, private investment, private ownership, and commercial operation of the electric power industry; and (iii) establishing and defining the functions of the Electricity Authority of Cambodia and the Ministry of Mines and Energy.

6. The provision of adequate and reliable electricity at reasonable cost underpins equitable development. The government, in its Socio-Economic Policy Agenda, 2018–2023, recognizes the importance of developing the energy sector to increase competitiveness, ensure sustained economic growth, and thereby continue to reduce poverty.[10] Its key policy objectives call for (i) expanding supply coverage, (ii) enhancing power reliability by extending and upgrading the transmission network infrastructure, (iii) further lowering systemwide costs to enable a tariff reduction, and (iv) providing access to electricity from 74.8% of all households in 2019 to 95% by 2030.

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[6] ADB. 2018. *Cambodia Energy Sector Assessment, Strategy, and Road Map.* Manila.
[7] EDC. 2020. *Financial Statements for the Year ended 31 December 2019 and Report of the Independent Auditors*. Phnom Penh. Exchange rate used $1 = KR4,1125 (as of 1 January 2020).
[8] ADB. 2019. *Country Partnership Strategy: Cambodia, 2019–2023——Inclusive Pathways to a Competitive Economy.* Manila.
[9] ADB. 2020. *Country Operations Business Plan: Cambodia, 2021–2023.* Manila.
[10] Royal Government of Cambodia. 2018. *Rectangular Strategy for Employment, Equity and Efficiency: Building the Foundation toward Realizing the Cambodia Vision 2050.* Phnom Penh.

B. Major Development Partners: Strategic Foci and Key Activities

7. Since the private sector, both domestic and foreign, is predominantly investing in large-scale power generation, development partners involved in Cambodia's electricity agenda focus on supporting the government's objectives by providing financing for the extension of high-voltage (230 kilovolt [kV] and 115 kV) and medium-voltage (22 kV) transmission lines and introducing the application of innovative technologies such as battery energy storage and remote sensor systems. Cambodia's major development partners in the energy sector are ADB, Agence Française de Développement (AFD), German development cooperation through KfW, and the Japan International Cooperation Agency (JICA). The table lists their recent key activities.

Major Development Partners

Development Partner	Project Name	Year Approved	Amount (million)
Energy sector			
ADB	Provincial Power Supply	2000	$18.60
	Develop a Strategy for Management of Provincial Supply (TA)	2000	$0.15
	Greater Mekong Subregion Transmission Project	2003	$44.30
	Capacity Building of EAC (TA)	2003	$0.24
	Second Power Transmission and Distribution Project	2006	$20.00
	Institutional Strengthening of the Cambodian National Petroleum Authority (TA)	2006	$1.00
	Cambodia Power Transmission Lines Power Transmission Project	2007	$32.00
	Capacity Building for the Cambodian National Petroleum Authority (TA)	2010	$0.40
	Preparing the Rural Electrification Project (TA)	2010	$1.30
	Medium-Voltage Sub-Transmission Expansion Sector Project	2012	$45.00
	Rural Energy Project (grant from Government of Australia)	2013	$6.10
	Medium-Voltage Sub-Transmission Expansion Sector Project – Additional Financing	2015	$1.00
	Support for the National Power Development Plan	2019	$1.40
	National Solar Park Project	2019	$7.64
	Grid Reinforcement Project	2020	$127.80
	Demand Side Energy Efficiency (TA)	2020	$ 0.50
AFD	Provincial Power Supply (cofinanced with ADB)	2000	$2.50
	REEs' Access to Finance	2014	$18.70
	Green Microfinance ("Good solar")	2014	$10.00
	EDC Grid Extension Phase 1	2015	€70.00
	EDC Capacity Building Program	2015	$1.30
	Potential for Energy Efficiency Measures in Biomass Consuming Industries	2017	N/A
	EDC Grid Modernization	2019	€29.00
	Modelisation of the Energy Sector by 2050 (TA)	2021	€0.25
Government of Australia	Investing in Infrastructure (3i)	2016	A$37.00
	ISO certification of EAC testing facility	2018	A$0.10
	Renewable Energy Master Plan for Cambodia	2018	A$0.50
	Advisory Support on Wind Energy Potential	2018	A$0.13
	Advisory Support on Solar Energy Potential	2018	A$0.20
	Advisory Support on Off-grid Electrification	2018	A$0.12
	Advisory Support on Renewable Energy Strategy	2020	A$0.08
	Advisory Support to conduct Renewable Energy Working Group	2021	A$0.45-$1.0
European Union	Capacity Development for Independent Evaluation and Update of Energy Efficiency Strategies Based on Data Analysis	2016	€0.70
	Switch to Solar (TA)	2020	€2.30

Development Partner	Project Name	Year Approved	Amount (million)
Global Green Growth Institute	Refused Derived Fuel Plant	2019	$ 0.75
	E-Mobility	2019	$ 0.50
	Switch Garment - Promotion of Sustainable Energy Practices in the Garment Sector in Cambodia (TA)	2020	€3.20
JICA	Rehabilitation and Upgrading of Electricity Supply Facilities for Phnom Penh	2005	$31.00
	Second Power Transmission and Distribution (cofinanced with ADB)	2006	¥2,632.00
	Phnom Penh City Transmission and Distribution Line Expansion Project (Phase 1)	2014	$65.00
	Phnom Penh City Transmission and Distribution Line Expansion Project (Phase 2)	2015	$130.00
	Southern Economic Corridor Distribution Expansion Project	2016	$9.00
	The Project for Enhancement of Operation and Management of Cambodia Transmission System (TA)	2017	N/A
	Phnom Penh City Transmission and Distribution System Expansion Project (Phase 2) (Stage II)	2018	$84.23
German development cooperation through KfW	Transmission Line (Takeo to Kampot)	2005	€12.20
	Grid Efficiency and Strengthening Project (TA)	2017	
	Energy Efficiency in Rural Grids	2019	€32.00
NDF	Greater Mekong Subregion Transmission Project (cofinanced with ADB)	2003	€10.00
OFID	Medium-Voltage Sub-Transmission Expansion Sector Project (cofinanced by ADB)	2012	$10.00
USAID	Clean Power Asia Program (TA)	2016	$16.00
World Bank	Rural Electrification and Transmission Project	2003	$16.00

ADB = Asian Development Bank, AFD = Agence Française de Développement (French Development Agency), A$ = Australian dollar, EAC = Electricity Authority of Cambodia, EDC = Electricité du Cambodge, € = euro, ISO = International Organization of Standardization, JICA = Japan International Cooperation Agency, N/A = not applicable, NDF = Nordic Development Fund, OFID = OPEC Fund for International Development, REE = rural electricity enterprise, TA = technical assistance, $ = United States dollar, USAID = United States Agency for International Development, ¥ = Japanese yen.
Source: ADB.

8. AFD, JICA, and KfW support the expansion of medium- and high-voltage transmission lines, and AFD also funds a program to promote the financing of rural electrification enterprises. KfW conducted a study on energy efficiency in rural grids and also provides support to the Rural Electrification Fund for its rural electrification programs. As regards technical assistance, the World Bank conducted an energy access review, while JICA is supporting capacity development activities to strengthen transmission management and planning at EDC, including training in software as well as dispatching and procurement processes. AFD and the Government of Australia support the deployment of solar home systems for households in rural areas. AFD commissioned a grid modernization study and supported a capacity building program to strengthen EDC's capacity for financial management, engineering and construction supervision, procurement, maintenance, and operation of the supervisory control and data acquisition system. Australia supports the preparation of a renewable energy master plan, while ADB helps prepare the national power development plan for 2020–2040.[11]

[11] ADB. 2018. *Technical Assistance for Southeast Asia Energy Sector Development, Investment Planning and Capacity Building Facility.* Manila.

C. Institutional Arrangements and Processes for Development Coordination

9. Development partner coordination in Cambodia's energy sector is facilitated by the formal Government–Development Partners' Energy Sub-Technical Working Group, while the main partners in the sector have also been meeting regularly since 2017 in informal working group sessions to deepen coordination and technical discussions. Coordination across the Greater Mekong Subregion takes place through the Regional Power Trade Coordination Committee. Established in 2002, the committee focuses on strengthening regional transmission networks, promoting cross-border investments in energy resources, and developing a regional electricity market in a phased manner. ADB, AFD, JICA, and the World Bank regularly participate in biannual committee meetings, and ADB and the World Bank also provide technical support to its two working groups (on regulatory issues and on performance standards and grid codes).[12]

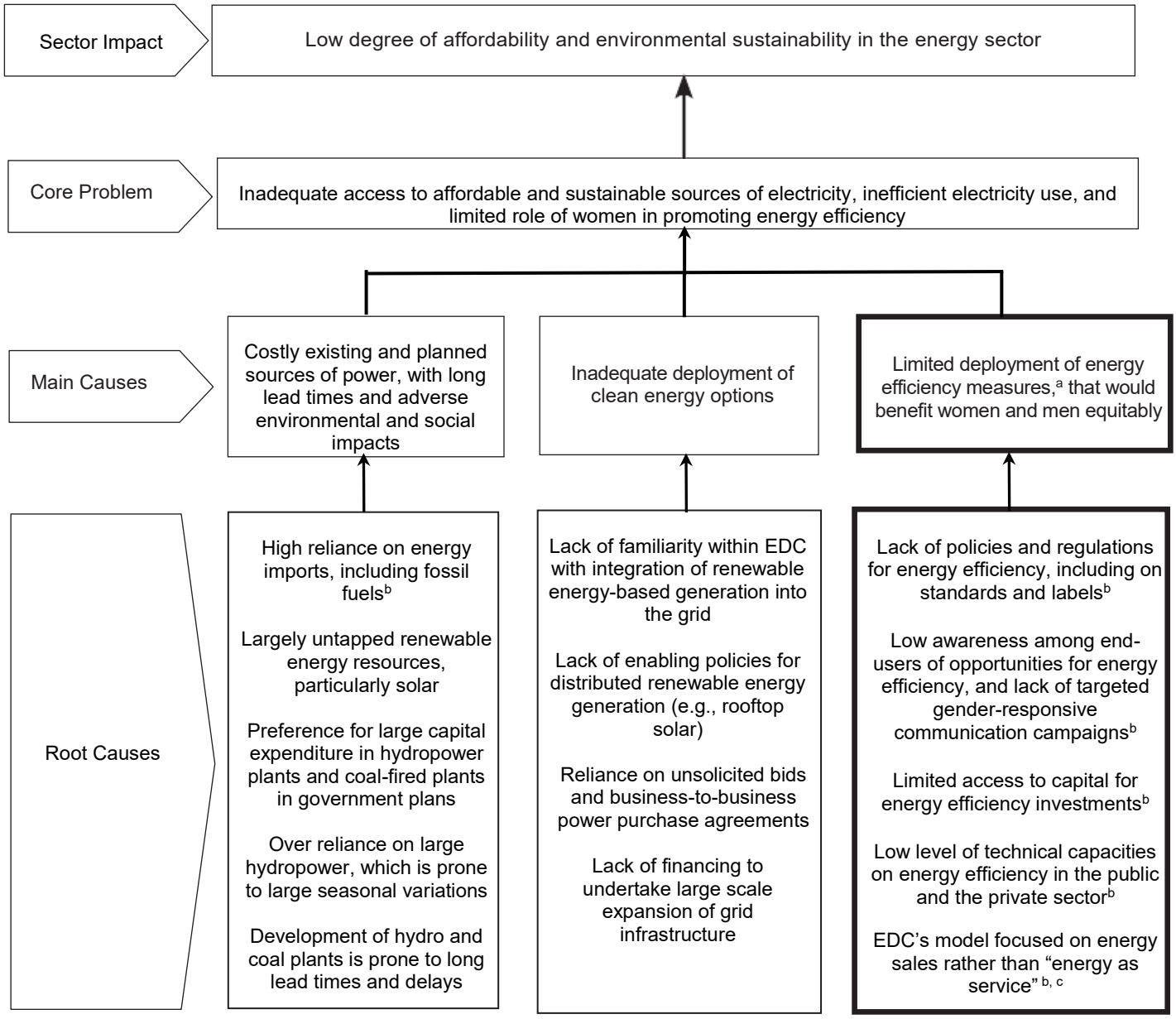
D. ADB Experience and Assistance Program

10. ADB's country partnership strategy for Cambodia, 2019–2023 (footnote 8), recognizes the importance of the energy sector to Cambodia's development. ADB also supported EDC to implement the Medium Voltage Sub-Transmission Expansion Sector Project to expand the electricity transmission infrastructure by constructing 2,380 kilometers of 22 kV sub-transmission lines in the five provinces, which was completed in December 2019. In addition to the Sector Development Program on Energy Efficiency, Cambodia's country operations business plan, 2021–2023 (footnote 9), includes a National Project on Energy Storage for Utility-Scale Solar Plants, with an indicative financing of $40 million (planned for 2024). In addition, ADB is implementing a Grid Reinforcement Project, which supports expanding the 150 kV and 230 kV grid infrastructure and installing the first stand-alone battery energy storage system in Cambodia.[13] ADB is also providing transaction advisory support to EDC under phase 2 of the national solar park project. The tender was launched in December 2020 for 40 MW of capacity.

[12] ADB. 2014. *Technical Assistance for Harmonizing the Greater Mekong Subregion Power Systems to Facilitate Regional Power Trade.* Manila; ADB. 2007. *Technical Assistance for Facilitating Regional Power Trading and Environmentally Sustainable Development of Electricity in the Greater Mekong Subregion*. Manila.

[13] ADB. Cambodia. Grid Reinforcement Project.

Problem Tree for Energy Sector



EDC = Electricité du Cambodge.

[a] The proposed Energy Efficiency Sector Development Program will address this main cause. Other main causes are being addressed by ongoing programs and projects of the Asian Development Bank and other development partners.

[b] Root cause to be addressed by the proposed Energy Efficiency Sector Development Program.

[c] Under the "energy as service" business model, a service provider offers various energy-related services in addition to supplying electricity, such as energy advisory services, asset installation, and financing and energy management solutions.

Source: Asian Development Bank.

PROCUREMENT RISK CLASSIFICATION

Ref	Component	Response
1.	How many implementing agencies are proposed to be involved in the project?	2–3
2.	Do the proposed implementing agencies have procurement experience under prior projects financed by ADB, MDBs, and/or other development partners?	☐ ADB ☐ Other MDB ☒ No
3.	Have the proposed implementing agencies experienced significant procurement and/or contractual issues, including long procurement lead times (bid invitation to contract signing) on past ADB or other externally financed projects?	☐ Yes ☒ No ☐ Not applicable
4.	Did the proposed implementing agencies require external support on past ADB-financed projects to process procurement transactions?	☐ Yes ☐ No ☒Not applicable
5.	Is advance contracting and/or retroactive financing expected?	Advance Contracting: ☒ Yes ☐ No Retroactive Financing: ☐ Yes ☒ No
6.	Are complex contracts expected?	☐ Yes ☒ No
7.	Are high value contracts (>$50 million) expected?	☐ Yes ☒ No
8.	Is the distribution of contracts under the project geographically dispersed, which could add complexity in packaging, implementation, and contract management?	☒ Yes ☐ No
9.	Are there any supply market restrictions expected in the provision of the required goods, works, and non-consulting and consulting services?	☐ Yes ☒ No
10.	Does the implementing agency have formal procedures in place for contract management?	☒ Yes ☐ No
11.	Will an e-procurement system be used on the project?	☐ Yes ☒ No
Narrative details and regional department's overall comments (Pradeep Tharakan)		
ADB will be working with new implementing agencies, and it will support them to better acquaint them with ADB processes.		
PPFD comments and concept stage procurement risk rating (Jenny Yan Yee Chu)		
Because of the new implementing agencies and the complexity of the program, there are opportunities for ADB to provide hands-on support to establish the capacities of the implementing agencies and project management office in ADB procurement processes and sustainable procurement practices, in particular throughout the strategic procurement planning phase.		

ADB = Asian Development Bank; MDB = multilateral development bank; PPFD = Procurement, Portfolio and Financial Management Department.
Source: ADB.

TECHNICAL ASSISTANCE FACILITY UTILIZATION UPDATE

1. The technical assistance (TA) facility for Southeast Asia Energy Sector Development, Investment Planning and Capacity Building was approved on 1 October 2018 in an amount of $5.40 million.[1] As of 16 August 2021, the total increase in the TA amount was $5.10 million, which resulted in a total TA amount of $10.50 million.[2] As of 16 August 2021, contract awards totaled $8.20 million, and disbursements totaled $4.65 million.

2. The scope of the TA facility will be expanded, and its financing will be increased in order to deliver the following outputs specifically for the ensuing Energy Efficiency Sector Development Program for Cambodia. The major outputs and activities are summarized in Table A4.1.

Table A4.1: Summary of Major Outputs and Activities

Outputs	Delivery Dates	Key Activities with Milestones
1. Government drafting and enacting of a portfolio of policies and regulations on energy efficiency supported	May 2022	1.1 Preparation of draft policies and regulations 1.2 Consultation workshops 1.3 Revised documents submitted to government for promulgation or enactment
2. At least two feasibility studies for priority subprojects prepared	April 2022	2.1 Surveys, site visits, and review of secondary information 2.2 Data analysis 2.3 Preparation of draft and final reports
3. Design of a pilot energy efficiency revolving fund prepared	April 2022	3.1 Draft design of a revolving fund, including the feasibility study of the revolving fund, risks assessment, and identification of alternative to the revolving fund 3.2 Consultation and finalization of the design
4. Overall technical, economic, financial and safeguards analysis for ADB investment program, including related loan documentation, developed	July 2022	3.1 Draft analysis 3.2 Fact finding mission 3.3 Final report submission and loan negotiations

ADB = Asian Development Bank.

[1] ADB. Regional: Southeast Asia Energy Sector Development, Investment Planning and Capacity Building Facility. ADB's Technical Assistance Special Fund (TASF) financed $4.0 million ($3.0 million from TASF 6 and $1.0 million from TASF-other sources), the Clean Energy Fund under the Clean Energy Financing Partnership Facility financed $1.0 million, and the Clean Technology Fund $0.4 million.

[2] ADB's TASF financed $5.0 million ($4.0 million from TASF 6 and $1.0 million from TASF-other sources), the Clean Energy Fund under the Clean Energy Financing Partnership Facility financed $3.1 million, the Clean Technology Fund $0.4 million, E-Asia Knowledge Partnership Fund $0.5 million, and the Urban Climate Change Resilience Trust Fund $1.5 million.

Source: Asian Development Bank staff estimates.

3. **Resources under the technical assistance facility.** The updated consultants' input allocation from the TA facility as of 16 August 2021 is presented in Table A4.5. This will be financed on a grant basis by the Clean Energy Fund[3] under the Clean Energy Financing Partnership Facility and administered by the Asian Development Bank. It is confirmed that (i) the TA facility has adequate resources, and (ii) the existing terms of reference for consultants are sufficient to undertake the activities required to deliver the outputs for the ensuing Energy Efficiency Sector Development Program for Cambodia.

[3] Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom.

Table A4.2: Updated Consultants' Input Allocation from the Technical Assistance Facility
(person-month)

	Item	Total	Loan[a] low	Loan[b] low	Loan[c] low	Loan[d] complex	Loan[e] low/complex	Loan[f] complex	Loan[g] complex	Loan[h] complex	Loan[i] low	Loan[j] complex
A	**International Consultants**											
	Solar energy specialist	8.0	4.0	1.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
	Electric vehicle specialist	10.5	1.5	0.0	0.0	0.0	0.0	0.0	9.0	0.0	0.0	0.0
	Transmission line specialist	10.0	3.0	0.0	5.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
	Substation specialist	6.0	0.0	0.0	4.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
	Distribution specialist	13.0	2.0	0.0	4.0	0.0	2.0	0.0	0.0	0.0	5.0	0.0
	DAS IT specialist	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
	Energy efficiency specialist	16.0	3.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	8.0
	Rural electrification specialist	2.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	GIS specialist	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Smart grid specialist	7.0	0.0	0.0	2.0	0.0	3.0	2.0	0.0	0.0	0.0	0.0
	Energy policy and regulatory specialist	7.0	0.0	1.0	0.0	0.0	5.0	0.0	0.0	1.0	0.0	0.0
	Power system planner	15.0	8.0	0.0	2.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
	Biodiversity specialist	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
	Drilling expert	6.0	0.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0	0.0
	Geothermal expert and/or geologist	13.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0
	Reservoir engineer and/or geophysicist	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
	Energy economist	16.5	5.0	0.0	0.0	1.0	3.0	0.0	0.0	1.5	3.0	3.0
	Renewable energy support	3.5	0.0	0.0	0.0	0.0	2.0	0.0	0.0	1.5	0.0	0.0
	Financial/PPP specialist	11.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	6.0
	Mechanical and/or Thermal Expert	7.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	0.0
	Financial innovation and engineering specialist	3.0	0.0	1.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
	Project financial specialist	9.0	0.0	0.0	3.0	2.0	2.0	2.0	0.0	0.0	0.0	0.0
	Project economist	9.0	4.0	0.0	3.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
	Procurement specialist	14.0	0.0	0.0	3.0	3.0	2.0	2.0	0.0	0.0	4.0	0.0
	Environmental specialist	19.0	0.0	0.0	3.0	4.0	2.0	3.0	0.0	0.0	4.0	3.0
	Social resettlement specialist	18.0	0.0	0.0	3.0	4.0	2.0	5.0	0.0	0.0	4.0	0.0
	Social development specialist	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	3.0
	Gender specialist	9.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	3.0	2.0
	Climate change specialist	4.0	0.0	0.5	0.5	0.0	0.5	0.5	0.0	0.0	2.0	0.0
	Stakeholder communications specialist	4.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	0.0
	Knowledge specialist	1.5	0.0	0.0	0.5	0.0	0.5	0.5	0.0	0.0	0.0	0.0
	Geographic project development specialist	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
	BESS design specialist	3.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0
	Smart lighting specialist	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
	Building energy retrofitting specialist	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
	Communications specialist	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
	Green bank regulation specialist	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0

	Item	Total	Loan[a] low	Loan[b] low	Loan[c] low	Loan[d] complex	Loan[e] low/complex	Loan[f] complex	Loan[g] complex	Loan[h] complex	Loan[i] low	Loan[j] complex
	Senior advisor	9.5	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	8.0
	Program coordinator	12.0	12.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Resource persons	5.5	0.0	0.5	0.5	3.5	0.5	0.5	0.0	0.0	0.0	0.0
	Subtotal A	**309.0**	**50.0**	**6.0**	**34.5**	**51.5**	**49.5**	**16.5**	**9.0**	**4.0**	**37.0**	**51.0**
B	**National Consultants**											
	Power sector specialist	10.0	3.0	1.0	4.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0
	Renewable energy specialist	9.0	4.0	1.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0
	Transmission engineer	12.0	3.0	0.0	6.0	0.0	2.0	1.0	0.0	0.0	0.0	0.0
	Distribution engineer	7.0	2.0	0.0	4.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
	Energy efficiency specialist	68.0	3.0	1.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	62.0
	Energy policy and regulatory specialist	5.0	0.0	1.0	2.0	0.0	0.0	0.0	0.0	2.0	0.0	0.0
	Power system planner	11.0	4.0	1.0	0.0	0.0	6.0	0.0	0.0	0.0	0.0	0.0
	Geothermal expert and/or geologist	13.0	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0
	Geoscientist and well targeting scientist	1.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0
	Subsurface specialist	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
	Reservoir engineer and/or geophysicist	4.0	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mechanical and/or thermal engineer	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
	Drilling expert	5.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0	0.0
	Communication specialist	13.0	0.0	0.0	0.0	7.0	0.0	0.0	0.0	0.0	0.0	6.0
	Energy economist	14.0	5.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	6.0
	Financial and/or PPP specialist	3.0	2.0	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Project financial specialist	18.0	0.0	0.0	3.0	0.0	2.0	1.0	0.0	0.0	0.0	12.0
	Project economist	8.0	4.0	0.0	3.0	0.0	1.0	0.0	0.0	0.0	0.0	0.0
	Procurement specialist	9.0	0.0	0.0	3.0	4.0	2.0	0.0	0.0	0.0	0.0	0.0
	Environmental specialist	24.0	0.0	0.0	3.0	4.0	2.0	3.0	0.0	0.0	6.0	6.0
	Social resettlement specialist	25.0	0.0	0.0	3.0	3.0	2.0	5.0	0.0	0.0	6.0	6.0
	Gender specialist	15.0	0.0	1.0	1.0	4.0	1.0	1.0	0.0	0.0	3.0	4.0
	Community development specialist	2.0	0.0	0.0	0.0	2.0	0.0	0.0	0.0	0.0	0.0	0.0
	Climate change specialist	4.0	0.0	1.0	1.0	0.0	1.0	1.0	0.0	0.0	0.0	0.0
	Legal and regulatory specialist	12.0	0.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0	0.0	9.0
	Project management consultant	10.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	10.0	0.0
	Green bank regulation specialist	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
	Stakeholder engagement specialist	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.0	0.0
	Project coordinator and/or assistant	69.0	2.0	2.0	2.0	1.0	3.0	2.0	0.0	1.0	2.0	54.0
	Energy efficiency analysts	6.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	6.0
	Resource persons	5.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0
	Subtotal B	**398.0**	**32.0**	**11.0**	**36.0**	**56.0**	**38.0**	**15.0**	**0.0**	**3.0**	**30.0**	**177.0**
	Total (A+B)	**707.0**										

BESS = battery energy storage system, DAS = distribution automation system, GIS = geographic information system, IT = information technology, PPP = public–private partnership.

[a] Support for a Sustainable Power Sector in Cambodia, ongoing as of August 2021.

[b] National Solar Park Project: Capacity Development for Increased Solar Generation (Cambodia), ongoing as of August 2021.

[c] Grid Reinforcement Project (Cambodia), ongoing as of August 2021.
[d] Geothermal Power Generation Project, ongoing as of August 2021.
[e] Ha Noi and Ho Chi Minh City Power Transmission Grid Development Sector Project (Viet Nam) and Power Transmission Investment Program Tranche 3 (Viet Nam), ongoing as of August 2021.
[f] Power Transmission Improvement Project (Myanmar) and Power Network Development Project (Myanmar), ongoing as of August 2021.
[g] Market Transformation through Introduction of Energy-Efficient Electric Vehicles Project (Philippines), financially closed on December 2019.
[h] Sustainable and Inclusive Energy Program (Indonesia), proposed as of August 2021.
[i] Accelerated Rural Electrification Project (Myanmar), approved as of December 2020.
[j] Smart and Energy Efficient City Project, Phase 1 (Viet Nam), 2022.
Source: Asian Development Bank estimates.

Table A4.3: Updated Budget Allocation from the Technical Assistance Facility
($'000)

Item	Total	Asian Development Bank[a]	Clean Energy Fund[b] under the Clean Energy Financing Partnership Facility	Clean Technology Fund[c]	Republic of Korea e-Asia and Knowledge Partnership Fund[d]	Urban Climate Change Resilience Trust Fund[e] under the Urban Financing Partnership Facility
Training, seminars, and conferences	613.0	150.0	247.4	15.6	50.0	150.0
Studies, surveys and reports	692.0	180.0	437.4	2.6	18.0	54.0
Goods (e.g., computer, printer, software)	200.0	50.0	124.1	25.9	0.0	0.0
Miscellaneous administration and support costs	372.2	115.0	110.7	26.5	30.0	90.0
Contingencies	817.4	405.8	162.1	59.1	47.6	142.8

[a] Financed by the Asian Development Bank's Technical Assistance Special Fund (TASF 6 and TASF-other sources).
[b] Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom. Administered by the Asian Development Bank.
[c] Administered by the Asian Development Bank.
[d] Administered by the Asian Development Bank.
[e] Financing partners: the Rockefeller Foundation and the governments of Switzerland and the United Kingdom. Administered by the Asian Development Bank.
Source: Asian Development Bank.

Table A4.4: Additional Consultants Estimated Input Allocation for the Energy Efficiency Sector Development Program for Cambodia to be Included in the Expanded Technical Assistance Facility

(person-month)

Item	Loan
International Consultants	
Team leader and energy efficiency specialist	6.0
Energy efficiency revolving fund in building specialist	3.0
Energy efficiency in building specialist	3.0
Energy efficiency in lighting system specialist	3.0
Environmental specialist	1.0
Social and resettlement specialist	1.0
Economic and finance specialist	3.0
Procurement specialist	2.0
Integrity specialist[a]	0.5
Subtotal A	**22.5**
National Consultants	
Deputy team leader and energy efficiency specialist	6.0
Environmental specialist	2.0
Social and resettlement specialist	2.0
Procurement specialist	4.0
Gender specialist	1.0
Subtotal B	**15.0**
Total A+B	**37.5**

[a] An integrity specialist will be engaged separately as an individual consultant directly by the Asian Development Bank. All other consultants will be engaged with a contract under a firm with the Asian Development Bank.

Source: Asian Development Bank staff estimates.

Table A4.5: Estimated costs of consulting services for the Energy Efficiency Sector Development Program for Cambodia

($)

Item	Amount[a]	Amount[a]
A. Consultants		
1. Remuneration and per diem		619,000
a. International	484,000	
b. National	135,000	
2. Out-of-pocket expenditures		81,000
a. International and local travel	25,000	
b. Studies and surveys	25,000	
c. Trainings and workshops	25,000	
3. Miscellaneous administration and support cost		25,000
B. Contingencies		25,000
Total		**750,000**

[a] Financed by the Clean Energy Fund under the Clean Energy Financing Partnership Facility. Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom. Administered by the Asian Development Bank.

Source: Asian Development Bank staff estimates.

INITIAL POVERTY AND SOCIAL ANALYSIS

Country:	Cambodia	Program Title:	Energy Efficiency Sector Development Program
Lending/Financing Modality:	Proposed Loans	Department/ Division:	Southeast Asia Department/ Energy Division

I. POVERTY IMPACT AND SOCIAL DIMENSIONS

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

The program is aligned with the Asian Development Bank (ADB) energy sector assessment, strategy, and road map, which is integrated into the country partnership strategy, 2019–2023 for Cambodia. Under Socio-Economic Policy Agenda, 2018–2023, the government recognizes the importance of developing the energy sector to increase competitiveness, ensure sustained economic growth and thereby continue to reduce poverty.[a] Relevant key energy policy objectives include (i) expanding supply coverage, (ii) enhancing power reliability by constructing additional sub-stations closer to economic growth centers, and (iii) further reducing electricity tariffs. The program will also support Cambodia's greenhouse gas emission reduction goals, because energy efficiency interventions feature prominently in Cambodia's nationally determined contributions to the United Nations Framework Convention on Climate Change.[b] Lastly, energy efficiency will create new job opportunities in Cambodia.

B. Poverty Targeting

☒General intervention ☐Individual or household (TI-H) ☐Geographic (TI-G) ☐Non-income MDGs (TI-M1, M2, etc.)

Strengthening policy and regulatory framework for energy efficiency and enhancement of energy savings are expected to considerably improve the efficiency of power use. Energy savings in public buildings and through the national public lighting program will result in emission reductions of carbon dioxide, which helps reduce drivers of climate change that might cause significant impacts on poor households. Furthermore, energy efficiency will help alleviate the poverty of low-income families by lowering their energy bills and increasing their share of disposable income.

C. Poverty and Social Analysis

1. Key issues and potential beneficiaries.

In 2019, Cambodia had a total population of 16,486,542.[c] As a result of Cambodia's sustained high growth, the percentages of Cambodians under the national poverty line fell from 47.8% in 2007 to 12.9% in 2018.[d] The price of electricity is $0.149 per kilowatt-hour for households, higher than those of other countries in Asia. Spending on electricity accounts for 3% of average monthly household expenditures. About 9.4% of grid-connected households cannot afford the electricity tariff. Of urban non-electrified households, 69.6% cite high costs as the main reason for not having a grid connection, while 47.8% of rural households cite distance from the grid as the main reason.[e] Potential beneficiaries of the program are poor households, non-poor households, enterprises who are owners of public offices, medical facilities, and education institutes in the whole country, and those will benefit from the energy efficiency revolving fund.

2. Impact channels and expected systemic changes.

The program aims to encourage energy efficiency through policy reforms and conducting interventions to improve energy savings. Output 2 will include interventions that lead to the adoption of more efficient ventilation and air-conditioning systems and make use of more efficient lighting and electrical equipment in public buildings. These interventions could help reduce electricity costs of public enterprises in the longer term and lower electricity bills of low-income households. Under output 3, a total of 300,000 light-emitting diode lamps will be installed across municipalities in areas not served yet by public lighting systems, which would result in the greenhouse gas emission reductions of 100,525 total carbon dioxide. Hence, is likely that poor households would cope with less risk of climate change. Furthermore, local authorities could take the savings in electricity bills (estimated at $19.8 million) and invest in other services such as sanitation, schools, or public health.

3. Focus of (and resources allocated in) the transaction TA or due diligence.

The transaction technical assistance (TA) will improve the program design to ensure that poor and vulnerable households will benefit from the program. The TA will include international and national social and resettlement specialists to prepare the summary poverty reduction and social strategy, and social safeguards documents in accordance with ADB's Safeguard Policy Statement (2009) and relevant government rules and regulations.

4. Specific analysis for policy-based lending.

Not applicable.

II. GENDER AND DEVELOPMENT

1. What are the key gender issues in the sector and/or subsector that are likely to be relevant to this project or program?

While men and women both benefit from access to energy, women often play a key role in managing household electricity use and are keenly aware of the cost of electricity and ways to conserve it. Access to energy enables women to spend less time on household activities such as cooking, and to spend more time on leisure and income

generating opportunities. Moreover, women are underrepresented in the energy sector, particularly at senior positions in government energy agencies as well as decision makers. At this stage, these issues are expected to be addressed in output 1 of the project, and a Gender Specialist (national) will be engaged to assess and identify further gender mainstreaming in the policy and regulatory framework for energy efficiency.

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

The objectives of the program in establishing the policy and regulatory framework for energy efficiency (project component 1) and the project component 2, would benefit the men and women equally, while the output of project component 3 in providing access to public lighting would improve women's public safety. Specifically, the project component 1 would seek to mainstream gender in the policy and regulatory framework for energy efficiency. The due diligence in the project preparatory work will include a gender assessment of the project component 1. to determine whether the project's SGE rating can be justified.

3. Could the proposed project have an adverse impact on women and/or girls or widen gender inequality?
☐ Yes ☒ No

There is no significant risk identified on women or girls. The program has positive impacts on the whole population and will not widen gender inequality.

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

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

The main stakeholders of the program include the Ministry of Mines and Energy, Electricity Authority of Cambodia, local authorities of municipalities in the country, beneficiaries including the whole population of the project municipalities, public offices, medical facilities, education institutes, local banks that have access to low-interest loans from the energy efficiency revolving fund, and small and medium industries. Information sharing and consultations through stakeholder workshops and community mobilization will take place during pre-feasibility and detailed engineering design.

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?

Priority and special care shall be given to the poor households identified through a socio-economic survey. The proposed program will need to ensure that the Safeguard Policy Statement involuntary safeguards objectives are met and that poor and marginalized groups are meaningfully consulted and covered under program entitlements if involuntary resettlement is required for energy efficiency projects. 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 (CSOs) in the project area? What is the level of civil society organization participation in the project design?
☒ Information generation and sharing (M) ☒ Consultation (L) ☐ Collaboration (N/A) ☐ Partnership (N/A)
Stakeholder CSOs could potentially contribute particularly to output 3 through community consultation for streetlighting. Because the social benefits of the program are primarily indirect, the program will ensure that information flows are fully transparent and will seek CSOs' engagement and advice as appropriate.

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

There are no significant issues during program design identified for which participation of the poor and excluded is important.

IV. SOCIAL SAFEGUARDS

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 program mainly focuses on policy reforms and includes interventions in public buildings as well as replacement of public lighting devices. As a result, involuntary land acquisition is not anticipated.

2. What action plan is required to address involuntary resettlement as part of the transaction TA or due diligence process?
☐ Resettlement plan ☐ Resettlement framework ☐ Social impact matrix
☐ Environmental and social management system arrangement ☒ 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
The impact has not been identified in this stage, but it is unlikely that there will be negative impacts. In general, the population in Cambodia is fairly homogenous with distinct ethnic groups likely not living within the program areas.
2. Does it affect the territories or natural and cultural resources indigenous peoples own, use, occupy, or claim, as their ancestral domain? ☐ Yes ☒ No
The program does not affect such territories or resources because it mainly focuses on policy reforms and includes interventions in public buildings and replacement of public lighting devices in areas where public lights already existed.
3. Will the project require broad community support of affected indigenous communities? ☐ Yes ☒ No
The program provides assistance for policy reforms and interventions in public buildings as well as replacement of public lighting devices. Indigenous people communities will not be impacted by the program.
4. What action plan is required to address risks to indigenous peoples as part of the transaction TA 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 program environment plan and civil works contracts will require compliance with core labor standards during construction. The program will extend its support to deliver longer-term benefits through hiring and training local professionals during the construction and operation phases.

VI. TRANSACTION TA OR DUE DILIGENCE RESOURCE REQUIREMENT

1. Do the terms of reference for the transaction TA (or other due diligence) contain key information needed to be gathered during transaction TA 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
TA consultants will help collect necessary information to confirm categorization, address any potential risks, and identify opportunities to maximize benefits to the poor and women.

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 transaction TA or due diligence?
International and national environment specialists will undertake an initial environmental examination as part of the feasibility study. International and national social development and/or safeguards specialists will conduct involuntary resettlement and indigenous peoples due diligence and prepare required social safeguards documents.

[a] Royal Government of Cambodia. 2018. *Rectangular Strategy for Growth, Employment, Equity and Efficiency: Building a Foundation Toward Realizing the Cambodia Vision 2050 of the Royal Government of Cambodia of the Sixth Legislature of the National Assembly – Phase IV*. Phnom Penh.

[b] This pertains to the draft version of Cambodia's updated nationally determined contributions, which was formally submitted to the United Nations Framework Convention on Climate Change in December 2020.

[c] World Bank. Population, total – Cambodia (accessed 23 October 2020).

[d] Cambodia uses an absolute poverty line definition. In 2013, the Ministry of Planning introduced new poverty lines. The revisions to the poverty lines include (i) a food poverty line based on 2,200 calories per person per day (up from 2,100); and (ii) a non-food component that is estimated separately for Phnom Penh, other urban, and rural areas. Cambodia Socioeconomic Survey 2014 identified those who earned less than $33 per person per month as living under the poverty line for other urban area. ADB. Poverty Data: Cambodia (accessed 23 October 2020).

[e] World Bank. 2018. *Energy Access Diagnostic Report Based on the Multi-Tier Framework*. Washington, DC.

Source: Asian Development Bank.