

Project Administration Manual

Project Number: 49216-002
Loan and Grant Numbers: {LXXXX; LXXXX}
June 2016

Democratic Socialist Republic of Sri Lanka:
Supporting Electricity Supply Reliability Improvement
Project

Abbreviations

ADB	=	Asian Development Bank
CEB	=	Ceylon Electricity Board
CEF	=	Clean Energy Fund
CEFPF	=	Clean Energy Financing Partnership Facility
EMP	=	environmental management plan
GRC	=	grievance redress mechanism
ICB	=	international competitive bidding
IEE	=	initial environmental examination
JFPR	=	Japan Fund for Poverty Reduction
km	=	kilometer
kV	=	kilovolt
LECO	=	Lanka Electricity Company Limited
MVA _r	=	megavolt-ampere reactive
MW	=	megawatt
NCB	=	national competitive bidding
NWSDB	=	National Water Supply and Drainage Board
OCR	=	ordinary capital resources
PAM	=	project administration manual
PMU	=	project management unit
SOE	=	statement of expenditure
SEA	=	Sustainable Energy Authority

CONTENTS

I.	PROJECT DESCRIPTION	1
II.	IMPLEMENTATION PLANS	4
	A. Project Readiness Activities	4
	B. Overall Project Implementation Plan	5
III.	PROJECT MANAGEMENT ARRANGEMENTS	6
	A. Project Implementation Organizations: Roles and Responsibilities	6
	B. Key Persons Involved in Implementation	7
	C. Project Organization Structure	7
IV.	COSTS AND FINANCING	9
	A. Cost Estimates Preparation and Revisions	10
	B. Key Assumptions	10
	C. Detailed Cost Estimates by Expenditure Category	11
	D. Allocation and Withdrawal of Loan Proceeds	13
	E. Detailed Cost Estimates by Financier	15
	F. Detailed Cost Estimates by Outputs	16
	G. Detailed Cost Estimates by Year	17
	H. Contract and Disbursement S-curve	18
	I. Fund Flow Diagram	18
V.	FINANCIAL MANAGEMENT	20
	A. Financial Management Assessment	20
	B. Disbursement	24
	C. Accounting	25
	D. Auditing and Public Disclosure	25
VI.	PROCUREMENT AND CONSULTING SERVICES	27
	A. Advance Contracting and Retroactive Financing	27
	B. Procurement of Goods, Works and Consulting Services	27
	C. Procurement Plan	28
	D. Consultant's Terms of Reference	34
VII.	SAFEGUARDS	35
VIII.	GENDER AND SOCIAL DIMENSIONS	38
IX.	PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION	41
	A. Project Design and Monitoring Framework	41
	B. Monitoring	44
	C. Evaluation	45
	D. Reporting	45
	E. Stakeholder Communication Strategy	45
X.	ANTICORRUPTION POLICY	46
XI.	ACCOUNTABILITY MECHANISM	46
XII.	RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL	47

Project Administration Manual Purpose and Process

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

The Ministry of Power and Renewable Energy, Ceylon Electricity Board, Lanka Electricity Company Limited, National Water Supply and Drainage Board and Sustainable Energy Authority of Sri Lanka are wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the government, borrower and ADB, and in accordance with the policies and procedures of the government and ADB. ADB staff is responsible for supporting implementation including compliance by Ministry of Power and Renewable Energy, Ceylon Electricity Board, Lanka Electricity Company Limited, National Water Supply and Drainage Board and Sustainable Energy Authority of Sri Lanka of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations the government, borrower and ADB shall agree to the PAM and ensure consistency with the loan and grant agreements. Such agreement shall be reflected in the minutes of the loan negotiations. In the event of any discrepancy or contradiction between the PAM and the loan and grant agreements, the provisions of the loan and grant agreements shall prevail.

After ADB Board approval of the project's report and recommendations of the President (RRP), changes in implementation arrangements are subject to agreement and approval pursuant to relevant government and ADB administrative procedures (including the Project Administration Instructions) and upon such approval they will be subsequently incorporated in the PAM.

I. PROJECT DESCRIPTION

A. Rationale

1. **Development problem.** Sri Lanka has improved its energy sector performance and also achieved a national electrification ratio of 98% (2014) compared with 29% in 1990. The remaining 2% of electrification is the most difficult to accomplish and is mainly in underdeveloped areas and small isolated islands around the country. Although some of the provinces have achieved 100% electrification, the conflict affected Northern and Eastern provinces have only 92% and 94% electrification, and Uva and North Central provinces achieved 95% with several districts falling well behind this level.¹ Further improvement of 33 kilovolt (kV) medium voltage network is needed to ensure system reliability and expand power supply into these rural areas, where many of the poor households remain unconnected and those connected have poor quality of electricity supply. There are several small isolated islands with population ranging from 1,800 to 4,500 people that cannot be provided with electricity through extension of the grid. These islands are currently supplied by expensive electricity generated by inefficient, old diesel generation sets that provide electricity for limited hours during the day with electrification ratio ranging from 38% to 60%.

2. The Government of Sri Lanka aims to ensure sustainable development of energy resources by improving the power supply systems to provide access to electricity services to the entire population. Sri Lanka has a national investment program including sector investments that are based on the National Energy Policy and Strategies (NEPS).² The NEPS includes a sector roadmap, a long-term investment plan, and appropriate policy and reform measures. The country's current installed generation capacity of 3,932 megawatt (MW) produces 12,357 gigawatt-hours (GWh) of electricity (2014)³ adequately covering the current demand. There is sufficient generation capacity to expand electricity supply further. The government intends to provide electricity to the population through the grid in the main island and mini-grid systems on small isolated islands. The project will contribute to the government's goal of expanding access to electricity and developing clean energy.

3. **Project's value addition.** The project will directly benefit the development of lagging areas. The project will cover 106 rural electrification schemes⁴ and 2,372 kilometers (km) of low voltage line extensions. Innovative hybrid mini-grids, consisting of wind-solar and efficient diesel generation systems coupled with energy storage (lithium-ion batteries), will be implemented in the small isolated islands.⁵ As a result, the project will help to ensure inclusiveness and access to electricity by all population. In total, it is expected that the project will provide electricity to about 35,710 rural households,⁶ including the conflict affected Northern and Eastern provinces as well as Uva and North Central provinces where the current electrification level is lower than

¹ The 2015 electrification rate in Mannar district is 85%, Kilinochchi district is 75%, and Mulathivu district is 80%, all in the Northern province. The 2015 electrification rate in Baticaloa district of the Eastern province is 89%.

² Government of Sri Lanka. 2008. *National Energy Policy and Strategies of Sri Lanka*. Colombo.

³ Ceylon Electricity Board. 2015. *Statistical Digest 2014*. Colombo.

⁴ A rural electrification scheme consists of a dedicated medium voltage (33 kV) line connected to a distribution substation and a relevant low voltage distribution network to supply electricity to customers in a specific rural area around the substation.

⁵ A pilot hybrid mini-grid system subproject is currently being implemented on Elevaithivu Island under ADB's regional technical assistance TA 7485: Effective Deployment of Distributed Small Wind Power Systems in Asian Rural Areas. The pilot subproject helps Ceylon Electricity Board, the implementing agency, to get relevant exposure and build capacity for implementing similar innovative sub-projects under the proposed loan.

⁶ In addition, 2,871 rural households will benefit from implementation of the hybrid mini-grid systems in small isolated islands.

in other parts of the country. The improvement of the medium voltage network will enhance quality and reliability of electricity supply to more than 493,000 consumers. The project is consistent with the Asian Development Bank's (ADB) interim country partnership strategy for Sri Lanka.⁷ It builds on previous ADB interventions focused on supporting transmission and distribution investments to expand access to clean and reliable electricity, and renewable energy development.⁸

B. Impact and Outcome

4. The impact of the project will be increased access to clean, reliable, and affordable power supply aligned with the National Energy Policy and Strategies of Sri Lanka (footnote 5). The outcome will be enhanced electricity supply, and distribution system efficiency and reliability.

C. Outputs

5. The project will have the following outputs:

- (i) **Renewable energy systems established.** This involves (a) establishing hybrid renewable energy systems, consisting of wind, solar, efficient diesel generators, and battery storage; (b) support for productive energy use for small isolated island and rural communities on three islands in the Jaffna area of the Northern Province (Analativu, Delft, and Nainativu); and (c) a renewable energy micro-grid system in the Western Province.
- (ii) **Reliability of the medium voltage network improved.** This involves (a) construction of 270.5 km of 33 kV tower lines, 80.0 km of 33 kV aerial bundled conductor lines, and 13 of 33 kV gantries; and (b) installation of 175 of 33 kV load-break switches and 25 of 33 kV auto reclosers.
- (iii) **Rural electrification network extended and distribution performance monitoring improved.** This involves (a) construction of 1,979 km of low voltage line extensions; (b) 106 rural electrification schemes, comprising 106 of 100 kilovolt-ampere distribution substations, 198 km of dedicated 33 kV lines, and

⁷ ADB. 2015. *Interim Country Partnership Strategy: Sri Lanka, 2015–2016*. Manila.

⁸ ADB financed strengthening transmission infrastructure for hydropower evacuation from the Central Province to load centers under ADB. 2009. *Report and Recommendation of the President to the Board of Directors: Proposed Loans, Grant, Administration of Grant, and Technical Assistance Grant to the Democratic Socialist Republic of Sri Lanka for the Clean Energy and Access Improvement Project*. Manila; and ADB. 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loans and Administration of Technical Assistance Grant to the Democratic Socialist Republic of Sri Lanka for the Sustainable Power Sector Support Project*. Manila. ADB. 2012. *Report and Recommendation of the President to the Board of Directors: Proposed Loans, Technical Assistance Grant, and Administration of Grant to the Democratic Socialist Republic of Sri Lanka for the Clean Energy and Network Efficiency Improvement Project*. Manila funds transmission and medium voltage infrastructure, including for the evacuation of power from a proposed wind park, and to pilot solar rooftop power generation subprojects. Tranche 1 of ADB. 2014. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranches Financing Facility to the Democratic Socialist Republic of Sri Lanka for the Green Power Development and Energy Efficiency Improvement Investment Program*. Manila finances hydropower development, transmission and medium voltage network improvements, and energy efficiency through innovative demand-side management pilot subprojects. Under the project preparatory TA for Preparing the Clean Energy and Network Efficiency Improvement Project (TA 7837-SRI), ADB supported actual wind measurements and wind resource assessment at the proposed 375 megawatt wind park site at Mannar, Northern Province. A system stability study and a country renewable energy master plan, along with a master plan and a business model of the proposed wind parks, were prepared with the support of the TA for Capacity Building for Clean Power Development (TA 8167-SRI).

393 km of low voltage lines to connect rural households to the grid; and (c) installation of 25,000 programmable distribution substation meters with a remote meter-reading facility.

- (iv) **Reactive power management in the transmission system improved.** This includes installation of (a) 100 megavolt-ampere reactive breaker-switched capacitors at the 132 kV bus bar of the existing Pannipitiya grid substation; and (b) a +100/–50 megavolt-ampere reactive static var compensator at the 220 kV bus bar of the existing Biyagama grid substation for voltage control during dynamic conditions.

6. The renewable energy interventions include an innovative renewable energy-based micro-grid pilot subproject to be financed by the investment grant of \$1.8 million equivalent from the Clean Energy Fund (CEF)⁹ under the Clean Energy Financing Partnership Facility (CEFPF), to be administered by ADB. The micro-grid concept will be implemented for the first time in Sri Lanka. It will support an innovative approach for optimization of cost-effective operation of loads and resources, and for the reduction of burden on the national grid. The pilot subproject's scope includes (i) the preparation of a feasibility study and detailed design of the pilot subproject; (ii) capacity building in the design and implementation of micro-grids in the distribution system; and (iii) establishing an alternate current–direct current 300-kilowatt micro-grid system, including solar photovoltaic power generation and battery storage, with the capability to supply loads from both alternate current and direct current bus bars. The pilot subproject's results will contribute to the development of interconnection standards and operation guidelines for the renewable energy micro-grid to facilitate replication in the future.

7. Additional support for ensuring the sustainability of the hybrid renewable energy systems in the small isolated islands will be provided through grant-financed activities for \$2 million equivalent from the Japan Fund for Poverty Reduction (JFPR), to be administered by ADB. This aims to improve livelihoods in local communities, including women, through (i) training in the safe use of electricity equipment; (ii) training in the productive use of income opportunities created as a result of access to electricity; (iii) increasing employment in local communities to work as a maintenance crew for simple and routine repairs, as well as operation and maintenance of hybrid renewable energy systems and other facilities; and (iv) developing additional infrastructure (i.e., a small seawater desalination plant, small water storage tanks, an ice-making factory, refrigeration facilities, and public street lighting).¹⁰

⁹ Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom.

¹⁰ Productive Energy Use for Small Isolated Island and Rural Communities (accessible from the list of linked documents in Appendix 2).

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 1: Project Readiness Activities

Indicative Activities	Months (2015 and 2016)												Responsible Unit
	N	D	J	F	M	A	M	J	J	A	S		
Advance contracting actions	X												CEB
Retroactive financing actions							X						CEB
Establish project implementation arrangements	X												MPRE/CEB
ADB Board approval									X				ADB
Loan signing										X			ADB/MOF/CEB
Government legal opinion provided											X		MOF/CEB
Government budget inclusion										X			MOF/MPRE/CEB
Loan effectiveness											X		MOF/CEB/ADB

ADB = Asian Development Bank, CEB = Ceylon Electricity Board, MOF = Ministry of Finance, MPRE = Ministry of Power and Renewable Energy.

Source: Asian Development Bank estimates.

B. Overall Project Implementation Plan

Table 2: Implementation Schedule

Description	2015		2016				2017				2018				2019				2020				2021			
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Project Formulation																										
Loan Preparation and Signing																										
Loan Effectiveness																										
Implementation																										
Output 1: Renewable Energy Systems Established																										
Tendering and Award																										
Preparatory works and Mobilization																										
Civil works, supply and erection of equipments																										
Testing and Commissioning																										
Output 2: Reliability of the Medium Voltage Network Improved																										
Tendering and Award																										
Preparatory works and Mobilization																										
Civil works, supply and erection of Equipments																										
Testing and Commissioning																										
Output 3: Rural Electrification Network Extended and Distribution Performance Monitoring Improved																										
Tendering and Award																										
Preparatory works and Mobilization																										
Civil works, supply and erection of equipments																										
Testing and Commissioning																										
Output 4: Reactive Power Management in the Transmission System Improved																										
Tendering and Award																										
Preparatory works and Mobilization																										
Civil works, supply and erection of Equipments																										
Testing and Commissioning																										
Management Activities																										
Implementation of Gender Action Plan activities																										
Procurement Plan Activities																										
Reviews																										
Project Completion Report																										

Source: Asian Development Bank

Signing and Effectiveness

Effectivity for the Entire Component

Effectivity for the Specific Activity

III. PROJECT MANAGEMENT ARRANGEMENTS

A. Project Implementation Organizations: Roles and Responsibilities

Table 3: Project Implementation Organizations: Roles and Responsibilities

Project Implementation Organizations	Management Roles and Responsibilities
LOAN	
Executing and Implementing Agency: Ceylon Electricity Board	<ul style="list-style-type: none"> ➤ Provision of counterpart staff, operational support and budget for project activities. ➤ Efficient and effective implementation of activities under the components. ➤ Quality assurance of project outputs. ➤ Provision of various reports to ADB. ➤ Monitoring and evaluation of project activities and outputs including periodic review. ➤ Dissemination of project activities and outputs.
GRANTS	
Executing Agency: Ministry of Power and Renewable Energy	<ul style="list-style-type: none"> ➤ Provision of counterpart staff, operational support and budget for project activities. ➤ Monitoring and evaluation of project activities and outputs including periodic review. ➤ Dissemination of project activities and outputs.
Implementing Agency for CEF Grant: Lanka Electricity Company Limited Implementing Agencies for JFPR Grant and GAP: Sustainable Energy Authority National Water Supply and Drainage Board	<ul style="list-style-type: none"> ➤ Provision of counterpart staff. ➤ Efficient and effective implementation of activities under the components. ➤ Quality assurance of project outputs. ➤ Provide various reports to ADB.
LOAN AND GRANTS	
Project Steering Committee	<ul style="list-style-type: none"> ➤ Will be chaired by the Secretary, Ministry of Power and Renewable Energy. Will include representatives from the Ministry of Finance (National Budget Department, and Treasury Operations Department), Ministry of National Policies and Economic Affairs (External Resources Department, Department of Project Management and Monitoring, and Department of National Planning), Ministry of Power and Renewable Energy, Public Utilities Commission, Ceylon Electricity Board, Lanka Electricity Company Limited, National Water Supply and Drainage Board and Sustainable Energy Authority.
Auditor General Department	<ul style="list-style-type: none"> ➤ Will undertake project financial statement audits.
Project Management Units (set up by CEB, LECO, SEA, and NWSDB)	<ul style="list-style-type: none"> ➤ Will be responsible for administration of imprest accounts, submission of withdrawal applications, retention of supporting documents, and any reporting requirements.
Contractors	<ul style="list-style-type: none"> ➤ Will undertake actual implementation of contracts for equipment, civil works and services.
ADB	<ul style="list-style-type: none"> ➤ Will undertake project reviews and facilitate implementation.

ADB = Asian Development Bank, CEB = Ceylon Electricity Board, CEF = Clean Energy Fund, GAP = gender action plan, JFPR = Japan Fund for Poverty Reduction, LECO = Lanka Electricity Company Limited, NWSDB = National Water Supply and Drainage Board, SEA = Sustainable Energy Authority.

Source: Asian Development Bank.

B. Key Persons Involved in Implementation

Executing Agencies

For LOAN: Ceylon Electricity Board	Mr. M. C. Wickramasekara General Manager Telephone: +94 11 2320953 Email address: gm@ceb.lk Office Address: 50, Sir Chittampalam A. Gardiner Mw, Colombo 02, Sri Lanka
For GRANTS: Ministry of Power and Renewable Energy	Dr. B. M. S. Batagoda Secretary Telephone : +94 11 2 370130 Email address : secretary@powermin.gov.lk Office Address: 72, Ananada Kumaraswamy Mawatha, Colombo 07, Sri Lanka

Asian Development Bank

Energy Division, South Asia Department	Mr. Anthony Jude Director Telephone No. : (632) 632 6301 Email address: ajude@adb.org
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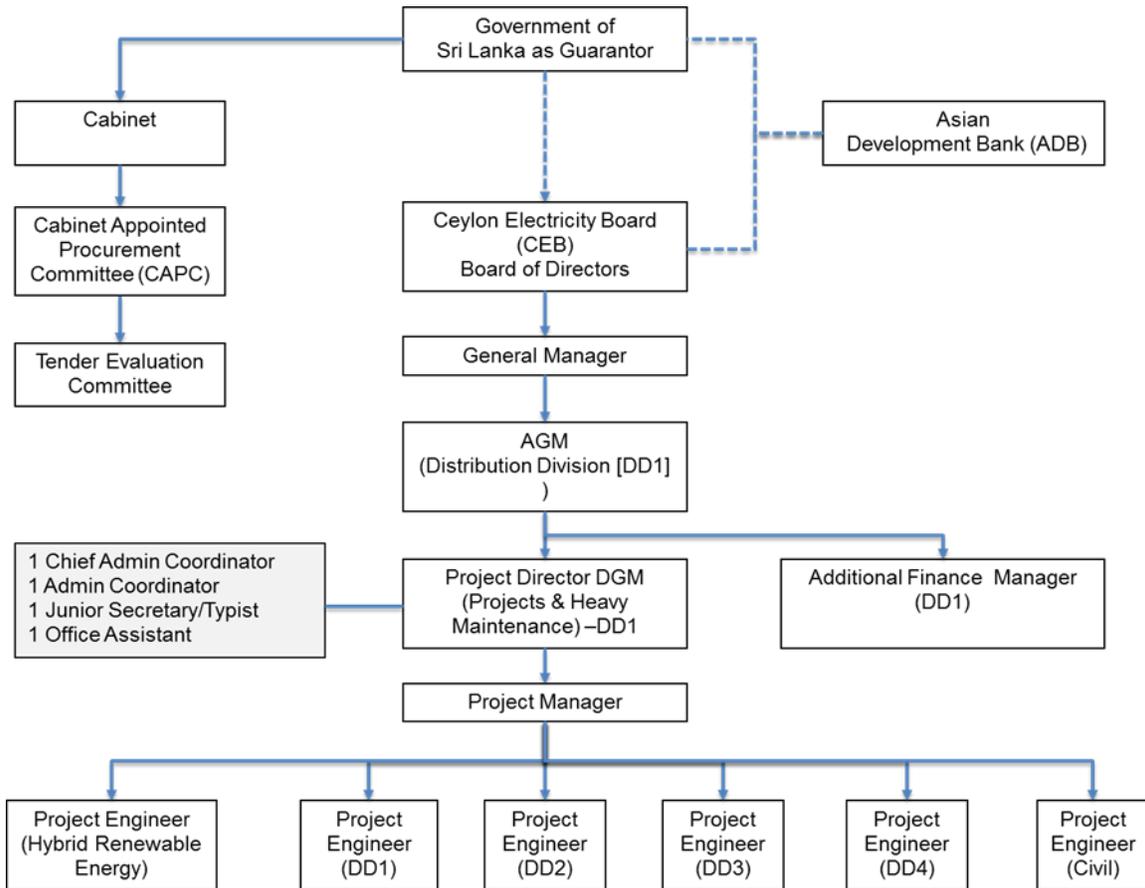
Mission Leader	Mr. Mukhtor Khamudkhanov Principal Energy Specialist Telephone No. : (632) 632 5387 Email address: mkhamudkhanov@adb.org
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C. Project Organization Structure

8. Ceylon Electricity Board (CEB) will be the executing and implementing agency for the components to be financed by the loan. The Ministry of Power and Renewable Energy (MPRE) will be the executing agency for the two grant subcomponents. The Lanka Electricity Company Limited (LECO) will be the implementing agency for the micro-grid pilot system, while Sustainable Energy Authority (SEA) and National Water Supply and Drainage Board (NWSDB) will be the implementing agencies for the grant subcomponent for productive energy use for small isolated island and rural communities in three islands in the Jaffna area of the Northern Province (Analativu, Delft and Nainativu). For the latter subcomponent, NWSDB will be specifically responsible for the development of additional infrastructure consisting of a water desalination plant, an ice-making factory, and small water storage tanks.

9. A steering committee, chaired by the MPRE secretary, will guide CEB, LECO, SEA and NWSDB, and review progress and results. CEB, LECO, SEA and NWSDB will set up project management units. The units will oversee procurement, disbursement, financial management and accounting, quality assurance, social, and environmental issues; and will coordinate with the procurement committee, appointed by the cabinet of MPRE, depending on the contract size. Full-time managers will supervise each project component under the project.

Figure 1. Project Implementation Structure



AGM = Additional General Manager, DGM = Deputy General Manager.

Note: The project implementation structure reflects arrangements for loan financed components.

Sources: Asian Development Bank and Ceylon Electricity Board.

IV. COSTS AND FINANCING

10. The project is estimated to cost \$164 million. The cost estimate is inclusive of taxes, duties, interest and other charges on the loan during construction. To finance the project, the government requested (i) a \$115 million loan from ADB's ordinary capital resources (OCR) to be provided to CEB under the sovereign guarantee, (ii) a grant not exceeding the equivalent of \$1.8 million from the CEF under the CEFPF for the renewable energy micro-grid pilot, and (iii) a grant not exceeding the equivalent of \$2 million from JFPR for productive energy use for small isolated island and rural communities (JFPR grant), both grants to be administered by ADB.

11. The OCR loan will have a 25-year term, including a grace period of 5 years, a straight-line repayment method, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility,¹¹ a commitment charge of 0.15% per year, the interest during construction to be capitalized in the loan, and such other terms and conditions set forth in the draft loan agreement. The loan will cover the expenses of turnkey contracts, equipment, a portion of physical and price contingencies, and interest during construction. The CEB has provided ADB with (i) the reasons for its decision to borrow under ADB's London interbank offered rate-based lending facility based on these terms and conditions, and (ii) an undertaking that these choices were its own independent decisions and not made in reliance on any communications or advice from ADB. The government and CEB will finance taxes and duties. CEB will also finance a portion of contingencies; costs of land acquisition, environmental and social mitigation, and other incremental costs; and civil works for the rural electrification and distribution performance monitoring component.

12. The loan will finance four components: (i) three hybrid renewable energy mini-grids in isolated islands Analaithivu, Delft, and Nainativu; (ii) reliability improvement of the medium voltage network; (iii) rural electrification and distribution performance monitoring; and (iv) reactive power management in the transmission system.

13. In addition to the loan, LECO has requested for a grant of \$1.8 million from the CEF under the CEFPF for a renewable energy based micro-grid pilot subproject, and SEA and NWSDB requested for a grant of \$2 million from the JFPR for productive energy use in small isolated islands and rural communities, specifically in the islands where hybrid renewable energy systems will be established. These subprojects are bundled together with the three hybrid renewable energy systems in small isolated islands of Analaithivu, Delft, and Nainativu.

14. The investment plan and financing plan are summarized in Table 4 and Table 5, respectively.

¹¹ The interest includes a maturity premium of 10 basis points payable to ADB since the OCR loan has an average loan maturity of 15.25 years based on the above loan terms and the CEB's choice of repayment option and dates.

Table 4: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Renewable energy systems	9.9
2. Reliability improvement of medium voltage networks	51.5
3. Rural electrification and distribution performance monitoring	49.9
4. Reactive power management	28.0
Subtotal (A)	139.3
B. Contingencies^c	18.1
C. Financing Charges During Implementation^d	6.6
Total (A+B+C)	164.0

^a In the fourth quarter 2015 prices.

^b Includes incremental (e.g., land, environmental and social mitigation) cost of \$1.7 million to be financed by CEB. Also includes taxes and duties of \$25.8 million to be financed from government and CEB resources.

^c Physical contingencies computed at 5% of base cost. Price contingencies computed using ADB's forecasts of international and domestic inflation. Includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

^d For the ordinary capital resources (OCR) components, interest during implementation is computed at the 5-year swap rate for the London interbank offered rate for US dollar as at January 2016 (1.72%) plus an effective contractual spread of 50 basis points and a maturity premium of 10 basis points. Commitment charges for an OCR loan are computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: Ceylon Electricity Board and Asian Development Bank estimates.

Table 5: Financing Plan
(\$ million)

Source	Amount (\$ million)	Share of Total (%)
A. Asian Development Bank		
Ordinary capital resources loan	115.0	70.1
Clean Energy Fund under the Clean Energy Financing Partnership Facility grant ^a	1.8	1.1
Japan Fund for Poverty Reduction grant ^b	2.0	1.2
Subtotal (A)	118.8	72.4
B. Government and Ceylon Electricity Board	45.2	27.6
Total (A+B)	164.0	100.0

^a Financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom. Administered by the Asian Development Bank.

^b Administered by the Asian Development Bank

Source: Ceylon Electricity Board and Asian Development Bank estimates.

A. Cost Estimates Preparation and Revisions

15. Cost estimations provided by the government in project proposals were examined and verified against prevailing market prices and past procurement records, and were used in preparing cost estimates for loan approval. These cost estimates are based on 2015 fourth quarter prices.

B. Key Assumptions

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

- (i) Exchange rate: SLR 144.00 = \$1.00 (as of 13 November 2015).
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 6: Escalation Rates for Price Contingency Calculation*

Item	2016	2017	2018	2019	2020	Average
Foreign rate of price inflation	1.5%	1.4%	1.5%	1.5%	1.5%	1.5%
Domestic rate of price inflation	6.5%	5.2%	5.2%	5.2%	5.2%	5.5%

* Inflation rates of 2018 were assumed to continue throughout 2019 and 2020.

Sources: International Cost Escalation Factors 2014–2018, ADB; Domestic Cost Escalation Factors, 2015–2018, South Asia, ADB.

C. Detailed Cost Estimates by Expenditure Category

- 17. Table 7 provides a detailed cost estimate by expenditure category.

Table 7: Summary Cost Estimates by Expenditure Category

Item	SLRs Million			\$ million			% of Total Base Cost
	Foreign Exchange	Local Currency	Total Cost	Foreign Exchange	Local Currency	Total Cost	
A. Investment Costs^a							
1. Turnkey contract	5,301.40	5,983.10	11,284.50	36.80	41.50	78.40	56.0%
2. Civil works and erection	0.00	1,527.30	1,527.30	0.00	10.60	10.60	8.0%
3. Mechanical and equipment	2,427.80	4,365.70	6,793.50	16.90	30.30	47.20	34.0%
4. Consultants							
a. Project management, design and supervision	32.40	35.80	68.20	0.20	0.20	0.40	0.0%
Subtotal (A)	7,761.60	11,912.00	19,673.50	53.90	82.70	136.60	98.0%
B. Other Costs^a							
1. Environment and social mitigation	0.00	248.90	248.90	0.00	1.70	1.70	1.0%
2. Training and Workshops	0.00	40.30	40.30	0.00	0.30	0.30	0.0%
3. Audit	0.00	4.80	4.80	0.00	0.00	0.00	0.0%
4. Project Overheads	0.00	84.90	84.90	0.00	0.60	0.60	0.0%
5. Communication	0.00	8.10	8.10	0.00	0.10	0.10	0.0%
Subtotal (B)	0.00	387.00	387.00	0.00	2.70	2.70	2.0%
Total Base Cost	7,761.60	12,299.00	20,060.60	53.90	85.40	139.30	100.0%
C. Contingencies							
1. Physical ^b	524.00	479.00	1,003.00	3.60	3.30	7.00	5.0%
2. Price ^c	542.30	1,319.90	1,862.20	3.30	7.80	11.20	8.0%
Subtotal (C)	1,066.30	1,798.90	2,865.10	7.00	11.20	18.10	13.0%
D. Financing Charges During Implementation							
1. Interest during implementation ^d	1,066.60	0.00	1,066.60	6.30	0.00	6.30	5.0%
2. Commitment charges	44.70	0.00	44.70	0.30	0.00	0.30	0.0%
Subtotal (D)	1,111.40	0.00	1,111.40	6.60	0.00	6.60	5.0%
Total Project Cost (A+B+C+D)	9,939.20	14,097.90	24,037.10	67.50	96.50	164.00	118.0%

SLR = Sri Lanka Rupees.

a In 2015 fourth quarter prices. Taxes and duties applicable for foreign and local supplies, a sum equivalent to SLRs3,708.9 million (\$25.8 million), included in the local currency component.

b Computed at 5% of base costs.

c Computed using ADB's forecasts of international and domestic inflation. Includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.

d Interest during implementation has been computed using a base rate of the 5-year fixed swap rate (1.92%), a spread of 0.5% and a maturity premium of 0.1%. Commitment charges have been computed at 0.15% of undrawn funds. No financing charges applicable for grants proposed.

Source: Ceylon Electricity Board and Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan and Grant Proceeds**Ordinary Capital Resources Loan**

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS			
CATEGORY		ADB FINANCING	
Number	Item	Total Amount Allocated for ADB Financing Categories	Percentage and basis for withdrawal from the Loan Account
		(\$) CEB	
1	Works*	59,600,000.00	100 percent of total expenditure claimed**
2	Equipment	38,600,000.00	100 percent of total expenditure claimed**
3	Interest during construction	6,300,000.00	
4	Unallocated	10,500,000.00	
	Total	115,000,000.00	

ADB = Asian Development Bank, CEB = Ceylon Electricity Board.

* Turnkey contracts including goods and related works.

** Excluding local taxes and duties imposed within the territory of the Borrower.

Clean Energy Fund under Clean Energy Financing Partnership Facility

ALLOCATION AND WITHDRAWAL OF GRANT PROCEEDS			
CATEGORY		ADB FINANCING	
Number	Item	Total Amount Allocated for ADB Financing Categories	Percentage and basis for withdrawal from the Grant Account
		(\$) LECO	
1	Works*	1,500,000.00	100 percent of total expenditure claimed**
2	Consulting services	300,000.00	100 percent of total expenditure claimed**
	Total	1,800,000.00	

ADB = Asian Development Bank, LECO = Lanka Electricity Company Limited.

* Turnkey contracts including goods and related works.

** Excluding local taxes and duties imposed within the territory of the Borrower.

Japan Fund for Poverty Reduction

ALLOCATION AND WITHDRAWAL OF GRANT PROCEEDS				
Number	Item	Total Amount Allocated for ADB Financing Categories (\$)		Percentage and basis for withdrawal from the Grant Account
		Category	Subcategory	
1	Works (Turnkey Contracts)*	1,000,000.00		100 percent of total expenditure claimed**
2	Equipment	150,000.00		100 percent of total expenditure claimed**
2A	NWSDB		75,000.00	
2B	SEA		75,000.00	
3	Consulting Services	700,000.00		100 percent of total expenditure claimed**
3A	NWSDB		80,000.00	
3B	SEA		620,000.00	
4	Unallocated	150,000.00		
4A	NWSDB		100,000.00	
4B	SEA		50,000.00	
	Total***	2,000,000.00		

ADB = Asian Development Bank, SEA = Sustainable Energy Authority, NWSDB = National Water Supply and Drainage Board.

* For NWSDB

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

*** \$1,255,000 for NWSDB and \$745,000 for SEA.

E. Detailed Cost Estimates by Financier

Table 8: Detailed Cost Estimates by Financier
(\$ million)

	USD million								Total Cost
	ADB - OCR Loan		ADB - CEF Grant		ADB - JFPR Grant		CEB//Other IAs		
	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category	
A. Investment Costs									
1. Turnkey contract	59.60	96.0%	1.50	3.0%	1.20	2.0%	0.00	0.0%	62.40
2. Civil works and erection	0.00	0.0%	0.00	0.0%	0.00	0.0%	9.50	100.0%	9.50
3. Mechanical and equipment	38.60	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	38.60
4. Consultants									
a. Project management, design and supervision	0.00	0.0%	0.20	45.0%	0.30	55.0%	0.00	0.0%	0.40
Subtotal (A)	98.20	89.0%	1.70	2.0%	1.50	1.0%	9.50	9.0%	110.90
B. Other Costs									
Environment and social									
1. mitigation	0.00	0.0%	0.00	0.0%	0.00	0.0%	1.70	100.0%	1.70
2. Training and Workshops	0.00	0.0%	0.00	0.0%	0.30	100.0%	0.00	0.0%	0.30
3. Audit	0.00	0.0%	0.00	0.0%	0.00	100.0%	0.00	0.0%	0.00
4. Project Overheads	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.60	100.0%	0.60
5. Communication	0.00	0.0%	0.00	0.0%	0.10	100.0%	0.00	0.0%	0.10
Subtotal (B)	0.00	0.0%	0.00	0.0%	0.40	14.0%	2.30	86.0%	2.70
Total Base Cost	98.20	87.0%	1.70	2.0%	1.80	2.0%	11.80	10.0%	113.60
C. Taxes and Duties	0.00	0.0%	0.00	0.0%	0.00	0.0%	25.80	100.0%	25.80
D. Contingencies									
1. Physical	5.00	72.0%	0.00	0.0%	0.00	0.0%	1.90	28.0%	7.00
2. Price	5.40	49.0%	0.10	1.0%	0.20	1.0%	5.40	49.0%	11.20
Subtotal (D)	10.40	57.0%	0.10	1.0%	0.20	1.0%	7.40	41.0%	18.10
E. Financing Charges During Implementation									
1. Interest during implementation	6.30	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%	6.30
2. Commitment charges	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.30	100.0%	0.30
Subtotal (E)	6.30	95.0%	0.00	0.0%	0.00	0.0%	0.30	5.0%	6.60
Total Project Cost (A+B+C+D+E)	115.00	70.0%	1.80	1.0%	2.00	1.0%	45.20	27.0%	164.0
% Total Project Cost		70.1%		1.1%		1.2%		27.6	100.0

ADB = Asian Development Bank, CEB = Ceylon Electricity Board, CEF = Clean Energy Fund, IA = Implementing agency, JFPR = Japan Fund for Poverty Reduction.

Notes: Numbers may not sum precisely because of rounding.

Separate contract packages will be assigned to OCR loan, CEF grant and JFPR grant. There will be no contract to be jointly disbursed on a pro-rata basis.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

F. Detailed Cost Estimates by Outputs

Table 9: Detailed Cost Estimates by Outputs
(\$ million)

Item	Total Cost	Output 1		Output 2		Output 3		Output 4	
		Amount	% of Cost Category						
A. Investment Costs									
1. Turnkey contract	78.40	9.00	11.5%	42.10	53.7%	0.00	0.0%	27.30	34.8%
2. Civil works and erection	10.60	0.00	0.0%	2.40	22.6%	8.20	77.4%	0.00	0.0%
3. Mechanical and equipment	47.20	0.00	0.0%	5.90	12.5%	41.30	87.5%	0.00	0.0%
4. Consultants									
a. Project management, design and supervision	0.40	0.40	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Subtotal (A)	136.60	9.40	6.9%	50.40	36.7%	49.50	36.2%	27.30	20.0%
B. Other Costs									
1. Environment and social mitigation	1.70	0.10	5.9%	1.10	64.7%	0.40	23.5%	0.10	5.9%
2. Training and Workshops	0.30	0.30	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
3. Audit	0.00	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
4. Project Overheads	0.60	0.00	0.0%	0.00	0.0%	0.00	0.0%	0.60	100.0%
5. Communication	0.10	0.10	100.0%	0.00	0.0%	0.00	0.0%	0.00	0.0%
Subtotal (B)	2.70	0.50	18.5%	1.10	40.7%	0.40	14.8%	0.70	25.9%
Total Base Cost	139.30	9.90	7.1%	51.50	37.0%	49.90	35.8%	28.10	20.2%
C. Contingencies									
1. Physical	7.00	0.50	7.1%	2.60	37.2%	2.50	35.7%	1.40	20.0%
2. Price	11.10	0.80	7.2%	6.70	60.4%	1.80	16.2%	1.80	16.2%
Subtotal (C)	18.10	1.30		9.30		4.30		3.20	
D. Financing Charges During Implementation	6.60	0.10	1.5%	3.40	51.5%	1.70	25.8%	1.50	22.7%
Total Project Cost (A+B+C+D)	164.00	11.30	6.9%	64.10	39.1%	55.90	34.1%	32.70	20.0%

Note: Numbers may not sum precisely because of rounding.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

G. Detailed Cost Estimates by Year

Table 10: Detailed Cost Estimates by Year
(\$ million)

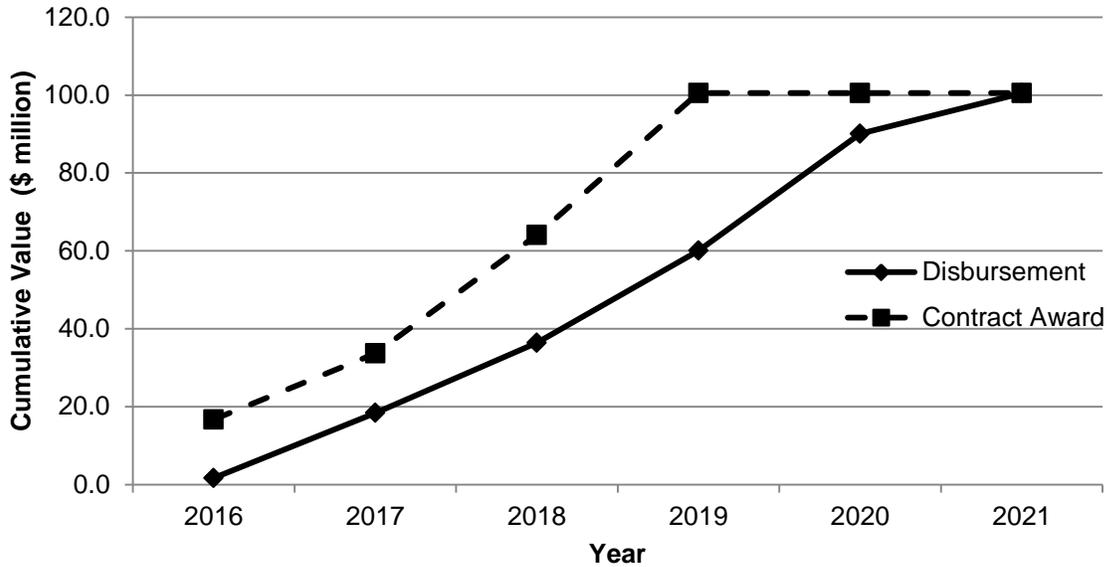
Item	Total Cost	2016	2017	2018	2019	2020	2021
A. Investment Costs							
1. Turnkey contract	78.40	0.00	2.40	22.10	40.60	11.90	1.40
2. Civil works and erection	10.60	0.00	4.10	4.10	1.20	1.00	0.20
3. Mechanical and equipment	47.20	27.10	14.20	2.90	2.90	0.00	0.00
4. Consultants							
a. Project management, design and supervision	0.40	0.00	0.30	0.10	0.10	0.00	0.00
Subtotal (A)	136.60	27.20	20.90	29.20	44.80	12.90	1.60
B. Other Costs							
1. Environment and social mitigation	1.70	0.00	0.40	0.20	0.60	0.60	0.00
2. Training and Workshops	0.30	0.00	0.00	0.10	0.10	0.00	0.00
3. Audit	0.00	0.00	0.00	0.00	0.00	0.00	0.00
4. Project Overheads	0.60	0.00	0.00	0.10	0.40	0.10	0.00
5. Communication	0.10	0.00	0.00	0.00	0.00	0.00	0.00
Subtotal (B)	2.70	0.00	0.40	0.50	1.20	0.60	0.00
Total Base Cost	139.30	27.20	21.30	29.70	46.00	13.50	1.60
C. Contingencies							
1. Physical	7.00	1.40	1.10	1.50	2.30	0.70	0.10
2. Price	11.20	0.60	1.00	2.40	4.70	2.20	0.20
Subtotal (C)	18.10	1.90	2.10	3.90	7.00	2.90	0.30
D. Financing Charges During Implementation	6.60	0.00	0.90	1.30	1.00	1.60	1.80
Total Project Cost (A+B+C+D)	164.00	29.10	24.30	34.90	54.00	18.00	3.70
% Total Project Cost	100.00	17.70	14.80	21.30	32.90	11.00	2.30

Note: Numbers may not sum precisely because of rounding.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

H. Contract and Disbursement S-curve

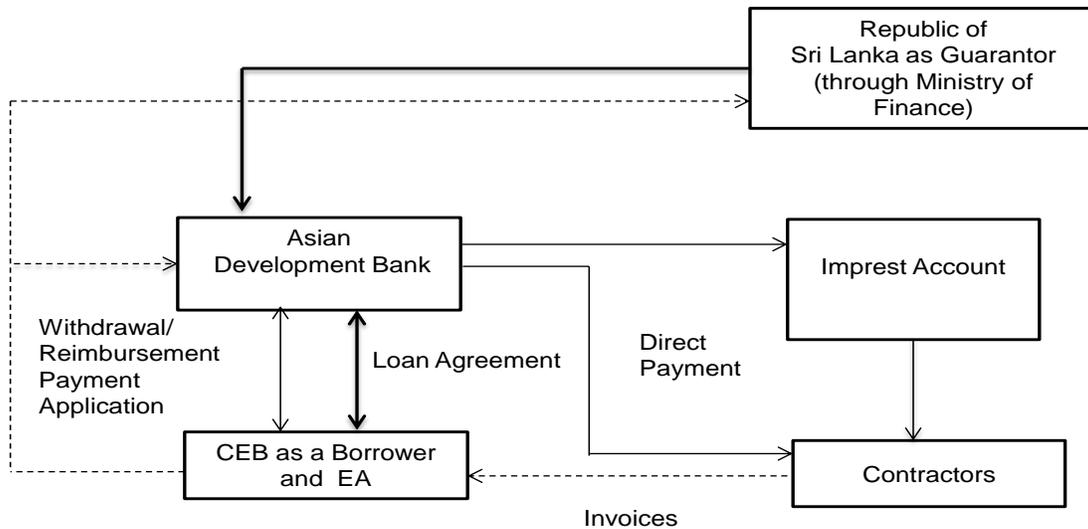
Figure 2. Contract and Disbursement S-curve



I. Fund Flow Diagram

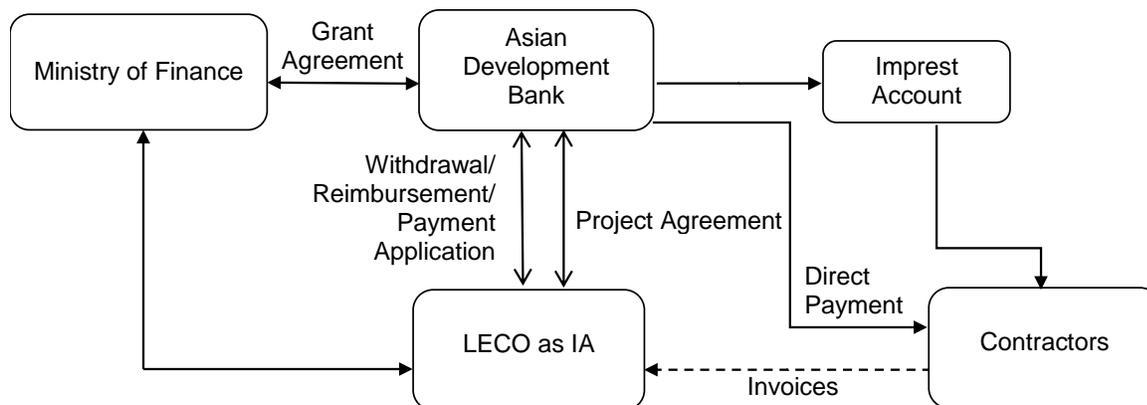
18. Loan and grant proceeds will be disbursed in accordance with ADB’s *Loan Disbursement Handbook* (2015, as amended from time to time), and detailed arrangements agreed upon between the Government, CEB and ADB.

Figure 3. Fund Flow Diagram for the Loan



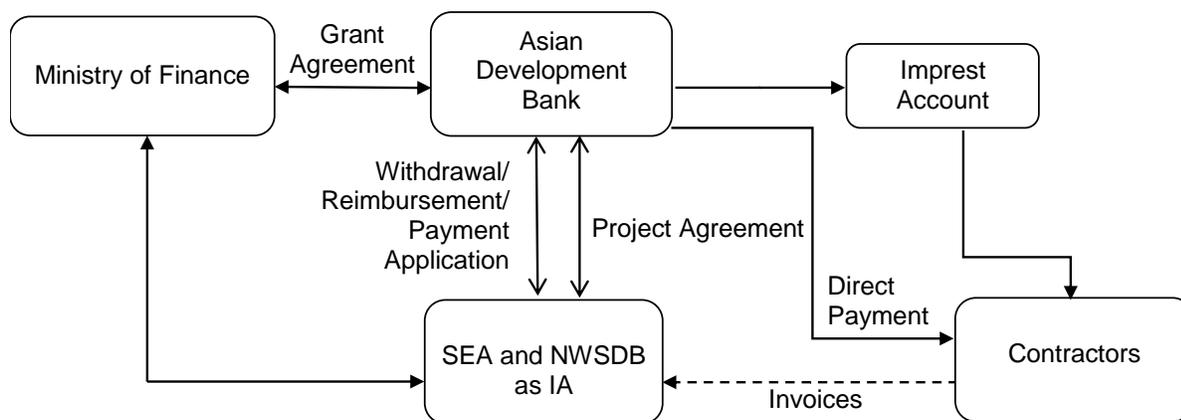
CEB = Ceylon Electricity Board, EA = executing agency.
Source: Asian Development Bank.

Figure 4. Fund Flow Diagram for Clean Energy Fund Grant



IA = implementing agency; LECO = Lanka Electricity Company Limited.
Source: Asian Development Bank.

Figure 5. Fund Flow Diagram for Japan Fund for Poverty Reduction Grant



IA = Implementing Agency; NWSDB = National Water Supply and Drainage Board; SEA = Sustainable Energy Authority.
Source: Asian Development Bank.

V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

19. A financial management assessment (FMA) has been carried out in accordance with ADB's most recent guidelines.¹² The FMA updates an earlier assessment carried out as part of ADB-funded Green Power Development and Energy Efficiency Improvement Investment Program in 2014.¹³ The FMA considers CEB, a state owned entity, in its role as the executing agency and implementing agency for the project. LECO, SEA and NWSDB) will act as the implementing agencies for small grant subcomponents, and financial management capacity and risk assessments have been undertaken for each of them.

20. The most recent public financial management assessment for Sri Lanka¹⁴ identified several serious weaknesses requiring major structural and procedural reforms. The assessment noted issues around fiscal sustainability, allocation of resources, capacity, and identified poor checks and balances and an absence of scrutiny and advocacy from the civil society. On the positive side, reform initiatives promoted by the new government were noted in the assessment. The assessment concluded that ongoing support and assistance from development partners is crucial to ensure that proposed reforms are implemented.

21. CEB, the executing agency for the proposed loan, generally follows acceptable financial management principles. CEB is a statutory board established in 1969 by an act of the Parliament. CEB must submit an annual report containing a statement of accounts and a report from the auditor general to the Minister of Power and Renewable Energy. This report is tabled in the Sri Lankan Parliament.

22. In general, CEB is capable of providing adequate project accounting, reporting and funds flow capabilities, and has done so on previous ADB loan projects. The recent transition to financial reporting in accordance with International Financial Reporting Standards (IFRS) is a positive step for the company. CEB has extensive experience of managing externally funded projects including those funded by ADB. The company's Finance Division and Project Management Unit (PMU) are well versed in ADB's procurement and financial management requirements. Late submission of CEB's audited financial statements to ADB is an ongoing issue. Audited financial statements for FY2013 were not submitted until January 2016 and only draft accounts were available as at February 2016. Audited financial statements for FY2014 were submitted only in May 2016. According to CEB, the issue is outside of its control. It prepares its financial statements in a timely manner at the end of each financial year, responds to draft audit observations as required, and subsequently submits its account for parliamentary approval. Dialogue will continue with the government concerning this issue. The CEB has implemented ADB and external funded projects for many years and is currently implementing the ADB's Clean Energy and Access Improvement Project (Loans 2518 and 2519, Grant 0149), Sustainable Power Sector Support Project (Loans 2733 and 2734), Clean Energy and Network Efficiency Improvement Project (Loans 2892 and 2893, Grant 0149), and Tranche 1 of the Green Power Development and Energy Efficiency Improvement Investment Program (Loans 3146, 3147, and 8290).

¹² ADB. 2015. *Financial Management Technical Guidance Note—Financial Management Assessment*. Manila.

¹³ ADB. 2014. SRI: LN 47037-003 MFF Green Power Development and Energy Efficiency Improvement Investment Program. Manila. <http://www.adb.org/projects/47037-003/main>.

¹⁴ USAID. 2015. *Sri Lanka Public Financial Management – Assessment Report*. Washington.

23. The financial management risk analysis assessed inherent risk as high, control risk as moderate and overall (combined) risk as moderate as specified in the Table 11.

Table 11: Risk Assessment and Management Plan

Risk Description	Risk Assessment			Mitigation Measures / Management Plan
	Impact	Likelihood	Assessment	
Inherent Risk				
Country-Specific – USAID’s 2015 PFM review of Sri Lanka identified a barely functioning PFM system, with significant weakness and limited checks and balances in most key areas. Poor adherence to public procurement laws and regulations is also noted.	High	Likely	High	ADB, USAID, the World Bank and other development partners are in constant dialogue with the Government regarding PFM reform. USAID’s 2015 PFM review made several recommendations regarding PFM reform, including the formation of a PFM-focused donor coordination group. ADB endorses these recommendations. ADB is also supporting development of an Integrated Treasury Management Information System. However, it needs to be recognized that PFM transformation will be an ongoing process.
Public Procurement and Anticorruption - Absence of an independent procurement regulator	High	Likely	High	Effectively engage with the Public Procurement Department of the Ministry of Finance. Allocate resources for the enhancement of the regulatory role of the Public Procurement Department. Enhance the capacity of others who can provide regulatory oversight, e.g., judiciary. Stronger and more real-time direct oversight of projects by ADB
Entity-Specific – Significant delays in public release of CEB’s audited annual financial statements are commonplace due to delays in approval of the accounts by parliament (the 2013 accounts were only made available in January 2016). This presents the risk that financial performance issues are not identified in a timely manner, making intervention and resolution of issues problematic.	High	Likely	High	Statement of Audit Needs agreed between ADB, AGD, CEB to ensure that entity’s financial statements and project financial statements prepared and audited in accordance with Sri Lankan accounting and auditing standards are submitted within 6 months of the end of the fiscal year. Strict submission deadlines to be covenanted in loan agreement.
Overall Inherent Risk	High			
Control Risk				
Information Systems - CEB’s in-house accounting system (“MITFIN”) may not be suitable (or may be too	Moderate	Likely	Moderate	CEB will initiate a broad review of its financial reporting requirements and will assess the adequacy of current arrangements. A road map for

Risk Description	Risk Assessment			Mitigation Measures / Management Plan
	Impact	Likelihood	Assessment	
expensive to develop further and maintain) for CEB's extended reporting requirements imposed by PUCSL, for decentralized cash management, and for significant foreign currency transactions arising from direct borrowing from ADB and other development partners. CEB's Projects Division has already indicated that MITFIN does not meet its requirements. This introduces a risk of inaccuracies, incomplete and delayed reporting, misappropriation, and potentially undesirable regulatory outcomes.				development of management information systems (and particularly of the financial management and reporting system, including project accounting and reporting) will be developed for presentation to CEB's board by December 2016.
Project Accounting and Reporting – CEB does not currently embed a qualified accounting in the PMU for ADB-funded projects, instead relying on part-time support from accountants from the Projects or for functional divisions. This level of support may be inadequate at times of heavy workload for accountants.	Moderate	Likely	Moderate	CEB will embed a fulltime accountant in the PMU.
Treasury – Direct borrowing from ADB will expose CEB to significant foreign exchange risk. CEB has limited experience in managing this risk.	High	Likely	High	CEB is in the process of recruiting a treasury management specialist who will be responsible for developing foreign exchange risk management capacity within CEB. If CEB is unable to recruit a suitable candidate, CEB will engage external consulting support to advise on treasury management until such time as recruitment can take place.
Overall Control Risk	Moderate			
Overall (Combined) Risk	Moderate			

ADB = Asian Development Bank, AGD = Auditor General Department, CEB = Ceylon Electricity Board, PUCSL = Public Utilities Commission of Sri Lanka, PFM = public financial management, PMU = project management unit, USAID = United States Agency for International Development.

24. Based on this assessment, an action plan was prepared to improve CEB's identified financial management weaknesses.

Table 12: Risk Action Plan

Action	Responsibility	Resources	Timing
Embedding on a fulltime accountant in the PMU.	CEB	No resource requirement.	Within 3 months of loan signing.
Recruitment of a fulltime treasury management professional (or external consulting support in lieu thereof).	CEB	CEB	Within 3 months of loan signing.
Preparation of an overarching MIS road map for CEB (including financial management)	CEB	CEB	Within 6 months of loan signing.

CEB = Ceylon Electricity Board, MIS = management information systems, PMU = project management unit.

25. For the proposed loan, the government has stated a preference for ADB to lend directly to CEB with a sovereign government guarantee. This proposed arrangement circumvents a number of public financial management risks that ADB would otherwise be exposed to, but does require CEB to develop foreign exchange risk policy and treasury management capacity in the short term. Financial management and financial performance assurances will be sought from CEB in this regard.

26. LECO was incorporated in 1983 as a private limited liability company. Most of LECO's shares are owned by CEB and the government; municipalities and the Urban Development Authority are minority shareholders. LECO distributes electricity in urban areas in Sri Lanka's western coastal belt, representing approximately 10% of Sri Lanka's electricity customers. LECO has two subsidiary companies: (i) LECO Projects Limited (an infrastructure development company) and , (ii) Ante LECO Metering Company Limited (an electricity meter manufacturer).

27. The FMA noted that LECO has some recent experience in managing externally funded projects including those by ADB. Most financial management procedures are documented, and the company appears to be adequately staffed by competent professionals. LECO's financial performance is encouraging, and no material external audit qualifications have been noted. The recent (2011) transition to financial reporting in accordance with International Financial Reporting Standards (IFRS) is a positive step for the company.

28. LECO is a well-organized entity, operating with an efficiency that is comparable to counterparts in developed countries. Performance is measured against operational and efficiency norms, which include billing accuracy, prompt payment to CEB, quality of power supply, speed of response to public complaint, and profitability. Full operational autonomy is available to branch offices for new connections, system repairs and service maintenance, meter reading, and accounts collection. The LECO head office retains basic management functions for strategy planning and accounts administration.

29. NWSDB has extensive experience implementing loans and ADB's Jaffna and Kilinochchi Water Supply and Sanitation Project (Loans 2710 and 2711). It is noted that, although reasonably efficient, NWSDB's water revenue is barely sufficient to recover the operational expenditure and debt service, and sewerage revenue does not cover operating costs. NWSDB

acknowledges instances of mismanagement of revenue collection and misappropriation of funds at different levels in the past and its 2016-2020 Corporate Plan includes strengthening of internal monitoring systems, ensuring compliance with established rules and regulations regarding accounting practices including government procurement guidelines and strengthening the internal audit function in its corporate office and regional offices. It has also announced plans to introduce Enterprise Resource Planning (ERP) across all functions including finance and accounting (although current project accounting arrangements are acceptable). The Auditor General of Sri Lanka is the external auditor of NWSDB. Internal audit is noted as well managed but has a high level of vacant staff positions. Given NWSDB's previous experience in implementation of grants and the small size of the JFPR grant, the NWSDB's financial management capacity is assessed as adequate and risk is rated as low for the purpose of grant implementation. In this context no particular financial management risks requiring mitigation have been identified.

30. SEA was established in 2007 through the Sri Lanka Sustainable Energy Authority Act No. 35 (2007). SEA's mandate is to drive Sri Lanka towards a new level of sustainability in energy generation and usage, through increasing indigenous energy and improving energy efficiency within the country. SEA's financial accounts are prepared in accordance with the revised Sri Lankan Accounting Standards and are audited by Auditor General of Sri Lanka. SEA has recent and on-going experience in implementing grants from ADB and other donors, and no financial management issues have been noted. SEA has an internal audit department with two full-time staff members (with one fully qualified accountant) and an accounts and finance department with eight full-time staff members (including two fully qualified accountants). The Internal Audit department has one fully qualified accountant while the accounts and finance department has two fully qualified accountants. SEA's financial management capacity is assessed as adequate for the purpose of grant implementation and financial risk is assessed as low. No particular financial management risks requiring mitigation have been identified.

B. Disbursement

1. Disbursement Arrangements for ADB Funds¹⁵

31. The loan and grant proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook*¹⁶ (2015, as amended from time to time), and detailed arrangements agreed upon between the government and ADB. Online training for project staff on disbursement policies and procedures is available.¹⁷ Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control.

32. **Imprest fund procedure.** Separate imprest accounts should be established for each funding sources and maintained at the Central Bank of Sri Lanka by CEB (for OCR loan), LECO (for CEF grant), and NWSDB and SEA (for JFPR grant). The currency of the imprest accounts is US Dollar. The imprest accounts are to be used exclusively for ADB's and ADB-administered co-financier funds' share of eligible expenditures. The CEB, LECO, NWSDB and SEA who established the imprest account in its name is accountable and responsible for proper use of advances to the imprest account.

¹⁵ Disbursement arrangements, Accounting, Auditing and Public Disclosure procedure and requirements will also be applicable to LECO, SEA, and NWSDB.

¹⁶ Loan Disbursement Handbook: <http://www.adb.org/Documents/loan-disbursement-handbook>.

¹⁷ Disbursement eLearning: http://wpqr4.adb.org/disbursement_elearning.

33. The total outstanding advance to the imprest accounts should not exceed the estimate of ADB's share of expenditures to be paid through the imprest accounts for the forthcoming 6 months. CEB, LECO, NWSDB and SEA may request initial and additional advance to the imprest accounts based on an Estimate of Expenditure Sheet¹⁸ setting out the estimated expenditures to be financed through the accounts for the forthcoming 6 months. Supporting documents should be submitted to ADB or retained by the government and borrower in accordance with ADB's Loan Disbursement Handbook (2015, as amended from time to time) when liquidating or replenishing the imprest accounts.

34. **Statement of Expenditures (SOE) procedure.** The SOE procedure may be used for reimbursement of eligible expenditures or liquidation of advances to the imprest account(s). Supporting documents and records for the expenditures claimed under the SOE should be maintained and made readily available for review by ADB's disbursement and review missions, upon ADB's request for submission of supporting documents on a sampling basis, and for independent audit.

35. Each project manager of CEB, LECO, NWSDB and SEA will be responsible for: (i) preparing disbursement projections, (ii) requesting budgetary allocations for counterpart funds, (iii) collecting supporting documents, and (iv) preparing and sending withdrawal applications to ADB.

36. Before the submission of the first withdrawal application, the borrower (CEB), LECO, NWSDB and SEA should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is set in accordance with the Loan Disbursement Handbook. Individual payments below this amount should be paid by the CEB, LECO, NWSDB and SEA and subsequently claimed to ADB through (i) reimbursement; or (ii) through the imprest fund procedure, unless otherwise accepted by ADB.

C. Accounting

37. CEB, LECO, NWSDB and SEA will maintain separate books and records by funding source for all expenditures incurred on the project following cash-based accounting system following the government's financial regulations. CEB, LECO, NWSDB and SEA will prepare project financial statements in accordance with Sri Lanka Accounting Standards, which are harmonized with international accounting principles and practices.

D. Auditing and Public Disclosure

38. The CEB, LECO, SEA, and NWSDB will cause the detailed project financial statements to be audited in accordance with International Standards on Auditing and with the government's audit regulations, by an independent auditor acceptable to ADB. The audited project financial statements together with the auditor's opinion will be presented in the English language to ADB within 6 months from the end of the fiscal year by the CEB, LECO, SEA, and NWSDB.

39. In addition, CEB, LECO, SEA, and NWSDB will also cause its entity-level financial statements to be audited in accordance with International Standards on Auditing and with the Government's audit regulations, by an independent auditor. The audited entity financial

¹⁸ ADB. 2015. *Loan Disbursement Handbook*. IOB.

statements, together with the auditors' report and management letter, will be submitted in the English language to ADB within 1 month after their approval by the relevant authority.

40. The audit report for the project financial statements will include a management letter and auditor's opinions which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting framework; (ii) whether the loan proceeds were used only for the purposes of the project; and (iii) whether the borrower (CEB), LECO, SEA, and NWSDB were in compliance with the financial covenants contained in the legal agreements (where applicable); (iv) use of the imprest fund procedure; and (v) the use of the statement of expenditure procedure certifying to the eligibility of those expenditures claimed under SOE procedures, and proper use of the SOE and imprest procedures in accordance with ADB's Loan Disbursement Handbook and the project documents. A management letter shall also be provided, unless already provided with the entity-level financial statements

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

42. The government, CEB, LECO, SEA, and NWSDB have been made aware of ADB's approach to delayed submission, and the requirements for satisfactory and acceptable quality of the audited project financial statements.¹⁹ ADB reserves the right to require a change in the auditor (in a manner consistent with the constitution of Sri Lanka), or for additional support to be provided to the auditor, if the audits required are not conducted in a manner satisfactory to ADB, or if the audits are substantially delayed. ADB reserves the right to verify the project's financial accounts to confirm that the share of ADB's financing is used in accordance with ADB's policies and procedures.

43. Public disclosure of the audited project financial statements, including the auditor's opinion on the project financial statements, will be guided by ADB's Public Communications Policy 2011.²⁰ After the review, ADB will disclose the audited project financial statements and the opinion of the auditors on the project financial statements no later than 14 days of ADB's confirmation of their acceptability by posting them on ADB's website. The management letter, additional auditor's opinions, and audited entity financial statements will not be disclosed.²¹

¹⁹ ADB's approach and procedures regarding delayed submission of audited project financial statements:

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

²⁰ ADB. 2011. *Public Communications Policy*. Manila. <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>.

²¹ This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Paragraph 97(iv) and/or 97(v).

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

44. All advance contracting and retroactive financing will be undertaken in conformity with ADB's Procurement Guidelines (2015, as amended from time to time)²² and ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).²³ The issuance of invitations to bid under advance contracting and retroactive financing will be subject to ADB approval. The government, CEB, LECO, SEA, and NWSDB, have been advised that approval of advance contracting and retroactive financing does not commit ADB to finance the project.

45. **Advance contracting.** ADB approved advance contracting for recruitment of consultants and procurement of goods, related services and civil works including inviting and receiving bids for contracts that might be approved for implementation prior to loan effectiveness. The issuance of invitations to bid under advance contracting will be subject to ADB approval.

46. **Retroactive financing.** Retroactive financing will be allowed for up to 20% of the loan amount for expenditures incurred prior to loan effectiveness, but no earlier than 12 months before the signing of the loan agreement.

B. Procurement of Goods, Works and Consulting Services

47. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time). ADB will allow advance contracting. ADB's Procurement Guidelines allow for the use of domestic preference for the goods and turnkey contracts. The government has requested for the domestic preference for goods and turnkey contracts and a provision will be made in the loan agreement and further details of its application will be included in the bidding documents. It will be applicable to domestically manufactured goods in single responsibility turnkey contracts where the cost of the goods and supplies for permanent works is estimated prior to the bidding is equal to or exceeds 60% of such works.

48. International competitive bidding (ICB) procedures will be used for procurement packages for medium voltage/low voltage hardware and accessories, transformers, PVC metering enclosures; accessories for aerial bundled conductor (ABC), medium voltage insulators, conductors and cables; 33 kV ABC, load break switches, and auto-reclosers; distribution substation metering; construction of 33kV lines and gantries; construction of hybrid renewable energy in small isolated islands; and construction of a sea water desalination plant and an ice-making factory. National Competitive Bidding (NCB) procedures will be used for procurement packages for poles.

49. Before the start of any procurement ADB and the government will review the public procurement laws to ensure consistency with ADB's Procurement Guidelines (2015, as amended from time to time).

50. An 18-month procurement plan indicating threshold and review procedures, goods, works, and consulting service contract packages and national competitive bidding guidelines is

²² Available at: <http://www.adb.org/Documents/Guidelines/Procurement/Guidelines-Procurement.pdf>.

²³ Available at: <http://www.adb.org/Documents/Guidelines/Consulting/Guidelines-Consultants.pdf>.

in Section C.

51. All consultants and nongovernment organizations (NGOs) will be recruited according to ADB's Guidelines on the Use of Consultants (2013, as amended from time to time).²⁴ The terms of reference for all consulting services are detailed in Section D.

C. Procurement Plan

PROCUREMENT PLAN

Basic Data

Project Name: Supporting Electricity Supply Reliability Improvement Project	
Project Number: 49216	Approval Number: xxxx
Country: SRI LANKA	Executing Agencies: Ceylon Electricity Board (for a loan), Ministry of Power and Renewable Energy (for grants)
Project Procurement Classification: B	Implementing Agencies: Ceylon Electricity Board (for a loan); Lanka Electricity Company Limited, National Water Supply and Drainage Board, Sustainable Energy Authority (for grants)
Procurement Risk: Low	
Project Financing Amount: \$164,000,000 ADB Financing: \$115,000,000 Cofinancing (ADB Administered): 3,800,000 Non-ADB Financing: \$45,200,000	Project Closing Date: 31 March 2022
Date of First Procurement Plan: (advance action)	Date of this Procurement Plan: 26 May 2016

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

1. Procurement and Consulting Methods and Thresholds

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

Procurement of Goods and Works		
Method	Threshold	Comments
International Competitive Bidding (ICB) for Works	\$15,000,000	
International Competitive Bidding for Goods	\$2,000,000	Based on domestic industry capacity.
National Competitive Bidding (NCB) for Works	Beneath that stated for ICB, Works	
National Competitive Bidding for Goods	Beneath that stated for ICB, Goods	
Shopping for Works	Below \$100,000	
Shopping for Goods	Below \$100,000	

Consulting Services	
Method	Comments
Quality- and Cost-Based Selection (QCBS)	
Individual Consultant Selection (ICS)	

²⁴ Checklists for actions required to contract consultants by method available in e-Handbook on Project Implementation at: <http://www.adb.org/documents/handbooks/project-implementation/>.

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

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

Package Number 5	General Description	Estimated Value	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments
1	Poles	\$5.79 million	NCB	Prior	1S1E	Q4/2015	Goods. Concrete poles are manufactured and supplied locally.
2	MV/LV hardware and accessories, and PVC metering enclosures	\$3.10 million	ICB	Prior	1S1E	Q4/2015	Goods
3	Accessories for ABC, MV insulators, conductors and cables	\$12.00 million	ICB	Prior	1S1E	Q4/2015	Goods
4	Construction of 33 kV lines and gantries	\$34.99 million	ICB	Prior	1S2E	Q3/2016	Plant
5	ABC 33kV, Load Break Switch, and Auto-reclosers; distribution substation metering; meter cubicles, wiring cables, etc.	\$16.11 million	ICB	Prior	1S1E	Q3/2016	Goods
6	Construction of hybrid renewable energy systems in small islands	\$4.19 million	ICB	Prior	1S2E	Q3/2016	Plant
7	SVC and BSC at GSS	\$20.43 million	ICB	Prior	1S2E	Q1/2017	Plant
8	Renewable Energy Micro-Grid	\$1.50 million	ICB	Prior	1S1E	Q1/2018	Plant
9	Sea water desalination plant and ice-making factory	\$1.15 million	ICB	Prior	1S2E	Q1/2018	Plant

ABC = aerial bundled conductor, BSC = breaker-switched capacitors, GSS = grid substation kV = kilovolt, MV/LV = medium voltage/low voltage, PVC = polyvinyl chloride, SVC = static Var compensator.

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

Package Number	General Description	Estimated Value	Recruitment Method	Review [Prior / Post]	Advertisement Date (quarter/year)	Type of Proposal	Comments
IC	Individual Consultants	\$380,000	ICS	Prior	Q4/2016	n/a	International and national
F	Consulting Firm	\$700,000	QCBS	Prior	Q4/2016	Simplified Technical Proposal	International; quality-cost ratio of 90:10

F = firm , IC = individual consulting , Q = quarter.

4. Goods and Works Contracts Estimated to Cost Less than \$1 Million

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

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

B. Indicative List of Packages Required Under the Project

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

Goods and Works						
General Description	Estimated Value (cumulative) (\$ million)	Estimated Number of Contracts	Procurement Method	Review [Prior / Post/Post (Sample)]	Bidding Procedure	Comments
Package 1: Supply and delivery of materials (R.C. Poles and Pre-Stressed Concrete Poles)	5.79	5	NCB	Prior	1S1E	Goods. Concrete poles are normally manufactured and supplied locally.
Lot 1: Poles- R.C. 8.3m 100kg	1.29					
Lot 2: Poles- R.C. 8.3m 100kg	1.29					
Lot 3: Poles- R.C. 8.3m 100kg	1.82					
Lot 4: Poles- Concrete	0.64					

Pre-Stressed 11.0m 350kg Lot 5: Poles- Concrete Pre-Stressed 11.0m 350kg and 500kg	0.75					
Package 2: Supply and delivery of materials Lot 1: MV/LV Hardware Accessories Lot 2: PVC Meter Enclosure 1 phase	3.10 2.24 0.86	2	ICB	Prior	1S1E	Goods. Domestic preference applicable.
Package 3: Supply and delivery of materials Lot 1: Accessories for ABC Lot 2: MV Insulators Lot 3: Conductors and Cables	12.00 0.97 0.7 10.33	3	ICB	Prior	1S1E	Goods. Domestic preference applicable.
Package 4: Construction of 33 kV lines and gantries	34.99	1	ICB	Prior	1S2E	Plant
Package 5: Supply and delivery of materials Lot 1: ABC 33kV and accessories; Isolating switches and Surge Arrestors Lot 2: Load Break Switch and Auto Reclosers Lot 3: Distribution Substation Meters and Modem Lot 4: Current Transformers for Metering Lot 5: Meter enclosures -Steel	16.11 2.16 1.95 6.35 4.49 1.17	5	ICB	Prior	1S1E	Goods. Domestic preference applicable.
Package 6: Construction of hybrid renewable energy systems in small islands	4.19	1	ICB	Prior	1S2E	Plant
Package 7: SVC at Pannipitiya GSS BSC at Biyagama GSS	20.43 16.75 3.69	1	ICB	Prior	1S2E	Plant
Package 8: Renewable Energy Micro-grid	1.50	1	ICB	Prior	1S1E	Plant
Package 9: Sea water desalination plant and ice-making factory	1.15	1	ICB	Prior	1S2E	Plant

ABC = aerial bundled conductor, BSC = breaker-switched capacitors, GSS = grid substation, kg = kilogram, kV = kilovolt, m = meter, MV/LV = medium voltage/low voltage, PVC = polyvinyl chloride, SVC = static var compensator

Consulting Services							
Package Number	General Description	Estimated Value	Estimated Number of Contracts	Recruitment Method	Review [Prior / Post]	Type of Proposal	Comments
IC	Individual Consultants	\$380,000	4	ICS	Prior	n/a	International and national
F	Consulting Firm	\$700,000	1	QCBS	Prior	Simplified Technical Proposal	International; quality- and cost-based ratio of 90:10

IC = individual consultant; F = firm

C. National Competitive Bidding

A. Regulation and Reference Documents

1. The procedures to be followed for national competitive bidding shall conform to the provisions prescribed in the *Procurement Guidelines 2006 for Goods and Works* issued in January 2006 by the National Procurement Agency, and the specific procedures prescribed by the *Procurement Manual* issued in March 2006, with the clarifications and modifications described in the following paragraphs required for compliance with the provisions of the ADB Procurement Guidelines.

B. Procurement Procedures

1. Eligibility

2. The eligibility of bidders shall be as defined under Section I of ADB's Procurement Guidelines (2015, as amended from time to time) (the "Guidelines"); accordingly, no bidder or potential bidder should be declared ineligible for reasons other than those provided in Section I of the Guidelines.

2. Registration and Sanctioning

3. Registration is acceptable under the following conditions:

- (i) Bidding shall not be restricted to pre-registered firms under the national registration system of the Construction Industry Development Authority (CIDA), and such registration shall not be a condition for the submission of bids in the bidding process.
- (ii) Where registration is required prior to award of contract, bidders: (i) shall be allowed a reasonable time to complete the CIDA registration process; and (ii) shall not be denied registration for reasons unrelated to their capability and resources to successfully perform the contract, which shall be verified through post-qualification.
- (iii) National sanction lists or blacklists may be applied only with prior approval of ADB.

3. Prequalification

4. Prequalification is discouraged for NCB. When used, particularly for works contracts, an individual prequalification exercise is acceptable for each contract as is the use of a registration system (or approved standing list) of contractors based on criteria such as experience, financial capacity, and technical capacity. Foreign bidders from eligible countries must, however, be allowed to register and to bid without unreasonable cost or additional requirements.

4. Advertising

5. The posting of NCB specific notices for contracts valued at less than \$1 million on ADB's website is not required but is highly recommended.

5. Preferences

6. The following shall be observed:

- (i) No preference of any kind shall be given to domestic bidders or for domestically manufactured goods.
- (ii) Foreign suppliers and contractors from ADB member countries shall be allowed to bid, without registration, licensing, and other government authorizations, leaving compliance with these requirements for after award and before signing of contract.

6. Participation by Government-Owned Enterprises

7. Government-owned enterprises in the Democratic Socialist Republic of Sri Lanka shall be eligible to participate only if they can establish that they are legally and financially autonomous, operate under commercial law, and are not a dependent agency of the procuring entity, or the Project Executing Agency or Implementing Agency.

7. Rejection of Bids and Rebidding

8. Bids shall not be subjected to a test for unrealistic rates. No lowest evaluated and substantially responsive bid shall be rejected on the basis of comparison to rates, including but not limited to market, historical, or agency established rates, without prior approval of ADB.

9. Bids shall not be rejected and new bids solicited without the ADB's prior concurrence.

8. Price Negotiations

10. Price negotiation shall be allowed only where the price offered by the lowest evaluated and substantially responsive bidder substantially exceeds costs estimates. Approval of ADB is required prior to any negotiation of prices.

C. Bidding Documents

9. Acceptable Bidding Documents

11. Procuring entities shall use standard bidding documents acceptable to ADB for the Procurement of Goods, Works and Consulting Services, based ideally on the standard bidding documents issued by ADB.

10. Bid Security

12. Where required, bid security shall be in the form of a certified check, a letter of credit or a bank guarantee from a reputable bank.

11. ADB Policy Clauses

13. A provision shall be included in all NCB works and goods contracts financed by ADB requiring suppliers and contractors to permit ADB to inspect their accounts and records and other documents relating to the bid submission and the performance of the contract, and to have them audited by auditors appointed by ADB.

14. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that the Borrower shall reject a proposal for award if it determines that the bidder recommended for award has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices in competing for the contract in question.

15. A provision shall be included in all bidding documents for NCB works and goods contracts financed by ADB stating that ADB will declare a firm or individual ineligible, either indefinitely or for a stated period, to be awarded a contract financed by ADB, if it at any time determines that the firm or individual has, directly or through an agent, engaged in corrupt, fraudulent, collusive, coercive or obstructive practices or any integrity violation in competing for, or in executing, ADB-financed contract.

D. Consultant's Terms of Reference

52. TORs for consultants are attached in Appendix 1.

VII. SAFEGUARDS

A. Environment

53. Following ADB's Safeguard Policy Statement (2009) and government laws, CEB has prepared an initial environmental examination (IEE), including an environmental management plan (EMP) for the project. The draft IEE will be disclosed on the ADB website. Any update in the IEE resulting from a change in project scope will be similarly disclosed.

54. CEB will monitor, audit, and report to ADB on the implementation of the EMP on a semiannual basis. The EMP has been prepared that discusses the anticipated impacts, monitoring requirements, and development of mitigation measures with respect to the following stages: (i) pre-construction, (ii) construction, and (iii) operation and maintenance. Detailed site-specific mitigation measures and monitoring plans were developed and will be implemented during the project implementation phase. The social and environmental management cell within CEB will assist in promoting environmentally responsible implementation of contracts and will monitor the implementation of all mitigation measures. The mitigation measures will be incorporated in contract documents for the Engineering, Procurement and Construction (EPC) contractor(s). EPC contractor(s) are required to comply with the EMP during pre-construction and construction stage and CEB will monitor compliance. Corrective actions will be taken for any unanticipated impacts and inadequate safeguards implementation.

55. Described below are the institutional roles and responsibilities to ensure environmental safeguard measures are implemented during design, construction and operation phases. Project Management Unit has a designated Environment Officer of Energy and Environment Division (EED) who has oversight responsibilities for monitoring of all subprojects in areas such as environment and social safeguards. CEB will hire appropriate Environment and Social Consultants at Project Implementing Unit (PIU) level, as deemed necessary or as stipulated by CEA's environmental clearance to assist EED in day-to-day coordination and reporting of various subproject activities.

56. The duties of the EED will include at a minimum: (i) oversight of field offices and construction contractors for monitoring and implementing mitigation measures; (ii) liaising with the field offices and contractors and seeking their help to solve the environment-related issues of subproject implementation; and (iii) preparation of environmental management reports every 6 months. EED will coordinate with PIUs for monitoring as well as designing appropriate mitigation measures to address environmental and social issues.

57. The duties of the Environment Division at the corporate level:

- Monitor and implement of mitigation measures during design, construction and operation phases of the project.
- Coordinate the preparation of suitable environmental management reports at various project sites.
- Advise and coordinate field environmental management cells activity towards effective environment management.
- Liaise with the Ministry of Power and Renewable Energy and Central Environmental Authority, and other relevant agencies and seek their help to solve the environment related issues of the project implementation.
- Advise project planning cell on environmental and social issues to avoid negative environmental impacts.

- Provide training and awareness on environmental and social issues related to power transmission projects to the project staff.

58. The duties of the Environment Division at the Field level:

- Implement the environment policy guidelines and environmental good practices at the sites.
- Advise and coordinate the field offices activity towards effective environment management.
- Liaise with the forest department and seek help of forest officers in resolving environment monitoring related issues.
- Carry out environmental and social survey in conjunction with project planning cell to avoid negative environmental impact.
- Make the contractor staff aware of the environmental and social issues related to power transmission projects so that EMP could be managed effectively.

59. Consultations with project stakeholders will continue through the pre-construction, construction and operation stages. A grievance redress mechanism (GRC) will be set up by CEB as soon as the project commences and will ensure equal representation of women in the members of GRC. GRC will convene once a month and will keep the record of the grievances, and provide the solution(s) within 30 days from the date of the complaint. All complaint related documentation such as minutes of the meeting and decisions will be summarized and become part of the semiannual monitoring report submitted to ADB. If the grievance is not addressed, the complainant can seek legal redress of the grievance in the appropriate courts.

60. CEB will prepare environmental and social monitoring reports and submit to ADB on a semiannual bases. These monitoring reports will be disclosed on the ADB website as required by ADB's Safeguard Policy Statement (2009) and Public Communications Policy (2011).

B. Involuntary Resettlement

61. The project has a resettlement plan to address and provide details on the nature and scale of land acquisition and resettlement required for the project, though this has been identified as insignificant in nature. The project does not lead to any physical displacement, but installation of distribution lines, towers, gantries and renewable energy generators will result in temporary and permanent economic displacements. All displaced people should be paid compensation and assistance in accordance with the resettlement plan. Additional support provisions for affected people belonging to vulnerable groups are also included. A loan condition of the project will be to ensure that the resettlement plan is implemented in accordance with ADB's Safeguard Policy Statement (2009) and CEB will be the entity responsible for ensuring this.

62. Proper consultation during the preparation of the resettlement plan with the project displaced persons including land acquisition and compensation process and disclosure to public through the ADB website will be undertaken. A GRC will be set up by CEB as soon as the project commences and will ensure equal representation of women in the members of GRC. If any modification or additional land requirement or involuntary resettlement impacts are identified, the resettlement plan should be updated in accordance with the applicable laws and ADB's Safeguard Policy Statement (2009).

63. The implementation of the resettlement plan will be monitored by CEB. If any significant

involuntary resettlement issues are identified and/or any compliance issues are identified during monitoring, a corrective action plan will be prepared.

64. The project is likely to be classified as category C for indigenous peoples. According to social assessments, no indigenous peoples are expected to be impacted by project activities. The project will not impact the existing socio-cultural system of indigenous peoples. No tribal lands will be acquired or affected. Should any impacts on indigenous peoples be identified, an indigenous peoples plan will be prepared in accordance with the applicable laws and ADB's Safeguard Policy Statement (2009).

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

VIII. GENDER AND SOCIAL DIMENSIONS

66. **Gender.** Reliable and adequate electricity supply improves living conditions, promotes the business expansion, and increases employment opportunities, which will have a positive impact on poverty reduction. The project is categorized as Effective Gender Mainstreaming and a gender action plan (GAP) (provided below) has been developed to support gender related activities. International and national consulting services funded by JFPR grant will be responsible for the implementation and monitoring of the GAP, and the implementation status and monitoring result will be incorporated into project progress reports and monthly reports of the CEB. Focus group discussions and consultations were undertaken with women from different socioeconomic groups in the project influenced area. This will contribute to sustainable economic growth in Sri Lanka which will further increase economic opportunities.

GENDER ACTION PLAN

Productive Energy Use for Small Isolated Islands of Analaitivu, Delft and Nainativu

No	Activities	Targets and Indicator	Responsibility	Timeframe ^a
Component A: Development of Energy-Based Livelihoods with a Focus on Women's Micro-enterprises				
1.	Livelihood development needs of women and men identified and assessed	1.1 Conduct a survey to identify livelihood related enterprises operated in the three islands 1.2 Identify, assess, and categorize types of support required by women and men entrepreneurs to improve and expand their existing operations (e.g., fish processing, palmyrah and coconut based handicrafts, and dress-making, etc.) and to add values 1.3 Identify, assess, and categorize training needs of women and men for MSME development 1.4 Develop a training plan and identify resource institutions and/or persons for the training	SLSEA, DS, GNs and CBOs	November–December 2016 November–December 2016 January 2017 January 2017
2.	Capacity development training for women and men conducted	2.1 Screen and select participants for training programs on MSME development and operation focusing on participation of 100% BPLs 2.2 Conduct training programs and provide business advice–target: 20% of the trainees should be FHHs 2.3 Follow-up training outcomes–target: 50 number of MSME developed	SLSEA, DS, GNs and CBOs	February 2017 March–September 2017 March 2017–2019
Component B: Development of Renewable Energy Technology (RET) Based Local Infrastructure				
1.	Seawater desalination plant and ice-making factory in Nainativu Island	1.1 Consult men and women, and CBOs including Fishery Cooperative Societies on their water and ice needs and requirements for the facilities 1.2 Incorporate community consultation results into design of a water desalination plant and ice-making factory 1.3 Develop the desalination plant and ice-	NWSDB, NGO, DS, GNs and CBOs	November 2016 December 2016–February

No	Activities	Targets and Indicator	Responsibility	Timeframe ^a
		making factory and provide associated supports (e.g., delivery of the fresh water)		2017 2017–2019
2.	Public and street lighting	2.1 Consult women on their needs for public and street lighting (e.g., places, times, management, etc.) 2.2 Design public and street lighting incorporating the views and opinions of women 2.3 Engage women in energy planning and decision-making on renewable energy system 2.4 Provide public and street lighting as necessary	SLSEA, CEB and CBOs	November 2016 December 2016– February 2017 2017–2019 2017–2019
Component C: End-user Education for the Safe and Efficient Use of Electricity and Electrical Equipment				
1.	Women's awareness on safe and efficient use of electricity and electrical equipment increased	1.1 Provide energy related information to women and men (e.g., energy policies, tariff rates, etc.) 1.2 Conduct awareness raising workshops for women and men on safe and efficient use of electricity – target: 900 users trained and 50% of the trainees should be women 1.3 Introduce electrical equipment which are cost effective and labor saving, especially for women	SLSEA and CBOs	2017–2019 2017–2019 2017–2019
Component D: Technical and Skills Training to Avail of Employment and Livelihood Opportunities				
1.	Skills and capacities of young women and men in energy based technical skills enhanced	1.1 Design and conduct energy based technical skills development programs on routine electrical repairs, and operation and maintenance of renewable energy systems and additional infrastructure facilities such as the desalination plant and ice-making factory focusing on participation of 100% BPLs - target: 600 persons trained, and 50% of the trainees should be women 1.2 Provide additional training related to employment and livelihood opportunities (e.g, IT skill training and spoken English language skill training)	SEA and CEB	2017–2019 2017–2019

BPL = below poverty line households, CBO = community based organization, CEB = Ceylon Electricity Board, DS = Divisional Secretary, FHH = female-headed household, GN = Grama Niladhari, IT = information technology, MSME = micro, small and medium sized enterprises, NWSDB = National Water Supply and Drainage Board, SLSEA = Sustainable Energy Authority of Sri Lanka.

^a It is indicative timeframe and link to project implementation schedule. The activities are expected to be conducted within 38 months from November 2016 to December 2019.

67. **HIV/AIDS.** Based on the poverty and social assessment, there is no risk that the project will increase HIV/AIDS incidence. However, contractors will carry out HIV/AIDS awareness for their laborers at work sites, which will be monitored by the construction supervision consultants.

68. **Health.** CEB, LECO and NWSDB will ensure that contractors adequately provide health and safety measures for the construction workers and further ensure that bidding documents include clauses on how contractors will address this, including an information and awareness raising campaign for construction workers on sexually transmitted diseases, including HIV/AIDS and human trafficking.

69. **Labor.** CEB, LECO and NWSDB will ensure that civil works contractors comply with all applicable labor laws and regulations do not employ child labor for construction and maintenance activities. Provide appropriate facilities for women and children in construction campsites; and do not differentiate wages between men and women for work of equal value. The CEB, LECO and NWSDB will ensure that specific clauses ensuring these will be included in bidding documents.

IX. PERFORMANCE MONITORING, EVALUATION, REPORTING AND COMMUNICATION

A. Project Design and Monitoring Framework

Impact the Project is Aligned with			
Access to clean, reliable, and affordable power supply in Sri Lanka increased by 2020 (<i>National Energy Policy and Strategies of Sri Lanka</i>) ^a			
Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>Outcome Electricity supply, and distribution system efficiency and reliability enhanced</p>	<p>By 2021: a. Electrification rate increased to 100% (2014 baseline: 98%) b. Additional 35,710 rural households connected to electricity (2015 baseline: 0) c. Energy supply from nonconventional renewable energy sources increased to 20.0% (2014 baseline: 9.8%) d. System losses of CEB network reduced to 10.00% of net generation (2014 baseline: 10.47%) e. Distribution line-end voltage fluctuation maintained within 5% in project areas (2014 baseline: 10%)</p>	<p>a–e. CEB annual report (power statistics) CEB monthly system reports</p>	<p>Delays in generation and transmission investments may impact improvements in electricity supply and reliability of the distribution network. Insufficient cash generation may impact CEB's ability to fund its operations.</p>
<p>Outputs 1. Renewable energy systems established</p>	<p>By 2020: 1a. Total 2.27 megawatts of hybrid mini-grid systems with 900 kilowatt-hour storage capacity established in three small islands (2015 baseline: 0) 1b. 300 kilowatt renewable energy micro-grid system established (2015 baseline: 0) 1c. Additional 9,597 tons of carbon dioxide emissions avoided per year (2015 baseline: 0) 1d. 10 LECO staff (30% women) trained in design of micro grids (2015 baseline: 0) 1e. Additional infrastructure (a 100,000 liters/day seawater desalination plant, an ice-making factory, water storage tanks) in three islands developed (2015 baseline: 0) 1f. 100% of below-poverty line (50% women's participation) households trained in safe use of electrical equipment (2015 baseline: 0) 1g. 100% of below-poverty line</p>	<p>1a and 1c. CEB annual report 1b–d. LECO annual report 1e. National Water Supply and Drainage Board annual report 1f–h. Sustainable Energy Authority annual report</p>	<p>(For all outputs) Unexpected increase in prices of commodities and raw materials, and construction delays impact the work.</p>

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>2. Reliability of the medium voltage network improved</p> <p>3. Rural electrification network extended and distribution performance monitoring improved</p> <p>4. Reactive power management in the transmission system improved</p>	<p>households (20% headed by women) trained in productive use of income opportunities emerging with the electricity access, targeting establishment of 50 microenterprises (2015 baseline: 0)</p> <p>1h. 100% of below-poverty line (50% women's participation) households trained in technical skills to avail of employment and livelihood opportunities as a maintenance crew for simple and routine electrical repairs, and operation and maintenance of hybrid systems and other facilities (2015 baseline: 0)</p> <p>By 2020:</p> <p>2a. Additional 270.5 km of 33 kV tower lines, 80 km of aerial bundled conductor lines, and 13 of 33 kV gantries constructed (2015 baseline: 0)</p> <p>2b. Installation of additional 175 33 kV load-break switches and 25 auto reclosers completed (2015 baseline: 0)</p> <p>By 2020:</p> <p>3a. Construction of additional 198 km of dedicated 33 kV lines, 393 km of low voltage lines to connect rural households to the grid, and 1,979 km of low voltage line extensions completed (2015 baseline: 0)</p> <p>3b. Installation of 25,000 programmable distribution substation meters completed (2015 baseline: 56)</p> <p>3c. 600 people (50% women) trained in safe and efficient use of electricity, and technical skills to avail of employment and livelihood opportunities (2015 baseline: 0)</p> <p>By 2020:</p> <p>4a. 100 megavolt-ampere reactive breaker-switched capacitors installed in Pannipitiya grid substation (2015 baseline: 0)</p> <p>4b. +100/-50 megavolt-ampere reactive static var compensator installed in Biyagama grid</p>	<p>2a–b. CEB annual report</p> <p>3a–c. CEB annual report</p> <p>4a–b. CEB annual report</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks										
	substation (2015 baseline: 0)												
<p>Key Activities with Milestones</p> <p>1. Renewable energy systems established</p> <p>1.1 Hybrid renewable energy systems established</p> <p>1.1.1 Issue bidding documents by Q3 2016</p> <p>1.1.2 Award contracts by Q3 2017</p> <p>1.1.3 Start construction by Q4 2017</p> <p>1.1.4 Commission by Q3 2019</p> <p>1.2 Renewable energy based micro-grid pilot established</p> <p>1.2.1 Complete feasibility study and detailed design by Q3 2017</p> <p>1.2.2. Train LECO engineering staff in design and implementation of micro grids by Q4 2017</p> <p>1.2.3 Issue bidding documents by Q1 2018</p> <p>1.2.4 Award contracts by Q4 2018</p> <p>1.2.5 Commission by Q1 2020</p> <p>1.3 Livelihoods in local communities improved</p> <p>1.3.1 Train households on (i) safe use of electrical equipment, (ii) productive use of income opportunities emerging with the electricity access, and (iii) technical skills by Q4 2017</p> <p>1.3.2 Issue bidding documents for additional infrastructure by Q1 2018</p> <p>1.3.3 Award contracts by Q4 2018</p> <p>1.3.4 Commission by Q1 2020</p> <p>2. Reliability of the medium voltage network improved</p> <p>2.1 Issue bidding documents by Q3 2016</p> <p>2.2 Award contracts by Q3 2017</p> <p>2.3 Start construction by Q4 2017</p> <p>2.4 Commission by Q3 2019</p> <p>3. Rural electrification network extended and distribution performance monitoring improved</p> <p>3.1 Issue bidding documents by Q4 2015</p> <p>3.2 Award contracts by Q3 2016</p> <p>3.3 Start construction by Q4 2016</p> <p>3.4 Commission by Q3 2018</p> <p>3.5 Train households on safe use of electrical equipment and technical skills to avail of employment and livelihood opportunities by Q4 2018</p> <p>4. Reactive power management in the transmission system improved</p> <p>4.1 Issue bidding documents by Q1 2017</p> <p>4.2 Award contracts by Q1 2018</p> <p>4.3 Start construction by Q2 2018</p> <p>4.4 Commission by Q4 2020</p>													
<p>Inputs</p> <table> <tbody> <tr> <td>Asian Development Bank ordinary capital resources loan</td> <td>\$115.0 million</td> </tr> <tr> <td>Government and Ceylon Electricity Board</td> <td>\$45.2 million</td> </tr> <tr> <td>Clean Energy Fund under the Clean Energy Financing Partnership Facility</td> <td>\$1.8 million</td> </tr> <tr> <td>Japan Fund for Poverty Reduction</td> <td>\$2.0 million</td> </tr> <tr> <td>Total</td> <td>\$164.0 million</td> </tr> </tbody> </table>				Asian Development Bank ordinary capital resources loan	\$115.0 million	Government and Ceylon Electricity Board	\$45.2 million	Clean Energy Fund under the Clean Energy Financing Partnership Facility	\$1.8 million	Japan Fund for Poverty Reduction	\$2.0 million	Total	\$164.0 million
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<p>Assumptions for Partner Financing</p> <p>Not applicable.</p>													

CEB = Ceylon Electricity Board, km = kilometer, kV = kilovolt, LECO = Lanka Electricity Company Limited, Q = quarter.

^a Government of Sri Lanka. 2008. *National Energy Policy and Strategies of Sri Lanka*. Colombo.

Sources: Ceylon Electricity Board. 2015. *Statistical Digest 2014*. Colombo; Government of Sri Lanka. 2008. *National Energy Policy and Strategies of Sri Lanka*. Colombo; Ceylon Electricity Board estimates; Lanka Electricity Company Limited estimates; and Asian Development Bank estimates.

B. Monitoring

70. **Project performance monitoring.** Project performance monitoring will be done using the targets, indicators, assumptions, and risks specified in the DMF. The beneficiaries will be involved in project monitoring during project implementation and consulted at the time of review missions. Disaggregated baseline data for output and outcome indicators gathered during project processing will be updated and reported quarterly through the CEB, LECO, SEA and NWSDB quarterly progress reports and after each ADB review mission. These quarterly reports will provide information necessary to update ADB's project performance reporting system.²⁵

71. **Compliance monitoring.** Compliance with loan covenants—policy, financial, safeguards, and others—will be monitored, discussed and reported during the project review missions.

72. **Safeguards monitoring.** The contractors, CEB, LECO and NWSDB must adhere to the EMP and resettlement plan during contract implementation as prepared in accordance with ADB's Safeguard Policy Statement (2009) and as agreed and endorsed by the Government of Sri Lanka. The contractors shall prepare and submit the monthly progress report in conformance to CEB, LECO and NWSDB requirements and shall indicate when, how and at what cost the contractors' plans to satisfy the requirements as per detailed specifications. For each component, these programs shall detail the resources to be provided or utilized and any related subcontracting proposed. CEB, LECO and NWSDB will be assisted by technical staff/experts who will evaluate the technical reports, feasibility studies, preliminary design reports, environmental assessment reports (including the EMP with budget), preliminary and detailed design reports to ensure compliance with ADB and government requirements. CEB, LECO and NWSDB will prepare progress reports and submit them to ADB on a quarterly basis and will submit other required performance and monitoring reports semiannually.

73. Compliance with safeguard requirements will include the need to ensure that project contractors adhere to ADB safeguard policy requirements, particularly with respect to compliance with core labor standards, occupational health and safety, and acceptable and fair working standards and conditions, in line with host country requirements. To avoid the risk of spreading preventable transmissible illnesses and diseases like HIV/AIDS as a result of an influx of workers into the project area during construction works, CEB, LECO and NWSDB will be expected to inform and educate project workers about the risks of HIV/AIDS, how it is spread and how it can be prevented.

74. **Gender and social dimensions monitoring.** Gender and social data will be monitored, collated and analyzed to provide an indication of change in the life of beneficiaries, which in turn will be important for recording the outputs and performance of the project. The results of social monitoring will be reported to ADB through CEB and SEA with routine project progress reports and other monitoring reports. The progress of the implementation of the GAP will be discussed during ADB review missions. GAP implementation reports will be attached to the project's quarterly progress reports and a terminal summative GAP implementation report will be attached to the Project Completion Report.

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

C. Evaluation

75. Within 6 months of physical completion of the project, CEB in coordination with LECO, NWSDB and SEA will submit a project completion report to ADB.

Table 13: Evaluation Methodology

Evaluation Activity	Purpose	Methodology	Who responsible and involved
Review mission	Review the progress of the project and provide guidance to facilitate implementation	Site visit and meetings with EA/IA officials, contractors, consultants at least twice a year	ADB/MPRE/CEB/LECO/NWSDB
Mid Term review	Comprehensive review of project	Site visit and meetings with EA/IA officials, contractors, consultants	ADB/DPMM/MPRE/CEB/LECO/SEA/NWSDB
Project Completion Report	Evaluate relevance, effectiveness in achieving outcome, efficiency in achieving outcome and outputs, assessment of sustainability, and impact.	Site visit and meetings with EA/IA officials, contractors, consultants	ADB/MPRE/CEB

ADB = Asian Development Bank, CEB = Ceylon Electricity Board, DPMM = Department of Project Management and Monitoring of the Ministry of Finance, EA = executing agency, IA = implementing agency, LECO = Lanka Electricity Company Limited, MPRE = Ministry of Power and Renewable Energy, SEA = Sustainable Energy Authority, NWSDB = National Water Supply and Drainage Board.

D. Reporting

76. The CEB, LECO, NWSDB and SEA will provide ADB with (i) quarterly progress reports in a format consistent with ADB's project performance reporting system; (ii) consolidated annual reports including (a) progress achieved by output as measured through the indicator's performance targets, (b) key implementation issues and solutions; (c) updated procurement plan, and (d) updated implementation plan for next 12 months; and (iii) a project completion report within 6 months of physical completion of the project. To ensure that projects will continue to be both viable and sustainable, project accounts and the CEB, LECO, NWSDB and SEA audited financial statement, together with the associated auditor's report, should be adequately reviewed.

E. Stakeholder Communication Strategy

77. CEB in coordination with LECO, NWSDB and SEA will prepare a stakeholder communication strategy and submit to ADB for review by the end of the third month after loan effectiveness. All communication will be in language suitable for the specific audience and will follow ADB's Public Communications Policy 2011. The stakeholder strategy will incorporate the following components:

- (i) compilation of stakeholder communication activities already undertaken,
- (ii) role of the project steering committee in coordinating and communicating with relevant government stakeholders, and
- (iii) public communication plan for disseminating information regarding project development to the public who may be impacted by the proposed projects.

X. ANTICORRUPTION POLICY

78. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the Project.²⁶ All contracts financed by ADB shall include provisions specifying the right of ADB to audit and examine the records and accounts of the executing agency and all Project contractors, suppliers, consultants and other service providers. Individuals and entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the Project.²⁷

79. To support these efforts, relevant provisions are included in the loan agreement/regulations and the bidding documents for the project.

80. The project incorporates several specific anticorruption measures, including (i) strict financial management with full adherence to monitoring and reporting systems; (ii) strict compliance with local laws and procurement regulations/guidelines published by the Department of Public Finance; (iii) the financial audit by the Auditor General's office of all subprojects; and (iv) random and independent spot checks of implementation by ADB. Furthermore, CEB, LECO, NWSDB and SEA will maintain a project webpage that will be updated regularly and will include (i) bidding procedures, bidders, and contract awards; (ii) use of the funds disbursed under the project; and (iii) physical progress.

XI. ACCOUNTABILITY MECHANISM

81. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make a good faith effort to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.²⁸

²⁶ Available at: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>.

²⁷ ADB's Integrity Office web site is available at: <http://www.adb.org/integrity/unit.asp>.

²⁸ For further information see: <http://www.adb.org/Accountability-Mechanism/default.asp>.

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

{All revisions/updates during course of implementation should be retained in this Section to provide a chronological history of changes to implemented arrangements recorded in the PAM.}

TERMS OF REFERENCE FOR CONSULTANTS (Microgrid pilot subproject)

Scope of the Project

1. As part of its road map to a smarter grid with distributed generation, Lanka Electricity Company Limited (LECO) will develop a renewable based pilot microgrid, at a premises of one of its large scale electricity consumers within its franchised area. Instead of a conventional ac microgrid, this will be a hybrid (both AC and DC) microgrid and will become an incubator and operational test bed for innovative smart grid movements in Sri Lanka. Owing to its contribution to improvements in efficiency, reliability, resilience and independence over the traditional utility grid, LECO plans to replicate the project in long run, as an extension to traditional distribution network which catalyse the absorption of renewable based distribution generation in to the distribution network. Further LECO expects to establish a workable business model for microgrid by developing necessary standards, training and operational manuals with a scalable and research supported micro grid platform. After the successful implementation, this microgrid platform will be used as an academic test bench for the further studies on microgrid implementation.

Terms of Reference

2. The pilot project will require 11 person months of individual consulting services: 6 person months of international consultants and 5 person months of national consultants. Recruitment of consultants will be in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The international and local consultants should have extensive experience and knowledge in renewable energy (notably solar) based microgrid project design, sizing, procurement, development, deployment and capacity building towards a successful implementation and operation. Preferably, consultants should have an extensive knowledge in institutional, financial, commercial and regulatory aspects in the local context. Consultants are expected to manage their office with the project management unit (PMU) at the LECO provided location. The overall terms of reference may be adjusted during the implementation stage depending upon unforeseeable circumstances.

3. The specific terms of reference for the international and local consultants are as follows but not limited to.

4. **Microgrid and renewable energy specialist/team leader** (international, 4 person-months). The international microgrid and renewable energy specialist/team leader should have demonstrated expertise in renewable energy based microgrid design, sizing, development, deployment, planning, estimation and other relevant aspects preferably in hybrid microgrids. All the sizing and scaling should be carried out by the team leader with the assistance of a local consultant who has considerable amount of knowledge in the local context. Advanced academic qualifications in renewable energy technologies are preferred. The international microgrid and renewable energy specialist will be responsible for the following:

- (i) Develop the study scope of the project;
- (ii) Develop conceptual design of the microgrid;
- (iii) Develop the detailed design of the microgrid;
- (iv) Draft specifications and bidding documents for the microgrid;

- (v) Overall supervision of the consulting team;
- (vi) Successful implementation of the pilot project where it meets the expected deliverables on time;
- (vii) Draft the pilot project completion and lessons learnt case study out of the project after monitoring the operation of the pilot project once commissioned;
- (viii) Draft the operations manual for microgrid and internalized in to the LECO regular operations and maintenance standards;
- (ix) Identify barriers, recommendation and commendations on policy and regulatory aspects for the deployment of microgrid, demand side management and distributed generation in Sri Lanka;
- (x) Give recommendations on the legal provisional amendments and statutory requirements of both regulators and LECO perspective for the replication of the project;
- (xi) Give recommendations on a sustainable financial and operational framework model for the micorgrid operations in Sri Lanka;
- (xii) Managing the overall quality of the deliverables and outputs; and
- (xiii) Coordinate with LECO and other relevant stakeholders.

5. **Capacity development and institution strengthening specialist** (international, 2 person-months) The international capacity development and institution strengthening specialist will be responsible for the following:

- (i) Develop capacity building and training programs for PMU and other operational staff involved in collaboration with other technical consultants;
- (ii) Develop trainer training program and manuals by training required personalities to train other people on microgrid platform;
- (iii) Develop a short course with an academic program syllabus for the microgrid design, implementation and operation in order to utilize the pilot facility as a academic and research platform affiliated with a local or foreign university; and
- (iv) Assist LECO in conducting the relevant capacity building and training activities.

6. **Renewable energy specialist** (national, 5 person-months). The national consultant will work closely and support the activities of the international consultants toward a successful implementation of pilot project. The national consultant should have demonstrated expertise in renewable energy based project development, deployment, planning, estimation and other relevant aspects preferably in solar photovoltaic. Advanced academic qualifications in electrical engineering are highly preferred. The national renewable energy specialist will be responsible for the following:

- (i) Carry out necessary studies on LECO suggested locations and identify suitable location for project implementation;
- (ii) Carry out load measurements and give necessary recommendations to the international consultant on sizing of the microgrid components;
- (iii) Identify deferrable and DC loads to be supply from the microgrid;
- (iv) Identify and provide recommendations on demand response activities within micro grid;
- (v) Propose modifications required on consumer side;
- (vi) Draft specifications and bidding documents for necessary consumer side modifications; and

- (vii) Assist the capacity development specialist in preparing capacity-related training program modules, manuals, develop academic program syllabuses and other requirements as appropriate; and
- (viii) Provide other assistance to the international consultants.

TERMS OF REFERENCE FOR CONSULTANTS (Small Water Desalination Plant and Ice Making Factory)

Scope of the Project

7. A small sea water desalination plant and a small ice making factory will be constructed in Nainativu Island (Jaffna district of the Northern Province) having 874 households with a population of 2,871 people using grant financing from the Japan Fund for Poverty Reduction administered by the Asian Development Bank (ADB). There is no sufficient and acceptable quality drinking water with the current average drinking water requirement of about 100,000 liters per day in the island. Refrigerating and ice making (average ice requirement is 50 m³ per day) facilities are needed to keep food (particularly fish since most of the households are engaged in fishery) from spoiling. The ADB-financed hybrid systems, including solar generation, battery storage and efficient diesel generator to be established in the island, will provide the required electricity for efficient operation of the above infrastructure. The solar power generated during the day time will provide cheap (comparing to the old, inefficient and expensive diesel generation) source of energy for the operation of the desalination plant and ice making factory. Consultancy support would be required for a technical design of the additional infrastructure facilities and overseeing implementation.

Terms of Reference

8. The project will require 4 person-months of individual international consulting services. Recruitment of the consultant will be in accordance with ADB's Guidelines on the Use of Consultants (2013, as amended from time to time). The international consultant should have experience and knowledge in water desalination plant design and construction/implementation. The consultant will work in close coordination with the project management unit (PMU) established in National Water Supply and Drainage Board (NWSDB). The overall terms of reference may be adjusted during the implementation stage depending upon specific circumstances.

9. The consultant should have advanced academic qualification in engineering, specifically relating to water supply technologies. Particularly, he should have experience in design and implementation of water desalination plants. The consultant will be responsible for the following:

- (i) Support NWSDB in designing a small water desalination plant in Nainativu Island;
- (ii) Draft specifications and bidding documents for the plant;
- (iii) Support NWSDB in successful implementation/construction, testing and commissioning of the plant;
- (iv) Give recommendations on a sustainable financial and operational model for the plant;
- (v) Assist NWSDB in designing, bidding and constructing a small ice making factory in Nainativu Island;
- (vi) Support NWSDB in coordinating with local community/stakeholders; and
- (vii) Draft the project completion and lessons learnt case study out of the project after commissioning.

**OUTLINE TERMS OF REFERENCE FOR CONSULTANTS
(Productive energy use for small isolated island and rural communities)**

1. A firm or nongovernment organization (NGO) with gender and energy sector expertise will be engaged for implementing a program on Productive energy use for small isolated island and rural communities. The firm or NGO will be responsible for the implementation of activities under components that are also specified in Gender Action Plan (GAP) of the project. These activities include:

- (i) Component A: Energy-based livelihoods with focus on women's microenterprises developed;
- (ii) Component B: Consultations for development of Renewable Energy Technology (RET) Based Local Infrastructure;
- (iii) Component C: End-user education for the safe and efficient use of electricity and electrical equipment; and
- (iv) Component D: Technical and skills training to avail of employment and livelihood opportunities.

2. The firm or NGO should have at least 5 years of experience in planning, implementing, and managing donor-funded projects, with a focus on rural electrification projects in the energy sector and in gender programming and developing sustainable income generating activities and have a demonstrated commitment to the principles of gender equality, women's empowerment, and community-based and/or community-driven development. The firm or NGO should maintain a proper accounting and financial system. For the implementation of the activities, a total of 44 person-months of consulting services including 8 person-months of international consultancy and 36 person-months of national consultancy are allocated.

A. International Consultants (8 person-months)

3. International consultancy services will be retained for advising and guiding national consultant and executing agencies who implement activities in GAP (Components A-C). The team will consist of two international experts: (a) a team leader and (b) a technical trainer.

4. **Team Leader (5 person-months):** The team leader will be a gender and development specialist with at least 5 years of working experience in energy and have a postgraduate university degree in social sciences or public administration. She/he will have overall responsibility for the direction of the implementing GAP. More specifically, she/he will be responsible for but not limiting to:

- (i) providing overall guidance and support for implementing GAP and reviewing plans and activities of the national consultants;
- (ii) undertaking activities including field trips to consult, coordinate and liaise with the national consultants, executing/implementing agencies, and other stakeholders and summarizing the findings, recommendations, and lessons learned;
- (iii) reviewing a draft final report submitted by the national consultants and finalizing the report.

5. **Technical Trainer (3 person-months):** The technical trainer will be an electrical engineer with at least 5 years of working experience in renewable energy sector and have a postgraduate university degree in electrical engineering or physics. She/he must have

knowledge of developing training programs and modules. She/he will be responsible for but not limiting to:

- (i) assisting in preparation of training programs/reviewing training programs and modules developed by the national consultants and providing guidance and other support;
- (ii) participating and supporting technical trainings and workshops falling under Component A, C and B.

B. National Consultants (36 person-months)

6. The national consultants will take responsibility for implementing the direct interventions of GAP under the project in partnership with the international consultants and executing/implementing agencies. Specifically this will include, but not be limited to:

- (i) conducting baseline surveys and consultations including focus group discussions to identify output-related current status and needs of community with a focus on women and to gather qualitative/quantitative gender data;
- (ii) identifying, selecting and categorizing target beneficiaries based on the baseline survey and consultation result with pro-poor, gender equity, and social inclusion criteria;
- (iii) mobilizing community and preparing women and men in the community for the upcoming project activities;
- (iv) developing relevant gender-sensitive information, education, and communication materials required for trainings and workshops;
- (v) preparing and implementing plans and activities for energy-based women's livelihood development, user-education on safe and efficient use of electricity and electrical equipment, and energy based technical skills development;
- (vi) organizing trainings and workshops including inception, mid-term review and project completion workshops;
- (vii) providing support for microenterprise start-ups of women;
- (viii) submitting periodic reports and preparing a draft final report on the implementation of GAP;
- (ix) preparing and maintaining records in relation to tools and materials, and physical and financial reports;
- (x) supporting the international consultants, executing agencies and ADB in the implementation of the GAP including preparation and conduct of the field trips and the monitoring reports.