

Project Administration Manual

Project Number: 49345-002
Loan Number: {LXXXX}
September 2017

Democratic Socialist Republic of Sri Lanka: Wind
Power Generation Project

ABBREVIATIONS

ADB	=	Asian Development Bank
CEB	=	Ceylon Electricity Board
EIA	=	environmental impact assessment
EMP	=	environmental management plan
GRM	=	grievance redress mechanism
ICB	=	international competitive bidding
NCB	=	national competitive bidding
OCR	=	ordinary capital resources
PAM	=	project administration manual
PMU	=	project management unit

CONTENTS

I.	PROJECT DESCRIPTION	1
II.	IMPLEMENTATION PLANS	3
	A. Project Readiness Activities	3
	B. Overall Project Implementation Plan	4
III.	PROJECT MANAGEMENT ARRANGEMENTS	5
	A. Project Implementation Organizations: Roles and Responsibilities	5
	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	12
	E. Detailed Cost Estimates by Financier	13
	F. Detailed Cost Estimates by Outputs and/or Components	14
	G. Detailed Cost Estimates by Year	15
	H. Contract and Disbursement S-Curve	16
	I. Fund Flow Diagram	17
V.	FINANCIAL MANAGEMENT	18
	A. Financial Management Assessment	18
	B. Disbursement	21
	C. Accounting	22
	D. Auditing and Public Disclosure	22
VI.	PROCUREMENT AND CONSULTING SERVICES	23
	A. Advance Contracting and Retroactive Financing	23
	B. Procurement of Goods, Works, and Consulting Services	24
	C. Procurement Plan	24
	D. Consultant's Terms of Reference	29
VII.	SAFEGUARDS	29
VIII.	GENDER AND SOCIAL DIMENSIONS	31
IX.	PERFORMANCE MONITORING, EVALUATION, REPORTING, AND COMMUNICATION	33
	A. Project Design and Monitoring Framework	33
	B. Monitoring	35
	C. Evaluation	36
	D. Reporting	36
	E. Stakeholder Communication Strategy	37
X.	ANTICORRUPTION POLICY	37
XI.	ACCOUNTABILITY MECHANISM	37
XII.	RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL	38

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.

Ceylon Electricity Board is wholly responsible for the implementation of ADB-financed projects, as agreed jointly between the government, borrower (Ceylon Electricity Board) 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 Ceylon Electricity Board of their obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

At loan negotiations, the borrower and ADB shall agree to the PAM and ensure consistency with the loan agreement. 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 agreement, the provisions of the loan agreement 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. Sri Lanka's power sector performance has improved as it achieved a national electrification ratio of 99.3% (2016) compared with 29% in 1990.¹ However, the sector continues to struggle in meeting the growing demand for electricity at sufficiently low cost and acceptable reliability. The share of thermal power in the generation mix remains high at 67.2% in 2016 as the entire demand growth has been served by oil-fired thermal (31.5%) and coal (35.7%) generation. Although 32.8% of the total generated power provided to the grid in 2016 was from renewable sources, including 24.6% hydropower, 5.2% small hydropower, 2.4% wind power, and 0.5% from other sources, the high share of oil-fired thermal generation still makes electricity expensive due to high fuel prices and poses a serious threat to the country's energy security and the environment.² There is an urgent need to develop other clean energy sources in addition to hydropower, undertake loss reduction efforts, and address energy efficiency issues. Diversification to renewable energy sources, such as wind and solar energy, will improve the country's energy security and the environment. In particular, developing wind power generation by both the public and private sectors³ and through public-private partnerships provides substantial opportunities to reach the country's goal of increasing the share of nonconventional renewable energy generation to 20% of the total generated power by 2020.⁴

2. The Government of Sri Lanka aims to ensure sustainable development of energy resources by improving the power supply systems to guarantee that the entire population has access to electricity services. Sri Lanka has a national investment program including sector investments that are based on a National Energy Policy and Strategies (NEPS).⁵ The NEPS includes a sector roadmap and appropriate policy and reform measures. To reduce the current high cost of thermal power generation and attain cost recovery, the government developed 900 megawatt (MW) of low cost coal-fired capacity that became fully operational in 2014. The government aims to increase supply capacity from renewable energy sources and potential future conversion of the oil-fired plants to gas-fired plants. The policies and incentives for developing renewable energy sources exist in the country. The increase to 20% of power generation from nonconventional renewable energy sources, including their current generation, will be in addition to 24.6% (2016) of conventional hydropower and will ensure that in the future a substantial portion of electricity is generated by domestic clean energy sources. This will address the critical issue of energy security.

3. The Wind Power Generation Project will contribute to the government's goal of expanding access to electricity and developing clean energy.⁶ This innovative, high technology project

¹ Ceylon Electricity Board. 2017. *Statistical Digest*. 2016. Colombo.

² The year 2016 was a dry year with substantially less rains that resulted in the estimated decrease of the hydropower generation with the corresponding increase in the oil-fired generation.

³ In 2016 there was a total of 131 megawatts (MW) of installed wind power generation capacity in Sri Lanka, of which 128 MW were constructed by the private sector. This wind power generation capacity allowed produce 343 gigawatt-hours (GWh) that is 2.4% of the total generated power in the country in 2016. The current feed-in-tariff for wind power of about 23 Sri Lanka rupees per kilowatt-hour that is applicable to wind power plants with capacity of up to 10 MW is considered high comparing to the world standards. This could be reduced if instead of the feed-in-tariff a competitive bidding is applied for new wind power installations.

⁴ Government of Sri Lanka. 2015. *Sri Lanka Energy Sector Development Plan for a Knowledge-Based Economy 2015-2025*. Colombo. Nonconventional renewable energy includes mini-hydro up to 10 MW capacity, wind, solar, biomass, tide and geothermal power generation sources.

⁵ Government of Sri Lanka. 2008. *National Energy Policy and Strategies of Sri Lanka*. Colombo.

⁶ The project is included in ADB. 2017. *Country Operations Business Plan: Sri Lanka, 2018–2020*. Manila.

represents the development of the first 100 MW wind park in Sri Lanka.⁷ It is consistent with the Asian Development Bank (ADB) country partnership strategy (CPS) for Sri Lanka.⁸ It has strong grounds on previous ADB interventions focused on supporting transmission and distribution investments to expand access to clean and reliable electricity, and renewable energy development.⁹ It will further support sustainable development of the power sector of Sri Lanka in line with the national and sector priorities, ADB's CPS and complement activities of other major development partners.¹⁰ The project will create an enabling environment for wind power development through the use of a public-private partnership (PPP) approach. It will also help to continue an ongoing and essential dialogue with the government on pursuing power sector reforms in coordination with other interested parties and development partners.

⁷ A project preparatory technical assistance (ADB. 2016. *Technical Assistance to the Democratic Socialist Republic of Sri Lanka for Preparing the Wind Power Generation Project*. Manila [TA 9085-SRI]) was approved on 18 March 2016 for \$2,000,000 to be financed on a grant basis by the Clean Energy Fund (financing partners: the governments of Australia, Norway, Spain, Sweden, and the United Kingdom) under the Clean Energy Financing Partnership Facility and administered by ADB. The technical assistance also includes capacity building of CEB to handle development of future wind power projects with private sector participation (Capacity Building of Ceylon Electricity Board as a Wind Park Developer for Private Sector Involvement in Wind Power Generation, accessible from the list of linked documents in Appendix 2).

⁸ ADB. 2017. *Country Partnership Strategy: Sri Lanka, 2018–2022 – Transition to Upper Middle-Income Country Status*. Manila.

⁹ 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. Tranches 1 and 2 of ADB. 2014. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranche 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, including the last transmission link (Mannar – Nadukuda) for power evacuation from the proposed wind park; 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 100 MW 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 park, were prepared with the support of the TA for Capacity Building for Clean Power Development (TA 8167-SRI). Under ADB's TA Quantum Leap in Wind Power Development actual wind measurement and wind resource assessment are ongoing through installation of met-towers in Pooneryn and Jaffna of the Northern Province and Kokilai of the North Eastern Province. A pilot hybrid mini-grid system sub-project is implemented and commissioned on Elevaithivu Island under ADB's technical assistance regional TA 7485: Effective Deployment of Distributed Small Wind Power Systems in Asian Rural Areas. The pilot helped Ceylon Electricity Board, an implementing agency, to get relevant exposure and build capacity for implementing similar innovative sub-projects under ADB. 2016. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Grants to the Democratic Socialist Republic of Sri Lanka for the Supporting Electricity Supply Reliability Improvement Project*. Manila.

¹⁰ ADB continuously coordinates with major development partners in Sri Lanka, including Agence Française de Développement, Japan International Cooperation Agency (JICA), and World Bank. JICA is planning to finance construction of a pumped storage in 2020 that would allow using wind power generated during off-pick hours for storing hydroelectric energy for load balancing rather than curtailing generation at the proposed wind park and other generation facilities.

B. Impact and Outcome

4. The project is aligned with the following impact(s): access to clean and reliable power supply in Sri Lanka enhanced by 2025 (footnote 4). The project will have the following outcome: clean power generation increased.

C. Outputs

5. **Output 1: Wind power generation capacity increased.** This output consists of three subcomponents: (i) 100 MW wind farm constructed in Mannar Island of the Northern Province;¹¹ (ii) wind park infrastructure developed that involves construction of wind park's internal medium voltage infrastructure, internal cabling, access roads and other arrangements; and (iii) a renewable energy dispatch control center established to forecast, control and manage intermittent 100 MW wind power generation.

6. **Output 2: System reactive power management improved.** This includes installation of 100 megavolt-ampere reactive (MVar) reactors at the 220 kilovolt (kV) level at the existing Anuradhapura grid substation in the North Central Province and a 50 MVar reactor at the 220 kV level at Mannar grid substation in the Northern Province to manage voltage levels within the planning limits and practical operational requirements, and ensure reliable operation of the wind park.

7. **Output 3: Capacity of CEB in project engineering design review and supervision strengthened.** Expert consultancy services will be procured to strengthen CEB capacity in project engineering design review and supervision. These advisory consultancy services will assist CEB in ensuring engineering oversight of wind turbine installation, commissioning and testing activities, and technical certification of contractor's activities throughout construction period.

II. IMPLEMENTATION PLANS

A. Project Readiness Activities

Table 1: Project Readiness Activities

Indicative activities	Months (2017)											Responsible Unit	
	M	A	M	J	J	A	S	O	N	D			
Advance contracting actions	X												CEB
Retroactive financing actions				X									CEB, ADB
Establish project implementation arrangements	X												CEB
Loan Negotiations						X							MOFMM/CEB
ADB Board/Management Approval								X					ADB
Loan Signing										X			ADB and MOFMM
Government legal opinion provided											X		MOFMM/CEB
Government (CEB) budget inclusion										X			CEB
Loan effectiveness											X		MOFMM/CEB

ADB = Asian Development Bank, CEB = Ceylon Electricity Board, MOFMM = Ministry of Finance and Mass Media.
Source: Asian Development Bank.

¹¹ Mannar Island was identified as high wind resource potential area based on studies of the National Renewable Energy Laboratory (USA), Sustainable Energy Authority of Sri Lanka and actual wind measurements and wind resource assessment at the proposed site financed by ADB TA 7837-SRI at the government request (footnote 8).

B. Overall Project Implementation Plan

Table 2: Implementation Schedule

Description	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
Project Formulation																						
Loan Preparation and Signing																						
Loan Effectiveness																						
A. DMF																						
Output 1: Wind power generation increased																						
Tendering and Award																						
Land acquisition																						
Preparatory works and Mobilization																						
Civil works, supply and erection of equipments																						
Testing and Commissioning																						
Output 2: System reactive power management improved																						
Tendering and Award																						
Preparatory works and Mobilization																						
Civil works, supply and erection of Equipments																						
Testing and Commissioning																						
Output 3: Capacity of CEB in project engineering design review and supervision strengthened																						
Project Management and Supervision Consulting Firm Recruitment																						
Consulting Services																						
B. Management Activities																						
Procurement Plan Activities																						
Reviews																						
Project Completion Report																						

-  Signing and Effectiveness
-  Effectivity for the Entire Component
-  Effectivity for the Specific Activity

CEB = Ceylon Electricity Board, DMF = design and monitoring framework, Q = quarter.
 Source: Asian Development Bank estimates.

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
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. ➤ Overseeing safeguards implementation. ➤ Quality assurance of project outputs. ➤ Provision of various reports to Asian Development Bank. ➤ Monitoring and evaluation of project activities and outputs including periodic review. ➤ Dissemination of project activities and outputs.
Project Steering Committee	<ul style="list-style-type: none"> ➤ Will be chaired by the Secretary, Ministry of Power and Renewable Energy (MPRE). Will include representatives from the Ministry of Development Assignments (Department of Project Management and Monitoring), Ministry of Finance and Mass Media (National Budget Department, Public Enterprises Department and Treasury Operations Department), Ministry of National Policies and Economic Affairs (External Resources Department, and Department of National Planning), Ministry of Power and Renewable Energy, Public Utilities Commission, Department of Wildlife Conservation and Ceylon Electricity Board. <p>The Steering Committee will undertake the following responsibilities:</p> <ul style="list-style-type: none"> ➤ Supervise project implementation; ➤ Provide any necessary government support on the implementation of project-related activities, if needed; ➤ Review progress and results; and ➤ Update ADB on any policy and regulatory changes that might affect project implementation.
Auditor General Department	<ul style="list-style-type: none"> ➤ Will undertake project financial statement audits.
Project Management Unit (set up by Ceylon Electricity Board and headed by a Project Director)	<ul style="list-style-type: none"> ➤ Will be responsible for submission of withdrawal applications, retention of supporting documents, safeguard matters and any reporting requirements. ➤ Finalize survey and detailed design and update that safeguard documents following detailed design. ➤ Prepare quarterly safeguards monitoring reports and ensure timely submission to ADB. ➤ Set up grievance redress mechanism and address any grievance raised by affected persons in a timely manner; ➤ Inform affected persons on ADB's accountability mechanism. ➤ Set up appropriate record keeping system. ➤ Disclose relevant information to the affected people and continue consultation. ➤ In the event of unanticipated environmental and resettlement impacts, prepare corrective action plan or update safeguard documents and take the actions.

Contractors	<ul style="list-style-type: none">➤ Will undertake actual implementation of contracts for equipment, civil works and services.➤ Will implement relevant safeguard requirements of the environmental impact assessment/environmental management plan.
Asian Development Bank	<ul style="list-style-type: none">➤ Will undertake project reviews and facilitate implementation including compliance by CEB of its obligations and responsibilities for project implementation in accordance with ADB's policies and procedures.

Source: Asian Development Bank.

B. Key Persons Involved in Implementation

Executing Agency

Ceylon Electricity Board

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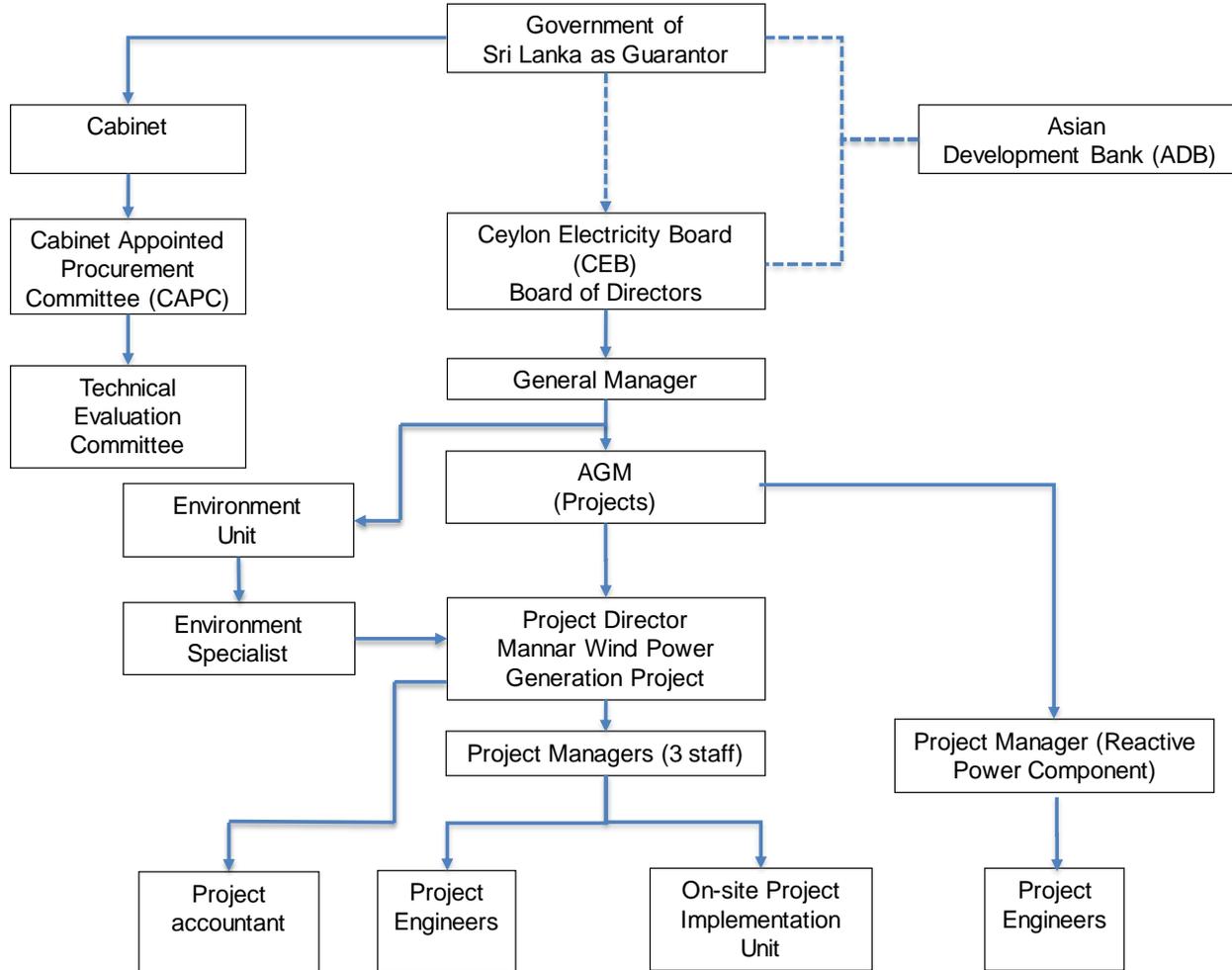
Mission Leader

Mr. Mukhtor Khamudkhanov
 Principal Energy Specialist
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C. Project Organization Structure

8. CEB will be the executing and implementing agency. A steering committee, chaired by the secretary of the Ministry of Power and Renewable Energy (MPRE), will guide CEB and review progress and results. CEB set up a project management unit (PMU) to be headed by a project director. The PMU 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 or MPRE, depending on the contract size. Full-time managers will supervise each project outputs under the project.

Figure 1: Project Implementation Structure



IV. COSTS AND FINANCING

9. The proposed project is estimated to cost \$256.7 million. The cost estimate is inclusive of taxes, duties and interest and other charges on the loan during construction. To finance the project, the government requested a \$200 million regular loan from ADB's OCR resources to be provided to CEB with a sovereign guarantee from Sri Lanka.

10. The OCR loan will have a 20-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,¹² 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, including civil works and erection, and equipment, consultancy services for the project engineering design review and supervision, portion of physical and price contingencies, and interest during construction.

11. 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 equity contribution of CEB is \$56.7 million covering taxes and duties, portion of contingencies and incremental costs (e.g., land acquisition, environmental and social mitigation, counterpart support).

12. The loan will finance three outputs: (i) wind power generation capacity increased; (ii) system reactive power management improved; and (iii) capacity of CEB in project engineering design review and supervision strengthened. The investment plan is summarized in Table 4.

Table 4: Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Output 1: Wind power generation capacity increased	196.8
2. Output 2: System reactive power management improved	19.1
3. Output 3: Capacity of Ceylon Electricity Board in project engineering design and supervision strengthened	1.0
Subtotal (A)	216.9
B. Contingencies^c	27.4
C. Financing Charges During Implementation^d	12.4
Total (A+B+C)	256.7

^a In the first quarter 2017 prices.

^b Includes taxes and duties of \$43.7 million to be financed from CEB resources. Such amount does not represent an excessive share of the project cost.

^c Physical contingencies computed at 5% of base costs. Price contingencies computed using ADB's forecasts of international and domestic inflation.

^d Interest during implementation for the ordinary capital resources loan has been computed at the 5-year US dollar fixed swap rate plus an effective contractual spread of 0.5% and zero maturity premium. Commitment charges are 0.15% per year to be charged on the undisbursed loan amount.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

¹² The interest does not include a maturity premium payable to ADB that is zero since the OCR loan has an average loan maturity of 12.75 years based on the above loan terms and CEB's choice of repayment option and dates.

13. The financing plan is in Table 5.

Table 5: Financing Plan
(\$ million)

Source	Amount (\$ million)	Share of Total (%)
Asian Development Bank		
Ordinary capital resources (regular loan)	200.0	77.9
Ceylon Electricity Board	56.7	22.1
Total	256.7	100.0

Source: Asian Development Bank estimates.

A. Cost Estimates Preparation and Revisions

14. Base cost estimates were prepared by CEB based on CEB's assessment of unit quantities and recent tender prices received by CEB for similar works. Contingencies and financial charges during implementation were estimated by ADB. CEB's Project Management Unit (PMU) will update cost estimates during implementation.

B. Key Assumptions

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

- (i) Exchange rate: SLR151 = \$1.00 (as of 22 February 2017).
- (ii) Price contingencies based on expected cumulative inflation over the implementation period are as follows:

Table 6: Escalation Rates for Price Contingency Calculation

Item	2017	2018	2019	2020	2021	Average
Foreign rate of price inflation	1.1%	2.5%	4.1%	5.6%	7.20%	4.1%
Domestic rate of price inflation	4.1%	9.5%	14.9%	20.7%	26.7%	15.2%

Sources: Asian Development Bank estimates.

- (iii) No in-kind contribution is envisaged.

C. Detailed Cost Estimates by Expenditure Category

16. This table below provides a detailed broken down cost by primary expenditure category.

Table 7: Detailed Cost Estimates by Expenditure Category

Item	LKR (millions)		Total Cost	\$ (millions)		Total Cost	% of Total Base Cost
	Foreign Exchange	Local Currency		Foreign Exchange	Local Currency		
A. Investment Costs							
1. Project Development and Overheads	52.90	279.40	332.20	0.40	1.90	2.20	1.0%
2. Land	0.00	211.40	211.40	0.00	1.40	1.40	1.0%
3. Turnkey Contract ^a	24,454.70	7,469.80	31,924.60	162.00	49.50	211.40	97.0%
4. Environmental & Social Mitigation	0.00	135.90	135.90	0.00	0.90	0.90	0.0%
5. Consultants	151.00	0.00	151.00	1.00	0.00	1.00	0.0%
Subtotal (A)	24,658.60	8,096.50	32,755.10	163.30	53.60	216.90	100.0%
Total Base Costs (A)	24,658.60	8,096.50	32,755.10	163.30	53.60	216.90	100.0%
B. Contingencies							
1. Physical ^c	1,232.90	404.80	1,637.80	8.20	2.70	10.80	5.0%
2. Price ^d	2,052.50	453.30	2,505.80	13.60	3.00	16.60	8.0%
Subtotal (B)	3,284.40	858.10	4,143.60	21.80	5.70	27.40	13.0%
C. Financing Charges during Implementation							
1. Interest during Implementation	1,793.30	0.00	1,793.30	11.90	0.00	11.90	5.0%
2. Commitment Fees	81.50	0.00	81.50	0.50	0.00	0.50	0.0%
Subtotal (C)	1,874.80	0.00	1,874.80	12.40	0.00	12.40	5.0%
Total Project Cost (A+B+C)	29,818.80	8,954.60	38,773.40	197.50	59.20	256.70	118.0%

Notes: Numbers may not sum precisely because of rounding.

^a Civil works include installation costs.

^b Equipment procurement on the basis of CIP cost (carriage and insurance paid).

^c Physical contingencies are computed at 5% of base cost.

^d Price Contingencies are computed by expenditure based on annual domestic and foreign inflation.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

D. Allocation and Withdrawal of Loan Proceeds

17. Turnkey contracts and consulting services will be financed by ADB loan 100% of the base cost, excluding local taxes and duties.

Ordinary Capital Resources Loan

ALLOCATION AND WITHDRAWAL OF LOAN PROCEEDS			
CATEGORY		ADB FINANCING	Percentage and basis for withdrawal from the Loan Account
Number	Item	Total Amount Allocated for ADB Financing Categories (\$)	
1	Turnkey contract* (Wind Power Generation)	157,600,000	100 percent of total expenditure claimed**
2	Turnkey contract* (System Reactive Power Management)	15,000,000	100 percent of total expenditure claimed**
3	Consulting services	1,000,000	100 percent of total expenditure claimed**
4	Interest during construction	12,400,000	
5	Unallocated	14,000,000	
	Total	200,000,000	

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

* Turnkey contracts include goods and related works.

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

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

E. Detailed Cost Estimates by Financier

18. This table below identifies the types of expenditure included in the overall project cost.

Table 8. Detailed Costs by Financier (\$ million)

	ADB		CEB				Total Cost
	OCR	% of Cost Category	Taxes & Duties	Non Tax	Total	% of Cost Category	
A. Investment Costs							
1. Wind Power Generation ^a	157.60	80.0%	34.80	4.40	39.20	20.0%	196.80
2. System Reactive Power Management ^b	15.00	78.0%	4.10	0.00	4.10	22.0%	19.10
3. Project Engineering Design and Support	1.00	100.0%	0.00	0.00	0.00	0.0%	1.00
Subtotal (A)	173.60	80.0%	38.90	4.40	43.30	0.0%	216.90
Total Base Costs (A)	173.60		38.90	4.40	43.30		216.90
B. Contingencies							
1. Physical ^a	5.30	49.0%	1.90	3.60	5.50	51.0%	10.80
2. Price ^b	8.70	52.0%	3.00	4.90	7.90	48.0%	16.60
Subtotal (B)	14.00	51.0%	4.90	8.50	13.40	49.0%	27.40
C. Financing Charges during Implementation							
1. Interest during Implementation	11.90	100.0%	0.00	0.00	0.00	0.0%	11.90
2. Commitment Charges	0.50	100.0%	0.00	0.00	0.00	0.0%	0.50
Subtotal (C)	12.40	100.0%	0.00	0.00	0.00	0.0%	12.40
Total Project Cost (A+B+C)	200.00	77.91%	43.70	13.00	56.70	22.09%	256.70
% Total Project Cost		77.91%				22.09%	

Note: Numbers may not sum precisely because of rounding.

a Physical contingencies are computed at 5% of base cost.

b Price Contingencies are computed by expenditure based on annual domestic and foreign inflation.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

F. Detailed Cost Estimates by Outputs and/or Components

19. This table identifies the types of expenditure by output included in the overall project cost.

Table 9: Detailed Costs by Output (\$ million)
(\$ million)

Item	Total Cost	Output 1		Output 2		Output 3	
		Amount	% of Cost Category	Amount	% of Cost Category	Amount	% of Cost Category
A. Investment Costs							
1. Project Development and Overheads	2.20	2.20	100.0%	0.00	0.0%	0.00	0.0%
2. Land	1.40	1.40	100.0%	0.00	0.0%	0.00	0.0%
3. Turnkey Contract ^a	211.40	192.30	91.0%	19.10	9.0%	0.00	0.0%
4. Environmental & Social Mitigation	0.90	0.90	100.0%	0.00	0.0%	0.00	0.0%
5. Consultants	1.00	0.00	0.0%	0.00	0.0%	1.00	100.0%
Subtotal (A)	216.90	196.80	91.0%	19.10	9.0%	1.00	0.0%
B. Contingencies							
1. Physical ^a	10.80	9.80	91.0%	1.00	9.0%	0.10	0.0%
2. Price ^b	16.60	15.00	91.0%	1.50	9.0%	0.10	0.0%
Subtotal (B)	27.40	24.80	91.0%	2.40	8.8%	0.10	0.0%
C. Financing Charges during Implementation							
1. Interest during Implementation	11.90	10.80	91.0%	1.10	8.8%	0.10	0.0%
2. Commitment Charges	0.50	0.50	91.0%	0.00	8.8%	0.00	0.0%
Subtotal (C)	12.40	11.30	91.0%	1.10	8.8%	0.10	0.0%
Total Project Cost (A+B+C)	256.70	232.90	91.0%	22.60	8.8%	1.20	0.0%

Note: Numbers may not sum precisely because of rounding.

^a Physical contingencies are computed at 5% of base cost.

^b Price Contingencies are computed by expenditure based on annual domestic and foreign inflation.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

G. Detailed Cost Estimates by Year

20. This table identifies the types of expenditure included in the overall project cost by year to enable the disbursement S-curve to be plotted in Section IV.H.

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

Item	Total Cost	2017	2018	2019	2020	2021
A. Investment Costs ^a						
1. Project Development and Overheads	2.20	0.00	1.00	0.60	0.50	0.20
2. Land	1.40	0.00	1.40	0.00	0.00	0.00
3. Turnkey Contract ^a	211.40	0.00	37.30	91.80	58.00	24.30
4. Environmental & Social Mitigation	0.90	0.00	0.60	0.10	0.10	0.10
5. Consultants	1.0	0.00	0.20	0.40	0.30	0.10
Subtotal (A)	216.90	0.00	40.30	92.90	58.90	24.70
B. Contingencies						
1. Physical ^b	10.80	0.00	2.00	4.60	2.90	1.20
2. Price ^c	16.60	0.00	2.90	6.00	5.10	2.70
Subtotal (B)	27.40	0.00	3.80	10.60	8.00	3.90
C. Financing Charges during Implementation						
1. Interest during Implementation ^d	11.90	0.00	0.50	2.20	4.10	5.10
2. Commitment Fees ^e	0.50	0.00	0.30	0.20	0.10	0.00
Subtotal (C)	12.40	0.00	0.80	2.40	4.10	5.10
Total Project Cost (A+B+C)	256.70	0.00	44.80	105.70	71.60	34.40
% Total Project Cost	100.00%	0.00%	18.11%	41.20%	27.64%	13.08%

^a In February 2017 prices.

^b Physical contingencies are computed at 5% of base cost.

^c Price Contingencies are computed by expenditure based on annual domestic and foreign inflation.

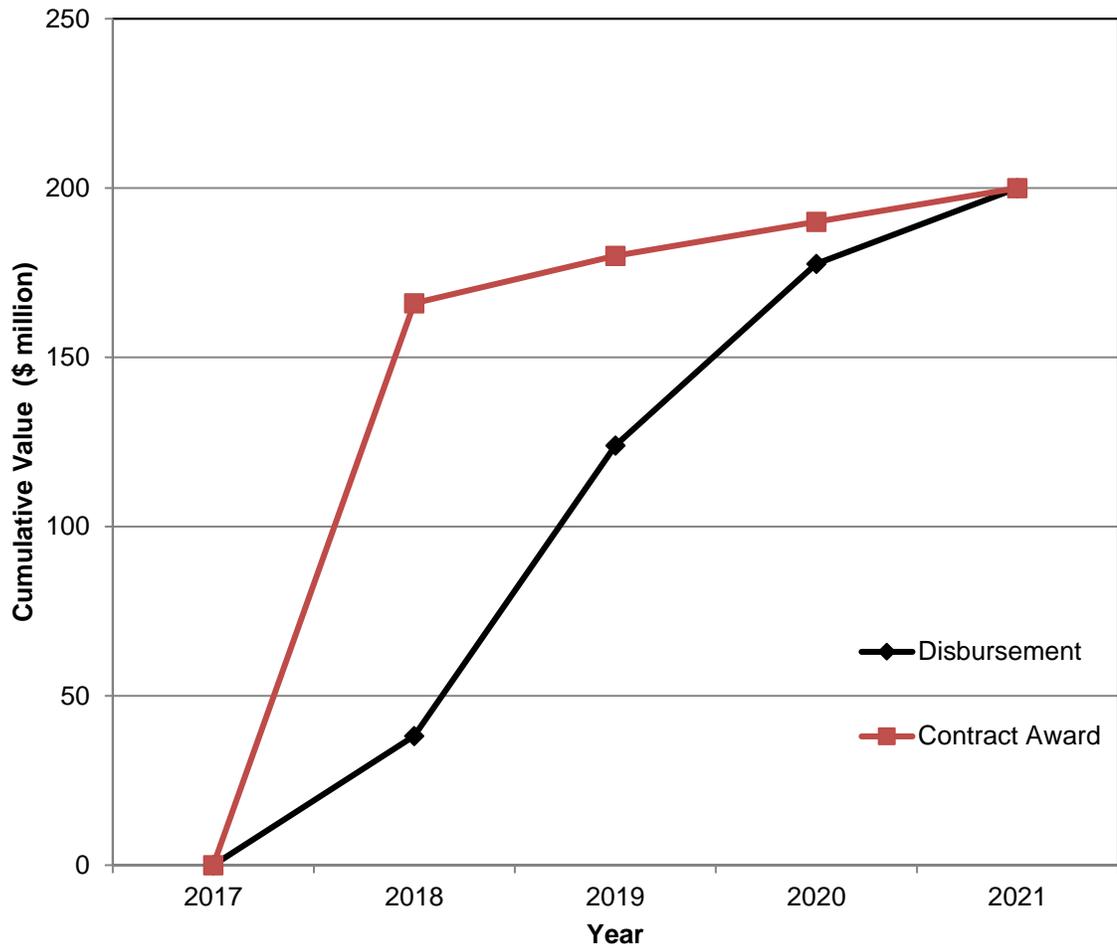
^d Interest during construction has been computed at 2.197% for OCR funds plus 0.5% contractual spread and 0.0% maturity premium

^e Commitment charge is based at 0.15% of the undisbursed balance.

Sources: Ceylon Electricity Board and Asian Development Bank estimates.

H. Contract and Disbursement S-Curve

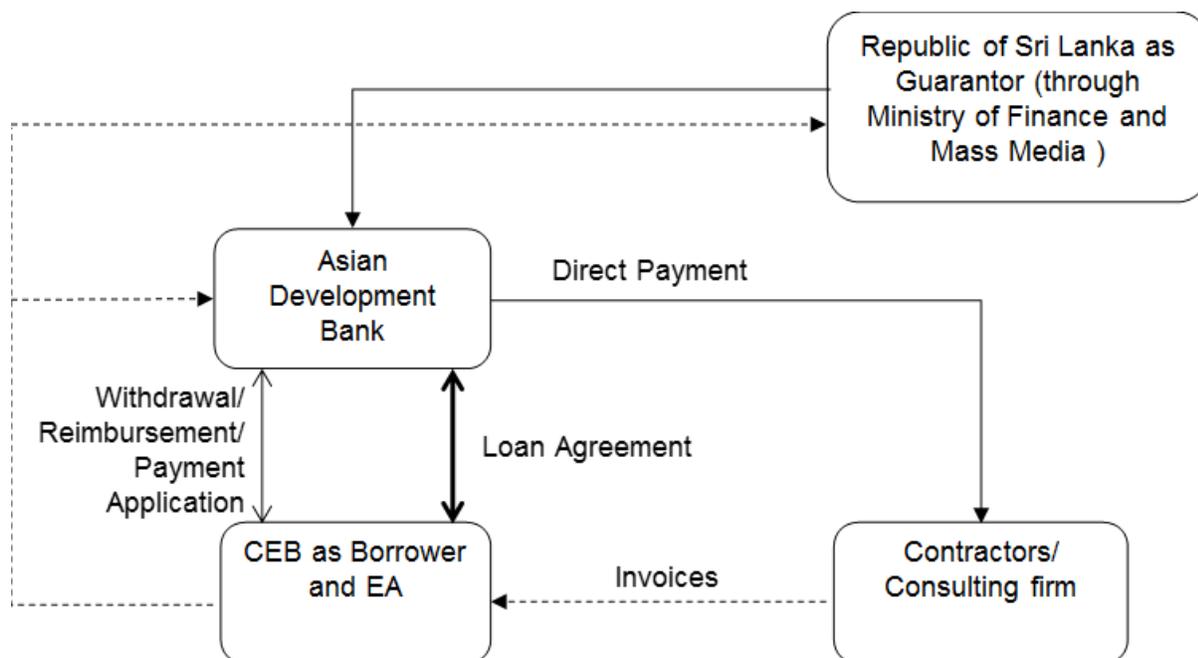
Figure 2: Contract and Disbursement S-Curve



I. Fund Flow Diagram

21. Loan proceeds will be disbursed in accordance with ADB's Loan Disbursement Handbook (2017, as amended from time to time), and detailed arrangements agreed between the Government, CEB, and ADB.

Figure 3: Fund Flow Diagram for the Loan



V. FINANCIAL MANAGEMENT

A. Financial Management Assessment

22. The financial management assessment (FMA) was conducted in February 2017 in accordance with ADB's Guidelines for the Financial Management and Analysis of Projects and the Financial Due Diligence: A Methodology Note.¹³ The FMA updates earlier assessments carried out as part of ADB-funded Green Power Development and Energy Efficiency Improvement Investment Program in 2014¹⁴ and Supporting Electricity Supply Reliability Improvement Project in 2016.¹⁵ The FMA considers CEB, a state owned entity, including funds-flow arrangements, staffing, accounting and financial reporting systems, financial information systems, and internal and external auditing arrangements, in its role as the executing agency and implementing agency for the project.

23. The most recent public financial management assessment for Sri Lanka¹⁶ 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.

24. 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.

25. 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 CEB. CEB has extensive experience of managing externally funded projects including those funded by ADB. The CEB's Finance Division and 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 financial year (FY) 2014 were submitted only in May 2016 and for FY2015 in June 2017. 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. CEB has implemented ADB and external funded projects for many years and is currently implementing the ADB's Sustainable Power Sector Support Project (Loans 2733 and 2734),¹⁷ Clean Energy

¹³ ADB. 2015. *Financial Management Technical Guidance Note—Financial Management Assessment*. Manila.

¹⁴ ADB. 2014. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranche Financing Facility to the Democratic Socialist Republic of Sri Lanka for the Green Power Development and Energy Efficiency Improvement Investment Program*. Manila.

¹⁵ ADB. 2016. *Report and Recommendation of the President to the Board of Directors: Proposed Loan and Administration of Grants to the Democratic Socialist Republic of Sri Lanka for the Supporting Electricity Supply Reliability Improvement Project*. Manila.

¹⁶ USAID. 2015. *Sri Lanka Public Financial Management – Assessment Report*. Washington.

¹⁷ 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.

and Network Efficiency Improvement Project (Loans 2892 and 2893, Grant 0149),¹⁸ Tranche 1 of the Green Power Development and Energy Efficiency Improvement Investment Program (Loans 3146, 3147, and 8290), Tranche 2 of the Green Power Development and Energy Efficiency Improvement Investment Program (Loans 3483, 3484, and 8313), and Supporting Electricity Supply Reliability Improvement Project (Loan 3409, Grant 0486).

26. 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 that includes the proposed financial management action plan.

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 National Procurement Commission of Sri Lanka. Allocate resources for the enhancement of the regulatory role of the National Procurement Commission of Sri Lanka. 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	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.

¹⁸ 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.

Risk Description	Risk Assessment			Mitigation Measures / Management Plan
	Impact	Likelihood	Assessment	
that financial performance issues are not identified in a timely manner, making fintervention and resolution of issues problematic.				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 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.	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 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

Risk Description	Risk Assessment			Mitigation Measures / Management Plan
	Impact	Likelihood	Assessment	
				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 omission of Sri Lanka, PFM = public financial management, PMU = project management unit, USAID = United States Agency for International Development.

27. 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.

28. For the proposed loan, the government has stated 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.

B. Disbursement

1. Disbursement Arrangements for ADB

29. The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2017, 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.¹⁹ Project staff are encouraged to avail of this training to help ensure efficient disbursement and fiduciary control. Disbursement of loan funds under the project will be for the two turnkey packages. ADB's direct payment, commitment, and reimbursement procedure will be used.

¹⁹ Disbursement eLearning. http://wpqr4.adb.org/disbursement_elearning

30. **Direct payment.** Before the submission of the first withdrawal application, the Borrower should submit to ADB sufficient evidence of the authority of the person(s) who will sign the withdrawal applications on behalf of the Borrower, together with the authenticated specimen signatures of each authorized person. The minimum value per withdrawal application is set in accordance with the Loan Disbursement Handbook. Individual payments below this amount should be paid by CEB and subsequently claimed to ADB through reimbursement. Each project manager of CEB 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. Withdrawal applications and supporting documents will demonstrate, among other things that the goods, and/or services for the two turnkey packages were produced in or from ADB members, and are eligible for ADB financing. Government counterpart funds will be used to finance the remaining miscellaneous works, services, taxes and duties.

C. Accounting

31. CEB will maintain separate books and records by funding source for all expenditures incurred on the project following accrual-based accounting following the government's financial regulations. CEB 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

32. CEB 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 CEB.

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

34. The audit report for the project financial statements will include a management letter and auditor's opinions, which cover (i) whether the project financial statements present an accurate and fair view or are presented fairly, in all material respects, in accordance with the applicable financial reporting standards; (ii) whether the loan proceeds were used only for the purposes of the project; and (iii) whether the borrower (CEB) was in compliance with the financial covenants contained in the legal agreements (where applicable). A management letter shall also be provided, unless already provided with the entity-level financial statements.

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

36. The government and CEB 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.²⁰ 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.

37. 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 2011.²¹ 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.²²

VI. PROCUREMENT AND CONSULTING SERVICES

A. Advance Contracting and Retroactive Financing

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

39. **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.

40. **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.

²⁰ 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.

²¹ Public Communications Policy: <http://www.adb.org/documents/pcp-2011?ref=site/disclosure/publications>

²² This type of information would generally fall under public communications policy exceptions to disclosure. ADB. 2011. *Public Communications Policy*. Manila, Paragraph 97(iv) and/or 97(v).

B. Procurement of Goods, Works, and Consulting Services

41. All procurement of goods and works will be undertaken in accordance with ADB's Procurement Guidelines (2015, as amended from time to time).

42. International Competitive Bidding (ICB) procedures will be used for procurement packages for (i) 100 MW wind power generation plant; (ii) 150 megavolt-ampere reactive (MVAR) reactors; and (iii) project engineering design review and supervision consulting services.

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

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

45. 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).²³ The terms of reference for consulting services are detailed in Section D.

C. Procurement Plan

PROCUREMENT PLAN

Basic Data

Project Name: Wind Power Generation Project	
Project Number: 49345-002	Approval Number: xxxx
Country: SRI LANKA	Executing Agency: Ceylon Electricity Board
Project Procurement Classification: B	Implementing Agency: Ceylon Electricity Board
Procurement Risk: Low	
Project Financing Amount: \$ 200,000,000 ADB Financing: \$ 200,000,000 Cofinancing (ADB Administered): Not applicable Non-ADB Financing:	Project (Loan) Closing Date: 30 June 2022
Date of First Procurement Plan: Not applicable	Date of this Procurement Plan: 24 August 2017

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	\$7,500,000	
International Competitive Bidding for Goods	\$2,000,000	Based on domestic industry capacity.

²³ 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/>

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)	Full Technical Proposal (FTP)

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

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

Package Number	General Description	Estimated Value (US\$ Million)	Procurement Method	Review [Prior / Post/Post (Sampling)]	Bidding Procedure	Advertisement Date (quarter/year)	Comments
1	Wind power generation facility	157.6	ICB	Prior	1S2E	Q2/2017	Turnkey with domestic preference for goods.
2	System reactive power management	15.0	ICB	Prior	1S2E	Q3/2017	Turnkey with domestic preference for goods.

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

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

Package Number	General Description	Estimated Value	Recruitment Method	Review (Prior / Post)	Advertisement Date (quarter/year)	Type of Proposal	Comments
C1	Project engineering design review and supervision support to CEB	1.0	QCBS	Prior	Q3/2017	FTP	90:10

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

The following table 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 / Consulting Services								
Package Number	General Description	Estimated Value	Number of Contracts	Procurement/ Recruitment Method	Review (Prior / Post)	Bidding Procedure / Type of Proposal	Advertisement Date (quarter/	Comments

							year)	
Not applicable.								

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 / Consulting Services							
Package Number	General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement/ Recruitment Method	Review (Prior / Post)	Bidding Procedure	Comments
Not applicable.							

C. Non-ADB Financing

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

Goods and Works / Consulting Services				
General Description	Estimated Value (cumulative)	Estimated Number of Contracts	Procurement/ Recruitment Method	Comments
Not applicable.				

D. 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 Institute for Construction, Training and Development (ICTAD), 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 ICTAD 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

46. A consulting firm will be engaged using the quality- and cost-based selection method with a quality-cost ratio of 90:10. The consulting services would require 12 person-months of international consultants on an intermittent basis. Expert consultancy services will be procured to support CEB in project engineering design review and supervision. These advisory consultancy services will assist CEB in ensuring engineering oversight of wind turbine installation, commissioning and testing activities, and technical certification of contractor's activities throughout construction period. The outline terms of reference (TORs) are given in Annex 1.

VII. SAFEGUARDS

48. The project is classified as environment category A, resettlement category B and indigenous peoples category C. Following ADB's Safeguard Policy Statement (SPS) 2009 and government laws, CEB has prepared a draft Environmental Impact Assessment (EIA), including an environmental management plan (EMP) and a draft Resettlement Plan (RP) for the Wind Power Generation Project. The draft EIA and RP have been disclosed on ADB's website on 18 May 2017 and 8 June 2017, respectively. The contractors and CEB will adhere to the SPS 2009 and national environmental regulations. In the event of any unanticipated environmental impacts during project implementation, CEB will take corrective actions, and update the EIA and revise the EMP, which will be disclosed on the ADB website. Environmental impacts have been assessed and mitigation measures have been proposed in the EIA and EMP to minimize habitat and species disturbance, impacts on health and safety as a result of project construction and operation, and potential bird collision risks during operation. Approximately 90.3 hectares (ha) of private land acquisition is required for 39 wind turbines,²⁴ 2.2 kilometers of new access roads and one new staff building. The number of the affected entities are 39 joint owners, 5 companies and other unidentified owners.²⁵ Physical displacement or significant resettlement impacts are not expected. Compensation will be provided in accordance with the entitlement matrix in the resettlement plan. Impacts due to noise and turbine toppling distance were assessed based on a preliminary design of the wind farm, and mitigation measures have been prepared. One of the mitigation options is to adjust the locations of sensitive receptors and relocate potentially affected structures.²⁶ The numbers of affected structures and people will be known after finalization of engineering designs by the contractor, as the impacts depend on the number of turbines and their specification. The impacts will then be assessed and the resettlement plan will be updated.

49. CEB will supervise, monitor, audit, and report to ADB on the implementation of the EMP on a quarterly basis during construction and an annual basis during operation. The EMP has been prepared that discusses the anticipated impacts, monitoring requirements, and 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. CEB will report to ADB on the implementation of RP separately on a semi-annual basis. The social and environmental management cell within CEB will assist in promoting environmentally and socially responsible implementation of contracts and will monitor the implementation of all mitigation measures. The EMP and relevant mitigation measures will be incorporated in contract documents

²⁴ One turbine requires 150 meters by 150 meters of land which is 2.25 ha.

²⁵ The number of the affected persons are expected to be approximately 50 persons, based on the social survey and statistics.

²⁶ CEB initiated consultations for relocation of two cabanas with 21 ha of land acquisition and two naval quarters considering potential noise impacts, and intends to utilize a portion of CEB's project contingencies for the relocation which is estimated at \$1.05 million.

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. CEB will ensure compliance with the EMP during operation and maintenance stage. Corrective actions will be taken for any unanticipated impacts and inadequate safeguards implementation.

50. Described below are the institutional roles and responsibilities to ensure environmental and social safeguard measures are implemented during design, construction and operation phases. PMU has a designated Environment and Social specialists and engineers who have the oversight responsibilities for monitoring in areas such as environment and social safeguards. The PMU will be responsible for overall project planning and implementation, including procurement, accounting, quality assurance, social and environmental issues and coordination with concerned agencies. CEB will hire appropriate Environment and Social Consultants at Project Implementing Unit (PIU) level, as deemed necessary to assist PIU in day-to-day coordination and reporting of various project activities. CEB will also retain qualified and experienced external expert(s) for environment (ecological/ornithological and other consultants as necessary), who will not be involved in day-to-day implementation and supervision of the Project, to verify environmental monitoring information.

51. The duties of PMU at corporate level include:

- Liaise with the Ministry of Power and Renewable Energy, Central Environmental Authority, Department of Wildlife Conservation, and other relevant agencies and seek their help to solve the environment and resettlement related issues of the project implementation.
- Oversight PIU and construction contractor(s) on monitoring and implementing mitigation measures during design, construction and operation phases of the project.
- Advise and coordinate with PIU to finalize survey and detailed design and update that safeguard documents following detailed design.
- Preparation of quarterly (during construction) and annual (during operation) environmental monitoring reports and semi-annual social monitoring reports.
- Advise and coordinate with PIU towards effective environment management and resettlement.
- Liaise with PIU and contractor(s) and seeking their help to solve the environment-and social- related issues of project implementation.
- Advise project planning cell on environmental and social issues to avoid negative environmental and social impacts.
- Engage in grievance redress and ensure the prompt resolution of complaints.
- Set up appropriate record keeping system.
- Disclose relevant information to the affected people and continue consultations.
- Provide training and awareness on environmental and social issues related to wind power generation projects to the project staff and EPC contractor(s).

52. The duties of PIU at field level include:

- Conduct overall coordination, preparation, planning, and implementation of all field level activities.
- Implement the environment and social policy guidelines and environmental and social good practices at the project site.
- Take responsibility for the implementation of EMP, Construction Statement Method, Biodiversity Management Plan and resettlement plan at the field level, if any, through EPC contractor(s) or third part consultants in consultation with PMU.

- Undertake day-to-day project planning and implementation activities, and manage the site activities.
- Support PMU to carry out environmental and social survey in conjunction with project planning cell to avoid negative environmental and social impact.
- Support PMU to prepare of quarterly (during construction) and annual (during operation) environmental monitoring reports and semi-annual social monitoring reports.
- Make the contractor staff aware of the environmental and social safeguard requirements and/or issues related to wind power generation projects so that EMP and resettlement plan, if any could be managed effectively.

53. 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 provide the solution(s) within 30 days from the date of the complaint received by GRC. All complaint related documentation, such as minutes of the meeting and decisions, will be summarized and become part of the environmental and social monitoring reports submitted to ADB. If the grievance is not addressed, the complainant can seek legal redress of the grievance in the appropriate courts. ADB's accountability mechanism will also be informed to the affected people by CEB.

54. **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

55. **Gender.** Clean and reliable electricity supply improves living conditions and benefits both men and women equally. The project is categorized as No Gender Elements as benefits from an electricity generation project are generally indirect and gender designs are not explicitly integrated. However, equal compensation and assistance will be paid to the impacted men and women, including additional assistance to women-headed households categorized as vulnerable. The project's loan agreement will include a standard assurance related to core labor standards for contractors, including gender equal pay for equal types of work, and an awareness program on HIV and sexually transmitted diseases and human trafficking. Focus group discussions and consultations were undertaken with women from different socioeconomic groups in the project influenced area.

56. **HIV /AIDS.** Based on the poverty and social assessment, the risk that the project will increase HIV/AIDS incidence is not high. However, contractors will carry out HIV/AIDS awareness for their laborers at work sites, which will be monitored by the construction supervision consultants.

57. **Health.** CEB 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.

58. **Labor.** CEB 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 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 and reliable power supply in Sri Lanka enhanced by 2025 (*Sri Lanka Energy Sector Development Plan for a Knowledge Based Economy, 2015–2025*)^a

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
<p>Outcome</p> <p>Clean power generation increased</p>	<p>By 2022:</p> <p>a. Additional 345,600 megawatt-hours of clean energy generated per year (2016 baseline: 0)</p> <p>b. Additional 265,700 tons of carbon dioxide emissions avoided per year (2016 baseline: 0)</p>	<p>a–b: CEB annual report (power statistics)</p>	<p>Delays in generation and transmission investments may impact improvements in electricity supply and reliability of the network.</p> <p>Integration of intermittent wind generation creates potential difficulties in managing the grid.</p> <p>Insufficient cash generation may impact CEB's ability to fund its operations.</p>
<p>Outputs</p> <p>1. Wind power generation capacity increased</p>	<p>By 2020:</p> <p>1a. 100-megawatt wind power park constructed (2016 baseline: 0)</p> <p>1b. Wind park internal infrastructure, including 31 kilometers of 33 kilovolts underground cables and access roads, developed (2016 baseline: 0)</p> <p>1c. Renewable energy dispatch control center to forecast, control, and manage intermittent 100 megawatt wind power generation established (2016 baseline: 0)</p>	<p>1a-c. CEB annual report</p>	<p>(For all outputs) Unexpected increase in the prices of commodities and raw materials may result in cost overruns and construction delays.</p>
<p>2. System reactive power management improved</p>	<p>By 2021:</p> <p>2a. 100 megavolt-ampere reactive reactors at</p>	<p>2a–b. CEB annual report</p>	

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting Mechanisms	Risks
3. Capacity of CEB in project engineering design review and supervision strengthened	<p>Anuradhapura grid substation (North Central Province) installed (2016 baseline: 0)</p> <p>2b. 50 megavolt-ampere reactive reactor at Mannar grid substation (Northern Province) installed (2016 baseline: 0)</p> <p>By 2020: 3a. Engineering oversight of wind turbine installation, commissioning, and testing, and technical certification over the construction period delivered (2016 baseline: 0)</p>	3a. CEB annual report	

Key Activities with Milestones

1. Wind power generation capacity increased

- 1.1 Issue bidding documents by Q2 2017.
- 1.2 Complete land acquisition by Q1 2018.
- 1.3 Award contract by Q1 2018.
- 1.4 Start construction by Q1 2018.
- 1.5 Commission the wind power generation plant by Q4 2020.

2. System reactive power management improved

- 2.1 Issue bidding documents by Q4 2017.
- 2.2 Award contract by Q4 2018.
- 2.3 Start construction by Q1 2019.
- 2.4 Commission reactors by Q1 2021.

3. Capacity of CEB in project engineering design review and supervision strengthened

- 3.1 Issue request for expression of interest by Q3 2017.
- 3.2 Award contract by Q1 2018.
- 3.3 Complete consulting services by Q4 2020.

Project Management Activities

Twice-a-year review missions from Q1 2018 until physical completion of the project.

Prepare project completion report by Q4 2021.

Inputs

ADB ordinary capital resources (regular loan)	\$200.0 million
CEB	\$56.7 million
Total	\$256.7 million

Assumptions for Partner Financing

Not applicable

CEB = Ceylon Electricity Board, Q = quarter.

^a Government of Sri Lanka. 2015. *Sri Lanka Energy Sector Development Plan for a Knowledge Based Economy, 2015–2025*. Colombo.

Sources: Ceylon Electricity Board. 2017. *Statistical Digest 2016*. Colombo; Government of Sri Lanka. 2008. *National Energy Policy and Strategies of Sri Lanka*. Colombo; Ceylon Electricity Board and Asian Development Bank estimates.

B. Monitoring

59. **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 quarterly progress reports and after each review mission. These quarterly reports will provide information necessary to update ADB's project performance reporting system.²⁷

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

61. **Safeguards monitoring.** The contractors, CEB 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/or endorsed by the government of Sri Lanka. The contractors shall prepare and submit the monthly progress report in conformance to CEB 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 will be assisted by technical staff and/or experts who will evaluate the technical reports, feasibility studies, preliminary design reports, environmental and social assessment reports (including the EMP with budget), preliminary and detailed design reports to ensure compliance with ADB and government requirements. CEB will provide environmental monitoring reports to ADB a quarterly basis during construction and an annual basis during operation, and submit separate social monitoring reports to ADB a semi-annual basis. The environmental and social monitoring reports will describe implementation progress of environment and resettlement activities and compliance issues, and include quantitative monitoring data in accordance with the EIA/EMP environmental monitoring plan and RP, respectively. The environmental and social monitoring reports and the relevant safeguard reports will be posted to ADB website as required by SPS 2009 and Public Communications Policy 2011 and disclosed locally by CEB. In the event of any unanticipated environmental or resettlement impacts during implementation, or if monitoring identifies a breach of performance standards that should be complied with by CEB and/or their contractors, CEB will submit to ADB a time-bound corrective action plan (CAP) or updated the EIA/RP.

62. 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 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.

²⁷ ADB's project performance reporting system is available at <http://www.adb.org/Documents/Slideshows/PPMS/default.asp?p=evaltool>

63. **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 with routine project progress reports and other monitoring reports. In addition, the inclusion and compliance with labor standards, health and gender aspects will be monitored through review of bidding documents, contract awards, and progress reports.

C. Evaluation

64. Within 6 months of physical completion of the project, CEB will submit a project completion report to ADB.²⁸

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 and other government officials, contractors, consultants at least twice a year	ADB/MPRE/CEB
Mid-term review	Comprehensive review of project	Site visit and meetings with EA/IA and other government officials, contractors, consultants	ADB/DPMM/MPRE/CEB
Project Completion Report	Evaluate the overall output of the project and its relevance and suitability	Site visit and meetings with EA/IA and other government 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 Development Assignments, EA = Executing Agency, IA = Implementing Agency, MPRE = Ministry of Power and Renewable Energy.

D. Reporting

65. CEB 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 the 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 executing agency audited financial statement together with the associated auditor's report, should be adequately reviewed.

²⁸ Project completion report format is available at: <http://www.adb.org/Consulting/consultants-toolkits/PCR-Public-Sector-Landscape.rar>

E. Stakeholder Communication Strategy

66. CEB 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 the relevant government stakeholders;
- (iii) Public communication plan for disseminating information regarding project development to the public who may be impacted by the proposed projects;
- (iv) Disclosure of environment monitoring reports and any updated EIA in the ADB and CEB websites and to affected persons and NGOs; and
- (v) Other communication arrangements at the local community level including through notice boards, newspapers, fisheries liaison officer, etc.

X. ANTICORRUPTION POLICY

67. ADB reserves the right to investigate, directly or through its agents, any violations of the Anticorruption Policy relating to the project.²⁹ 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/or entities on ADB's anticorruption debarment list are ineligible to participate in ADB-financed activity and may not be awarded any contracts under the project.³⁰

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

69. 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 if all subprojects; and (iv) random and independent spot checks of implementation by ADB. Furthermore, CEB will maintain a project webpage that will be updated regularly and will include (i) bidding procedures, bidders, and contract awards; (ii) use of funds disbursed under the project; and (iii) physical progress.

XI. ACCOUNTABILITY MECHANISM

70. People who are, or may in the future be, adversely affected by the project may submit complaints to ADB's Accountability Mechanism. The Accountability Mechanism provides an independent forum and process whereby people adversely affected by ADB-assisted projects can voice, and seek a resolution of their problems, as well as report alleged violations of ADB's operational policies and procedures. Before submitting a complaint to the Accountability Mechanism, affected people should make an effort in good faith to solve their problems by working with the concerned ADB operations department. Only after doing that, and if they are still dissatisfied, should they approach the Accountability Mechanism.³¹

²⁹ Anticorruption Policy: <http://www.adb.org/Documents/Policies/Anticorruption-Integrity/Policies-Strategies.pdf>

³⁰ ADB's Integrity Office web site: <http://www.adb.org/integrity/unit.asp>

³¹ Accountability Mechanism: <http://www.adb.org/Accountability-Mechanism/default.asp>.

XII. RECORD OF CHANGES TO THE PROJECT ADMINISTRATION MANUAL

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

Terms of Reference for Project Engineering Design Review and Supervision Support to CEB

1. This outline terms of reference (TORs) has been used for recruitment of a consulting firm for the supervision of the Mannar Wind Power Generation Project. The outline TORs is applicable (with amendment to suit the particular circumstances) for the procurement of consulting firms for other construction supervision contracts needed for the scaled up project. ADB's "no objection" to TORs for recruitment of supervising consultants for the outputs shall be sought when developing the "Request for Proposals".

Introduction

2. The Government of Sri Lanka and CEB will develop a 100 megawatt (MW) wind power generation facility on southern coast of Mannar Island in the Northern Province of Sri Lanka. The Wind Power Generation Project will contribute to the government's goal of expanding access to electricity and developing clean energy. The project is consistent with the Asian Development Bank (ADB) country partnership strategy (CPS) in Sri Lanka.³² It has strong grounds on previous ADB interventions focused on supporting transmission and distribution investments to expand access to clean and reliable electricity, and renewable energy development. It will further support sustainable development of the power sector of Sri Lanka in line with the national and sector priorities, ADB's CPS and complement activities of other major development partners. The project will create an enabling environment for wind power development through the use of a public-private partnership (PPP) approach. It will also help to continue an ongoing and essential dialogue with the government on pursuing power sector reforms in coordination with other interested parties and development partners.

A. Construction Supervision

3. Project management and construction supervision services shall be provided to support CEB in project engineering design review and supervision. These advisory consultancy services will support CEB in ensuring engineering oversight of the wind park detailed design, wind turbine installation, commissioning and testing activities, and technical certification of contractor's activities throughout construction period.

4. **Scope of Work:** The consulting firm will serve as a technical advisor to CEB throughout the construction period. The work by CEB during the construction phase of the Project will involve monitoring of the contractor's design engineering and construction efforts. The consulting firm will provide part-time observation on site, review results of quality control testing, provide on-site monitoring of equipment testing, and provide independent certification of turbine-generator acceptance test results. The primary role of the consulting firm is to provide technical support to CEB in specific areas of expertise. The following roles and minimum tasks have been identified:

- Get familiarized with the EPC contract agreement with special focus on obligations of the Contractor and CEB;
- Study all manuals and guidelines supplied by the wind turbine supplier for transportation, storage, installation and commissioning of the wind plant;
- Assist CEB in preparing the organizational set up for project execution – staff and their responsibilities and the working arrangements with the Contractor;
- Discuss and agree on the tasks of the Construction Environmental Management Plan;

³² ADB. 2017. *Country Partnership Strategy: Sri Lanka, 2018–2022—Transition to Upper Middle-Income Country Status*. Manila.

- Prepare the project implementation schedule in consultation with the Contractor and Owner.

5. The whole of the work is expected to be completed by December 2020, though services will be required for supervising performance based maintenance activities for one year thereafter.

B. Composition and Inputs of the Construction Supervision Team.

6. The Supervision Team shall comprise, as a minimum, a Supervision Team Leader to act as the "Engineer" (as per the definition of "Engineer" of the in the civil works contracts), a Civil / Structural Engineer, and an Electrical / Test Engineer, and other specialists and administrative staff needed to meet the requirements of these TORs as required:

1. Supervision Team Leader/Civil/Structural Engineer (6 person-months on intermittent basis)

- Review Contractor's geotechnical investigation and the suitability of Contractor's proposed foundation designs;
- Review Contractors proposed road designs and earthworks in accordance with contract specifications and wind turbine specifications;
- Inspect early stage foundation excavations, bulk earthworks, road and hardstand construction;
- Witness, inspect and verify
 - at least first two foundation pours;
 - first cable installation; and
 - first wind turbine tower, nacelle and rotor installation;
- Verify the wind turbine transportation, site storage and erection is undertaken according to Contractor's specifications;
- Generally support CEB to ensure civil work balance of plant design and construction activities are in accordance with the Contractor's specifications.

2. Electrical/Test Engineer (6 person-months on intermittent basis)

- Review and verify the Contractor's detailed electrical design for the wind farm balance of plant (wind turbine transformer and MV switchgear, power collection system);
- Witness, inspect and verify early stage underground cable installations;
- Generally support CEB to ensure electrical balance of plant design and construction activities are in accordance with the Contractor's specifications, including:
 - underground cabling;
 - switchgear;
 - SCADA/control system;
 - earthing design;
 - insulation coordination; and
 - arc flash design;
- Review commissioning and Inspection and Test Plans for compliance with the contract and evaluate the testing procedure for adequacy;
- Witness-start-up and testing of the first unit.

Other tasks

- Maintain issues register and Request for Information process;

- The consulting firm may be called upon to provide non-core role technical support in the following areas:
 - Wind turbine power system model validation and performance validation test plan/report;
 - Review changes to project design, such as wind turbine micro-siting, post-contract award;
 - Provide technical advice in planning for power curve test execution, including siting of wind monitoring mast; and
 - Inspections of wind turbine components before they are accepted;
- The consulting firm will conduct periodic reviews of the project, including
 - on-site inspection to assess the quality of the work completed to date;
 - review the engineering, procurement and construction (EPC) contractor's periodic progress report;
 - evaluate the actual quality control procedures implemented and advise if, in its opinion, the Quality Control/Quality Assurance program of the EPC contractor is appropriate and adequate with respect to project site conditions and typical of industry practice;
 - The consulting firm will provide a letter report addressing each of the above items after each site visit.

7. During the construction period, it is estimated that the Civil/Structural and the Electrical/Test consultants will each need to visit the project site a total of 6 occasions over a construction period for civil, electrical and wind turbine site works.

Reports to be delivered by CEBs Engineer

- Civil and electrical design review reports; and
- Construction Progress Reports at the completion of each site visit.

Schedule

- The construction period, from design reviews, through initial site works, through to wind turbine commissioning is expected to be 22 months;
- All reports shall be in the English language and should be prepared in Microsoft Word or PDF format and Microsoft EXCEL, as required. All reports should be submitted by e-mail to the Project Director, Mannar Wind Plant, CEB.