PROJECT PREPARATORY TECHNICAL ASSISTANCE (WIND POWER GENERATION PROJECT)

Justification

1. The sector development framework of the Government of Sri Lanka envisions sustainable development of energy resources, enabling access to and use of low cost energy services by the entire population, and reliable delivery of such services at a competitive price.[1] To increase access to electricity and achieve the goal of meeting the growing demand for electricity at sufficiently low cost and acceptable reliability to widen access to growth opportunities and attain sustainability and energy security in the long term, the government plans to increase supply capacity of the system by raising the share of renewable energy sources, particularly wind power generation in Sri Lanka's energy mix. To address investment needs in support of these plans, a project preparatory technical assistance (TA) is needed to prepare a relevant investment project for consideration by the Asian Development Bank (ADB).

Major Outputs and Activities

2. The major outputs and activities are summarized in Table A3.1.

Table A3.1: Summary of Major Outputs and Activities

Major Activities	Expected Completion Date	Major Outputs	Expected Completion Date
Conducting project technical, economic, financial, governance, resettlement and environmental, and other due diligence	June 2017	Inception Report Interim Report Final Report	August 2016 December 2016 June 2017

Source: Asian Development Bank estimates.

3. The TA will support the Ceylon Electricity Board (CEB), the implementing agency, in preparing a feasibility study, preliminary engineering design, and conducting due diligence. As part of advance contracting, PPTA consultants will assist in preparing procurement packages and relevant bidding documents for the proposed CEB wind power generation, and competitive bidding documents for private sector participation in the project. The PPTA consultants will also prepare a road map and options for private sector involvement in further developing renewable energy sources in the country.

Cost Estimate and Proposed Financing Arrangement

4. The TA is estimated to cost $2,000,000 to be financed on a grant basis by the Clean Energy Fund under the Clean Energy Financing Partnership Facility (CEFPF) which is administered by ADB. [2] The Government of Sri Lanka will provide counterpart support in the form of office accommodation and support facilities, counterpart staff, technical data, and other in-kind contributions. The detailed cost estimate is presented in Table A3.2.

[1] Government of Sri Lanka, 2008. *National Energy Policy and Strategies of Sri Lanka*. Colombo.

[2] Financing partners include the Governments of Australia, Norway, Spain, and Sweden. The PPTA is included in ADB. 2015. *Country Operations Business Plan: Sri Lanka, 2016–2018*. Manila.

Table A3.2: Cost Estimates and Financing Plan
($'000)

Item				Total Cost
Asian Development Bank[a]				
1.	Consultants			
	a.	Remuneration and per diem		
		i.	International consultants (36 person-months)	1,073.0
		ii.	National consultants (32 person-months)	212.0
	b.	International and local travel		200.0
	c.	Reports and communications		80.0
2.	Equipment (computer, printer, etc.)[b]			30.0
3.	Workshops, training, seminars, and conferences[c]			50.0
4.	Surveys[d]			150.0
5.	Miscellaneous administration and support costs			50.0
6.	Representative for contract negotiations			5.0
7.	Contingencies			150.0
Total				**2,000.0**

[a] Financed by the Clean Energy Fund under the Clean Energy Financing Partnership Facility.

[b] Equipment

Type	Quantity	Cost
Specialized software for wind forecast, control and management	3 licenses	$15,000
Computers, printers and other peripherals	5 units	$15,000

[c] Workshops, training, seminars, and conferences

Purpose	Venue
Seminars and consultations	Wind park areas, Mannar, SRI
Training in wind forecast, control and management	Colombo, SRI

[d] Environmental, social and other baseline condition studies and surveys

Source: Asian Development Bank estimates.

Consulting Services

5. A consulting firm will be recruited for the technical assistance with total positions and person-months as indicated in Table A3.3. Taking into consideration the project complexity, the firm will be recruited using quality and cost–based selection methodology with 90:10 technical-cost weighting based on full technical proposal. The consulting firm will conduct technical, economic, financial, and governance due diligence, prepare project cost estimates, procurement plan and implementation schedule. International and national environmental and social development specialists will be recruited on an individual basis to ensure that they start their field activities early due to the expected environmental category “A” and involuntary resettlement category “B” for the project. Consultants will be recruited following the Guidelines on the Use of Consultants (2013, as amended from time to time).

Table A3.3: Summary of Consulting Services Requirement

International Name of Positions	Person-months	National Name of Positions	Person-months
Consulting Firm:			
Power System Engineer/Team Leader	6.0	Power System Engineer	4.0
Wind Power Specialist	6.0	Wind Power Specialist	6.0
MV Network/Distribution Specialist	3.0	MV Network/Distribution Specialist	3.0
Power Economist	3.0	Power Economist	2.0
Financial Management Specialist/Financial Analyst	3.0	Financial Management Specialist/Financial Analyst	2.0
Project Management/ Procurement Specialist	2.0	Project Management/ Procurement Specialist	2.0
Bid Advisor/Transaction Specialist	3.0	Bid Advisor/Transaction Specialist	3.0
Legal Specialist	2.0	Legal Specialist	2.0
Individual Consultants:			
Environmental Specialist	3.0	Environmental Specialist	3.0
Environmental Specialist (Ornithologist)	2.0	Environmental Specialist (Ornithologist)	2.0
Social Development Specialist	3.0	Social Development Specialist	3.0
Total:	**36.0**		**32.0**

MV = medium voltage
Source: Asian Development Bank estimates

6. The outline terms of references for the TA international consultants are described below:

Position	Summary Tasks	Qualification
Power System Engineer /Team Leader	• Manage consulting team and ensure quality output • Prepare sector assessment • Prepare proposal on a dedicated dispatch center for the proposed wind parks together with a Wind Power Specialist • Conduct due diligence on internal infrastructure of wind parks including medium voltage network and internal cabling, examine alternative solutions • Prepare composite cost estimates, procurement plan and implementation schedule • Estimate Green House Gas Reduction • Climate change impacts will be identified and properly addressed, if necessary	Power engineer qualified to at least a university bachelor degree with 15 years of experience in power systems
Wind Power Specialist	• Support CEB in preparing/finalizing a feasibility study for the proposed wind parks • Assist CEB in preparing technical design and identifying optimal specifications • Support the Power System Engineer in preparing proposal on a dedicated dispatch center for the proposed wind parks • Prepare a road map and options for private sector involvement in further developing renewable energy sources in the country	Wind power engineer qualified to at least a university bachelor degree with 10 years of experience of working in the wind power sector
Medium Voltage Network/Distribution Specialist	• Conduct/review route surveys • Finalize the least-cost design for line routes and the cost estimates for a relevant component of ensuing	Power engineer qualified to at least a university bachelor degree with 10

Position	Summary Tasks	Qualification
	project • Conduct load flow studies to optimally sizing the wire and develop an investment plan for wind park internal cabling • Prepare a procurement plan and implementation schedule for the component	years of experience in medium voltage network/distribution design
Power Economist	• Undertake project economic analysis following the ADB's Guidelines for Economic Analysis • Assess social and gender impacts jointly with social development specialist	At least a bachelor degree in economics and 10 years of relevant experience in economic analysis of projects
Financial Management Specialist/Financial Analyst	• Review CEB's financial performance and operating systems • Undertake CEB's financial management assessment, identify areas and devise measures for improving CEB's financial performance, operating systems, and overall efficiency levels • Undertake project financial analysis • Design project fund flow/disbursement mechanisms	At least a bachelor degree in finance and 10 years of relevant experience in financial management assessment and/or financial analysis of projects. Having a chartered accountant, CPA, or equivalent may be advantageous.
Project Management/ Procurement Specialist	• Conduct project management and relevant capacity assessment • Conduct procurement capacity assessment • Provide support in preparation of procurement documents, including master bidding documents, and advance contracting activities	At least a bachelor degree in economics/ finance/ engineering and 10 years of relevant experience in project management/ procurement
Bid Advisor/ Transaction Specialist	• Identify optimal public-private partnership (PPP) bid package options • Preparation of competitive bidding guidelines for the private sector participation in the wind sector • Develop commercial arrangements and finalize competitive bidding documents for wind power park blocks allocated for private sector participation; • Support CEB for selection of private developers through a competitive bidding process	At least a bachelor degree in business administration with at least 10 years of working experience in the energy sector, specifically on the competitive bidding framework in the renewable energy.
Legal specialist	• Draft commercial documentation including a power purchase agreement between a park developer and a private sector developer specifically focused on wind power generation	At least a master's degree in law with at least 10 years of experience in advising renewable energy transactions
Environmental Specialist	• Prepare Initial Environmental Examination (IEE) reports and/or, as necessary, Environmental Impact Assessment (EIA), for project components • Prepare Environmental Management Plans (EMPs) • Conduct information disclosure and public consultation	At least a bachelor's degree in environmental science/ engineering and at least 10 years of experience in carrying environmental studies for projects, IEE and EIA preparation
Environmental Specialist (Ornithologist)	• Based on results of a bird migration survey, conduct a bird collision modeling pertaining to a wind park area • Identify mitigation measures preventing birds colliding with wind turbines • Develop a biodiversity management plan to ensure no net loss of biodiversity	At least a master's degree in environmental science/ ecology or similar with at least 10 years of ornithological experience and carrying environmental studies for wind power

Position	Summary Tasks	Qualification
	• Provide written inputs to the EIA's ornithological assessment	projects, including ornithological assessments with collision risk modelling preferably for large-scale wind power developments
Social Development Specialist	• Conduct social and gender analysis • Prepare Resettlement Plans for project components • Identify appropriate compensation methodologies where required • Conduct information disclosure and public consultation	At least a bachelor degree in social development or related fields and at least 10 years of relevant experience

7. International consultants will be assisted by national consultants. All national consultants will have at least a bachelor's degree from an established university and seven years of experience in their respective area of expertise.

Implementation Arrangements

8. The Ministry of Power and Renewable Energy (MPRE) will be the executing agency, and CEB will be the implementing agency for the TA. A dedicated project implementation unit (PIU), which will include experienced staff and be headed by a senior officer, will be set up in CEB to undertake day-to-day TA activities. CEB will provide in-kind contribution in the form of counterpart staff, project related data, office accommodation for consultants, and local transportation outside Colombo to visit project sites as feasible. Disbursements under the TA will be done in accordance with *ADB's Technical Assistance Handbook* (May 2010, as amended from time to time).

9. The proposed TA processing and implementation schedule is listed in Table A3.4.

Table A3.4: Technical Assistance Processing and Implementation Schedule

Major Milestones	Expected Completion Date
Approval of concept paper	March 2016
Selection of a consulting firm	March-June 2016
Inception Report	August 2016
Interim Report	December 2016
Final Report	June 2017
Physical completion	July 2017
Technical assistance financial closure	September 2017

Source: Asian Development Bank estimates.