Report and Recommendation of the President
to the Board of Directors

Project Number: 39415
November 2010

Proposed Loans and Administration of Technical Assistance Grant
Democratic Socialist Republic of Sri Lanka:
Sustainable Power Sector Support Project

Asian Development Bank
CURRENCY EQUIVALENTS
(as of 11 November 2010)

Currency Unit – Sri Lankan rupee/s (SLRe/SLRs)

SLRe1.00 = $0.00895
$1.00 = SLRs111.67

ABBREVIATIONS

ADB – Asian Development Bank
ADF – Asian Development Fund
CEB – Ceylon Electricity Board
CO₂ – carbon dioxide
EMP – environmental management plan
FIRR – financial internal rate of return
LIBOR – London interbank offered rate
MOPE – Ministry of Power and Energy
NEPS – National Energy Policy and Strategies
OCR – ordinary capital resources
PIU – project implementation unit
QCBS – quality- and cost-based selection
SEA – Sustainable Energy Authority
TA – technical assistance
WACC – weighted average cost of capital

WEIGHTS AND MEASURES

km – kilometer
kV – kilovolt
MVA – megavolt ampere
MVAr – megavolt ampere reactive
MW – megawatt
NOTE

In this report, "$" refers to US dollars.

<table>
<thead>
<tr>
<th><strong>Vice-President</strong></th>
<th>X. Zhao, Operations 1</th>
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<tbody>
<tr>
<td><strong>Director General</strong></td>
<td>S. H. Rahman, South Asia Department (SARD)</td>
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<tr>
<td><strong>Director</strong></td>
<td>Y. Zhai, Energy Division, SARD</td>
</tr>
<tr>
<td><strong>Team leader</strong></td>
<td>M. Khamudkhanov, Senior Energy Specialist, SARD</td>
</tr>
<tr>
<td><strong>Team members</strong></td>
<td>R. Nagpal, Senior Counsel, Office of the General Counsel</td>
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<tr>
<td></td>
<td>J. Peththawadu, Project Implementation Officer, Sri Lanka Resident Mission, SARD</td>
</tr>
<tr>
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<td>S. Sasaki, Environment Specialist, SARD</td>
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<td>P. van Houten-Castillo, Social Development Specialist, SARD</td>
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<tr>
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<td>P. Wijayatunga, Senior Energy Specialist, SARD</td>
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<tr>
<td><strong>Peer reviewer</strong></td>
<td>A. Zhou, Energy Specialist, Regional and Sustainable Development Department</td>
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</table>

In preparing any country program or strategy, financing any project, or by making any designation of or reference to a particular territory or geographic area in this document, the Asian Development Bank does not intend to make any judgments as to the legal or other status of any territory or area.
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1. Design and Monitoring Framework

2. List of Linked Documents
1. **Project Name:** Sustainable Power Sector Support
2. **Project Number:** 39415-013
3. **Country:** Sri Lanka
4. **Department/Division:** South Asia Department/Energy Division

5. **Sector Classification:**
<table>
<thead>
<tr>
<th>Sectors</th>
<th>Primary</th>
<th>Subsectors</th>
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<tbody>
<tr>
<td>Energy</td>
<td></td>
<td>Electricity transmission and distribution</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Energy efficiency and conservation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Renewable energy</td>
</tr>
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</table>

6. **Thematic Classification:**
<table>
<thead>
<tr>
<th>Themes</th>
<th>Primary</th>
<th>Subthemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic growth</td>
<td></td>
<td>Widening access to markets and economic opportunities</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Promoting macroeconomic stability</td>
</tr>
<tr>
<td>Environmental sustainability</td>
<td></td>
<td>Natural resources conservation</td>
</tr>
<tr>
<td>Private sector development</td>
<td></td>
<td>Public-private partnerships</td>
</tr>
</tbody>
</table>

6a. **Climate Change Impact**
   - Mitigation: Medium

6b. **Gender Mainstreaming**
   - Effective gender mainstreaming (EGM)
   - Gender equity theme (GEN)
   - No gender elements (NGE)
   - Some gender benefits (SGB)

7. **Targeting Classification:**
   - General Intervention
   - Targeted Intervention
   - Geographic dimensions of inclusive growth
   - Millennium development goals
   - Income poverty at household level

8. **Location Impact:**
   - National High
   - Rural Medium
   - Urban Low

9. **Project Risk Categorization:** Low

10. **Safeguards Categorization:**
    - Environment B
    - Involuntary resettlement B
    - Indigenous peoples C

11. **ADB Financing:**
    | Sovereign/Nonsovereign | Modality | Source                          | Amount ($ Million) |
    |------------------------|----------|---------------------------------|-------------------|
    | Sovereign              | Project loan | Asian Development Fund         | 10.0              |
    | Sovereign              | Project loan | Ordinary capital resources     | 110.0             |
    | Total                  |           |                                 | 120.0             |

12. **Cofinancing:**
    - No Cofinancing available.

13. **Counterpart Financing:**
    | Source                  | Amount ($ Million) |
    |-------------------------|--------------------|
    | Government              | 42.0               |
    | Total                   | 42.0               |

14. **Aid Effectiveness:**
    - Parallel project implementation unit: No
    - Program-based approach: No
    - Use of country procurement system: No

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*a The project will be supported by technical assistance for Implementation of Energy Efficiency Policy Initiatives for $1.85 million in grant financing from the Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility administered by ADB.*
I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) proposed loans to the Democratic Socialist Republic of Sri Lanka for the Sustainable Power Sector Support Project, and (ii) proposed administration of technical assistance (TA) grant for Implementation of Energy Efficiency Policy Initiatives to be provided by the Asian Clean Energy Fund¹ under the Clean Energy Financing Partnership Facility.

2. The project² will include three components: (i) transmission system strengthening to improve its reliability and enable rural electrification in Eastern, North Central, Southern, and Uva provinces; (ii) rural electrification and distribution system improvement in Eastern and Uva provinces to expand access for the poor and rural households; and (iii) energy efficiency improvement and renewable energy development.³

II. THE PROJECT

A. Rationale

3. Sri Lanka’s power sector struggles to meet the growing demand for electricity at sufficiently low cost and acceptable reliability. The share of thermal energy in the generation mix has increased from 6% in 1995 to 61% in 2010 as demand growth has been generally met by oil-fired thermal generation. This type of power generation makes electricity expensive because of high fuel prices, and poses a serious threat to the country’s energy security and the environment. The transmission system is too weak to meet the growing demand in the regions. Substantial investments are required to strengthen the transmission network and improve its reliability. About 15% of households—primarily those in rural areas—do not have access to electricity despite the government’s intensive investment program to expand the rural distribution network. The electrification ratio of 67.3% in Eastern Province⁴ is the lowest among all of Sri Lanka’s provinces and is well below the average national electrification ratio of 85.4% in 2009.⁵ Uva Province is another lagging region with an electrification ratio of 70% as of 2009. There is an urgent need to develop clean energy and indigenous renewable energy sources, reduce losses, and improve energy efficiency.

4. The project will support Sri Lanka’s national and sector priorities as stated in the country’s 10-year development framework prepared in 2006, which focuses on infrastructure development to accelerate economic growth and narrow regional disparities. The project is also in line with the National Energy Policy and Strategies (NEPS), a 10-year plan for the energy sector, covering a period up to 2016. The NEPS envisions sustainable development of energy resources, conversion facilities, and delivery systems to enable access to and use of energy services by the entire population, as well as the safe, reliable delivery of such energy services at a competitive price. The NEPS provides a comprehensive sector road map and includes a long-term investment program with specific policy and reform measures. It aims to (i) supply electricity to 86% of households by 2010 and 98% by 2016, and (ii) ensure electricity tariffs are

¹ Established by the Government of Japan.
² ADB. 2009. Technical Assistance to the Democratic Socialist Republic of Sri Lanka for the Sustainable Power Sector Support II Project. Manila (project preparatory TA 7363-SRI, for $800,000, approved on 13 October and financed on a grant basis from the Japan Special Fund).
³ The design and monitoring framework is in Appendix 1.
⁴ The electrification ratio in Ampara district of Eastern Province, where most of project's rural electrification interventions are expected to be undertaken, is 64%.
⁵ Ceylon Electricity Board. 2010. Statistical Digest.
competitive with those in other countries and sufficient for utilities to be viable. The government’s main goals are to improve the quantity, quality, and cost of service delivery, and to increase electricity connections in rural areas.

5. The project is consistent with the Asian Development Bank (ADB) country partnership strategy for Sri Lanka, which focuses on (i) funding transmission projects to remove grid constraints on absorbing additional capacity from renewable energy sources, (ii) improving energy efficiency and reliability by strengthening the transmission network, (iii) expanding access to electricity by improving connectivity for the poor, and (iv) mitigating climate change by financing clean energy projects and supporting energy efficiency initiatives. The project will support the sustainable development of the power sector in line with national and sector priorities, the country partnership strategy, and complement activities of other major development partners. The project will expand ADB interventions in the power sector initiated under the Clean Energy and Access Improvement Project, which was designed to support sector reforms following approval of the Sri Lanka Electricity Act in March 2009. The project will address the post-conflict electricity needs of the population and improve infrastructure in Eastern Province that was severely damaged by the conflict, and directly contribute to the development of this poor province. The project will strengthen the 220-kilovolt (kV) transmission line that is vital to the overall reliability of the transmission system and the evacuation of power from renewable hydropower sources—primarily located in Central Province—to the conflict-affected northern part of the country through North Central Province. To ensure regional balance, the project is also designed to benefit other poor provinces.

B. Impact and Outcome

6. The project will contribute to a reliable, adequate, and affordable power supply for sustainable economic growth and poverty reduction in Sri Lanka. The outcome of the project will be improved coverage, efficiency, and reliability in the delivery of electricity.

C. Outputs

7. The outputs of the proposed project will include the following:

(i) Transmission system strengthening:
   (a) New Galle power transmission development. Construction of New Galle 94.5-megavolt ampere (MVA), 132/33 kV grid substation and Ambalangoda-to-New Galle 40-kilometer (km), double-circuit 132 kV transmission line.
   (b) North East power transmission development. Construction of Mahiyangana-to-Vavunativu (via Ampara) 129 km and Monaragala-to-Madagama 16 km, double-circuit 132 kV transmission lines; stringing of second circuit of existing Kotmale-to-New Anuradhapura 163 km, 220 kV transmission line; construction of Monaragala 31.5 MVA, Vavunativu 63 MVA,

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7 Development Coordination (accessible from the list of linked documents in Appendix 2).
9 The act envisages regulatory reforms in the power sector.
10 ADB also provides support to address post-conflict electricity needs in Northern Province (ADB. 2010. Report and Recommendation of the President to the Board of Directors: Proposed Loan to the Democratic Socialist Republic of Sri Lanka for the Conflict-Affected Region Emergency Project. Manila).
11 Detailed Description of Project Components (accessible from the list of linked documents in Appendix 2).
and Pollonnaruwa 31.5 MVA, 132/33 kV grid substations; and augmentation of Ampara 132/33 kV grid substation.

(ii) Rural electrification expansion and distribution system improvement:
(a) **Ampara district distribution development in Eastern Province.** Construction of 165 km, 33 kV and 593 km, 0.4 kV distribution lines including 67 of 33/0.4 kV and 11/0.4 kV distribution substations to electrify 12,190 households in 113 remote villages under various rural electrification schemes.
(b) **Ampara district distribution network reliability improvement.** Reliability improvement of 33 kV network comprising installation of 75 auto-reclosers and 100 load break switches.
(c) **Eastern Province distribution capacity development.** Purchase of tools and specialized utility vehicles for construction and maintenance for 30 line gangs in Ampara, Batticaloa, and Trincomalee districts to enable implementation of rural electrification and distribution network maintenance.
(d) **Strengthening of distribution system in Uva Province:** Strengthening of the distribution system in Haldummulla and Ragala areas in Uva Province, including construction of 45 km, 33 kV primary distribution backbone line reinforcements and upgrading 9 km of existing 33 kV line to remove network constraints and improve voltage conditions to existing rural customers.

(iii) Energy efficiency improvement and renewable energy development:
(a) **Estate micro-hydro rehabilitation and repowering pilot.** Consulting support to develop detailed technical specifications and funding eligibility criteria for micro-hydro rehabilitation and grid connection, and engineering assessment and environmental and social monitoring of the pilot; and a credit line of $1.29 million to private developers for about 19 micro-hydro projects providing about 1.3 megawatt (MW) of grid connected capacity on a net metering basis.
(b) **Energy appliance testing laboratory.** Purchase of lighting appliance testing equipment.
(c) **Reactive power management.** Installation of 40-megavolt ampere reactive (MVAr) breaker switched capacitor banks for loss reduction at Aniyakanda, Ambalangoda, and Katunayake grid substations.
(d) **Moragolla hydropower station.** Preparation of a detailed engineering design of about a 30 MW, run-of-river hydropower station estimated at $6.35 million, including $6 million to be financed by ADB and $0.35 million by the government for possible financing under a subsequent ADB loan.

8. Some energy efficiency interventions supporting the energy efficiency improvement and renewable energy development component will be financed by TA for Implementation of Energy

12 Poor households will be provided with a credit to finance initial connection charges. This credit line will be under ADB's Clean Energy and Access Improvement Project (footnote 8), which covers Ampara district.
13 Incremental rural household consumption created by the project is expected to be covered by additional energy generated by the 150-megawatt (MW) Upper Kotmale hydropower plant funded by the Japan International Cooperation Agency and the 300 MW (phase 1) of the Norochcholai coal-fired power plant funded by the People's Republic of China.
14 These will be selected from sites for which a safeguard assessment was conducted during project preparation.
15 In total, about 30 MW of micro-hydro capacity may be connected to the grid on a net metering basis.
16 The feasibility study for the Moragolla hydropower plant was prepared with financing from the Kuwai Fund for Arab Economic Development.
Efficiency Policy Initiatives.¹⁷ These interventions include (i) setting up energy appliance testing laboratory¹⁸ and consulting support to establish laboratory procedures and quality systems to facilitate the introduction of minimum equipment performance standards and energy efficiency labeling for consumer electrical appliances; (ii) training courses for 90 energy auditors and purchase of measurement and data logging instruments to assist commercial, industrial, and government enterprises with managing energy use and implementing energy efficiency measures; and (iii) energy-efficient lighting customer surveys, analysis, and field trials to determine optimal lighting solutions for households and development of a road map for implementing energy-efficient lighting solutions.

9. Additional support for the rural electrification component will be provided through grant-financed activities (for about $1 million)¹⁹ aimed at improving livelihoods in local communities, especially for women, through training on the safe use of electricity equipment, productive use of micro-credit linked to income opportunities emerging with electricity access, and an increase in employment as meter readers and maintenance crew for simple and routine repairs.

D. Investment and Financing Plans

10. The project is estimated to cost $162.03 million, including physical and price contingencies, financing charges during implementation, and taxes and duties. The investment plan is summarized in Table 1.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amounta</th>
</tr>
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<tr>
<td><strong>A. Base Cost</strong>b</td>
<td></td>
</tr>
<tr>
<td>1. Transmission system strengthening</td>
<td>99.86</td>
</tr>
<tr>
<td>2. Rural electrification and distribution system improvement</td>
<td>23.34</td>
</tr>
<tr>
<td>3. Energy efficiency and renewable energy</td>
<td>9.40</td>
</tr>
<tr>
<td><strong>Subtotal (A)</strong></td>
<td>132.60</td>
</tr>
<tr>
<td><strong>B. Contingencies</strong>c</td>
<td>12.46</td>
</tr>
<tr>
<td><strong>C. Financing Charges During Implementation</strong>d</td>
<td>16.97</td>
</tr>
<tr>
<td><strong>Total (A+B+C)</strong></td>
<td>162.03</td>
</tr>
</tbody>
</table>

a Includes taxes and duties of $20.52 million to be financed from government resources.
b In mid-2010 prices.
c Physical contingencies computed at 4% of base cost. Price contingencies computed using Asian Development Bank forecasts of international and domestic inflation. Price contingencies computed at 0.5% on foreign exchange costs and 7.0% on local currency costs.
d Interest during implementation has been computed at the 5-year forward London interbank offered rate plus a spread of 30 basis points and an onlending margin of 6.9% for ordinary capital resources (OCR) loan components, and at a base rate of 1.0% with an onlending margin of 6.9% for Asian Development Fund loan components. Commitment charges for an OCR loan have been computed at 0.15% per year to be charged on the undisbursed loan amount.

Source: Ceylon Electricity Board and Asian Development Bank estimates.

¹⁷ Technical Assistance for Implementation of Energy Efficiency Policy Initiatives (accessible from the list of linked documents in Appendix 2).
¹⁸ Except lighting appliance testing equipment to be financed from loan proceeds.
¹⁹ These activities are expected to be supported by a related gender mainstreaming initiative for the Improving Gender-inclusive Access to Clean and Renewable Energy in Bhutan, Nepal, and Sri Lanka, which is being processed separately for approval.
11. To help finance the project, the government has requested (i) a loan of $110 million from ADB’s ordinary capital resources (OCR), and (ii) a loan in various currencies equivalent to SDR6,426,000 ($10 million equivalent) from the Asian Development Fund (ADF). The ADF loan will finance Ampara district distribution development and distribution capacity development in Eastern Province. The rest of the project components will be financed by the OCR loan. ADB will not finance taxes and duties.

12. The OCR loan will have a 25-year term, including a grace period of 5 years, an annual interest rate determined in accordance with ADB’s London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year, the interest and other charges during construction to be capitalized in the loan, and such other terms and conditions set forth in the draft loan and project agreements. The government has provided ADB with (i) the reasons for its decision to borrow under ADB’s LIBOR-based lending facility based on these terms and conditions, and (ii) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB.

13. The ADF loan will have a 32-year term, including a grace period of 8 years, an annual interest charge of 1.0% during the grace period and 1.5% thereafter, and such other terms and conditions set forth in the draft loan and project agreements.

<table>
<thead>
<tr>
<th>Source</th>
<th>Amount ($ million)</th>
<th>Share of Total (%)</th>
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</thead>
<tbody>
<tr>
<td><strong>Asian Development Bank</strong></td>
<td></td>
<td></td>
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<tr>
<td>OCR loan</td>
<td>110.00</td>
<td>67.9</td>
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<tr>
<td>ADF loan</td>
<td>10.00</td>
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<td><strong>Subtotal</strong></td>
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<td>74.1</td>
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<td><strong>Government</strong></td>
<td>42.03</td>
<td>25.9</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>162.03</td>
<td>100.0</td>
</tr>
</tbody>
</table>

ADF = Asian Development Fund, OCR = ordinary capital resources
Source: Asian Development Bank estimates

E. Implementation Arrangements

14. The executing agency for the project will be the Ministry of Power and Energy (MOPE). Ceylon Electricity Board (CEB) will be the implementing agency for the transmission strengthening and rural electrification and distribution system improvement components and two sub-components of the energy efficiency and renewable energy component (reactive power management and Moragolla hydropower plant detailed engineering design). The Sustainable Energy Authority (SEA) will implement the remaining energy efficiency and renewable energy sub-components. A steering committee, established for the project and chaired by the secretary of the MOPE, will meet quarterly to provide guidance to the implementing agencies and review the progress of the project.

15. Project implementation units (PIUs), which will include experienced staff and be headed by senior officers, will be set up in CEB and SEA to undertake day-to-day activities. Separate PIUs will be established in CEB for transmission strengthening, rural electrification and distribution system improvement, and detailed engineering for the Moragolla hydropower plant. Full-time project managers with qualified staff will be appointed to supervise subprojects under

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20 Financing charges relating to onlending to the Ceylon Electricity Board will be financed by the government.
each component. The PIUs will be responsible for overall project implementation, including procurement, accounting, quality assurance, social and environmental issues, and coordination with government agencies. The PIUs will also coordinate closely with the procurement committee, which will be appointed by the cabinet or MOPE depending on the size of the contracts. SEA’s PIU will be supported by project implementation consultants.

16. The government has asked ADB to approve advance contracting and retroactive financing for procurement of goods and civil works, including preparation of bidding documents, and inviting and receiving bids for project contracts. The government has been advised that ADB’s approval of advance contracting does not commit ADB to finance any part of this project.

17. The implementation arrangements are summarized in Table 3 and described in detail in the project administration manual. Project implementation will be completed by 30 April 2014, and loan closing will be 30 October 2014.

| Table 3: Implementation Arrangements |
|---|---|
| **Aspects** | **Arrangements** |
| Implementation period | 3 years |
| Estimated project completion date | 30 April 2014 |
| Project management | |
| (i) Oversight body | Steering committee consisting the secretary, Ministry of Power and Energy (chair), and representatives of the Ministry of Finance and Planning, Ministry of Power and Energy, Public Utilities Commission, Ceylon Electricity Board, and Sustainable Energy Authority (members) |
| (ii) Executing agency | Ministry of Power and Energy |
| (iii) Key implementing agencies | Ceylon Electricity Board and Sustainable Energy Authority |
| (iv) Project implementation units | Placed in Ceylon Electricity Board and Sustainable Energy Authority |
| Procurement | |
| International competitive bidding | 12 contracts | $90.62 million |
| National competitive bidding | 5 contracts | $4.01 million |
| Consulting services | |
| Quality- and cost-based selection | 323 person-months | $6.00 million |
| Fixed-budget selection | 12 person-months (national) | $0.06 million |
| Individual | 14 person-months (national) | $0.07 million |
| Retroactive financing and/or advance contracting | Advance contracting, including preparation of bidding documents, inviting and receiving bids for contracts, and retroactive financing covering reimbursement of eligible expenditure incurred under the project no earlier than 12 months before the date of signing of the loan agreement, subject to a maximum amount equivalent to 20% of the aggregate amount of the loans |
| Disbursement | The loan proceeds will be disbursed in accordance with the Asian Development Bank’s Loan Disbursement Handbook (2007, as amended from time to time) and detailed arrangements agreed upon between the government and Asian Development Bank. |

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*a* Includes four contracts for concrete poles that are normally manufactured and supplied locally.

Source: Asian Development Bank estimates.

III. TECHNICAL ASSISTANCE

18. The project will be supported by TA for Implementation of Energy Efficiency Policy Initiatives. SEA will be the implementing agency. The TA is estimated to cost $2.24 million.

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21 Project Administration Manual (accessible from the list of linked documents in Appendix 2).
including $1.85 million in grant financing from the Asian Clean Energy Fund\textsuperscript{22} under the Clean Energy Financing Partnership Facility administered by ADB, and $0.39 million from the government. Details are in the TA description (footnote 17).

**IV. DUE DILIGENCE**

**A. Economic and Financial**

19. Economic and financial analyses were undertaken for the project.\textsuperscript{23} The economic internal rate of return was calculated by comparing “with-project” and “without-project” scenarios. Detailed cost–benefit calculations were used to assess and confirm economic viability and sustainability. The economic analysis confirms that the proposed investment is least cost and economically viable. The analysis yields an overall economic internal rate of return of 23.0%. A sensitivity and risk analysis demonstrates that the expected economic performance is robust.

20. The financial internal rate of return (FIRR) was calculated to determine the financial viability of the project. Financial viability was examined by comparing the incremental costs and benefits on a “with investment” and “without investment” basis. The weighted average cost of capital (WACC) to CEB was calculated for each subproject and for the overall project. Financial viability was assessed by comparing the WACC to the FIRR for each subproject and for the aggregated project. The sensitivity of the FIRR to adverse movements in the underlying assumptions was also assessed. The overall FIRR to CEB is 10.8%. These returns compare favorably with the estimated WACC. The overall project is deemed financially viable.

**B. Governance**

21. With its substantial experience in implementing externally funded projects including those financed by ADB, the World Bank, Japan International Cooperation Agency, and bilateral development partners, CEB has the necessary capacity to handle the project. CEB is the implementing agency for ADB’s Clean Energy and Access Improvement Project (footnote 8), and is implementing a power sector component of the ADB’s Conflict-Affected Region Emergency Project (footnote 10). A financial management assessment was undertaken to determine whether CEB could fulfill ADB’s fiduciary requirements for the project. Details are available in the project administration manual (footnote 21) and in the assessment of CEB’s past financial performance and projections.\textsuperscript{24}

22. In recent years, SEA has received considerable capacity development assistance from its development partners, including ADB\textsuperscript{25} and the Japan International Cooperation Agency, and will be undertaking technical due diligence of applications for the estate micro-hydro rehabilitation and repowering sub-component, and limited procurement activities for energy efficiency lighting equipment.

\textsuperscript{22} Established by the Government of Japan.
\textsuperscript{23} Economic Analysis and Financial Analysis (accessible from the list of linked documents in Appendix 2).
\textsuperscript{24} CEB’s Past Financial Performance and Projections (accessible from the list of linked documents in Appendix 2).
\textsuperscript{25} ADB. 2007. *Technical Assistance to the Democratic Socialist Republic of Sri Lanka for Building the Capacity of the Sustainable Energy Authority*. Manila (TA 7011-SRI, approved on 12 December, for $600,000 with financing from the Multi-Donor Clean Energy Fund under the Clean Energy Financing Partnership Facility administered by ADB. Contributors to the fund are the governments of Australia, Norway, Spain, and Sweden).
23. Procurement will be subject to ADB's Procurement Guidelines (2010, as amended from time to time). Recruitment of consultants will be in accordance with ADB's Guidelines on the Use of Consultants (2010, as amended from time to time). Use of open competitive bidding, transparency in the selection of projects, and ADB oversight will ensure integrity in procurement and implementation activities. CEB and SEA will maintain a project website that will be updated regularly and will include (i) bidding procedures, bidders, and contract awards; (ii) use of the funds disbursed under the project; and (iii) physical progress. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government, MOPE, CEB, and SEA. The specific policy requirements and supplementary measures are described in the project administration manual (footnote 21).

C. Poverty and Social

24. The project will contribute to sustainable economic development, poverty reduction, and social well-being through increased access to electricity, reduction of system losses, and improvement in the quality of power. Greater access to a stable supply of electricity will promote business expansion and increase jobs, which will help reduce poverty. The project is expected to generate jobs for skilled and unskilled laborers during construction. Access to electricity will also improve the living standards of rural households. These will include health and hygiene improvements through the replacement of kerosene and wood use, increases in the educational level of children as they can devote more time to studying, and wider access to information.

25. The project is classified under effective gender mainstreaming. It includes activities to improve the livelihoods of local communities, especially for women. Where households headed by women are affected, the project will implement special livelihood restoration provisions to ensure that their vulnerability is adequately addressed. Affordability is not likely to be an issue as the government generally subsidizes electricity, especially for poor and disadvantaged customers. Poor households will be provided with a credit line (footnote 12).

D. Safeguards

1. Social Safeguards

26. None of the project components will have a significant social impact. The transmission and distribution lines primarily cross public and unused lands. Where crop fields might be affected, households will be fairly compensated for the loss. Construction will be carried out during the off-season for crops. New grid substations will be built on public land, and the project may mount the distribution transformers on poles to minimize their footprint.

27. The project is classified category B for involuntary resettlement issues. CEB prepared a resettlement plan for the transmission strengthening and rural electrification and distribution improvement components (footnote 28). The project is classified category C for indigenous peoples issues since no indigenous peoples will be directly affected by the project.

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26 Summary Poverty Reduction and Social Strategy (accessible from the list of linked documents in Appendix 2).
27 Gender Action Plan (accessible from the list of linked documents in Appendix 2). The Improving Gender-inclusive Access to Clean and Renewable Energy in Bhutan, Nepal, and Sri Lanka is being processed separately for approval.
28 Provisions are in the Resettlement Plan (accessible from the list of linked documents in Appendix 2).
2. Environmental Safeguards

28. CEB and SEA have prepared initial environmental examinations\(^{29}\) for their components and held public consultation meetings. During construction and operation, steps will be taken to minimize environmental impacts, particularly those associated with the construction of transmission lines. CEB has observed the route-selection criteria in the national regulations and has adopted best environmental practices. Adequate provisions have been made for the environmental mitigation measures, monitoring requirements, and their associated costs in the environmental management plans (EMPs) prepared for each subproject. CEB has sufficient capacity to implement the safeguard measures based on the EMPs. Mitigation measures related to construction and specified in the EMPs will be incorporated into civil works contracts. The contractors will have primary responsibility for implementing the mitigation measures during construction, but CEB will be responsible for overall implementation of its site-specific EMPs. SEA will be responsible for overall implementation of its site-specific EMPs for the estate micro-hydro rehabilitation and repowering pilot sub-component. SEA will be supported by safeguard consultants. CEB and SEA will adhere to ADB’s Safeguard Policy Statement (2009), and local and government environmental regulations. The project is classified environmental category B.

3. Climate Change Impact

29. The project is expected to have a considerable climate change impact. Its renewable energy intervention will bring an additional 1.3 MW of power generation to the grid, which is equivalent to avoiding about 4,140 tons of carbon dioxide (CO\(_2\)) emissions per year.\(^{30}\) The energy efficiency policy initiatives supported by the project and the associated TA are expected to produce about 480 gigawatt-hours of energy savings, resulting in 353,787 tons of CO\(_2\) emissions equivalent avoided per year by 2015. A reduction of 147,745 tons of CO\(_2\) emissions per year may be achieved through additional household connections and technical loss reduction from the improved energy efficiency of the transmission and distribution lines by 2015.

E. Risks and Mitigating Measures

30. The potential governance risk stems from CEB having insufficient cash to fund its operations because of (i) an increase in fuel oil costs and reliance on expensive thermal electricity generation, (ii) delays in commissioning less costly generating capacity, and (iii) tariffs set below the cost of supply. The potential risks to project implementation include unexpected increases in the prices of commodities and raw materials, and delays in implementation that raise project costs. These risks appear to be moderate and may be mitigated through (i) progress on power sector reforms, and government efforts to increase supply capacity and reduce the cost of generation; and (ii) close supervision by the steering committee and ADB, timely project implementation, and advance contracting. Major risks and mitigating measures are described in the risk assessment and risk management plan.\(^{31}\)

V. ASSURANCES AND CONDITIONS

31. The government and MOPE have assured ADB that project implementation shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail

\(^{29}\) Initial Environmental Examination (accessible from the list of linked documents in Appendix 2).

\(^{30}\) In addition, a reduction of 97,200 tons of CO\(_2\) emissions per year may be achieved from commissioning the Moragolla hydropower plant (about 30 MW) upon completion of a detailed engineering design and its construction.

\(^{31}\) Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).
in the project administration manual and draft loan documents. The government and MOPE have agreed with ADB on certain covenants for the project, which are set forth in the draft loan and project agreements.

32. Disbursement of the credit line for estate micro-hydro rehabilitation and repowering will be subject to the following conditions:

(i) approval of selection criteria for micro-hydro project developers and participating financial institution(s) by the government and ADB;
(ii) approval and publication of net metering regulations, a standardized agreement, and technical connection requirements by CEB and the Public Utilities Commission, including announcements on raising the export capacity limit of the net metered renewable energy facility from 42 kW up to 300 kW, introduction of a register-and-exempt licensing procedure by the Public Utilities Commission, and a simplified process for granting energy permits for micro-hydro projects by SEA;
(iii) selection of an eligible participating financial institution(s)\(^{32}\) satisfactory to ADB;
(iv) execution of a subsidiary financing agreement between SEA, eligible participating financial institution(s) and the government in form and substance satisfactory to ADB.

VI. RECOMMENDATION

33. I am satisfied that the proposed loans would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve

(i) the loan of $110,000,000 to the Democratic Socialist Republic of Sri Lanka for the Sustainable Power Sector Support Project from ADB’s ordinary capital resources, with interest to be determined in accordance with ADB’s London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 5 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
(ii) the loan in various currencies equivalent to SDR6,426,000 to the Democratic Socialist Republic of Sri Lanka for the Sustainable Power Sector Support Project from ADB’s Special Funds resources with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board; and
(iii) the administration by ADB of technical assistance not exceeding the equivalent of $1,850,000 to the Government of the Democratic Socialist Republic of Sri Lanka for Implementation of Energy Efficiency Policy Initiatives to be provided by the Asian Clean Energy Fund under the Clean Energy Financing Partnership Facility on a grant basis.

Haruhiko Kuroda
President

25 November 2010

\(^{32}\) The participating financial institution(s) will not be implementing agencies.
## DESIGN AND MONITORING FRAMEWORK

<table>
<thead>
<tr>
<th>Impact</th>
<th>Performance Targets and Indicators with Baselines</th>
<th>Data Sources and Reporting Mechanisms</th>
<th>Assumptions and Risks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliable, adequate, and affordable power supply for sustainable economic growth and poverty reduction</td>
<td>Electrification ratio increased from 85.4% in 2009 to 98% in 2016</td>
<td>CEB annual report (power sector statistics)</td>
<td>Assumptions&lt;br&gt;Macroeconomic growth remains stable.&lt;br&gt;Government remains committed to power sector reforms&lt;br&gt;Risks&lt;br&gt;Insufficient cash generation by CEB to fund its operations because of (i) an increase in fuel oil costs and reliance on expensive thermal electricity generation, (ii) delays in commissioning of less costly generating capacity, and (iii) tariffs set below supply cost</td>
</tr>
<tr>
<td></td>
<td>Average cost of power reduced by 25% by 2016 (2009 baseline: SLRs18.69/kWh)</td>
<td></td>
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<td></td>
<td>500 MW of renewable energy added by 2016 (2007 baseline: 123 MW)</td>
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<td></td>
</tr>
<tr>
<td></td>
<td>CEB generating sufficient cash to cover operating costs by 2015</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Outcome</td>
<td>Technical and commercial losses of the CEB network reduced from 14.6% of net generation in 2009 to 12.0% by 2016.</td>
<td>CEB annual report (power sector statistics)</td>
<td>Assumptions&lt;br&gt;Least-cost generation expansion plan implemented as scheduled&lt;br&gt;The government to continue to fund grid extension in Eastern Province</td>
</tr>
<tr>
<td>Improved coverage, efficiency and reliability in service delivery</td>
<td>Increase in electrification ratio in Eastern Province from 67.3% in 2009 to 80.0% by 2016</td>
<td>Progress reports on 10-Year Development Framework</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decrease in distribution losses from 11.02% in 2009 to 10.00% by 2016</td>
<td>CEB monthly system reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>19 micro (&lt; 300 kW) hydropower projects with total capacity of about 1.3 MW connected to the grid under net metering arrangements</td>
<td>CEB billing records and census data</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Energy efficiency labeling implemented for lighting, fans, refrigeration, and air conditioning appliances by 2013</td>
<td>SEA reports</td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td>Technical and commercial losses of the CEB network reduced from 14.6% of net generation in 2009 to 12.0% by 2016.</td>
<td>CEB annual report (power sector statistics)</td>
<td></td>
</tr>
<tr>
<td>1. Strengthened transmission network</td>
<td>Increase in electrification ratio in Eastern Province from 67.3% in 2009 to 80.0% by 2016</td>
<td>Progress reports on 10-Year Development Framework</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Decrease in distribution losses from 11.02% in 2009 to 10.00% by 2016</td>
<td>CEB monthly system reports</td>
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<td>CEB billing records and census data</td>
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</tr>
<tr>
<td></td>
<td>Energy efficiency labeling implemented for lighting, fans, refrigeration, and air conditioning appliances by 2013</td>
<td>SEA reports</td>
<td></td>
</tr>
<tr>
<td></td>
<td>220 MVA of transformer capacity added to the transmission network by September 2013</td>
<td>CEB annual report (power sector statistics)</td>
<td>Assumptions&lt;br&gt;Counterpart funds mobilized on time&lt;br&gt;Sufficient project implementation capacity of CEB and SEA&lt;br&gt;Availability of qualified service and/or training</td>
</tr>
<tr>
<td></td>
<td>185 km of 132 kV transmission lines added to the transmission network by September 2013</td>
<td>Government budget</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Second circuit stringing of 163</td>
<td>Government gazette</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Project progress</td>
<td></td>
</tr>
<tr>
<td>Design Summary</td>
<td>Performance Targets and Indicators with Baselines</td>
<td>Data Sources and Reporting Mechanisms</td>
<td>Assumptions and Risks</td>
</tr>
<tr>
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</tr>
<tr>
<td>2. Expanded and improved distribution network in rural areas of Eastern and Uva provinces</td>
<td>km of 220 kV transmission line completed by September 2013 30 MVAr installed on 33 kV for loss reduction at Galle grid substation 12,190 rural households (target: 20% poor households headed by women) connected to electricity in 113 remote villages in Ampara district, 165 km of 33 kV distribution lines and 593 km of 0.4 kV distribution lines constructed in Eastern Province 45 km of 33 kV primary distribution backbone line added and 9 km of 33 kV line capacity increased in Uva Province to improve power quality to poor rural households including those headed by women</td>
<td>reports</td>
<td>providers for livelihood improvement of local rural communities</td>
</tr>
<tr>
<td>3. Energy efficiency improved and additional renewable energy developed</td>
<td>About 1.3 MW of micro-hydro power capacity added to the grid resulting in 4,140 tons of CO₂ emissions equivalent avoided per year 40 MVAr of reactive power devices installed on 33 kV for loss reduction. Establishment of energy efficient laboratories Training of 90 energy auditors (target: 30% women participation) Energy efficient lighting trials implemented Detailed engineering for Moragolla hydropower plant prepared</td>
<td>CEB monthly reporting SEA reports CEB monthly reporting Project progress reports</td>
<td>Risks Unexpected increase in prices of commodities and raw materials, and construction delays Delayed government approvals for procurement and recruitment of consultants</td>
</tr>
<tr>
<td>4. Improved livelihood of local communities in Ampara district of Eastern Province</td>
<td>1,500 people (target: 30% women) from deprived and vulnerable households trained in electricity-related skills 750 local community members (target: 30% women) trained in</td>
<td>CEB monthly reporting Project progress reports</td>
<td>providers for livelihood improvement of local rural communities</td>
</tr>
</tbody>
</table>
Design Summary | Performance Targets and Indicators with Baselines | Data Sources and Reporting Mechanisms | Assumptions and Risks
--- | --- | --- | ---
| | repairs of technical equipment | | |
| | Awareness of 12,000 local community members raised (through support of women motivators) on safe and efficient use of energy for newly electrified households | | |

Activities with Milestones

1.1. Construction of New Galle 132/33 kV grid substation by September 2013
1.2. Construction of Ambalangoda–New Galle 132 kV transmission line by September 2013
1.3. (i) Construction of Monaragala, Vavunativu, and Polonnuruwa 132/33 kV grid substations; and (ii) augmentation of Ampara 132/33 kV grid substation by September 2013
1.4. (i) Construction of 132 kV transmission lines for (a) Mahiyangana–Vavunativu, (b) Medagama–Monaragala, and (c) LILO to connect Ampara grid substation to Mahiyangana–Vavunativu line; and (ii) second circuit stringing of Kotmale–New Anuradhapura 220 kV line by September 2013
2.1. Construction and improvement of distribution network in Ampara district of Eastern Province by April 2014
2.2. Construction of 33 kV line reinforcements in Uva Province by April 2014
3.1. Connection of about 19 micro-hydropower projects to the grid by April 2014
3.2. Installation of reactive power devices by September 2013
3.3. Establishment of lighting testing and energy efficiency labeling laboratories, and development of relevant standards by May 2012
3.4. Completion of energy efficient lighting trials by September 2012
3.5. Training of energy auditors by September 2012
3.6. Completion of detailed engineering for Moragolla hydropower plant by October 2012
4.1. Training program for improvement of livelihoods of local communities conducted by April 2014

Inputs

**ADB loan (OCR):** $110 million

**ADB loan (ADF):** $10 million

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Civil works</td>
<td>28.93</td>
</tr>
<tr>
<td>Equipment</td>
<td>67.08</td>
</tr>
<tr>
<td>Consulting services</td>
<td>5.88</td>
</tr>
<tr>
<td>Contingencies</td>
<td>12.47</td>
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<tr>
<td>Interest and commitment charges during construction</td>
<td>5.66</td>
</tr>
</tbody>
</table>

**Government: $42.03 million**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount ($ million)</th>
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</thead>
<tbody>
<tr>
<td>Civil works</td>
<td>3.64</td>
</tr>
<tr>
<td>Equipment</td>
<td>0.00</td>
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<tr>
<td>Incremental (land, environmental and social mitigation, project supervision)</td>
<td>6.56</td>
</tr>
<tr>
<td>Contingencies</td>
<td>0.00</td>
</tr>
<tr>
<td>Taxes and duties</td>
<td>20.52</td>
</tr>
<tr>
<td>Interest during construction</td>
<td>11.31</td>
</tr>
</tbody>
</table>

**Technical assistance**

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount ($ million)</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACEF under CEFPF</td>
<td>1.85</td>
</tr>
<tr>
<td>Government</td>
<td>0.39</td>
</tr>
</tbody>
</table>

ACEF = Asian Clean Energy Fund, ADB = Asian Development Bank, ADF = Asian Development Fund, CEB = Ceylon Electricity Board, CEFPF = Clean Energy Financing Partnership Facility, km = kilometer, kV = kilovolt, kW = kilowatt, kWh = kilowatt-hour, LILO = line in–line out, MVA = megavolt-ampere, MVAr = megavolt-ampere of reactive power, MW = megawatt, OCR = ordinary capital resources, SEA = Sustainable Energy Authority, TA = technical assistance.

This output is expected to be supported and monitored by the gender mainstreaming initiative of the Improving Gender-Inclusive Access to Clean and Renewable Energy in Bhutan, Nepal, and Sri Lanka, which is being processed separately for approval.

Source: Asian Development Bank estimates.
LIST OF LINKED DOCUMENTS

http://www.adb.org/Documents/RRPs/?id=39415-01-3

1. Loan Agreement (Special Funds resources)
2. Loan Agreement (ordinary capital resources)
3. Project Agreement
4. Sector Assessment (Summary): Power
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Financial Analysis
9. Economic Analysis
10. Country Economic Indicators
11. Summary Poverty Reduction and Social Strategy
12. Gender Action Plan
13. Initial Environmental Examination: New Galle Power Transmission Development
14. Initial Environmental Examination: North East Power Transmission Development
15. Initial Environmental Examination: Rural Electrification Expansion and Distribution System Improvement
16. Initial Environmental Examination: Estate Micro-Hydro Rehabilitation and Repowering
17. Resettlement Plan
18. Risk Assessment and Risk Management Plan

Supplementary Documents

19. Detailed Description of Project Components
21. Ceylon Electricity Board’s Past Financial Performance and Projections