Report and Recommendation of the President to the Board of Directors

Project Number: 48224-002
September 2016

Proposed Loan
Energy Efficiency Services Limited
Demand-Side Energy Efficiency Sector Project
(Guaranteed by India)

Asian Development Bank

CURRENCY EQUIVALENTS

(as of 19 August 2016)

Currency unit	–	Indian rupee/s (Re/Rs)
Re1.00	=	$0.014965
$1.00	=	Rs66.8205
€1.00	=	Rs75.8425

ABBREVIATIONS

BEE	–	Bureau of Energy Efficiency
CO_2	–	carbon dioxide
EARF	–	environmental assessment and review framework
EESL	–	Energy Efficiency Services Limited
ESCO	–	energy service company
GDP	–	gross domestic product
LED	–	light-emitting diode
MOP	–	Ministry of Power
NMEEE	–	National Mission for Enhanced Energy Efficiency
PAM	–	project administration manual
UN	–	United Nations

NOTES

(i) The fiscal year (FY) of the Government of India and its agencies ends on 31 March. "FY" before a calendar year denotes the year in which the fiscal year ends, e.g., FY2016 ends on 31 March 2016.

(ii) In this report, "$" refers to US dollars.

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PROJECT AT A GLANCE

1. Basic Data — **Project Number:** 48224-002

Project Name	Demand-Side Energy Efficiency Sector Project	**Department /Division**	SARD/SAEN
Country	India	**Executing Agency**	Energy Efficiency Services Limited
Borrower	Energy Efficiency Services Limited		

2. Sector

	Sector	Subsector(s)	ADB Financing ($ million)
✓	**Energy**	Energy efficiency and conservation	200.00
		Total	**200.00**

3. Strategic Agenda

	Subcomponents
Inclusive economic growth (IEG)	Pillar 1: Economic opportunities, including jobs, created and expanded
Environmentally sustainable growth (ESG)	Eco-efficiency Global and regional transboundary environmental concerns Natural resources conservation

Climate Change Information

Mitigation ($ million)	200.00
CO_2 reduction (tons per annum)	3,000,000
Climate Change impact on the Project	Low

4. Drivers of Change

	Components
Governance and capacity development (GCD)	Client relations, network, and partnership development to partnership driver of change Institutional development
Knowledge solutions (KNS)	Application and use of new knowledge solutions in key operational areas

Gender Equity and Mainstreaming

Some gender elements (SGE)	✓

5. Poverty Targeting

Project directly targets poverty	No

Location Impact

Rural	Low
Urban	High

6. Risk Categorization: Low

7. Safeguard Categorization **Environment:** C **Involuntary Resettlement:** C **Indigenous Peoples:** C

8. Financing

Modality and Sources	Amount ($ million)
ADB	**200.00**
Sovereign Sector loan: Ordinary capital resources	200.00
Cofinancing	**0.00**
None	0.00
Counterpart	**200.00**
Energy Efficiency Services Limited	200.00
Total	**400.00**

9. Effective Development Cooperation

Use of country procurement systems	Yes
Use of country public financial management systems	Yes

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed loan to Energy Efficiency Services Limited (EESL), to be guaranteed by India, for the Demand-Side Energy Efficiency Sector Project.[1]

2. The project will finance high-priority areas under EESL's demand-side energy efficiency operations under its energy service company (ESCO) business model.[2] This includes the (i) use of more efficient light-emitting diodes (LEDs) by municipalities for streetlights that could be operated remotely; (ii) use of more efficient LED bulbs, tube lights, and electric fans by households and institutions; and (iii) promotion of more energy-efficient agricultural water pumps.[3]

II. THE PROJECT

A. Rationale

3. Energy efficiency approaches are the most cost competitive of the technology options to provide better quality energy services. Upward projections for global economic growth by the World Bank[4] and the emerging role of developing countries as a hub for industrial activities will increase energy demand, and awareness of the need for greater efficiency in energy use is growing worldwide—even more so in developing countries. According to the International Energy Agency, developing Asia's share of worldwide energy-related carbon dioxide (CO_2) emissions more than doubled from 17% in 1990 to 39% in 2013. Without additional efforts to decarbonize, developing Asia is expected to account for 46% of CO_2 emissions by 2030.[5] These projections reflect Asia's increasing role as a center of manufacturing and home to over half of all global megacities, further exacerbating energy security and environmental constraints. A stronger emphasis on energy efficiency, both from the demand and supply side, is required, as well as accelerated investments in renewable energy and in the deployment of advanced low-carbon technologies to reduce local air pollution that causes damage to health and the environment. Given that India is already one of the world's largest and fastest-growing economies, low-carbon growth in India will have a great impact on the overall global situation.

4. India's economy has grown rapidly, with an average annual gross domestic product (GDP) growth rate of 7.2% since 2000, compared with an annual global GDP growth rate of 2.6% in the same period. High economic growth is underpinned by increased energy use. The government is ramping up its efforts to provide reliable electricity to close to 300 million people. As a result, the total primary energy supply almost doubled from 441.3 million tons of oil equivalent in 2000 to 775.5 million tons of oil equivalent in 2013. Annual CO_2 emissions from fuel combustion have grown even faster, from 892.0 million tons in 2000 to 1,868.2 million tons in 2013, as the fuel mix in India is largely based on fossil fuels.[6] The potential for further economic growth and rapid increase in energy demand in India is enormous.

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

[2] ESCOs generally develop, design, build, and fund projects that save energy and recover their investment from their customers over time based on energy cost savings. (Refer to Supplementary Linked Document 14).

[3] The Asian Development Bank (ADB) provided project preparatory technical assistance for Preparing the Demand-Side Energy Efficiency Investment Project (TA 9081-IND) and will continue to provide technical support during project implementation.

[4] World Bank. 2016. Global Economic Prospects: Divergences and Risks. Washington, DC. http://pubdocs.worldbank.org/en/842861463605615468/Global-Economic-Prospects-June-2016-Divergences-and-risks.pdf

[5] International Energy Agency. World Energy Outlook 2015. http://www.worldenergyoutlook.org/weo2015/.

[6] International Energy Agency. Statistics. http://www.iea.org/statistics/.

5. **Sector challenges**. Key changes in policy priorities and investment strategies will be necessary particularly in India, where rapid economic growth is coinciding with urbanization impacts. Among the barriers to India realizing its full energy efficiency potential are (i) regulatory challenges, as electricity is subsidized to some extent and energy efficiency programs are voluntary; (ii) institutional challenges, as capacity to support the scaling up of energy efficiency is limited; (iii) financing challenges, as some energy-efficient technologies have high up-front costs, but project sizes are small from a lender's perspective, and returns may be difficult to quantify; and (iv) limited understanding of energy-efficient technologies and associated benefits limits its uptake. Delivering energy efficiency through third-party financing following an ESCO delivery mechanism can help in scaling up the implementation of energy efficiency projects. However, ESCOs require support in accessing commercial finance and managing technical performance and payment security risks. Long project development lead times and high transaction costs also affect their viability; thus, there is a need to support the demonstration of a viable company that can contribute to transforming the market through various energy-efficient technologies using the ESCO business model, which can then be scaled up and replicated.

6. **Alignment with government priorities.** Against regional trends for growth and in recognition of energy efficiency benefits, large emerging economies, including India, have launched initiatives resulting in significant energy efficiency improvements. The government has determined that increased end-use energy efficiency is critical for meeting India's rapid energy demand growth. In 2015, the government pledged to reduce the emissions intensity of its GDP by at least 33% below 2005 levels by 2030 as part of its intended nationally determined contributions to the United Nations (UN) Framework Convention on Climate Change.[7] A recent Asian Development Bank (ADB) report suggested that achieving an intermediate target reduction of at least 20% in emissions intensity by 2020 would require investing approximately $68 billion in energy efficiency measures in India.[8] Investments in energy efficiency are increasingly being recognized by the government as the most cost-effective option (in the short to medium term) to reduce energy costs, deliver increased economic productivity and competitiveness, increase energy security, and combat climate change.

7. **Sector development plan.** The government has recognized the need to achieve more sustainable low-carbon economic growth and has taken bold steps toward that end, including establishing the National Mission for Enhanced Energy Efficiency (NMEEE) as one of the eight missions under India's National Action Plan on Climate Change, which the government unveiled in 2008. The NMEEE aims to strengthen the market for energy efficiency by creating conducive regulatory and policy regimes and has envisaged fostering innovative and sustainable business models for the energy efficiency segment of the energy sector. The NMEEE has launched four initiatives to enhance energy efficiency in energy-intensive industries: Perform, Achieve and Trade Scheme; Market Transformation for Energy Efficiency; Energy Efficiency Financing Platform; and Framework for Energy Efficient Economic Development. Through these initiatives, the NMEEE seeks to scale-up efforts to unlock the market for energy efficiency (estimated at Rs740 billion) and help achieve total avoided capacity addition of 19,598 megawatts and greenhouse gas emissions reductions of 98.55 million tons per year at its full implementation stage. Until now, only about 5% of this potential has been tapped through the ESCO business

[7] Government of India, Ministry of Environment, Forest and Climate Change. 2015. *India's Intended Nationally Determined Contribution: Working Towards Climate Justice.* http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf.

[8] ADB. 2013. *Same Energy, More Power: Accelerating Energy Efficiency in Asia.* Manila.

model.[9] The Bureau of Energy Efficiency (BEE) under the Ministry of Power (MOP) acts as the secretariat and coordinating agency for the NMEEE. EESL will support BEE in the implementation activities.

8. **Borrower.** EESL is a joint venture between four public sector undertakings of the MOP: National Thermal Power Corporation, Powergrid Corporation of India Limited, Power Finance Corporation, and Rural Electrification Corporation. EESL was established in 2009 as an implementing arm of BEE, serving as an advisor, consultant, and ESCO implementing agency. As an ESCO implementing agency, EESL administers projects and is paid back over time from the resulting energy savings, thereby addressing the barrier imposed by the high up-front costs of energy efficiency projects to the long-term beneficiary. EESL has successfully implemented several projects. Consequently, demand for its ESCO services is growing rapidly throughout the country. To achieve the national goals and objectives articulated in the NMEEE, EESL has developed a business plan and road map for 2015–2020, which includes plans for scaling up its institutional, technological, and financial capacity. EESL's board of directors and MOP have approved the business plan. German development cooperation through KfW and Agence Française de Développement have each approved credit lines of €50 million to EESL. EESL is also talking to the World Bank and KfW for further investment support.

9. **Project design.** EESL's approach follows a standard process for each project, involving detailed energy audits, an assessment of technology requirements, and pilot implementation in the project area to establish performance benchmarks and to calculate energy savings. This forms the basis for the project scope and repayment terms, which are based on a deemed savings approach.[10] EESL then implements the projects and retains responsibility for asset operation and maintenance during the repayment period.

10. **Rationale for sector lending.** EESL's investment focus is on efficient municipal streetlights, efficient domestic lighting and fans, and efficient agriculture pumps. Responding to the NMEEE, the business plan set ambitious targets, including installing about 4.5 million streetlights, 700 million LED bulbs, and 6 million efficient agriculture pumps by 2020, which would require an investment of more than $12 billion. EESL plans to mobilize the funds from various sources, including bilateral and multilateral agencies, domestic sources, and its own equity. EESL has a pipeline of subprojects in various stages of readiness for each of these immediate and high-priority investments. A sector loan financing modality is considered appropriate for this project because there is a sector road map and capacity, and because it allows for the early implementation of subprojects with high readiness and the expansion of coverage to include newer subprojects as they are developed, irrespective of physical location.

11. **Core subprojects.** Based on the available information, EESL and ADB have conducted due diligence of sample core subprojects in Rajasthan for municipal streetlights and agriculture pumps, and in Maharashtra for household lighting. Potential subprojects have also been identified in Andhra Pradesh, Goa, Karnataka, and Uttar Pradesh.[11] EESL will ensure that all subprojects contributing to the sector development plan are appraised, selected, and approved following the subproject selection criteria and approval procedures in the project administration

[9] Bureau of Energy Efficiency, National Mission for Enhanced Energy Efficiency. https://beeindia.gov.in/content/nmeee-1; and Energy Efficiency Services Limited. http://www.eeslindia.org/Home.aspx.

[10] A deemed savings approach involves an up-front estimation of energy savings that will be achieved from the project, which is agreed by both parties and serves as the basis for annuity payments made during the project life.

[11] Subprojects from other eligible states may also be included subject to further due diligence and acceptance by ADB following its eligibility requirements.

manual (PAM), to the satisfaction of ADB. To be eligible for inclusion in the investment project, each candidate subproject will need to

(i) have a detailed project report completed in a format and to a level of detail that are acceptable to ADB;
(ii) have all necessary counterparty arrangements agreed, including the implementation schedule and repayment terms;
(iii) be scheduled for completion no later than December 2020;
(iv) yield a financial internal rate of return exceeding its weighted average cost of capital, and an economic internal rate of return of at least 12%;
(v) meet category C of ADB's Safeguard Policy Statement 2009 for environment, indigenous people, and involuntary resettlement; and
(vi) use no funds from other bilateral and multilateral sources, unless complementary arrangements are clearly agreed beforehand, to avoid duplication and double counting.

12. **Alignment with ADB priorities.** ADB's country partnership strategy, 2013–2017 for India states that its focus on the energy sector will include energy efficiency.[12] The project is also aligned with the Midterm Review of Strategy 2020's priority of maintaining support for climate change mitigation through investments in energy efficiency.[13] ADB support for energy efficiency in India has largely focused on the supply; this would be ADB's first investment in India targeting demand-side energy efficiency since the 1994 loan to support industrial efficiency.[14] There is potential for follow-on loans for implementing additional energy efficiency programs.

B. Impact and Outcome

13. The impact will be an expanded market for energy-efficient technologies and reduced emissions intensity of economy,[15] aligned with the NMEEE and India's intended nationally determined contributions to the UN Framework Convention on Climate Change (footnote 6 and 8). The project's outcome will be increased end-use energy efficiency in the subproject areas.

C. Outputs

14. The project will have three outputs:

(i) efficiency of street lighting in one or more municipalities in eligible states (including Goa, Maharashtra, Rajasthan, and Telangana) enhanced by replacing the existing lights with LED lamps with a remote monitoring and control system;
(ii) efficiency of bulbs, tube lights, and electric fans in households and institutions in utility service areas in eligible states (including Andhra Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh) enhanced by installing LED-based household and institution lighting and more efficient fans; and
(iii) efficiency of agricultural water pumps in utility service areas in eligible states (including Andhra Pradesh, Maharashtra, Karnataka, and Rajasthan) improved by replacing old pumps with more efficient models that have a remote monitoring and control system.

[12] ADB. 2013. *Country Partnership Strategy: India, 2013–2017*. Manila. The government requested ADB's financial assistance in a letter dated 1 January 2016 as an addition to the country operations business plan.
[13] ADB. 2014. *Midterm Review of Strategy 2020: Meeting the Challenges of a Transforming Asia and Pacific*. Manila.
[14] ADB. 1994. *Report and Recommendation of the President to the Board of Directors: Proposed Loan to India for the Industrial Energy Efficiency Project.* Manila.
[15] Emissions intensity of the economy refers to ratio of greenhouse emissions produced to gross domestic product.

D. Investment and Financing Plans

15. The project is estimated to cost $400 million (Table 1).

Table 1: Project Investment Plan
($ million)

Item			Amount[a]
A.	**Base Cost**[b]		
	1.	Efficient municipal streetlights	134.8
	2.	Efficient appliances for households and institutions	78.5
	3.	Efficient agricultural pumps	144.8
		Subtotal (A)	**358.1**
B.	**Contingencies**[c]		
	1.	Physical	6.7
	2.	Price	17.5
		Subtotal (B)	**24.2**
C.	**Financing Charges During Implementation**[d]		
	1.	Interest during implementation	11.1
	2.	Commitment and other charges	6.5
		Subtotal (C)	**17.6**
		Total (A+B+C)	**400.0**

Note: Numbers may not sum precisely because of rounding.
[a] Includes taxes and duties of $57.2 million to be financed by Energy Efficiency Services Limited.
[b] In second quarter of 2016 prices.
[c] Physical contingencies computed at 2% for all equipment costs. Price contingencies computed at an average of 5.5% on local currency costs and 1.5% on foreign currency costs; includes provision for potential exchange rate fluctuation under the assumption of a purchasing power parity exchange rate.
[d] Includes interest, commitment charges, and guarantee commission. Interest during construction (assumed to be 1 year) for the Asian Development Bank (ADB) loan has been computed at the 5-year fixed London interbank offered rate plus a spread of 0.5%. Commitment charges for the ADB loan are 0.15% per year to be charged on the undisbursed loan amount. Interest on domestic borrowing is computed at 8% per annum. The guarantee commission to the Government of India on the ADB loan has been computed at 1.2% per annum on the outstanding ADB loan.
Source: Asian Development Bank estimates.

16. EESL has requested a sovereign guaranteed loan of $200 million from ADB's ordinary capital resources to help finance the project. The loan will have a 20-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, and such other terms and conditions to be set forth in the draft loan and guarantee agreements. Based on this and the loan repayment schedule agreed with EESL, the average loan maturity is 12.75 years. EESL will bear the foreign exchange risk under this loan. The remaining financing will be mobilized by EESL, including debt from other lenders and equity contributions. The financing plan is in Table 2.

Table 2: Financing Plan

Source	**Amount** ($ million)	**Share of Total** (%)
Asian Development Bank		
Ordinary capital resources (loan)	200.0	50.0
Energy Efficiency Services Limited[a]	200.0	50.0
Total	**400.0**	**100.0**

[a] Energy Efficiency Services Limited's contribution includes domestic appliance customers' contribution of $11 million, domestic borrowing of $109 million, and its own contribution of $80 million.
Source: Asian Development Bank estimates.

E. Implementation Arrangements

17. The implementation arrangements are summarized in Table 3 and described in detail in the PAM.[16]

Table 3: Implementation Arrangements

Aspects	Arrangements		
Implementation period	December 2016–December 2020		
Estimated loan closing date	30 June 2021		
Management			
(i) Oversight body	EESL board		
(ii) Executing agency	EESL		
(iii) Key implementing agency	EESL		
(iv) Implementation unit	EESL's central and regional offices (100+ staff to oversee)		
Procurement	International and/or national competitive bidding	Multiple contracts	$200 million
Consulting services	Not applicable		
Retroactive financing and/or advance contracting	All eligible contract packages and eligible expenditures agreed between ADB and the borrower have been approved for retroactive financing and advance contracting.		
Disbursement	The loan proceeds will be disbursed in accordance with ADB's *Loan Disbursement Handbook* (2015, as amended from time to time) and detailed arrangements agreed between EESL and ADB.		

ADB = Asian Development Bank, EESL = Energy Efficiency Services Limited.
Sources: Asian Development Bank and Energy Efficiency Services Limited estimates.

18. EESL's future growth path includes expanding its existing services and diversifying into new energy market segments, such as smart grids and trigeneration (combined cooling, heat, and power). ADB, together with the UN Environment Programme, is supporting EESL in developing a concept to test new technology options and business models and enter into energy-efficient and high-impact business ventures. The Global Environment Facility approved a project identification form in October 2015 to support the development of this concept. Once the Global Environment Facility Council approves the final proposal with $14.3 million funding to be administered by ADB, approval for additional cofinancing for this project will be processed, but at a later time given different time lines for approval. Such additional cofinancing would enhance the scope of the project and not in any way impair the current proposal.

III. DUE DILIGENCE

A. Technical

19. The project's outputs will adopt proven energy-efficient technologies to reduce peak and off-peak demand on local and regional electricity networks in India. The technical specifications for the energy-efficient equipment complies with BEE standards, including the energy efficiency standards and labeling scheme for appliances, equipment, and lighting products. The procured equipment will come with adequate warranties complying with stringent technical specifications and incorporating international best practices. Laboratory testing of samples of procured equipment will be undertaken to include both safety and equipment life parameters. The introduction of more efficient agricultural water pumps, LED-based streetlights, and households and institutions lighting and electric fans will give significant energy savings (30% from agricultural water pumps, about 80% from households and institutions LED lighting, and about

[16] Project Administration Manual (accessible from the list of linked documents in Appendix 2).

50% from LED streetlights). The project's overall energy savings are expected to be around 3,800 gigawatt-hours per annum, which is equivalent to the annual output of two 300-megawatt coal-fired power stations. EESL has confirmed that equipment procured under the project will be (i) suitable for local conditions, taking into account issues such as reliability and the quality of electricity supply and making sure the equipment can tolerate the sustained low voltages that often occur in India during peak demand periods; (ii) backed up by adequate performance guarantees from suppliers; and (iii) serviceable locally, especially agricultural water pumps. EESL's post-installation customer service procedures to support maintenance, external measurement, and verification arrangements and warranty compliance have been reviewed and are considered practical and appropriate.

B. Economic and Financial

20. The project will assist in institutionalizing energy efficiency in India's public sector and will help demonstrate that energy efficiency is the least cost means to close the gap between electricity demand and supply across the country. The project will benefit electricity consumers, principally domestic and agricultural consumers, as well as urban local bodies as a result of reduced expenditure on electricity. It will also allow electricity distribution companies to reduce purchases of expensive peak electricity and reduce the electricity subsidy burden on state governments. EESL will benefit financially through benefit-sharing agreements with end-users that will allow EESL to recover its costs and earn a sustainable return on its investments. From an economic perspective, benefits accrue through incremental consumption of electricity during peak periods that is made possible because of the reduction in electricity used for lighting and domestic fans, and resource cost savings because of the reduction in electricity used for water pumping, street lighting, and households and institutions LED bulbs and electric fans outside of peak demand periods. The subproject economic internal rates of return are 35.2% (domestic LED bulbs), 31.8% (domestic ceiling fans), 43.9% (agricultural pumps), and 14.5% (LED streetlights). Sensitivity analyses show that sample subprojects' economic benefits are stable against major risk factors.

21. The sample subprojects' financial internal rate of return to EESL, calculated on a real post-tax basis (and assuming no reflow of loan proceeds), is 2.7%–3.7% per annum, higher than the weighted average cost of capital of 2.2%. On this basis, the investment project is expected to be economically viable and financially sustainable. In addition, analysis indicates that the project would generate an even higher financial internal rate of return if subsequent reflows were considered. Although the ADB loan is for a 20-year tenor, the assets financed under the project will be transferred to the beneficiaries within 1 year of supply for the domestic equipment component and after 7 years of supply for streetlights and agricultural water pumps. Consequently, the tenor of the ADB loan is substantially longer than the tenor of the cash reflows that EESL will receive through a transfer of assets. EESL will use such cash flows for similar subprojects until the ADB loan is repaid, which may widen the impact of the project.

22. EESL's financial performance in 2013–2015 has shown exponential growth, with revenue increasing from Rs145 million in FY2013 to Rs7.1 billion in FY2016, and post-tax returns on equity increasing from 6% to 13%. While EESL has obtained an AA credit rating (indicating a high degree of financial stability) from two domestic credit rating agencies for its long-term borrowing program, its plan to invest approximately Rs890 billion in 2017–2020 is very ambitious and will be a challenge from the perspective of access to investment capital and institutional capacity.

C. Governance

23. **Financial management assessment.** EESL has experience in accessing loans from development banks such as KfW and Agence Française de Développement, and has robust budgeting and accounting systems in place, including policies and procedures with adequate internal control systems. However, the overall financial management risk was assessed as *moderate* primarily because of counterparty risk associated with Urban Local Bodies and electricity distribution companies, and the lack of a foreign exchange risk management strategy for EESL. Measures proposed in the financial management action plan to address the various risks include the establishment of (i) a foreign exchange risk management framework with specific policies relating to hedging of foreign currency and interest rates; (ii) a framework for escrow account monitoring; (iii) a framework to protect project assets post-commissioning; and (iv) a program to build the capacity of EESL staff on areas such as program accounting; ADB reporting, and policies and procedures; and imprest account management. A detailed financial management action plan is in the PAM, based on which the expected financial management arrangements are expected to be satisfactory.

24. **Project procurement risk assessment.** EESL has a well-developed procurement system and a procurement policy that complies with the Government of India's General Financial Rules, 2005. Its procurement department has experienced professionals who have extensive experience in delivering projects of a similar size and complexity using competitive bidding procedures. Per government guidelines for all procurements in excess of Rs500,000, EESL has adopted an e-procurement system that is compliant with the Information Technology Act, 2000. The existing procurement processes are governed by regulations that require robust documentation, which is archived electronically in established information management systems. Existing information management systems are easily accessed and can provide data to support contract negotiations, dispute resolutions, and required audits. EESL's lack of experience with ADB-funded projects and international competitive bidding procedures will be mitigated and controlled through continuous assistance and training for the smooth implementation of the procurement plans. ADB will also provide assistance in developing the standard bidding documents to facilitate the smooth implementation of the procurement plans and conduct prior review for at least the first two procurement packages; all other procurement packages would be subjected to a post-review. ADB's Procurement Guidelines (2015, as amended from time to time) will be used for any procurement of goods using ADB's loan proceeds. For the remaining procurement of goods and services for the project, EESL will follow its existing policies and rules to source the required mandated minimum procurement from micro, small, and medium-sized enterprises and domestic manufacturers on an annual basis.

25. **Institutional capacity assessment.** EESL has in place a well-structured professional team with clearly defined roles and responsibilities for efficient and effective project management. Transparent human resources and personnel management practices are adopted to achieve the project's desired objectives and EESL's vision and mission. In line with the projected growth in business, EESL has been concurrently increasing its human resources from the market, and has obtained MOP's approval to recruit adequate and talented professionals to meet its rapid growth in ongoing programs and future projects. In addition to its staff, EESL will outsource some nonessential activities, as needed, to streamline project management and implementation. EESL has a regular staff of 450 and is in the process of recruiting an additional 100 in 2017. EESL appears to have the capability and capacity to successfully deliver multi-stakeholder projects and business opportunities in the energy efficiency markets, which is in line with its business plan for 2015–2020.

26. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government and EESL. The specific policy requirements and supplementary measures are described in the PAM (footnote 15).

D. Poverty and Social

27. The project will contribute to sustainable economic development, poverty reduction, and social well-being through increased access to energy-efficient appliances and reduced electricity consumption. Project beneficiaries are spread across the regions traversed by the project. They will include agricultural, household, and institution consumers in selected states in India. People will benefit from (i) economic investment and growth, (ii) improvements in basic infrastructure, and (iii) continued community support. A stakeholder communication strategy[17] has been prepared and includes end-user awareness programs in subproject areas that focus on women's participation, gender sensitive training modules, and the adoption and use of energy efficient technologies. A gender action development framework has been prepared.[18]

E. Safeguards

28. **Environment.** The project is classified environment category C. As required by ADB's Safeguard Policy Statement for a sector loan, an environmental assessment and review framework (EARF) was prepared to guide EESL in subproject selection, screening and categorization, environmental assessment, and institutional arrangements. The EARF specifies that only category C subprojects according to the Safeguard Policy Statement will be considered for funding. The project is expected to improve energy efficiency and reduce CO_2 emissions with minimal environmental footprint by replacing streetlights, domestic lights, ceiling fans, and agricultural pumps with more energy-efficient units. These interventions will generate waste, which will be collected, stored, transported, and disposed following the requirements and regulations of the Ministry of Environment, Forest and Climate Change. EESL and its contractors will adhere to the Safeguard Policy Statement and the national environmental regulations in managing the waste that the project may generate. EESL will keep a record of the disposed waste following the requirements of the Ministry of Environment, Forest and Climate Change; Central Pollution Control Board; and State Pollution Control Board, including the relevant permits and/or waste destruction certificates. EESL will require its contractors to establish a grievance redress mechanism consistent with the Safeguard Policy Statement, and follow the environment, health, and safety requirements of the guarantor, relevant state, and ADB. EESL will assign staff to the project management unit to (i) manage potential environmental issues and compliance with the EARF, and (ii) monitor the compliance of contractors and implementing partners with environmental requirements.

29. **Social.** The project is classified category C for involuntary resettlement and indigenous peoples and will not have any impact. The project activities are not expected to cause any physical or economic displacement nor will they require private land acquisition and government land transfer. The project will not have negative impacts on titled or nontitled holders, including on indigenous peoples and their livelihood. A resettlement framework has been prepared for subproject selection and implementation. The framework includes involuntary resettlement and indigenous peoples checklists, and due diligence reports for the three sample project outputs to ensure that the project will not have any negative impact on involuntary resettlement and indigenous peoples. Stakeholder consultations were held following the Safeguard Policy Statement and documented in due diligence reports. The loan agreement will include a standard

[17] Stakeholder Communication Strategy (accessible from the list of linked documents in Appendix 2).
[18] Gender Action Development Framework (accessible from the list of linked documents in Appendix 2).

assurance related to social safeguards, core labor standards for contractors (including equal pay for equal types of work), and HIV/AIDS and sexually transmitted disease prevention.

F. Risks and Mitigating Measures

30. Major risks and mitigating measures are summarized in Table 4 and described in detail in the risk assessment and risk management plan.[19] The risks are manageable, and appropriate mitigation measures are incorporated. The integrated benefits are expected to outweigh the costs.

Table 4: Summary of Risks and Mitigating Measures

Risks	Mitigating Measures
EESL's lack of experience in implementing an ADB-funded project	Capacity building to help EESL adhere to ADB's disbursement, procurement, and financial management policies and procedures, including in managing an imprest account
Delay in receipt of payments from customers	EESL to establish a framework for (i) escrow account (and other securities) monitoring, including setting up escrow accounts, depositing funds, and enforcing payment terms in the event of default; and (ii) the post-commissioning protection of project assets (insurance) in case of fire, theft, and force majeure, among other events
Foreign exchange risk	EESL to establish a foreign exchange risk management framework with specific policies relating to hedging of foreign currency and interest rates

ADB = Asian Development Bank, EESL = Energy Efficiency Services Limited.
Sources: Asian Development Bank and Energy Efficiency Services Limited.

IV. ASSURANCES

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

32. The government and EESL have agreed with ADB on certain covenants for the project, which are set forth in the loan agreement and guarantee agreement.

V. RECOMMENDATION

33. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the loan of $200,000,000 to Energy Efficiency Services Limited, to be guaranteed by India, for the Demand-Side Energy Efficiency Sector 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 20 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 guarantee agreements presented to the Board.

Takehiko Nakao
President

8 September 2016

[19] Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

DESIGN AND MONITORING FRAMEWORK

Impacts the Project is Aligned with

Market for energy-efficient technologies expanded (National Mission for Enhanced Energy Efficiency)[a]
Emissions intensity of economy reduced (India's intended nationally determined contribution to the United Nations Framework Convention on Climate Change)[b]

Results Chain	Performance Indicators with Targets and Baselines	Data Sources and Reporting	Risks
Outcome End-use energy efficiency in subproject areas increased	By 2021: a. Electricity consumption in subproject areas reduced by 3,800 GWh per annum (Baseline: 0) b. Additional aggregate greenhouse gas emissions reduced by 3 million tCO_2eq per year (Baseline: 0)	a. Distribution utility reports b. Project reports	Rebound effect is substantial whereby consumers offset energy savings from efficiency measures with increased usage or other behaviors.
Outputs 1. Efficiency of street lighting in one or more municipalities in eligible states (including Goa, Maharashtra, Rajasthan, and Telangana) enhanced	By 2020: 1a. 1.5 million streetlights replaced with LED lamps (Baseline: 0) 1b. End-user awareness programs, with 30% women's participation, implemented	1a–b. Monitoring and verification reports	Municipalities, Urban Local Bodies, and distribution companies might delay payments to EESL due to poor financial health.
2. Efficiency of bulbs, tube lights, and electric fans in households and institutions in utility service areas in eligible states (including Andhra Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh) enhanced	2a. 42 million LED lamps, ceiling fans, and LED tube lights installed (Baseline: 0) 2b. End-user awareness programs, with 30% women's participation, implemented	2a–b. Monitoring and verification reports	
3. Efficiency of agricultural water pumps in utility service areas in eligible states (including Andhra Pradesh, Karnataka, Maharashtra, and Rajasthan) improved	3a. 225,000 inefficient agricultural water pumps replaced with more efficient models (Baseline: 0) 3b. End-user awareness programs, with 30% women's participation, implemented	3a–b. Monitoring and verification reports	

Key Activities with Milestones

1 Efficiency of street lighting in one or more municipalities in eligible states (including Goa, Maharashtra, Rajasthan, and Telangana) enhanced

1.1 EESL signs MOUs with municipalities (Q2 2016 onward)
1.2 EESL develops and validates DPRs, and conducts pilot tests to demonstrate technology and savings (Q3 2016 onward)
1.3 EESL enters into contractual agreements with municipalities and ensures a secure payment mechanism (Q4 2016 onward)
1.4 EESL procures equipment and implements the subprojects (Q1 2017 onward)
1.5 EESL undertakes monitoring and verification activities (Q3 2017 onward)

2 Efficiency of bulbs, tube lights and electric fans in households and institutions in utility service areas in eligible states (including Andhra Pradesh, Maharashtra, Rajasthan, and Uttar Pradesh) enhanced

2.1 EESL signs MOUs with distribution utilities (Q2 2016 onward)
2.2 EESL develops and validates DPRs, and conducts pilot tests to demonstrate technology and savings (Q3 2016 onward)
2.3 EESL enters into contractual agreements with distribution utilities and ensures a secure payment mechanism (Q4 2016 onward)
2.4 EESL procures equipment and implements the subprojects (Q1 2017 onward)
2.5 EESL undertakes monitoring and verification activities (Q3 2017 onward)

3 Efficiency of agricultural water pumps in utility service areas in eligible states (including Andhra Pradesh, Karnataka, Maharashtra, and Rajasthan) improved

3.1 EESL signs MOUs with distribution utilities (Q3 2016 onward)
3.2 EESL develops and validates DPRs, and conducts pilot tests to demonstrate technology and savings (Q4 2016 onward)
3.3 EESL enters into contractual agreements with distribution utilities and ensures a secure payment mechanism (Q1 2017 onward)
3.4 EESL procures equipment and implements the subprojects (Q2 2017 onward)
3.5 EESL undertakes monitoring and verification activities (Q3 2017 onward)

Project Management

Project monitoring and evaluation, capacity building of EESL staff on ADB policies and procedures (Q2 2016 onward)

Inputs

ADB: $200 million (loan)

EESL: $200 million

Assumptions for Partner Financing

None.

ADB = Asian Development Bank, DPR = detailed project report, EESL = Energy Efficiency Services Limited, GWh = gigawatt-hour, LED = light-emitting diode, MOU = memorandum of understanding, Q = quarter, tCO_2eq = ton of carbon dioxide equivalent.

Note: KfW will support a similar program for €250 million (equivalent to about $283 million) under collaborative cofinancing arrangement.

[a] Bureau of Energy Efficiency. National Mission for Enhanced Energy Efficiency. https://beeindia.gov.in/content/nmeee-1.

[b] Government of India, Ministry of Environment, Forest and Climate Change. 2015. *India's Intended Nationally Determined Contribution: Working Towards Climate Justice.* http://www4.unfccc.int/submissions/INDC/Published%20Documents/India/1/INDIA%20INDC%20TO%20UNFCCC.pdf.

Source: Asian Development Bank.

LIST OF LINKED DOCUMENTS
http://www.adb.org/Documents/RRPs/?id=48224-002-3

1. Loan Agreement
2. Guarantee Agreement
3. Sector Assessment (Summary): Energy
4. Project Administration Manual
5. Contribution to the ADB Results Framework
6. Development Coordination
7. Financial Analysis
8. Economic Analysis
9. Country Economic Indicators
10. Summary Poverty Reduction and Social Strategy
11. Environmental Assessment and Review Framework
12. Resettlement Framework
13. Risk Assessment and Risk Management Plan

Supplementary Documents

14. Energy Efficiency Services Limited Approach: Technical and Business Process
15. Institutional Capacity Assessment
16. Stakeholder Communication Strategy
17. Gender Action Development Framework