スリランカ民主社会主義共和国
省エネルギー普及促進プロジェクト
中間レビュー報告書

平成 22 年 5 月
(2010 年)

独立行政法人国際協力機構
スリランカ事務所

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序　　文

当機構は、スリランカ民主社会主義共和国関係機関との討議議事録に基づき、「省エネルギー普及促進プロジェクト」を 2008 年 5 月から 3 ヵ年の計画で実施しています。

今般、本プロジェクト協力開始から 1 年 6 ヵ月が経過したことを踏まえ、これまでのプロジェクトの投入実績、活動実績、計画達成度を調査・分析し、問題点を整理するとともに、評価 5 項目（妥当性、有効性、効率性、インパクト、自立発展性）の観点から、日本側、スリランカ民主社会主義共和国側関係者による合同中間評価を行い、併せてプロジェクト目標達成を視野に入れた今後の活動方針をスリランカ民主社会主義共和国政府及びプロジェクト専門家と協議、再確認し、必要に応じてプロジェクト・デザイン・マトリックスの改訂を検討することを目的として、2009 年 9 月 22 日から 10 月 13 日まで、当機構スリランカ事務所長 志村 哲を団長とする中間評価調査団を現地に派遣しました。

本調査団は、スリランカ民主社会主義共和国側評価委員と合同評価チームを形成し、評価結果を合同評価報告書に取りまとめ、現地プロジェクト運営委員会に提出するとともに、スリランカ民主社会主義共和国側政府関係者とプロジェクトの今後の方向性について協議し、協議議事録として署名を取り交わしました。

本報告書は、調査団による調査と評価結果を取りまとめたものであり、今後のプロジェクトの実施にあたり広く活用されることを願うものです。

終わりに、本調査にご協力とご支援を頂いた内外の関係各位に対し、心からの感謝の意を表します。

平成 22 年 5 月

独立行政法人国際協力機構
スリランカ事務所長　志村　哲

目　　次

略　語　一　覧

CDM	Clean Development Mechanism	クリーン開発メカニズム
CFL	Compact Fluorescent Lamp	電球型小型蛍光灯
ESCO	Energy Service Company	エネルギー・サービス会社
IT	Information Technology	情報技術
JICA	Japan International Cooperation Agency	独立行政法人国際協力機構
JCC	Joint Coordination Committee	ジョイント・コーディネーション委員会
PDM	Project Design Matrix	プロジェクト・デザイン・マトリックス
SLEMA	Sri Lanka Energy Manager Asociation	スリランカ・エネルギー管理士協会
SLSEA	Sri Lanka Sustainable Energy Authority	スリランカ持続可能エネルギー推進機構

評価調査結果要約表

１．案件の概要		
国名:スリランカ民主社会主義共和国	案件名:スリランカ民主社会主義共和国省エネルギー普及促進プロジェクト	
分野：エネルギー	援助形態：技術協力プロジェクト	
所轄部署：JICA スリランカ事務所	協力金額（2009 年 9 月 30 日時点）：3 億 6,000 万円	
	相手国実施機関：スリランカ持続可能エネルギー推進機構（SLSEA）	
	日本側協力機関：電源開発株式会社	
協力期間	（R/D）：2008 年 2 月 11 日	他の連携協力：
	3 年（2008 年 5 月 1 日～2011 年 4 月 30 日）	

１－１　協力の背景と概要

スリランカ民主社会主義共和国（以下、「スリランカ」と記す）の 1 次エネルギー供給は、伝統的なバイオマスが 47%と非常に高い比率を占めている（2007 年）。一方、商業的に流通しているエネルギーは、水力以外は全量を輸入石油に依存している。また電力供給についてみると、発電電力量の 60%を輸入石油に依存している。このためスリランカの電気料金は他のアジア諸国に比べて高く、特に海外市場において他のアジア諸国と競合する輸出産業の競争力を阻害する原因となっている。また、新規の発電所開発にも限界があることから、将来深刻な電力供給不足に直面する可能性がある。このような背景から、今後もスリランカが経済成長を続けるためには省エネルギー（以下、「省エネ」と記す）の推進は緊急の課題であった。

2006 年 10 月に制定された「National Energy Policy and Strategies of Sri Lanka」では、1 次エネルギーの供給能力増強と多様化に加え、省エネの普及がスリランカのエネルギー分野における重要課題であると認識されている。また、2007 年 9 月には「スリランカ持続可能エネルギー推進機構法」が制定され、省エネ対策機関として、「スリランカ持続可能エネルギー推進機構（SLSEA）」が設立された。

同法では、省エネ政策の立案・普及、エネルギー需要管理、省エネに資する技術革新、省エネ表示の義務づけ、一般住民への啓発活動、エネルギー管理士・診断士の認証などが義務づけられている。

このような政策的背景を受け、同国は省エネに関するわが国の進んだ技術及び知見を導入したいとして、技術協力プロジェクト「省エネルギー普及促進プロジェクト」を要請した。要請は 2006 年 8 月に採択され、2 度の事前調査を経て、2008 年 5 月より 3 ヵ年の計画で技術協力が実施されている。

１－２　協力内容

（１）上位目標

エネルギー消費効率の高い社会が実現する。

（2）プロジェクト目標

省エネ活動を促進するために必要な基盤（政策、人材、奨励制度、省エネ意識）が整備される。

（3）成果（アウトプット）

1）スリランカ持続可能エネルギー推進機構法施行に必要な資源（政策、人材、機材、資料）が整備される。

2）省エネを促進させるためのインセンティブ制度が整備される。

3）一般家庭、私企業、公共セクターの省エネに関する意識が向上する。

（4）投入（2009 年 10 月初旬時点）

日本側：

・専門家 10 名（統括・省エネ政策・行政/省エネ普及促進・資金検討/省エネ監査・管理技術・機材/ラベリング・ESCO[1]/情報技術（IT）・技術/電力分野・需要側マネージメント/省エネ政策・カウンターパート研修/エネルギー管理メカニズム/CDM[2]開発支援）

・機材（測定機器）

・カウンターパート本邦研修（合計 7 名）

・その他の活動経費

相手国側：

・カウンターパートの配置（合計 14 名）

・日本人専門家の執務室、同室の家具・電話など

・その他の活動経費

2．評価調査団員の概要

調査者	団　　長	志村　哲	JICA スリランカ事務所長
	協力計画	戸村浩之	JICA 産業開発部 副調査役
	協力企画	原　　毅	JICA スリランカ事務所員
	協力企画	セーラシンハ	JICA スリランカ事務所員
	評価分析	田村智子	株式会社かいはつマネジメント・コンサルティング
	Mr. M M C Ferdinando		電力エネルギー省 次官
	Mr. Sulakshana Jayawardana		電力エネルギー省 アシスタントディレクター
	Ms. Chrishanti Hapugoda		大蔵省 対外援助局 ディレクター
	Mr. Chandana Samarasinghe		SLSEA ディレクター・ジェネラル
調査期間	2009 年 9 月 22 日～10 月 13 日		評価の種類：中間レビュー

[1] エネルギー・サービス会社。

[2] クリーン開発メカニズム。

３．評価結果の概要

３－１　実績の確認

（１）プロジェクトの成果の達成状況

１）成果 1 の達成状況

成果 1 は遅延なく達成されつつある。CFL（電球型小型蛍光灯）の省エネ表示の義務づけ制度が既に導入されたこと、大規模消費者を対象とするエネルギー消費年次報告やエネルギー診断の義務づけ、エネルギー管理士とエネルギー診断士の認証制度、天井扇風機とバラストの省エネ表示の義務づけ制度のいずれもの準備が進んでおり、すべての制度が 2010 年内には導入される予定である。これらのことから、協力期間終了時までに成果 1 が達成される可能性は高いが、今後の活動実施においては、以下の点に更なる注意を払う必要がある。

・上述の諸制度を速やかに導入するためには、内閣承認の取りつけや官報の作成など法制度施行のために必要な手続きと、ガイドラインや基準の設置などの技術的な検証が同時並行してタイムリーに進むよう留意する。
・エネルギー消費報告・エネルギー診断の義務づけは、適当なレベルのペナルティを伴うものとする。
・天井扇風機の省エネ表示の義務づけの速やかな導入のためには、法制度の施行に遅れることなく、試験施設の設置準備を進める。

２）成果 2 の達成状況

成果 2 を達成すべく準備が進められているが、現在のところいずれも目に見える成果につながっていないことから、協力期間終了後までに成果 2 が達成されるかどうかに関してはやや懸念が残る。成果 2 を協力期間終了時に達成するには、省エネ事業への投資を奨励するための融資制度の開発や改善、及びエネルギー効率の高い CFL を普及させるためのインセンティブ制度やパイロット・プロジェクトの導入を早期に実現する必要がある。

なお、成果 2 の達成に関して下記①②のような課題が認められた。

①　省エネ事業への投資を奨励するための融資制度の開発や改善の停滞

表 1 は 2006～2008 年に実施された円借款事業「環境対策支援事業 II」（省エネを含む環境改善事業への低金利の融資制度）の省エネ事業への利用者数と合計融資額を示している。同表からは、2007 年は 2006 年に比べて利用が大幅に増加したことが分かる。2007 年に融資対象となった省エネ事業 10 件中 7 件は紅茶産業による事業であり、これは SLSEA が実施した紅茶産業を対象とした啓発・トレーニングにおいて、同産業における省エネ事業実施の成功例やモーターにインバーターを取り付けるといった確立した省エネ技術を事業主に紹介したことが有効に作用した結果である。2008 年には同融資制度の資金が残り少なくなり、融資が制限されたため、省エネ事業への融資件数は再び減少した。なお、同事業における省エネ事業への融資総額は、公害防止事業など他の分野の事業を含めた全融資総額のわずか約 3%であった。

表１　「環境対策支援事業II」の省エネ事業への活用件数及び金額

	2006 年	2007 年	2008 年
活用件数	2	10	4
合計金額	12,360,000 ルピー	107,212,944 ルピー	18,702,850 ルピー

出所：プロジェクト・チーム

「環境対策支援事業 II」の先行事業である「環境対策支援事業 I」は 2008 年に終了した。同事業のリボルビング・ファンド制度は 2009 年の 7 月に活用が開始されたばかりであり、省エネへの融資実績はまだない。

「サステイナブル・ギャランティー・ファシリティー」は、民間企業が省エネ事業への融資を銀行から取りつける際に SLSEA が保証を提供する制度である。当制度の利用は過去 2 年間で 2 件のみであり、活用件数の増加はみられない。現時点では銀行からの融資を受けて省エネ事業を実施しようとする事業主の数が少ないことが、同制度の利用数が伸びないことの背景となっている。

このように、2008 年以降、省エネを対象とした融資制度の活用状況にめざましい進捗はみられない。

②　省エネ機器を普及させるためのインセンティブ制度の導入の遅延

以下に述べるように、省エネ機器を普及させるためのインセンティブ制度、及び CFL の配布のためのパイロット・プロジェクトはいずれも準備段階にあり、導入が急がれる。

・CFL の免税制度

エネルギー効率の高い CFL の普及のためのインセンティブ制度が検討されてきた。これは、2009 年 7 月に導入された CFL のラベリング制度により、3 つ星以上と認定されたエネルギー効率の高い CFL に課される付加価値税及び輸入税を免除することにより、販売価格を下げ、消費者の購買意欲を高め普及を促進する方策である。当免税制度は 2009 年の初旬に内閣の承認が得られたが、同免税制度の実施により発生する正・負のインパクトを測定し、同免税制度導入が有意義なものであることを財務省に報告するという「条件つき承認」であった。このため現時点で免税制度の導入には至っていない。

・CFL の配布のためのパイロット・プロジェクト

SLSEA は、CFL の普及率の低い低所得者層を対象に、CFL を割引価格で配布する事業を将来全国で実施する計画をもっており、当プロジェクトでは、同事業の実施手法の有効性を検証するためのパイロット・プロジェクトをランカ・エレクトリシティー・カンパニー[3]の協力を得て実施するべく準備を進めている。

（２）成果 3 の達成状況

公官庁・私企業、一般消費者、児童生徒を対象に、セミナー、トレーニング、新聞・雑誌・ラジオなどを通じた省エネ啓発活動が実施された。そのうち、紅茶産業と国家上下水道庁を対象に実施された啓発・トレーニングでは、啓発・トレーニングのあとに各参加団体が実施した省エネ事業に関して SLSEA によるフォローアップと効果測定が実施されて

[3] コロンボの郊外を中心に電力を供給するスリランカの電力会社の 1 つ。

いる（表２参照）。一方、一般消費者や公官庁、児童生徒を対象とした啓発活動においては、その結果や効果が測定されておらず、中間レビューにおいても、これらの啓発活動がどれだけ成果につながっているのか判断することができなかった。

表２　紅茶産業と国家上下水道庁を対象に実施された啓発・トレーニングの実績

対　象	トレーニング実施日	参加者数	省エネ事業実施団体数	年次電力消費量に占める節電量（%）	年間節電量（kwh）
紅　茶	2008 年 2 月 12～15 日	25	10	1.55～15.75	7,058～93,185（合計 274,193）
	2008 年 7 月 7～11 日	27	5	3.2～8.66	11,016～61,180（合計 159,409）
	2008 年 9 月 7～11 日	24	フォローアップ中		
	2009 年 3 月 23～25 日	32	フォローアップ中		
国家上下水道庁	2009 年 3 月 30 日～4 月 1 日	26	7（完了） 6（実施中）	フォローアップ中	32,076～1,685,880（合計 2,456,271）

出所：プロジェクト・チーム提供資料

（３）プロジェクト目標の達成状況

成果 1 については、導入予定の諸制度がすべて 2010 年以内に導入される見込みがあり、成果は遅延なく達成されつつあるといえるが、成果 2、3 については制度や施策が準備中、若しくは、一部しか活動の効果が測定されておらず、現時点では、活動が目に見える成果につながっているとは言い難い。上位目標が協力期間内に達成される可能性はあるが、若干の懸念事項があるため、楽観は禁物であるといえよう。

３－２　評価結果の概要

（１）妥当性

スリランカにおいて省エネは開発政策上の優先課題であり、今後の持続的な経済成長のための緊急課題でもある。また日本は 2007 年に策定した「エネルギー基本計画」において省エネ対策普及促進への支援の必要性を指摘している。また、当プロジェクトで導入予定の法制度の多くは、日本で既に導入済みであること、日本及び JICA は省エネに関するより豊かな経験と技術をもっていることから、技術協力をより効果的に実施することができる。これらのことから当プロジェクト実施の妥当性は非常に高い。

（２）有効性

前述のように、当プロジェクトの目標が協力期間内に達成される可能性はあるが、懸念事項もいくつかある。一方、SLSEA が当プロジェクトの活動を実施するための法的権限を十分に有していること、電力エネルギー省や SLSEA の幹部が当プロジェクトを積極的に支援していること、プロジェクト活動の実施に関係機関が積極的に参加していること、プロジェクト目標達成を阻害する特定の要因がないことなどから、当プロジェクトの有効性は高いと判断する。

（３）効率性

日本側の投入である専門家の派遣、機材の購入、本邦研修の実施、スリランカ側の投入であるカウンターパートの配置、プロジェクト活動のローカルコストの負担、専門家の執務室の整備等すべて計画どおりであり、量・質・タイミングともに特に問題はない。成果の達成状況に関しては、成果 1 については遅延なく達成されつつあるが、成果 2、3 については現時点で活動が目に見える成果につながっておらず、達成の可能性に関して若干の懸念が残る。これらのことから当プロジェクトの効率性は中程度と判断する。

（４）インパクト

現時点では当プロジェクトの実施による政策・環境・社会経済面などの正・負のインパクトは特に発生していない。一方、「南アジア地域協力連合省エネ表示会議」や「CDM セミナー」などプロジェクト・チームの尽力により省エネ関連のイベントがスリランカで開催されたことは当プロジェクトの活動レベルの副次的な効果といえる。また、当プロジェクトの効果が上位目標の実現に貢献する可能性はあるが、その貢献度についての判断はまだ困難である。これらのことから、現時点で当プロジェクトのインパクトについて評価するのは時期尚早であり、今後に期待したい。

（５）自立発展性

当プロジェクトは電力エネルギー省や SLSEA 幹部の強い支持を受けていること、省エネはスリランカ政府の優先課題であることから、協力期間終了後も当プロジェクトの効果継続への政策レベルの支援が継続する見込みがある。SLSEA は今後も省エネ推進のファシリテーターとしての役割を担い、スリランカ・エネルギー管理士協会（SLEMA）やスリランカ標準機関（SLSI）、ESCO などの関連機関が施策実施において重要な役割を果たす予定である。そのため、当プロジェクトによる諸制度・施策の導入により SLSEA の役割が大幅に増加することはないと思われる。このことから、今後も SLSEA への適切な人材の配置と予算配分が継続されるのであれば、当プロジェクトで生み出された効果を持続させるにおいて、組織的・財政面の問題は当面ないと思われる。しかし、当プロジェクトで作成中の「省エネ 10 年計画」を将来本格的に実施するためには、石化燃料に対する「特定財源税」の導入や「スリランカ持続可能エネルギー基金」の設立による独自財源の確保が重要となる。なお、協力期間終了時には、SLSEA や関連機関の職員の技術レベルが当プロジェクトの効果を持続させるに十分なものとなる見込みはあるが、今後も技術力向上のためのトレーニング等を定期的に実施することが望ましい。これらのことから、当プロジェクトの自立発展性は高いと判断する。

３－３　問題点及び問題を惹起した要因

（１）計画内容に関すること

・「特定業種に関するエネルギー消費量ベンチマークの策定や見直しを行う」ことが計画されていた。当初はこのベンチマークの順守を義務づける予定であったが、いくつかの業種のエネルギー消費量を調査した結果、同一業種でも各事業者のエネルギー消費量に

大きなばらつきがあること、そのばらつきは事業内容の多様化を反映するものであることなどが分かったため、義務づけは実施しないことになった。他国においてもベンチマークの順守が義務づけられている例は少ないことから、当初の計画はやや合理性に欠けるものであったと考えられる。

・当初、ESCO の認証制度の導入が活動として計画されており、又、ESCO の売上げの増加や認証 ESCO の数が指標としてあげられていた。現在、スリランカにおいて SLSEA には複数の ESCO が登録しているが、省エネ工事の実施や融資までを担当する能力をもつ、いわゆる日本などにおける ESCO の定義に該当する団体は 1 社しかなく、その他の多くの団体はエネルギー監査の実施が主な事業内容である。また ESCO の認証制度は日本でも導入されていない。このような事態を勘案すると、前述の活動や指標の設定はやや現実性に欠けるものであったと思われる。

（2）実施プロセスに関すること

プロジェクト・チームのチームワーク、意思決定プロセス、情報の共有化などに関する問題は特になく、ジョイント・コーディネーション委員会（JCC）は当事業の進捗管理や上位レベルの意思決定において重要な役割を果たしている。また、上位機関や関係機関が当プロジェクトに積極的に参加しており、当プロジェクトの実施プロセスに関する問題は特にない。

３－４　プロジェクト・デザイン・マトリックス（PDM）の改訂

下記の PDM の項目について調査団が改訂を提案し、JCC にて承認された。

（1）上位目標の指標

・「1 次エネルギーに換算したエネルギー消費効率が 2017 年に 500toe/100 万 SDR に向上する」を「商業エネルギーに換算したエネルギー消費効率が 2017 年に 1.8toe/100 万ルピーに向上する」に変更。当初の目標値が既に 2017 年に達成されたこと、バイオマスを含む 1 次エネルギーではなく商業エネルギーに注目し、又 SDR ではなくルピーで測定することが当プロジェクトの指標としてよりふさわしいことから。

・「発電所の利用効率が毎年 1%向上する」を追加。スリランカの電力セクターにおける最も深刻な問題である発電所の低利用効率の省エネによる改善が望まれることから。

（2）プロジェクト目標の指標

・「ESCO の売上げが 10%以上増加する」を「省エネへの投資額が毎年 10%以上増加する」に変更。現在 ESCO が 1 社しかないため、その売上げを指標として用いるのは不適当であり、又省エネへの投資額で測定するのが適当と思われることから。

・「一般家庭における CFL の使用率が 40%以上になる」を「都市・農村・農園いずれの地域においても、一般家庭の CFL の使用率（1 世帯に CFL が 1 個でもあれば可）が 40%以上になる」と変更。SLSEA の調査によれば CFL の使用率は地域によってばらつきがあるが、すべての地域での普及拡大をめざす必要があることから 3 地域を特定し、又、「使用率」の定義を明確にした。

・「省エネ 10 年計画が電力エネルギー省に承認される」を追加。抜けていたと思われることから。

（3）成果 1 の指標

・「優先度の高い 5 業種（紅茶製造業、縫製業、乾燥ココナツ製造業、ホテル、商業ビル）にベンチマーク制度が導入される」を「月次エネルギー消費量が 25 万 kwh を超える産業・商業・公的機関に対するエネルギー消費量の年次報告の義務づけ制度が導入される」に変更。上述のように、エネルギー消費の削減を指導するために、ベンチマークの順守の義務づけに変わって、エネルギー消費量の年次報告の義務づけが計画されていることから。

・「エネルギー消費基準値が分析され、毎年アップデートされる」を追加。ベンチマークの順守の義務づけに変わって、基準値に関する情報提供の実施が計画されていることから。

・「ESCO が 3 団体以上、省エネコンサルタントが 6 団体以上認証される」を削除。ESCO の認証制度は設けないことから。

（4）成果 3 の指標

・「CFL に対する認知度が向上する」を「都市・農村・農園いずれの地域においても、一般家庭の CFL の使用率（1 世帯に CFL が 1 個でもあれば可）が 40%以上になる」に変更。より具体的な記述とする必要があることから。

（5）活　動

・「特定業種に関するエネルギー消費ベンチマークの策定や見直しを行う」を「エネルギー消費基準値が分析され、毎年アップデートされる」及び「月次エネルギー消費量が 25 万 kwh を超える産業・商業・公的機関に対するエネルギー消費量の年次報告の義務づけ制度が導入される」に変更。ベンチマークの順守義務づけは導入しないことから。

・「エネルギー診断士、エネルギー管理者、ESCO の認証制度を導入する」を「エネルギー診断士とエネルギー管理士の認証制度を導入する」に変更。ESCO の認証制度は導入しないこと及び文言の統一から。

・「主要な機器（CFL、バラスト、天井扇風機）に関するインセンティブ制度を開発する」を「エネルギー効率の高い CFL に関するインティブ制度及びパイロット・プロジェクトを開発する」に変更。現在、他の機器ではなく CFL の普及に集中することが必要かつ現実的であること、インセンティブ制度のみではなく、普及が遅れている地域への CFL 配布を実現するためのパイロット・プロジェクトの必要性が認識されたことから。

３－５　結　論

現在のところ当プロジェクトはある程度順調に進捗しているが、有効性、効率性、自立発展性の面でいくつか留意点が認められた。SLSEA カウンターパート、JICA 専門家その他のプロジェクト関係者は、後述の「提言」に十分留意しながら、今後も一層努力を続けることにより、

協力期間終了時にはすべての活動を終了させる必要がある。

３－６　提言（当該プロジェクトに関する具体的な措置、提案、助言）

（１）省エネ融資制度の活用と開発

・「環境対策支援事業 I」のリボルビング・ファンド制度が 2009 年 7 月より利用可能となっている。これまで実施された「環境対策支援事業」I 及び II の制度をレビューし、改善が必要な点があれば指摘し、今後、リボルビング・ファンド制度を省エネ事業に有効活用できるよう関係機関に働きかけることが望まれる。

・プロジェクト・チーム、特に SLSEA のカウンターパートは、既存の省エネへの融資制度に関して、事業主や銀行などの関係者への働きかけをより積極的に行う必要がある。その際は、制度を積極的に利用するよう意識づけをすることに加えて、各業種の省エネ事業の成功事例や確立した省エネ技術を紹介することにより、事業者及び銀行の省エネ事業への理解と積極性を高めることが効果的である。

・プロジェクト・チームは今後も引き続き、商工業セクターのみでなく、公官庁の省エネ事業や省エネ機器購入を融資対象に含む新規融資制度の形成に積極的に取り組むよう期待される。なお、省エネ機器購入への融資に関しては、当該機器の省エネ表示の義務づけと連携を図る必要がある。

（２）インセンティブ制度の開発

・CFL の付加価値税・輸入税免除の実現のため、税免除による正・負のインパクトについての科学的な論拠を伴った説得力のある報告書を早急に作成する必要がある。2010 年には税免除が実施されるよう、2009 年末までに当該報告書を作成し財務省に提出すべく、プロジェクト・チームの支援を受け積極的に作業を進めるよう電力エネルギー省に期待する。

・CFL 配布のパイロット・プロジェクトが 2010 年初旬には開始され、協力期間終了までにその教訓を踏まえた CFL 配布の全国規模の事業が形成されるよう、同活動を積極的に推進することが望まれる。

（３）啓発活動

・一般消費者向けの啓発活動の効果のモニタリングを含め、啓発活動をより戦略的に実施する必要がある。そのため例えば、CFL の省エネラベル義務づけ制度を周知徹底するためのキャンペーンを実施する際には、ターゲットを絞ったキャンペーンを一定期間実施したのち、その効果を測定するインパクト・アセスメント調査を行い、その結果から教訓を引き出し、教訓を踏まえて次回の戦略を立案する、などといった一連の施策の実施が望ましい。施策の計画・立案が 2009 年末までに行われ、2010 年には実施の運びとなるよう望まれる。

３－７　教訓（当該プロジェクトから導き出されたほかの類似プロジェクトの発掘・形成、実施、運営管理に参考となる事柄）

本邦研修の実施が当プロジェクトの円滑な実施に貢献しており、実施のタイミングや研修対象者の選出方法は、他の類似プロジェクトの運営管理の参考になると思われる。具体的には以下のとおり。

・当プロジェクトの開始前に SLSEA の部長クラスの職員が本邦研修に参加し、省エネに関する法規制や諸施策に関する理解を深めていた。研修の成果を生かして SLSEA が、計画されていた活動の準備を始めたり、部分的に実施したりしていたこと（ラベリング制度の技術的検討や産業界へのトレーニングなど)、及び研修を通じて職員の意識が向上したことが、同機関のプロジェクトへの主体的な参加につながっている。

・当プロジェクトで 2008 年に実施された本邦研修では、電力エネルギー省の次官や SEA 会長を含むカウンターパート幹部職員が日本の省エネ政策や現状を視察した。当研修がプロジェクト開始直後に実施され、又幹部レベルの職員が参加したことは、プロジェクトの円滑な運営に大変効果的であった。特に当研修により、省エネ推進に関する幹部レベルの職員の理解と積極性が深まり、意思決定や関係機関との調整などプロジェクトが上位機関の関与を必要とする際に十分な支援が得られるようになった。またカウンターパート幹部職員が研修を終えスリランカに帰国した直後に JICA 専門家がタイミングよくスリランカに赴任し、両者がプロジェクトのフレームワークや目的に関して討議を行い、意識の共有化を図ったうえでプロジェクト活動を開始する運びとなったこともプロジェクト活動の円滑な進捗に寄与した。

第１章　中間レビュー調査の概要

１－１　調査背景

スリランカ民主社会主義共和国（以下、「スリランカ」と記す）の 1 次エネルギー供給は、伝統的なバイオマスが 47%と高い比率を占めているが、商業的に流通しているエネルギーは、水力以外は全量を輸入石油に依存している。また電力供給についてみると、発電電力量の 60%を輸入石油に依存している（Sri Lanka Energy Balance、2007 年）。このためスリランカの電気料金は他のアジア諸国に比べて高く、アジア諸国との比較において同国の輸出産業の競争力を低下させる原因となっている。また、新規の発電所開発にも限界があることから、将来深刻な電力供給不足に直面する可能性がある。このような事情から、今後も同国が経済成長を続けるためには省エネルギー（以下、「省エネ」と記す）の推進は緊急の課題であった。

そのような背景のなか 2006 年 10 月に制定された「National Energy Policy and Strategies of Sri Lanka」でも、1 次エネルギーの供給能力増強と多様化に加え、省エネの普及がスリランカのエネルギー分野における重要課題であると認識されている。また、省エネを加速度的に推進すべく、2007 年 9 月には「スリランカ持続可能エネルギー推進機構法」が制定され、省エネ対策機関として、「スリランカ持続可能エネルギー推進機構（SLSEA）」が設立された。同法では、省エネ政策の立案・普及、エネルギー需要管理、省エネに資する技術革新、省エネ表示の義務づけ、一般住民への啓発活動、エネルギー管理士・診断士の認証などが義務づけられている。

このように省エネ政策を進めるなか、同国は省エネに関するわが国の進んだ技術及び知見を導入したいとして、技術協力プロジェクト「省エネルギー普及促進プロジェクト」を要請した。要請は 2006 年 8 月に採択され、2 度の事前調査を経て、2008 年 5 月より 3 ヵ年の計画で技術協力プロジェクトが実施されている。当中間レビュー調査は、協力期間が 1 年半過ぎた時点において当プロジェクトの進捗を確認し、課題や問題について討議し改善することを目的に実施された。

１－２　調査目的

・プロジェクトの進捗及び実施プロセスを確認する
・5 項目の観点から評価を行う
・課題や問題があれば討議し、今後の方向性を決める
・プロジェクトがより効果的に実施されるよう提言を行う

１－３　評価方法

関連資料・報告書のレビュー、関係者へのインタビュー及び関係機関との討議によって当中間レビューの調査・評価が実施された。

（1）関連資料・報告書のレビュー

以下の関連資料や報告書をレビューした。

・事前評価調査要約表（2007 年 12 月）
・プロジェクト・ドキュメント - 2008 年 7 月、SLSEA・電源開発株式会社
・第 1 年度業務実施計画書 - 2008 年 5 月、電源開発株式会社

・業務完了報告書 - 2009 年 3 月、電源開発株式会社
・第 2 年度業務実施計画書 - 2009 年 5 月、電源開発株式会社
・“Record of Discussions” 2008 年 2 月
・“Minuets of Meeting for the Project Promoting Energy Efficiency Improvement in Sri Lanka”-2008 年 7 月
・“Minutes of Meeting of the 2nd JCC”-2008 年 10 月
・“Minutes of Meeting of the 3rd JCC” - 2009 年 7 月
・“Project Progress Report No. 2”, Project Team - 2009 年 7 月
・“Sri Lanka Energy Balance”, SLSEA、2007 年
・“Energy Consumption Baseline Analysis”, SLSEA

（2）インタビュー

電力エネルギー省と SLSEA の主な職員へのインタビューを行った。

下記の討議が実施された。

・中間レビュー・キックオフミーティング（9 月 22 日）
・中間レビュー調査団内会議（10 月 6 日）
・SEA 職員及び大蔵省対外援助局との会議（10 月 8 日）

１－４　調査団構成

・団　　長	志村　哲	JICA スリランカ事務所長
・協力計画	戸村浩之	JICA 産業開発部 副調査役
・協力企画	原　　毅	JICA スリランカ事務所員
・協力企画	セーラシンハ	JICA スリランカ事務所員
・評価分析	田村智子	株式会社かいはつマネジメント・コンサルティング
・Mr. M M C Ferdinando		電力エネルギー省 次官
・Mr. Sulakshana Jayawardana		電力エネルギー省 アシスタントディレクター
・Ms. Chrishanti Hapugoda		大蔵省 対外援助局 ディレクター
・Mr. Chandana Samarasinghe		SLSEA ディレクター・ジェネラル

１－５　調査日程

調査期間は2009年9月22日～10月13日までであった。主要な日程を下表に示す。

日	曜日	調査日程
9 月 22 日	火	キックオフミーティング
9 月 23 日	水	SLSEA 職員・JICA 専門家との討議
9 月 24 日	木	SLSEA 職員・JICA 専門家との討議
9 月 25 日	金	SLSEA 職員・JICA 専門家との討議
9 月 26 日	土	評価レポート作成
9 月 27 日	日	評価レポート作成

9 月 28 日	月	SLEMA 職員・SLSEA 職員との討議
9 月 29 日	火	SLSEA 職員・JICA 専門家との討議
9 月 30 日	水	SLSEA 職員・JICA 専門家との討議
10 月 1 日	木	SLSEA 職員・JICA 専門家との討議
10 月 2 日	金	SLSEA 職員・JICA 専門家との討議
10 月 3 日	土	評価レポート作成
10 月 4 日	日	評価レポート作成
10 月 5 日	月	SLSEA 職員・JICA 専門家との討議
10 月 6 日	火	中間レビュー調査団内会議
10 月 7 日	水	SLSEA 職員・JICA 専門家との討議
10 月 8 日	木	SLSEA 職員及び大蔵省対外援助局職員との討議
10 月 9 日	金	中間レビュー調査団内会議
10 月 10 日	土	評価レポート作成
10 月 11 日	日	評価レポート作成
10 月 12 日	月	中間レビュー調査団内会議
10 月 13 日	火	ジョイント・コーディネーション委員会（JCC）ミーティング

１－６　主要面談者

・Mr. Upali Daranagama - 電力エネルギー省次官補 兼 SLSEA副ジェネラルマネージャー（オペレーション）
・Mr. Sulakshana Jayawardana - 電力エネルギー省アシスタントディレクター
・Ms. Chrishanti Hapugoda - 大蔵省対外援助局ディレクター
・Mr. Chandana Samarasinghe - SLSEAディレクター・ジェネラル
・Mr. Harsha Wickramasinghe - SLSEA副ジェネラルマネージャー（ストラテジー）
・Mr. M. M. R. Pathmasiri - SLSEA省エネ部門ディレクター
・その他SLSEA省エネ部門職員
・JICA専門家（電源開発株式会社）

第２章　プロジェクトの概要

(1) 上位目標

エネルギー消費効率の高い社会が実現する。

(2) プロジェクト目標

省エネ活動を促進するために必要な基盤（政策、人材、奨励制度、省エネ意識）が整備される。

(3) 成果（アウトプット）

・スリランカ持続可能エネルギー推進機構法施行に必要な資源（政策、人材、機材、資料）が整備される。
・省エネを促進させるためのインセンティブ制度が整備される。
・一般家庭、私企業、公共セクターの省エネに関する意識が向上する。

第３章　プロジェクトの実績と実施プロセス

３－１　投入実績

日本側：

・専門家 10 名（統括・省エネ政策・行政/省エネ普及促進・資金検討/省エネ監査・管理技術・機材/ラベリング・ESCO[1]/情報技術（IT）・技術/電力分野・需要側マネージメント/省エネ政策・カウンターパート研修/エネルギー管理メカニズム/CDM[2]開発支援）

・機材（測定機器）

・カウンターパート本邦研修（合計 7 名）

・その他の活動経費

相手国側：

・カウンターパートの配置（合計 14 名）

・日本人専門家の執務室、同室の家具・電話など

・その他の活動経費

３－２　プロジェクトの達成度

（1）プロジェクトの成果の達成状況

1）成果 1 の達成状況

電球型小型蛍光灯（CFL）の省エネ表示の義務づけ制度が既に導入されたこと、大規模消費者を対象とするエネルギー消費年次報告やエネルギー診断の義務づけ、エネルギー管理士とエネルギー診断士の認証制度、天井扇風機とバラストの省エネ表示の義務づけ制度のいずれも準備が進んでおり、すべての制度が 2010 年内には導入される予定である。これらのことから、成果 1 は遅延なく達成されつつあるとみなすことができる。また、協力期間終了時までに成果 1 が達成される可能性は高いが、今後の活動実施においては、以下の点に更なる注意を払う必要がある。

・上述の諸制度を速やかに導入するためには、内閣承認の取りつけや官報の作成など法制度施行のために必要な手続きと、ガイドラインや基準の設置などの技術的な検証が同時並行してタイムリーに進むよう留意する。

・エネルギー消費報告・エネルギー診断の義務づけは、適当なレベルのペナルティを伴うものとする。

・天井扇風機の省エネ表示の義務づけの速やかな導入のためには、法制度の施行に遅れることなく、試験施設の設置準備を進める。

2）成果 2 の達成状況

成果 2 を達成すべく準備が進められているが、現在のところ目に見える成果につながっていないことから、協力期間終了後までに成果 2 が達成されるかどうかに関してはやや懸念が残る。成果 2 を協力期間終了時に達成するには、省エネ事業への投資を奨励するための融資制度の開発や改善、及びエネルギー効率の高い CFL を普及させるためのインセンテ

[1] エネルギー・サービス会社。
[2] クリーン開発メカニズム。

ィブ制度やパイロット・プロジェクトの導入を早期に実現する必要がある。

なお、成果 2 の達成に関して下記①②のような課題が認められた。

① 省エネ事業への投資を奨励するための融資制度の開発や改善の停滞

表３－１は 2006～2008 年に実施された円借款事業「環境対策支援事業 II」（省エネを含む環境改善事業への低金利の融資制度）の省エネ事業への利用者数と合計融資額を示している。同表からは、2007 年は 2006 年に比べて利用が大幅に増加したことが分かる。2007 年に融資対象となった省エネ事業 10 件中 7 件は紅茶産業による事業であり、これは SLSEA が実施した紅茶産業を対象とした啓発・トレーニングにおいて、同産業における省エネ事業実施の成功例やモーターにインバーターを取り付けるといった確立した省エネ技術を事業主に紹介したことが有効に作用した結果である。2008 年には同融資制度の資金が残り少なくなり、融資が制限されたため、省エネ事業への融資件数は再び減少した。なお、同事業における省エネ事業への融資総額は、公害防止事業など他の分野の事業を含めた全融資総額のわずか約 3%であった。

表３－１ 「環境対策支援事業II」の省エネ事業への活用件数及び金額

	2006 年	2007 年	2008 年
活用件数	2	10	4
合計金額	12,360,000 ルピー	107,212,944 ルピー	18,702,850 ルピー

出所：プロジェクト・チーム

「環境対策支援事業 II」の先行事業である「環境対策支援事業 I」は 2008 年に終了した。同事業のリボルビング･ファンド制度は 2009 年の 7 月に活用が開始されたばかりであり、省エネへの融資実績はまだない。

「サステイナブル・ギャランティー・ファシリティー」は、民間企業が省エネ事業への融資を銀行から取りつける際に SLSEA が保証を提供する制度である。当制度の利用は過去 2 年間で 2 件のみであり、活用件数の増加はみられない。現時点では銀行からの融資を受けて省エネ事業を実施しようとする事業主の数が少ないことが、同制度の利用数が伸びないことの背景となっている。

このように、2008 年以降、省エネを対象とした融資制度の活用状況にめざましい進捗はみられない。

② 省エネ機器を普及させるためのインセンティブ制度の導入の遅延

以下に述べるように、省エネ機器を普及させるためのインセンティブ制度、及び CFL の配布のためのパイロット・プロジェクトはいずれも準備段階にあり、導入が急がれる。

・CFL の免税制度

エネルギー効率の高い CFL の普及のためのインセンティブ制度が検討されてきた。これは、2009 年 7 月に導入された CFL のラベリング制度により、3 つ星以上と認定されたエネルギー効率の高い CFL に課される付加価値税及び輸入税を免除することにより、販売価格を下げ、消費者の購買意欲を高め普及を促進する方策である。当免税制度は 2009 年の初旬に内閣の承認が得られたが、同免税制度の実施により発生する正・負のインパクトを測定し、同免税制度導入が有意義なものであることを財務省に報告するという

「条件つき承認」であった。このため現時点で免税制度の導入には至っていない。

・CFL の配布のためのパイロット・プロジェクト

SLSEA は、CFL の普及率の低い低所得者層を対象に、CFL を割引価格で配布する事業を将来全国で実施する計画をもっており、当プロジェクトでは、同事業の実施手法の有効性を検証するためのパイロット・プロジェクトをランカ・エレクトリシティー・カンパニー[3]の協力を得て実施するべく準備を進めている。

(2) 成果 3 の達成状況

公官庁・私企業、一般消費者、児童生徒を対象に、セミナー、トレーニング、新聞・雑誌・ラジオなどを通じた省エネ啓発活動が実施された。そのうち、紅茶産業と国家上下水道庁を対象に実施された啓発・トレーニングでは、啓発・トレーニングのあとに各参加団体が実施した省エネ事業に関して SLSEA によるフォローアップと効果測定が実施されている（表３－２参照）。一方、一般消費者や公官庁、児童生徒を対象とした啓発活動においては、その結果や効果が測定されておらず、中間レビューにおいても、これらの啓発活動がどれだけ成果につながっているのか判断することができなかった。

表３－２　紅茶産業と国家上下水道庁を対象に実施された啓発・トレーニングの実績

対　象	トレーニング実施日	参加者数	省エネ事業実施団体数	年次電力消費量に占める節電量（%）	年間節電量（kwh）
紅　茶	2008 年 2 月 12～15 日	25	10	1.55～15.75	7,058～93,185（合計 274,193）
	2008 年 7 月 7～11 日	27	5	3.2～8.66	11,016～61,180（合計 159,409）
	2008 年 9 月 7～11 日	24	フォローアップ中		
	2009 年 3 月 23～25 日	32	フォローアップ中		
国家上下水道庁	2009 年 3 月 30 日～4 月 1 日	26	7（完了） 6（実施中）	フォローアップ中	32,076～1,685,880（合計 2,456,271）

出所：プロジェクト・チーム提供資料

(3) プロジェクト目標の達成状況

成果 1 については、導入予定の諸制度がすべて 2010 年以内に導入される見込みがあり、成果は遅延なく達成されつつあるといえるが、成果 2、3 については制度や施策が準備中、若しくは、一部しか活動の効果が測定されておらず、現時点では、活動が目に見える成果につながっているとは言い難い。上位目標が協力期間内に達成される可能性はあるが、若干の懸念事項があるため、楽観は禁物であるといえよう。

[3] コロンボの郊外を中心に電力を供給するスリランカの電力会社の 1 つ。

第４章　評価５項目による分析

４－１　妥当性

スリランカにおいて省エネは開発政策上の優先課題であり、今後の持続的な経済成長のための緊急課題でもある。また日本は 2007 年に策定した「エネルギー基本計画」において省エネ対策普及促進への支援の必要性を指摘している。また、当プロジェクトで導入予定の法制度の多くは、日本で既に導入済みであること、日本及び JICA は省エネに関するより豊かな経験と技術をもっていることから、技術協力をより効果的に実施することができる。これらのことから当プロジェクト実施の妥当性は非常に高い。

４－２　有効性

前述のように、当プロジェクトの目標が協力期間内に達成される可能性はあるが、懸念事項もいくつかある。一方、SLSEA が当プロジェクトの活動を実施するための法的権限を十分に有していること、電力エネルギー省や SLSEA の幹部が当プロジェクトを積極的に支援していること、プロジェクト活動の実施に関係機関が積極的に参加していること、プロジェクト目標達成を阻害する特定の要因がないことなどから、当プロジェクトの有効性は高いと判断する。

４－３　効率性

日本側の投入である専門家の派遣、機材の購入、本邦研修の実施、スリランカ側の投入であるカウンターパートの配置、プロジェクト活動のローカルコストの負担、専門家の執務室の整備等すべて計画どおりであり、量・質・タイミングともに特に問題はない。成果の達成状況に関しては、成果 1 については遅延なく達成されつつあるが、成果 2、3 については現時点で活動が目に見える成果につながっておらず、達成の可能性に関して若干の懸念が残る。これらのことから当プロジェクトの効率性は中程度と判断する。

４－４　インパクト

現時点では当プロジェクトの実施による政策・環境・社会経済面などの正・負のインパクトは特に発生していない。一方、「南アジア地域協力連合省エネ表示会議」や「CDMセミナー」などプロジェクト・チームの尽力により省エネ関連のイベントがスリランカで開催されたことは当プロジェクトの活動レベルの副次的な効果といえる。また、当プロジェクトの効果が上位目標の実現に貢献する可能性はあるが、その貢献度についての判断はまだ困難である。これらのことから、現時点で当プロジェクトのインパクトについて評価するのは時期尚早であり、今後に期待したい。

４－５　自立発展性

当プロジェクトは電力エネルギー省や SLSEA 幹部の強い支持を受けていること、省エネはスリランカ政府の優先課題であることから、協力期間終了後も当プロジェクトの効果を継続させるための政策レベルの支援が継続する見込みがある。SLSEA は今後も省エネ推進のファシリテーターとしての役割を担い、スリランカ・エネルギー管理士協会（SLEMA）やスリランカ標準機関（SLSI）、ESCO などの関連機関が施策実施において重要な役割を果たす予定である。そのため、当プロジェクトによる諸制度・施策の導入により SLSEA の役割が大幅に増加することはないと

思われる。このことから、今後も SLSEA への適切な人材の配置と予算配分が継続される場合、当プロジェクトの効果を協力期間終了後も持続させるにおいて、組織的・財政面の問題は当面ないと思われる。しかし、当プロジェクトで作成中の「省エネ 10 年計画」を将来本格的に実施するためには、石化燃料に対する「特定財源税」の導入や「スリランカ持続可能エネルギー基金」の設立による独自財源の確保が重要となる。なお、協力期間終了時には、SLSEA や関連機関の職員の技術レベルが当プロジェクトの効果を持続させるに十分なものとなる見込みはあるが、今後も技術力向上のためのトレーニング等を定期的に実施することが望ましい。これらのことから、当プロジェクトの自立発展性は高いと判断する。

第５章　提　　言

（1）省エネ融資制度の活用と開発

・「環境対策支援事業 I」のリボルビング・ファンド制度が 2009 年 7 月より利用可能となっている。これまで実施された「環境対策支援事業」I 及び II の制度をレビューし、改善が必要な点があれば指摘し、今後、リボルビング・ファンド制度を省エネ事業に有効活用できるよう関係機関に働きかけることが望まれる。

・プロジェクト・チーム、特に SLSEA のカウンターパートは、既存の省エネへの融資制度に関して、事業主や銀行家などの関係者への働きかけをより積極的に行う必要がある。その際は、制度を積極的に利用するよう意識づけをすることに加えて、各業種の省エネ事業の成功事例や確立した省エネ技術を紹介することにより、事業者及び銀行家の省エネ事業への理解と積極性を高めることが効果的である。

・プロジェクト・チームは今後も引き続き、商工業セクターのみでなく、公官庁の省エネ事業や省エネ機器購入を融資対象に含む新規融資制度の形成に積極的に取り組むよう期待される。なお、省エネ機器購入への融資に関しては、当該機器の省エネ表示の義務づけと連携を図る必要がある。

（2）インセンティブ制度の開発

・CFL の付加価値税・輸入税免除の実現のため、税免除による正・負のインパクトについての科学的な論拠を伴った説得力のある報告書を早急に作成する必要がある。2010 年には税免除が実施されるよう、2009 年末までに当該報告書を作成し財務省に提出すべく、プロジェクト・チームの支援を受け積極的に作業を進めるよう電力エネルギー省に期待する。

・CFL 配布のパイロット・プロジェクトが 2010 年初旬には開始され、協力期間終了までにその教訓を踏まえた CFL 配布の全国規模の事業が形成されるよう、当活動を積極的に推進することが望まれる。

（3）啓発活動

・一般消費者向けの啓発活動の効果のモニタリングを含め、啓発活動をより戦略的に実施する必要がある。そのため例えば、CFL の省エネラベル義務づけ制度を周知徹底するためのキャンペーンを実施する際には、ターゲットを絞ったキャンペーンを一定期間実施したのち、その効果を測定するインパクト・アセスメント調査を行い、その結果から教訓を引き出し、教訓を踏まえて次回の戦略を立案する、などといった一連の施策の実施が望ましい。施策の計画・立案が 2009 年末までに行われ、2010 年には実施の運びとなるよう望まれる。

第６章　プロジェクト・デザイン・マトリックス（PDM）の改訂

下記の PDM の項目について調査団が改訂を提案し、JCC にて承認された。

（1）上位目標の指標

・「1 次エネルギーに換算したエネルギー消費効率が 2017 年に 500toe/100 万 SDR に向上する」を「商業エネルギーに換算したエネルギー消費効率が 2017 年に 1.8toe/100 万ルピーに向上する」に変更。当初の目標値が既に 2017 年に達成されたこと、バイオマスを含む 1 次エネルギーではなく商業エネルギーに注目し、又 SDR ではなくルピーで測定することが当プロジェクトの指標としてよりふさわしいことから。

・「発電所の利用効率が毎年 1%向上する」を追加。スリランカの電力セクターにおける最も深刻な問題である発電所の低利用効率の省エネによる改善が望まれることから。

（2）プロジェクト目標の指標

・「ESCO の売上げが 10%以上増加する」を「省エネへの投資額が毎年 10%以上増加する」に変更。現在 ESCO が 1 社しかないため、その売上げを指標として用いるのは不適当であり、又省エネへの投資額で測定するのが適当と思われることから。

・「一般家庭における CFL の使用率が 40%以上になる」を「都市・農村・農園いずれの地域においても、一般家庭の CFL の使用率（1 世帯に CFL が 1 個でもあれば可）が 40%以上になる」と変更。SLSEA の調査によれば CFL の使用率は地域によってばらつきがあるが、すべての地域での普及拡大をめざす必要があることから 3 地域を特定し、又、「使用率」の定義を明確にした。

・「省エネ 10 年計画が電力エネルギー省に承認される」を追加。抜けていたと思われることから。

（3）成果 1 の指標

・「優先度の高い 5 業種（紅茶製造業、縫製業、乾燥ココナツ製造業、ホテル、商業ビル）にベンチマーク制度が導入される」を「月次エネルギー消費量が 25 万 kwh を超える産業・商業・公的機関に対するエネルギー消費量の年次報告の義務づけ制度が導入される」に変更。上述のように、エネルギー消費の削減を指導するために、ベンチマークの順守の義務づけに変わって、エネルギー消費量の年次報告の義務づけが計画されていることから。

・「エネルギー消費基準値が分析され、毎年アップデートされる」を追加。ベンチマークの順守の義務づけに変わって、基準値に関する情報提供の実施が計画されていることから。

・「ESCO が 3 団体以上、省エネコンサルタントが 6 団体以上認証される」を削除。ESCO の認証制度は設けないことから。

（4）成果 3 の指標

・「CFL に対する認知度が向上する」を「都市・農村・農園いずれの地域においても、一般家庭の CFL の使用率（1 世帯に CFL が 1 個でもあれば可）が 40%以上になる」に変更。より具体的な記述とする必要があることから。

(5) 活　動

・「特定業種に関するエネルギー消費ベンチマークの策定や見直しを行う」を「エネルギー消費基準値が分析され、毎年アップデートされる」及び「月次エネルギー消費量が 25 万 kwh を超える産業・商業・公的機関に対するエネルギー消費量の年次報告の義務づけ制度が導入される」に変更。ベンチマークの順守義務づけは導入しないことから。

・「エネルギー診断士、エネルギー管理士、ESCO の認証制度を導入する」を「エネルギー診断士とエネルギー管理士の認証制度を導入する」に変更。EDCO の認証制度は導入しないことから。

・「主要な機器（CFL、バラスト、天井扇風機）に関するインセンティブ制度を開発する」を「エネルギー効率の高い CFL に関するインティブ制度及びパイロット・プロジェクトを開発する」に変更。現在、他の機器ではなく CFL の普及に集中することが必要かつ現実的であること、インセンティブ制度のみではなく、普及が遅れている地域への CFL 配布を実現するためのパイロット・プロジェクトの必要性が認識されたことから。

付　属　資　料

１．協議議事録（Minutes of Meeting）

２．Joint Mid Term Review Report

Minutes of Meeting
of
4th Joint Coordinating Committee
on
The Project for Promoting Energy Efficiency Improvement in Sri Lanka

Agreed
by
Ministry of Power & Energy
Sustainable Energy Authority
JICA Project Team
and
Japan International Cooperation Agency

Colombo, 13 October 2009

Addl Sec. (Pl & Dev)

for **Mr. M.M.C. Ferdinando**
Secretary
Ministry of Power & Energy

Mr. Akira Shimura
Chief Representative
JICA Sri Lanka Office

Dr. Krishan Deheragoda
Chairman
Sustainable Energy Authority

for 岡本 二郎

Dr. Kimio Yoshida
Team Leader of JICA Project
J-Power

Minutes of the 4th Joint Coordinating Committee Meeting on Project for Promoting Energy Efficiency Improvement in Sri Lanka held on 13th October 2009, 3.00pm ~ 4.30pm at the Ministry of Power and Energy

Attendance:

Ministry of Power & Energy:

Mr. Upali Daranagama, Addl. Secretary (Planning & Development), Chairman
Ms. Indrani Vithanage, Director
Mr. Sulakshana Jayawardane, Assistant Director

CEB:

Mr. K.S.P. Jayawardane, Acting General Manager
Mr. Nihal Wikramasuriya, Additional General Manager
Mr. K.G.R.F. Comester, DGM (Personnel)

SEA:

Mr. Chandana Samarasinghe, Director General
Mr. Harsha Wikramasinghe, Deputy DG
Mr. Ranjith Pathmasiri, Director (Energy Management)
Mr. Chamila Jayasekera, Head (Energy Efficient Systems)
Mr. P.P.K. Wijetunga, Head (OSC)
Mr. H.A. Wimal Nadeera, Head (RA)

JICA Project Team (J-Power):

Dr. Kimio Yoshida, Team Leader
Mr. H. Ida
Mr. Jaap Smink, MGM
Mr. Koichiro Tanabe
Mr. Kiyoshi Takashima
Mr. Hiroyuki Wakabayashi
Mr. Niro Okamoto
Mr. Sakae Tezuka

Ministry of Finance:

Ms. Chrishanthi Hapugoda, Director (Japan Division), ERD
Mr. Hemantha Kumara, Assistant Director, NPD

Embassy of Japan:
Mr. Katsuho Hayashi, Second Secretary

JICA:
Mr. Akira Shimura, Chief Representative, JICA Sri Lanka Office
Mr. Hiroyuki Tomura, Industrial Development Dept., JICA HQs
Mr. Tsuyoshi Hara, Representative, JICA Sri Lanka Office
Mr. Priyantha Serasinghe, Senior Project Specialist, JICA Sri Lanka Office
Ms. Tomoko Tamura, Consultant, Kaihatsu Management Consulting, Inc.

Other Organizations:
Dr. Tilak Siyambalapitiya, Consultant, RMA

1. Introductory Remarks:
Additional Secretary of MoPE welcomed the members and other invitees for the meeting and appreciated the progress of the first half of the 3-year Project and mentioned that the activities in the first one and half years have been completed with good results and it was focused to discuss matters related to that in detail. He stated that the Sri Lankan Government is giving all the Support for the Project.

Mr. Akira Shimura, at his opening remarks, identified this Project as a very challenging one, unlike other JICA Technical Cooperation Projects and he mentioned that the Project drives towards the reduction of financial burden of consumers as well as SL Govt.. He mentioned the importance of constructive thinking in order to achieve the overall goal of the Project. Finally, he urged all stakeholders to extend their cooperation that they have rendered so far, for the remaining period of the Project as well.

Mr. Harsha Wikramasinghe of SEA highlighted some of the achievements under the Project. Different approach of capacity building of Energy Managers/ Energy Auditors scheme, technical services through Instrument Bank which will serve On-Line booking in near future, development of awareness materials such as brochures, leaflets were picked up as successful outcomes of the Project. Energy manager tool has been developed for the Tea sector, and similar software tools will be developed for other 4 sectors as well. He noted that the draft document of 10-year Development Plan which was highlighted as lagging behind at the last JCC meeting has now been developed and compiled.

2. Presentation on Joint Mid-Term Review:

Ms. Tomoko Tamura, Consultant made a presentation on the results of Joint Mid-Term Review of the Project, highlighting the achievements and focused on the problems and issues that have to be addressed.

Power Point Presentation used is attached hereto.

3. Comments on the Presentation & Discussion:

Chairman of JCC opened the floor for discussion.

(i) Mr. Harsha Wikramasinghe, DDG of SEA, noted that the indicator of 500 toe/SDR was to be maintained with the economic development, but not to achieve.

(ii) Mr. Jaab Smink mentioned that it will still be better if the Project focus on urban areas for CFL distribution until the power distribution becomes stable in the rural areas. Mr. Hara pointed out that the LECO pilot project will provide the necessary inputs in this regard.

(iii) Dr. Yoshida mentioned that the progress and standards in Energy Manager/ Energy Auditor schemes, consumption reporting, mandatory Energy Auditing and Labeling programs are very much higher compared with situation in Vietnam and Indonesia. He further revealed that the interim output in financial aspects such as low interest loan scheme and incentive/disincentive schemes are low and mentioned that the capacity with SEA in this respect is low. Furthermore, to design a functional financial mechanism is not an easy issue, so JICA Project Team will concentrate into this issue more than before. The ways of assessment of impact of awareness programs were also noted to be an issue.

(iv) Dr. Tilak Siyambalapitiya mentioned that there may be a negative impact due to rural electrification activities in the system and positive impact due to energy conservation. He further noted, unless there is a clear mechanism, it would be difficult to separate out the impacts.

(v) Ms. Chrishanthi Hapugoda, Director (Japan Division) of ERD pointed out the importance of preparation of ground situation before establishing a dedicated loan scheme. She expressed the importance of establishing a proper distribution methodology of quality CFLs as well. Additional Secretary replied that the labelling program has systematically aligned already and Sri Lanka Standard Institution (SLSI) will be implementing the program.

(vi) Dr. Yoshida pointed out that there is no specific loan scheme supporting public sector and appliances at present and highlighted the importance of establishing such scheme.

(vii) DDG of SEA said that import inspection of low quality lamps has been being practised since 2006, which has already curtailed low quality lamps in to the country. He expressed the necessity of finding donor funding for refrigerator and air-conditioner laboratories. Funding for establishment of CFLs and Fans testing laboratories will be provided by the GOSL..

(viii) Discussion under each recommendation, MoPE, SEA, JICA Project Team and JICA agreed as follows:

- To study the issues with E-Friends-I and E-Friends-II within a period of two months, which will enable developing a sound financial scheme;
- To develop a convincing report on impact of exemption of VAT and import duty within 3 months (30 man days for independent local expert);
- To carry out pilot project on CFLs in collaboration with CEB and LECO by March 2010;
- To conduct an awareness improvement baseline study first and then continue awareness campaign by early 2010;
- To update the knowledge of SEA staff, Energy Managers and those who are expecting energy manager certification, through seminars, workshops, etc; and
- To give high priority for labeling program, establishing legal framework and popularizing high efficient appliances.

Some officials commented about above agreement as follows:

- Dr. Yoshida mentioned that there are similar tax exemptions schemes in Indonesia as well; and
- Mr. Nihal Wikramasuriya of CEB noted the importance of awareness improvement on good quality CFLs.

4. Summarization:

The Chief Representative of JICA summarized the contents of the meeting and mentioned that this type of project is not an easy task and there should be continuous attention for the program. He further elaborated that all stakeholders of the Project have to get together to achieve the expected goals. Additional Secretary thanked JICA and JICA Project Team and assured the commitment from GoSL for the Project.

Attachments:

Attachment – I: Power Point Presentation made by the Evaluation Team on the Results of the Mid-Term Review.

Attachment – II: Joint Mid-Term Review Report

Project for Promoting Energy Efficiency Improvement
Joint Mid-term Review

13, October 2009
JCC Meeting

Contents of the presentation

Introduction
1. Objective of the Mid-term Review
2. Mid-term Review Team
3. Methodology
4. Schedule

Results of the Review
5. Inputs
6. Activities implemented
7. Achievement of the Outputs
8. Implementation process
9. Achievement of the Project Purpose
10. Evaluation by 5 criteria
11. Proposal of revision of PDM
12. Conclusions
13. Recommendations

1. Objectives of the Mid-term Review

- Study achievements and implementation process of the Project
- Evaluate the result of the study with the five criteria
- Discuss issues and problems, if any
- Revise PDM if necessary
- Recommend necessary measures for improvement.

2. Review team – Japanese side

- **Mr. Akira Shimura**, Chief Representative, JICA Sri Lanka Office – Team leader
- **Mr. Hiroyuki Tomura**, Energy Efficiency Dept. JICA HQ.
- **Mr. Tsuyoshi Hara**, Representative, JICA Sri Lanka Office
- **Dr. Priyantha Serasinghe**, Senior Project Specialist, JICA Sri Lanka Office
- **Ms. Tomoko Tamura**, Consultant, Kaihatsu Management Consulting, Inc.

Attachment - 1

2. Review team -Sri Lankan side

- Mr. M M C Ferdinando, Secretary, MOPE
- Mr. Sulakshana Jayawardana, Assistant Director, MOPE
- Ms. Chrishanti Hapugoda, Acting Director, ERD
- Mr. Chandana Samarasinghe, Director General, SEA

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3. Methodology

- Interviews with SEA staff
- Interview with MOPE & ERD
- Kick-off Meeting on September. 22nd, 2009
- Internal meeting by the Review Team on October 6th, 2009
- Meeting with partner organizations on October. 8th, 2009
- JCC Meeting on October 13th, 2009

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4. Period and schedule

Sep. 22	Tue	Kick-off meeting	
Sep. 23	Wed		
Sep. 24	Thu	Video conference (JICA ofice & JICA expert team in Tokyo)	
Sep. 25	Fri		
Sep. 26	Sat		
Sep. 27	Sun		
Sep. 28	Mon		
Sep. 29	Tue		Discussions & interviews with the Project Team and SEA staff
Sep. 30	Wed	Video conference (JICA Experts & Review Team)	
Oct. 01	Thu		
Oct. 02	Fri		
Oct. 03	Sat		
Oct. 04	Sun		
Oct. 05	Mon		
Oct. 06	Tue	Meeting with SEA staff	
Oct. 07	Wed	Arrival of the Review Team from Tokyo	
Oct. 08	Thu	Meeting with SEA senior officials	
Oct. 09	Fri	Meeting with SEA staff and ERD	
Oct. 10	Sat	Preparation of the Mid-term Review Report	
Oct. 11	Sun	Preparation of the Mid-term Review Report	
Oct. 12	Mon	Discussion with JICA Chief Representative and the Secretary of MOPE	
Oct. 13	Tue	JCC meeting	

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5. Input – Japanese side

☺ Human resources
- O Assignment of JICA Experts – as planned
- O Contribution of JICA Experts - satisfactory

☺ Training
- O Five senior officials of MOPE & SEA - effective
- O Four SEA staff - effective

☺ Equipment
- O FY2008 – completed by March 2009 (13 items, JP¥20 million)
- O FY2009 – to be completed by Dec. 2009 (17 items, JP¥14 million)
- O Selection - appropriate
- O Usage and maintenance – no problem

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5. Input – Sri Lankan side

☺Human resources
- ○No. of SEA C/P – sufficient
- ○Technical level of SEA C/P – satisfactory
- ○Contribution of SEA C/P - satisfactory

☺Financial resources
- ○Budget for recurrent expenditure - sufficient
- ○Budget for capital expenditure – so far no problem
- ○No serious problem at the moment

6. Activities implemented

- Most of the activities were implemented as planned.

However, there are some concerns in the followings:

- Develop/ improve finance schemes
- Develop incentive/ disincentive schemes for major appliances

6. Activities implemented

(1) Develop/ improve finance schemes

Current situation

- Sustainable guarantee facility : only 2 projects for the last two years.
- E-Friends II – A progress was observed in 2007, however, the amount for EE&C was only 3% among the total disbursement:

The funds almost exhausted

Year	2006	2007	2008
No. of projects	2	10	4
Total amount approved.	Rs. 12,360,000	Rs. 107,212,944	Rs. 18,702,850

- Revolving fund of E-Friends-1: no project yet. Just started in July 2009.

6. Activities implemented

(1) Develop/ improve finance schemes

Concern of the Review Team

Will any finance schemes developed or improved and number and amount of loans taken were increased by the end of the Project?

- External environment:
  - A new Japanese ODA loan: under preparations, however need some more time to become available.
  - Fund of E-Friend 1 and 2 : almost exhausted.

6. Activities implemented

The following actions were taken by the Project team *to create a convincing environment* for industrial and commercial institutions to apply for finance for EE&C implementation:

- Sector specific training – proved to be effective
  - Effect of the training was proved by the increase of E-Friends usage in 2007 (70% of the borrowers of the year were tea sector)
  - Information on the proved technology (inverter) and success stories were encouraging to the management
- Legislations to compel implementation of EE&C – *in progress*
- Disseminate information of successful examples and established technology – by National Energy Efficiency Award – *in progress*
- Provide tools to analyze current situation – energy consumption baseline analysis, IT infrastructure and Instrument Bank - *being provided*

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6. Activities implemented

However, the followings were still not done to a successful level:

(1) Analyse the usage of E-friends I and II to identify disturbing factors in the schemes if any. →Propose necessary actions to take in the revolving fund schemes.

(2) Active intervention to create more awareness among the bankers in stakeholders meetings and seminars (only one seminar so far)

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6. Activities implemented

(2) **Develop incentive/ disincentive schemes for major appliances**

The following programme is underway:

- VAT exemption for high efficient CFLs
  - A cabinet paper was approved subject to monitoring of CBSL.
  - SEA is preparing a report on positive and negative impact to be created by the exemption.
- A pilot project of CFLs distribution
  - Under preparations & will be started by early 2010.

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6. Activities implemented

(2) **Develop incentive/ disincentive schemes for major appliances**

Concern of the Review Team

Will any incentive/ disincentive schemes will be introduced by the end of the Project?

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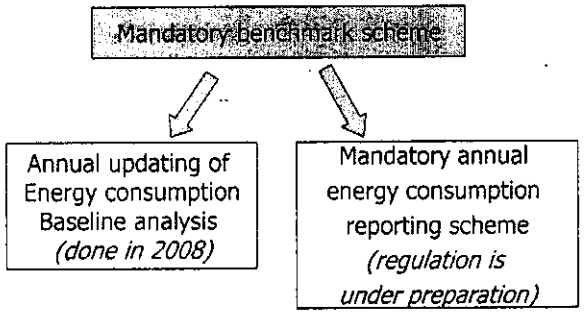
6. Activities implemented

Modifications in the activities (1)



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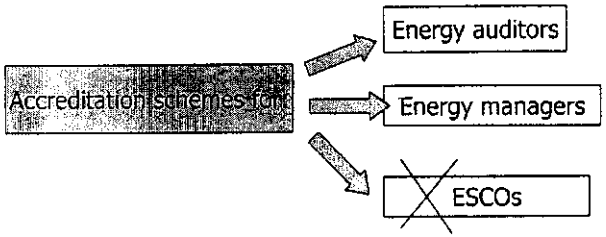
6. Activities implemented

Modifications in the activities (2)



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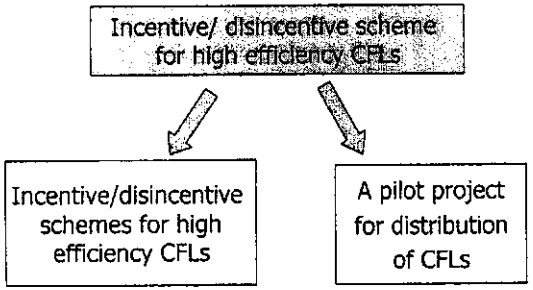
6. Activities implemented

Modifications in the activities (3)



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7. Outputs created – Output 1

Necessary resources, rules and regulations, human resources, equipment and materials for implementing SEA act are prepared

- Mandatory labeling of CFLs – **done**
- Mandatory labeling of ceiling fans
- Mandatory labeling of ballasts
- Accreditation of energy managers
- Accreditation of energy auditors
- Mandatory energy consumption reporting
- Mandatory auditing

In progress. Will be done in 2010

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7. Outputs created – Output 1

Adequate human resources (with adequate capacity), financial resources, equipment and materials for implementing SEA are/are prepared

⇨ No serious concerns about the progress.

Notes for your attention:

- ○Regulations should be timely prepared
  (along with preparation of criteria and guidelines)
- ○Mandatory reporting and auditing schemes should be equipped with appropriate level of penalty.
- ○A testing center for mandatory labeling of ceiling fans should be established timely.

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7. Outputs created – Output 2

Incentive/disincentive mechanisms for promoting energy efficiency is/are prepared

⇨ being created,

⇩

however

with some concerns mentioned earlier

- Utilization of existing finance schemes
- Mobilization of a fund for a new finance scheme
- Introduction of incentive/ disincentive schemes should be accelerated.

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7. Outputs created – Output 3

Adequate awareness is created among general public, private and public sectors on energy efficient appliances

being created, especially it was positive for tea industries

A series of interventions were done to public sector institutions and general public

⇩

however

Direct impacts created on general public and public sector institutions are unknown

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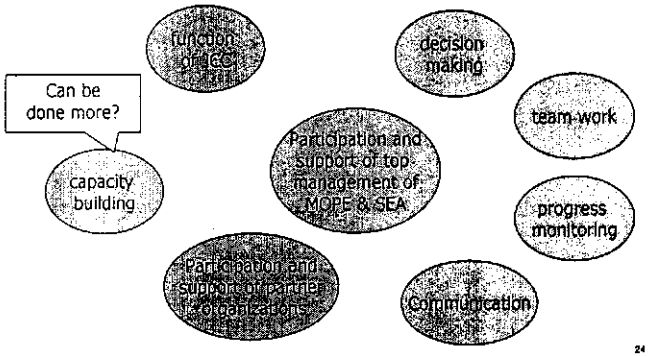
8. Implementation process

☺ No particular problem observed



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9. Achievement of the Project Purpose

There is a probability for the Project to achieve the Project Purpose within the Project period, however the Review Team is not totally positive as there are some concerns and delays.

- Pay due attentions to the "recommendations" of the Mid-term Review.
- Continuous support to the Project, please.
- Keep on your speed!

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10. Evaluation by 5 criteria – (1) Relevance

- The Project Purpose is consistent with development policies of Sri Lanka and Japan.
- EE&C is urgent and necessary
- Japan and JICA have rich experience

Relevancy is very high ☺☺

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10. Evaluation by 5 criteria – (2) Efficiency

- Output 1 is being created as planned
- Output 2 is being created with concern
- Output 3 is partly successful but partly unknown.

Mixed results in Efficiency : moderate

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10. Evaluation by 5 criteria – (3) Effectiveness

- The Project Purpose is likely to be achieved
- SEA has adequate regulatory powers
- The Project is supported by senior officials of MOPE and SEA
- Active participation of partner organizations
- No major disturbing factor

Still not sure, but many positive factors in Effectiveness : high ☺

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10. Evaluation by 5 criteria – (4) Impact

- High potential for the Project to contribute to attain the Overall Goal "High Efficiency in energy consumption is achieved."
- No particular impacts were created yet by the Project in fields of policy, environment, socio-economy, etc.

Too early to comment on "Impact"

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10. Evaluation by 5 criteria – (5) Sustainability

- Policy and institutional support : positive
- Organizational aspect : positive
- Financial aspect: positive, but in the future, need to secure own resources by introduction of CESS and "Sustainable Energy Fund"
- Technological aspect : positive, but need to be updated periodically

⇒ Sustainability is High ☺

11. Proposal of revisions of PDM

Indicators for the Overall Goal

- 500 toe/Millions SRD in 2017
  ⇨ 1.8 toe/ millions Rs. In 2017
  (2.34 in 2007)
- (new) Electricity load factor is increased annually by 1%

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11. Proposal of revisions of PDM

Indicators for the Project Purpose

- Sales of ESCOs are increased by 10%
  ⇨ Amount of EE&C is increased by 10%
  (reported to be Rs. 298.1 Mill. in Aug. 2008 – Aug. 2009)
- Penetration rate of CFLs become more than 40%
  + At least one bulb per household
  + In every sub-sector, rural urban and estate
- (new)
  10 year plan for EE&C is authorized by MOPE

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11. Proposal of revisions of PDM

Indicators for the Output 1

- Mandatory benchmarks for at least 5 sectors
  - ⇨ Mandatory annual energy consumption reporting to the consumers : more than 250,000kwh/ month
  - ⇨ Annual updating of energy consumption baseline analysis
- ~~*3 full ESCOs and 6 consulting ESCOs are accredited.*~~ *(deleted)*

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11. Proposal of revisions of PDM

Indicators for the Output 3

- Awareness on use of CFLs is increased.
  - ⇨ Penetration rate (at least one bulb per household) of CFLs become more than 40% in every sub-sector, namely urban, rural and estate.

34

11. Proposal of revisions of PDM

Activities

- 1.2. Mandatory benchmarks ⇨ Energy consumption Baseline analysis; ⇨ Mandatory reporting scheme
- 1.3. Accreditation schemes for ESCOs. ⇨ Deleted
- 2.2. incentive/ disincentive schemes ⇨ + Pilot projects for high efficient CFLs

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12. Conclusion

Project is being implemented satisfactory to some extent with some remarks on the evaluation results of efficiency, effectiveness and sustainability.

- Continue your commitment and efforts
- Due attention to the recommendations
- Make sure to complete the activities without delay

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13. Recommendations (1)

Develop/ improve finance schemes

- Now, revolving fund of E-Friends I is available. The Project Team is recommended to review the existing loan schemes of E-Friends I and II, identify disturbing factors if any, propose necessary improvement, so that the revolving fund schemes will be utilized actively.
- Active promotion for potential borrowers and bankers is also crucial for promotion of finance schemes. The Project Team, especially SEA counterparts, is advised to start planning and implementation of the promotion without delay.
- The Project Team is advised to keep effort to formulate a new finance scheme, which will be applied not only for commercial and industrial sectors, but also for public sector and for small appliances. The scheme is needed to have a linkage with mandatory labeling schemes for small appliances.

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13. Recommendations (2)

- **Develop Incentive/ disincentive schemes**

Develop a **convincing report** on positive and negative impacts of exemption of **VAT and import duty** of high efficiency CFLs with scientific proof to be submitted to the Treasury by the end of 2009, so that the exemption will be introduced in 2010.

Start **implementation** of a **pilot project** by early 2010, and analyse the result of the project within the Project period, so that findings of the project will be utilized for planning of CFL distribution programme to be expanded island wide.

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13. Recommendations (3)

Awareness creation

- It is not appropriate to continue awareness programme for general public without knowing its impact.
- *(needs to know "real impact" of the programme to convince Treasury for budget allocation for the programme, too)*

Therefore.....

- It should be conducted more strategically with periodical impact evaluation

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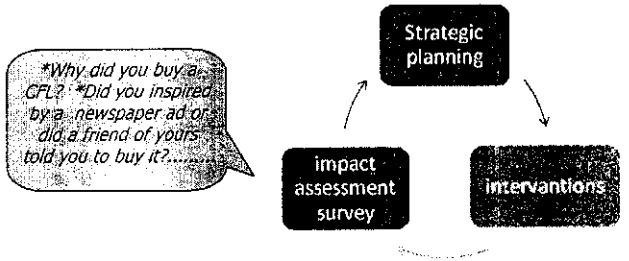
13. Recommendations (3)

Ex: For CFLs promotion campaigns



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13. Recommendations (3)

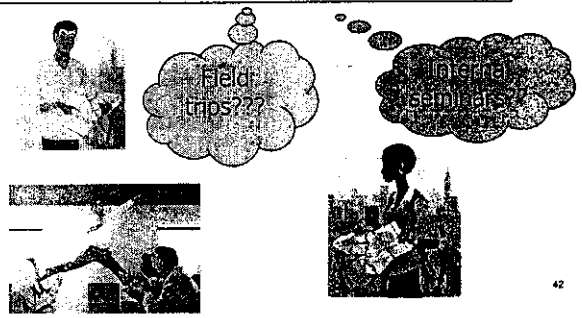
Develop a **plan** for strategic awareness creation programme and campaigns with impact monitoring by the **end of 2009**

Start **implementation** of the plan at least by **early 2010**

41

13. Recommendations (4)

Additional arrangements to update and upgrade technical knowledge of SEA C/P would be appreciated



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- Your comments and opinions, please

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JOINT MID-TERM REVIEW REPORT

ON

THE PROJECT FOR PROMOTING ENERGY EFFICIENCY IMPROVEMENT IN SRI LANKA

COLOMBO, 13 OCTOBER 2009

JICA – SRI LANKA

JOINT MID-TERM REVIEW TEAM

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6. Conclusion and Recommendations

6.1. Conclusion

6.2. Recommendations

ANNEXES

1. Placement Records of Japanese Experts
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Joint Evaluation Report

1. Introduction

1.1. Background and Objective of the Review Mission

Background:

Sri Lanka heavily depends on imported oil among various energy sources. For example, 45% of primary energy sources are from imported oil; 62% of electric power is generated from imported oil in 2005. Therefore, electricity prices are much higher that those of neighbouring countries. Sri Lanka is vulnerable in terms of stable energy supply and oil price hikes.

The electric demand in 2025 is estimated at 36,843 GWh of generated energy, and 7,610MW of peak power as a result of annual 7.8% growth of peak power. In order to meet these growing demand, it is required add 300MW new power generating facility every year. It is widely believed that due to delay of implementing generation expansion plan, it is very likely to face power shortage in the near future.

In order to tackle high electricity cost rapidly growing energy demand, the Government decided to adopt National Program on Energy Conservation, and set a target of 20% reduction in energy consumption by 2011. Several concrete measures of demand side management (DMS) such as efficiency improvement of electricity appliances, bench marking of energy consumption of specific industries, revision of building energy efficiency standards, higher market share of CFLs are clearly spelled out in its National Development Plan.

In October 2007, Sri Lanka Sustainable Energy Authority Act became effective which intends to promote (i) energy efficiency improvement, and (ii) renewable energy development. Sri Lanka Sustainable Energy Authority (SLSEA), among other matters, is given authority to regulate energy efficiency through

(i) Mandatory energy consumption benchmarks of specific industries and buildings

(ii) Mandatory labelling on energy consumption limits or performance of specific appliances.

(iii) Accreditation and ranking of energy managers, energy auditors and energy service providers.

It is urgent necessity for SLSEA to develop 10-year Energy Efficiency Improvement Program, and to take concrete measures for every requirement specified in SLSEA Act. The SLSEA needs to improve institutional capability to carry out these important assignments, especially in the areas of designing policy measures, and their implementation. Incentives/disincentives are also to be introduced for energy efficiency in private sector, energy audit by ESCOs, and financial schemes etc.

In general public, energy consciousness is very limited. The very symbolic CFL, the questionnaire survey shows 27% of households are using the CFLs in ***. This clearly indicates the necessity of awareness through mass media and other means, tax incentives and well designed electricity tariff etc.

Under these circumstances, the Government of Sri Lanka (GoSL) requested the Project Promoting Energy Efficiency Improvement to Government of Japan (GoJ) in August 2004 with particular interest on Japan's advanced technologies, and GoJ made its decision to implement this Technical Cooperation Project in August 2006. The Project has been formulated based on two-phase studies; the first project identification study in March 2007, and the second study in October 2007. During this period, the Project framework, implementation organization, responsibilities of both parties are discussed and agreed in the Minutes of Meeting. The Record of Discussion was signed by GoSL and JICA in February 2008. The Project of Promoting Energy Efficiency Improvement in Sri Lanka has then commenced 1 May 2008 for three years.

Since one and half years passed from the commencement of the Project, the Mid-term Review was conducted. The review had been conducted from October 5 to 13, 2009.

Objectives Mid Term Review Mission

(i) Confirm the achievement and implementation process of the Project,
(ii) Evaluate the result with the five criteria,
(iii) Discuss the overall direction of the remaining project period and
(iv) Recommend necessary measures for improvement of the Project activities.

1.2. Method of Review

1.2.1.1. Evaluation Criteria

The Evaluation was conducted with the aspects of the following five criteria.

(1) Relevance

This is to question whether the outputs, Project purpose and overall goal are still in keeping with the national and sector policy of both Sri Lanka and Japan and priority needs and concerns at the time of evaluation.

(2) Effectiveness

This concerns the extent to which the Project purpose has been achieved, in relation to the outputs produced by the Project.

(3) Efficiency

This is the productivity of the implementation process. How efficiently the various inputs were converted into outputs.

(4) Impact

This is changes, intended and unintended, direct and indirect, positive and negative, which were made as a result of the Project, as well as prospect for the Project to contribute to realize the Overall Goal.

(5) Sustainability

This is to question whether the Project benefits are likely to continue after the external aid has come to an end.

1.2.1.2. Data Collection Method

(1) Review of the relevant documents

The following reports and other related documents were mainly reviewed:

- Summary of the Ex-post Evaluation of the Project
- "Record of Discussions" among the representatives of JICA, MOPE, ERD and SLSEA for the Project dated on Feb. 11, 2008.
- "Project document for Promoting Energy Efficiency Improvement in Sri Lanka", dated on July 22, 2008
- "Minuets of Meeting for the Project Promoting Energy Efficiency Improvement in Sri Lanka", agreed between SLSEA and JICA Expert Team on July 23, 2008.
- "Implementation plan" for the 1st financial year of the Project documented by the JICA Expert Team in May 2008 (Japanese document)
- "Implementation plan" for the second financial year of the Project documented by the JICA Expert Team in May 2009 (Japanese document)
- Minutes of Meeting of the 2nd JCC dated Oct. 21st, 2008.
- Minutes of Meeting of the 3rd JCC dated July 10th, 2009.
- Work completion report documented by JICA Expert Team in March 2009 (Japanese document)
- Project Progress Report No. 2, documented by JICA Expert Team in July 2009.
- Sri Lanka Energy Balance 2007, SLSEA
- Energy Consumption Baseline Analysis, SLSEA

(2) Interviews and discussions conducted

The Japanese side of Review Team conducted interviews and discussions with the following stakeholders of the Project:

- Secretary of MOPE
- Additional Secretary of MOPE cum Deputy General Manager (Operation)
- Director General of SLSEA
- Deputy General Manager (Strategy) of SLSEA
- Staff of Energy Management Division of SLSEA

(3) Meetings conducted

The following meetings were conducted:

- Kick-off Meeting on September. 22nd, 2009
- Internal meeting by the Review Team on October 6th, 2009
- Meeting with partner organizations on October. 8th, 2009

1.3. Members of the Review Team

1.3.1.1. Japanese side

Mr. Akira SHIMURA	Chief Representative, JICA Sri Lanka Office
Mr. Hiroyuki TOMURA	Deputy Assistant Director, JICA Head Quarter
Mr. Tsuyoshi HARA	Representative, JICA Sri Lanka Office
Dr. Priyantha Serasinghe	Project Specialist, JICA Sri Lanka Office
Ms. Tomoko TAMURA	Consultant, Kaihatsu Management Consulting Inc.

1.3.1.2. Sri Lankan side

Mr. M M C Ferdinando	Secretary, MOPE
Mr. Sulakshana Jayawardana	Assistant Director, MOPE
Ms. Chrishanti Hapugoda	Acting Director, ERD
Mr. Chandana Samarasinghe	Director General, SLSEA

1.4. Schedule of the Review

From 22nd September to 13th October, 2009

2. Outline of the Project

2.1. Background

The Project for Promoting Energy Efficiency Improvement in Sri Lanka was initiated as a Technical Cooperation Project of JICA under the scheme of Japanese ODA in May 2008 for the period of three years. J-power was assigned as Japanese Knowledge Partner while SLSEA served as a implementing agency. The overall objective of the project is to reduce primary energy intensity to 500 toe/million SDR by 2017. The project activities include the development of a 10 year plan for energy efficiency improvement programme, the development of an updated mandatory energy consumption benchmarks for selected industries, introduction of accreditation schemes for energy auditors, energy managers, and ESCOs, introduction of mandatory labelling for appliances, development of IT infrastructure and for monitoring and data analysis, expansion of SLSEA's instrument bank, improvement/ development of finance schemes to promote energy efficiency investment, development of incentives/ disincentive schemes for major appliances and conducting awareness campaigns for general public and the private sector.

2.2. Overall Goal

Overall Goal of the Project is to achieve 'High Efficiency in energy consumption'. The target is "primary energy intensity is reduced to 500toe/million-SDR by 2017".

2.3. Project Purpose

The Project Purpose is "Infrastructure necessary for materializing energy efficiency activities in the country is enhanced". The target indicators are;

(1) Mandatory energy audit, monitoring and follow-up are conducted annually at least in 150 organizations in private and public sector.
(2) Sales of energy services providers (ESCOs) are increased at least by 10%.
(3) All CFLs, ballasts and fans in markets have energy efficiency labels.
(4) Presentation rate of CFLs in household sector becomes at least 40%.

2.4. Outputs

There are three Outputs for the Project as follows:

Output 1: Necessary resources (rules and regulations, human resources, equipment and materials) for implementing SLSEA Act.
Output 2: Incentive/disincentive mechanism for promoting energy efficiency
Output 3: Mass consciousness among general public, private and public sectors on energy efficiency improvement.

3. Progress of the Project

3.1. Inputs

3.1.1.1. Japanese side

(1) Human resources

JICA Experts were assigned as planned. Expertise of the Experts in energy efficiency and conservation (EE&C) and their rich experience of implementing technical cooperation projects in other Asian countries were some of the contributing factors for the Project to create the planned Outputs in time. See ANNEX-1 for placement record of JICA Experts.

(2) Training

A training for EE&C policy makers was conducted in January 2009 in Japan as planned. Five senior officials of MOPE and SLSEA participated in the training as planned. Four SLSEA counterparts participated in group training courses on Energy Conservation Technologies and EE&C, which were conducted in January, May and June 2009. These training courses were conducted as planned. See ANNEX 3 for the list of participants of the counterpart training in Japan.

It was very timely that the senior officials of MOPE and SLSEA visited Japan in the beginning of the Project period. It was also effective that soon after they came back to Sri Lanka from Japan, a team of JICA Experts arrived in Sri Lanka, so that they can discuss and share conceptual framework and objective of the Project without delay. Senior officials

became further committed and supportive to the Project after the visit. Knowledge and experience gained during the visit were utilized at the time of policy level decision makings, establishment of strategies and dissemination of EE&C technologies.

As a result of the training courses, the SLSEA counterparts gained practical experience and knowledge on systems and schemes for legislations, such as mandatory labelling and accreditation of energy managers. The knowledge, experience and materials they have obtained in Japan were utilized very often in their daily work.

(3) Equipment

All the planned items for the financial year 2008 of JICA were purchased. Selection of the equipment was appropriate and met the urgent needs in Sri Lanka. There is no particular problem with quantity and quality of the equipment. Spare parts and accessories of the equipments are available with local agents in Sri Lanka. Purchasing of equipment for the financial year 2009 is underway and to be completed by the end of December, 2009. See ANNEX 4 for the list of equipment provided under the Project.

3.1.1.2. Sri Lankan side

(1) Human resources:

Cadre of SLSEA counterparts were fulfilled except one post, namely "Head of Efficient systems". There is one vacancy for the period of three years for the post of "Senior Specialist", as the specialist took an official leave for study abroad. Technical level of the counterparts is satisfactory. Most of the counterparts are active and committed to their work and are contributing much to create the planned Outputs. Some of them mentioned they would like to have more opportunity to learn from the JICA Experts and improve their technical capacity.

(2) Financial resources

There is no particular budget allocation by GoSL for the Project. Annual budget of SLSEA is used for local expenses of the Project. Annual budget of SLSEA has been approximately 450 Million rupees. A half of the budget has been allocated to the Energy Management Division. The amount of recurrent cost of the budget is sufficient to cover the actual cost. Capital budget has been sufficient to implement the Project activities so far, however will not be sufficient to purchase necessary capital goods in the future, such as testing facility for mandatory labeling schemes of refrigerators and A/Cs, which cost around 10 million rupees and Rs. 30-100 million respectively. SLSEA did not have a capital budget for purchasing necessary equipment for the instrument bank, which cost around 34 million rupees, however obtained most of them under the Project. Overall, there is no serious issue with regard to the financial resources.

3.2. Activities implemented

Most of the activities were implemented as planned. However, the Mid-term Review Team has concerns about several activities whether they will be accomplished within the Project period. See ANNEX 5 "Accomplishment Grid" for more details.

(1) Activities under the Output 1

Activities under the Output 1 are mainly introduction of the following legislation schemes:

- Mandatory labeling of CFLs
- Mandatory labeling of ceiling fans
- Mandatory labeling of ballasts
- Accreditation of energy managers
- Accreditation of energy auditors
- Mandatory energy consumption reporting
- Mandatory auditing

Among the above list, "mandatory labelling of CFLs" was already legislated in July 2009. There is a high probability for all the other schemes to be legislated within 2010. Therefore, the Mid-term Review Team does not have any serious concern about the progress of these activities.

(2) Activities under the Output 2

Activities under the Output 2 are "develop/ improve finance schemes" and "develop incentive/disincentive schemes". The Mid-term Review Team has a concern whether these activities will be completed with a tangible output within the Project period.

(2)-1. Develop/ improve finance schemes to promote energy efficiency investment

Utilization of the finance schemes for the past several years were as follows:

(a) E-Friends II

E-Friends II was implemented for three years from 2006 to 2008. As the following table shows, numbers and total amount of sub projects on EE&C approved for finance of E-Friends II was increased in 2007 compared with those in 2006. However they were decreased in 2008 as the fund was almost exhausted. Total amount of sub-projects on EE&C approved for finance was 3% among the total amount disbursed. At the moment, the scheme does not call for any application. Revolving Fund of the scheme will be available in 2010.

Amount and number of sub-projects on EE&C financed for E-Friends II

Year	2006	2007	2008
No. of projects	2	10	4
Total amount approved.	Rs. 12,360,000	Rs. 107,212,944	Rs. 18,702,850

(Source: Project Team)

The progress in 2007 was a result of "sector specific training for industries" conducted by SLSEA to the selected companies in tea industry. Seven projects out of ten approved for finance for 2007 was the projects of tea industries. A proven technology of installation of inverter to motors in tea factories and success stories of the projects implemented by other tea factories earlier inspired and encouraged the managers participated to the training to make a decision to implement the projects and then apply for the finance scheme.

(b) E-Friends I

Fund of E-Friends I was exhausted in 2008. At the moment, the scheme does not call for application. Revolving fund scheme of the scheme became available in July 2009. As it was introduced very recently, no project on EE&C was approved for finance, yet.

(c) Sustainable Guarantee Facility

There had not been an active utilization of Sustainable Guarantee Facility. For the past two years, there were two projects obtained the Facility; both of them were renovation of buildings of private banks. This was realized as a result of an active coordination of SLSEA to link the applicants and a finance institution.

So far, the Facility has not been a strong motivation for private institutions to apply for finance. All the companies applied for E-Friends II did not need the Facility as they had appropriate collateral. There has been no companies who sought finance while they did not have collateral, except for the two mentioned above.

In order to promote the Facility, there is a need to create more awareness among the potential borrowers and bankers about the Facility as well as about the importance and benefits of EE&C. A half day promotion seminar on the Facility was carried out in 2008.

(d) A new Japanese ODA loan

Conceptual framework for a new Japanese ODA loan project for EE&C, including those for public sector and small appliances is being formulating with a support of the Project Team. JICA had expected to commence the project in early 2010, however, due to various uncontrollable reasons, currently, JICA considers it would be by early 2010 at earliest for the project to be approved. A feasibility study for the project will be conducted by a local consultant farm from the end of October 2009 and will be completed in March 2010.

The following actions were taken by the Project Team to create a convincing environment for industrial and commercial institutions to apply for finance for implementation of EE&C projects:

- Sector specific training for industries– proved to be effective as mentioned earlier
- Legislations to compel implementation of EE&C – in progress
- Disseminate information of successful examples and established technology – by National Energy Efficiency Award – in progress
- Provide tools to analyze current situation – energy consumption baseline analysis, IT infrastructure and Instrument Bank - being provided

As mentioned above, currently, the funds of E-Friends I and II were exhausted. It takes some more time for the new ODA loan project to be approved. On the other hand, revolving fund scheme for E-Friends I has been started recently and revolving fund for E-Friends II will be available in 2010. Therefore, promotion of these schemes will be an important task for the Project Team as mentioned in "Recommendation".

(2)-2. Develop incentive/ disincentive schemes for major appliances

Preparation work for introduction of the following incentive/ disincentive schemes are conducted. However, none of them were introduced and practiced, yet.

(a) Incentive for efficient CFL: A Cabinet paper for exemption of VAT and import duty for energy efficient CFLs, which have labels of more than 3-stars, was approved subject to monitoring of CBSL. SLSEA is preparing a report on positive and negative impacts to be created by the exemption and will submit it to the Treasury for their perusal.

(b) Pilot project of CFL: Preparatory work for a pilot projects for distribution of CFLs to 3,000 households is underway with collaboration of LECO and planned to be commenced by early 2010.

(3) Activities under the Output 3

The following three kinds of activities were implemented under the Output 3 as awareness creation programmes. Sector specific training for industries was carried out with follow-ups and impact monitoring. However, the Mid-term Review Team could not make sure the impact of the programme to general public and public sector, as there has been no monitoring of direct impact.

(a) Sector specific training for industries

Programme of "Sector specific training for industries" were conducted for tea industry and National Water Supply and Drainage Board in 2008-2009. The training included lecture and practical sessions. Most of the EE&C projects identified in the training programme were implemented by the respective institutions and the effects of the projects

were reported to SLSEA as specified in the following table:

Sector	No, of training courses	No. of participants	No. of institutions implemented EEI programme	% of saving from the annual consumption	Annual saving (kWh)
Tea	Feb. 12-15, 2008	25	10	1.55 – 15.75	7,058 – 93,185 274,193 in total
	July 7-11, 2008	27	5	3.2 – 8.66	11,016 – 61,180, 159,409 in total
	Sep. 7-11, 2008	24	To be reported		
	Mar. 23-25, 2009	32	To be reported		
Water board	Mar. 30 -Apr. 1, 2009	26	Completed in 7 places (being conducted in 6 places)	n/a	32,076 – 1,685,880 2,456,271 in total
Hotel	Ready to be conducted in Oct. 2009				

(b) One day seminars for public and private institutions

One day seminars for public and private institutions were conducted for the following institutions in 2008 and 2009. These were conducted according to the requests of the institutions:

- Educational institutes: University of Ruhuna, University of Peradeniya and Open University
- Medical institutions: Blood Bank and Gampaha General Hospital
- Ministries and Departments: Ministry of Parliamentary Affairs, Ministry of Public Administration, Ministry of Local Government & Provincial Council, Ministry of Religious Affairs, Ministry of Higher Education, Ministry of Power & Energy, Ministry of Housing, Ministry of Trades, Ministry of Disaster Management, Ministry of Internal Administration, Ministry of Finance, Ministry of Rural Industries, Auditor Generals Department, Census and Statistics Department and Coast Conservation Department.
- Other public sectors: National Water Supply and Drainage Board – Ratmalana and Telawala, Ceramic Corporation, National Building Research Organization, Condominium Management Authority, Divisional Secretariat-Kalutara, Export Development Board and Coconuts Cultivation Board
- Banks: Bank of Ceylon
- Private institutes: Sri Lanka Telecom, Rubber & Plastic Institute, National Chamber of Enterprises and CEAT-Kelaniya

(c) School programme

Eight and two school programmes were carried out in 2008 and 2009 respectively.

(d) Media promotion

- TV, radio and newspaper advertisement
- Women newspaper programme
- "Sanraksha" -Magazine

- "Red notice" – booklets distributed to general public

Five kinds of on-sheet leaflets and one booklet were produced as awareness creation materials with a support of JICA Experts. SLSEA is printing them at the moment.

(4)Revisions in the activities
There were several revisions for the activities as follows;

(a) Develop and update mandatory energy consumption benchmarks for selected industries.
Instead of "mandatory benchmark scheme", SLSEA decided to have "mandatory annual energy consumption reporting scheme" and "annual updating of energy consumption baseline analysis.", as introducing "mandatory" benchmark found not to be realistic as in a industrial sector, energy consumption of each factory/ company differs when they have different types of production activities.

(b) Introduce accreditation schemes for energy auditors, energy managers and ESCOs.
SLSEA decided not to establish an accreditation scheme for ESCOs. There is only one full-scale ESCO in Sri Lanka at the moment. Most of the energy service providers are undertaking mainly energy auditing. Therefore, it is too early to introduce the scheme; as such a scheme has not been introduced even in Japan. Instead, ESCO will be given recognition in National EEI award. An accreditation scheme for energy auditors and managers will be established as planned.

(c) Develop incentive/ disincentive schemes for major appliances (CFL, ballast, fan, etc.)
In addition to develop incentive/ disincentive schemes, implementation of a "pilot project" for promotion of energy efficient major appliances was identified as an important step to verify a methodology and mechanism to be adopted in a proposed incentive scheme of distribution of CFL for low electricity users to be implemented island wide. It is also necessary to examine a possibility to formulate a CDM program of CFL to reduce burden of consumers and government by CO2 emission credits as well as to enhance capacity of SLSEA.

3.3. Achievement of the Outputs
(See ANNEX 5 "Accomplishment Grid" for more details of Outputs.)

3.3.1.1. Output 1 : "Necessary resources (rules and regulations, human resources, equipment

and materials) for implementing SLSEA act are prepared."

As mentioned earlier, there is a prospect that legislations of all the planned schemes and systems will be completed in 2010. Therefore, the Mid-term Review Team does not have any particular concern about the progress of the Output 1. However, the following matters should be paid due attention by the Project Team:

(1) Establishment of regulations, including preparation of gazette notifications and obtaining cabinet approvals, for accreditation schemes of energy managers and energy auditors and mandatory energy reporting, auditing and labelling, should be completed timely in parallel with preparation of criteria and guidelines.
(2) Mandatory reporting and auditing schemes should be equipped with appropriate level of penalty.
(3) Testing facility for fans should be introduced timely by the time of enforcement of the regulation.

3.3.1.2. Output 2 : "Incentive/ disincentive mechanism for promoting energy efficiency is prepared"

Output 2 is being created, however The Mid-term Review Team has a concern whether the Output 2 is completely created by the end of the Project period, as no prominent result has been created so far. Progress of promotion of finance schemes and incentive/ disincentive schemes for energy efficiency appliances should be accelerated to create the Output 2 completely by the end of the Project period.

3.3.2. Output 3 : "Mass consciousness is created among general public, private and public sectors on energy efficiency improvement"

Output 3 is being created to a certain degree. However, the Mid-term Review Team is not sure the degree of direct impact created to general public and public sector, as impacts of the programme were not monitored, while training programme for industries was follow-upped and their impacts were monitored.

3.4. Achievement of the Project Purpose

There is a probability that the Project will achieve the Project Purpose within the Project period, however the Mid-term Review Team is not totally positive as there are some concerns and delays as mentioned earlier. Continuous commitment and dedication are necessary to be given to the Project by the Project Team and senior management of MOPE and SLSEA. Especially, the Project Team is advised to give due attention to the recommendations specified in "6" of this report.

3.5. Implementation Process

The Review Team studied the implementation process of the Project, with criteria of team work, communication, decision making, progress monitoring, capacity building of Sri Lankan counterparts, Participation and support of MOPE, SLSEA, partner organizations and JICA to the Project and function of JCC. The Review Team found that the Project Team has implemented the Project with a good team work and commitment and by obtaining sufficient support of higher authorities and partner organizations. SLSEA counterparts expressed their willingness to have more occasions to absorb expertise of the JICA Experts. Therefore, the Mid-term Review Team does not have any particular problems with regard to the implementation progress. See ANNEX 5 "Accomplishment Grid" for more details.

4. Evaluation by Five Criteria

4.1. Relevance

The Project Purpose is consistent with development policies of Sri Lanka and Japan. Energy conservation is identified as a high priority issue in the National Development Policy of GOSL. GOJ stressed the necessity to actively promote international cooperation on energy efficiency programme, especially to the Asian countries in the "Basic plan of Energy" in 2007. Japanese ODA Country Policy and Country Strategy of JICA for Sri Lanka highlighted an importance to assist power sector, including EE&C.

Last few years, annual growth rates of GDP of Sri Lanka were more than 5%. In order to attain further economic development, it is an urgent task for the country to realize a socio-economic structure of high energy intensity by promoting EE&C programme, as the country is highly depends on petroleum for its energy source.

Most of the legislations to be enhanced or introduced in Sri Lanka under the new SLSEA act were already established in Japan under the Rationalization in Energy Use Law. JICA has implemented EE&C projects in China, Argentine, Bulgaria, Turkey, Thailand, Poland, Iran, Cambodia and Indonesia. Therefore, accumulated knowledge and experience of Japan and JICA is expected to be utilized in the Project.

Taking the above factors into consideration, the Mid-term Review Team concluded that the relevance of the Project is very high.

4.2. Effectiveness

There is a probability that the Project will achieve the Project Purpose within the Project period, however the Mid-term Review Team is not totally positive as there are some concerns and delays as mentioned earlier.

Rregulatory powers provided to SLSEA by the SLSEA Act contributed to achieve the Project Purpose. Commitment and support of the senior officials of MOPE and SLSEA were very much effective and contributed for timely decision making, problem solving and high-level coordination which were crucial for smooth implementation of the Project. The partner organizations of the Project were actively involved in the Project. There is no major disturbing factor for the Project to achieve the Project Purpose.

Taking the above factors into consideration, the Mid-term Review Team concluded that the effectiveness of the Project is high.

4.3. Efficiency

As mentioned earlier, the Mid-term Review Team identified that there is a high probability that the Output 1 is created within the Project period. However, the Team has a concern whether the Output 2 and 3 will be created by the end of the period, as there is no prominent result created so far, although a number of activities are underway.

Inputs provided by GOSL, such as human resources and financial allocation to the Project were appropriate and satisfactory. Inputs provided by GOJ, such as human resources, equipment and training courses in Japan were also appropriate and satisfactory.

Taking the above factors into consideration, the Review Team concluded that the efficiency of the Project is moderate.

4.4. Impact

There is a high potential that the effects of the Project would contribute to attain the Overall Goal, as infrastructure currently being enhanced by the Project is already a contributing factor to achieve higher efficiency in energy consumption.

No particular impacts were created yet by the Project in the fields of policy, environment, socio-economy and so on. However, several programmes were conducted by inspired by the Project as follows:

(a) CDM seminar conducted by JICA Expert Team in March 2009.
(b) Presentation at Institution of Engineering Association by Deputy Director General (Strategy) of SLSEA in September 2008
(c) SAARC International Conference on Energy Efficient Labeling in October 2009

Taking the above factors into consideration, the Mid-term Review Team concluded that although there were potential for the Project to create the expected positive impacts, it is too early to comment on the impact of the Project, yet.

4.5. Sustainability

(1) Policy and institutional support

Commitment and support of the senior officials of MOPE and SLSEA is a positive factor to maintain effects of the project even after the Project period. SLSEA has an adequate authorities and regulatory powers to maintain systems and schemes introduced by the Project as well as facilitate implementation of the proposed 10-year plan.

(2) Organizational aspect

Currently, SLSEA has adequate human resources to implement their tasks. The human resources of SLSEA would be sufficient in the future, when a number of regulations are enforced and 10-year plan is implemented, as SLSEA will play roles of manager and facilitator for promotion of EE&C technology, while partner organizations will take part in implementation. As for partner organizations, role of ESCOs will become more important in the future to further promote EE&C programme. Continuous human resource development of ESCO will be necessary in this regard.

(3) Financial aspect

As mentioned above, SLSEA plays roles of manager and facilitator for promotion of EE&C technology, while partner organizations such as SLEMA, SLSI, NERD Center, ESCOs, and consultant companies are undertaking their specialized tasks in promoting and implementing EE&C programmes, such as training, testing, auditing and consulting services. Such a structure contributes to minimize administration cost and number of staff of SLSEA.

The annual budget for recurrent cost for the Energy Efficient Division of SLSEA would be sufficient for the time being to cover administration cost to maintain and expand systems and schemes introduced by the Project, unless there would be a drastic reduction of the allocation. However, annual budget for capital cost would not be sufficient in the future, to expand facility for testing of appliances, expand instrument bank maintain EE&C program, including annual data collecting mechanism and formulate incentive and disincentive mechanism for energy efficiency improvement and conservation. Taking the financial situation of the country into consideration, SLSEA might need to seek external assistance in this regard.

10-year plan will be an important document for SLSEA to justify and convince the Treasury for the needs of continuously implement EE&C programme in the future. To implement the 10-years plan, it is important to expand financial resources of SLSEA by introduction of "Cess" for fossil energy and establish "Sri Lanka Sustainable Energy Fund".

Availability of an attractive and accessible finance schemes on EE&C for private and public institutions and domestic consumers is a crucial factor to promote EE&C activities at the moment and in the future.

(4) Technological aspect

SLSEA counterparts have potential to enhance their technical capacity, with a support of JICA Experts, up to a sufficient level to further disseminate energy efficient technologies and maintain the schemes and regulations introduced by the Project. Technical input to the SLSEA counterparts should be provided periodically in the future, to update their knowledge and skills. Technical capacities of partner organizations, such as SLEMA and local consultant companies on EEI and IT have been improved through participating and implementing activities of the Project. Their technical capacity would be enhanced sufficiently by the end of the Project period to continue provision of training and maintain and update IT infrastructure. Technical input to these organizations should be provided periodically in the future, to update their knowledge and skills. Meanwhile in-house capacities were being developed in hotel, tea sector, and National Water Supply and Drainage Board to attend EE&C activities continuously.

Taking the above factors into consideration, the Mid-term Review Team concluded that the sustainability of the Project is high, if present conditions and environment of the Project and SLSEA would not be changed drastically.

5. Revision of PDM

The PDM-1 is proposed to be revised as follows:

	Indicator/ activity	Description in PDM-1	Description proposed for PDM-2	Reasons for revisions
1	Indicator No. 1 for the Overall Goal	Primary energy intensity is reduced to 500 toe/ Million-SDR by 2017.	Commercial energy intensity is reduced below 1.8 toe/ Million-Rs. by 2017.	(1) Original target was already achieved (It was 474.16 toe/Mill-SDR in 2007). (2) "Commercial" energy intensity is more suitable for an indicator for the Project than "primary" energy intensity, which includes biomass. (3) "Rs." is more suitable than "SDR" to reflect real situation of the country. (4) Base-year of the revised indicator is 2002. It was 2.34 toe/ Million-Rs in 2007.
2	Additional indicator for the Overall Goal	n/a	Electricity load factor is increased annually by 1% * * it was 55% in 2007.	Low electricity load factor is the most serious issue in EE&C, and was identified as an significant indicator for Overall Goal.
3	Indicator No. 2 for the Project Purpose	Sales of energy service providers (ESCOs) are increased at least by 10%.	Amount of investment to Energy Efficiency and Conservation is increased at least by 10%.	(1) There is only one full-scale ESCO at the moment and it is too early to use the sales of ESCOs as an indicator. (2) "Amount of investment" is the most significant figure to represent increment of energy efficiency improvement and conservation efforts. (3) Data in annual reports of ESCO's performance summarized by SLSEA and information of banks on finance to EE&C can be used as sources of verification, although they do not include all the investment to EE&C efforts. Baseline data for the period from 15.08.2008 to 14.08.2009 was 298.1Million rupees (SLSEA's report)
4	Indicator No. 4 for the Project Purpose	Penetration rate of CFLs in household sector becomes at least 40%.	Penetration rate (at least one bulb per household) of CFLs in household sector becomes more than 40% in every sub-sector, namely urban, rural and estate.	(1) As a result of a survey conducted in 2007 by SLSEA, penetration rates of CFL were "34% in rural, 24% in estate and 57% in urban". Accordingly, urban area already achieved the target. (2) Therefore, it was changed to "every sub-sector" as rural and

				estate sector, of which penetration rates were 34 and 24 respectively, needs improvement. (3) The sentence of "at least one bulb per household" was added to define "penetration rate".
5	Additional indicator for the Project Purpose	n/a	10 year plan for energy efficiency improvement and conservation is been authorized by the ministry.	Identified as an important indicator to measure achievement of the Project Purpose.
6	Indicator No. 1.1 for the Output 1	Mandatory benchmark schemes are introduced in 5 prioritized sub-sectors (tea, garments, desiccated coconuts, hotels and commercial buildings).	A mandatory annual energy consumption reporting system is introduced to the industrial, commercial and public institutions, of which electricity consumption is larger than 250,000kwh/ month.	(1) Making benchmark as "mandatory" is difficult as there are varieties of production activities even in an industrial sub-sector. Therefore, SLSEA decided not to have a "mandatory" benchmark scheme. (2) SLSEA is going to introduced "Mandatory annual energy consumption reporting scheme" instead of "mandatory benchmark scheme". The wordings were amended accordingly.
7	Additional indicator for the Output 1	n/a	Report on "energy consumption baseline analysis" is documented and updated every year.	Instead of "mandatory benchmark", SLSEA has conducted "energy consumption baseline analysis" and published a booklet. The analysis will be conducted annually. The wordings were amended accordingly.
8	Indicator No. 1.4 for the Output 1	3 full scale and 6 consulting ESCOs are accredited.	*Deleted.*	(1) There is only one full-scale ESCO at the moment. Therefore it is too early to use the sales of ESCOs as an indicator. (2) To measure efforts on EE&C, we added indicator 2 for the Overall Goal "Amount of investment ……".
9	Indicator 3.3 for the Output 3	Awareness on use of CFL is increased.	Penetration rate (minimum of one bulb per household) of CFLs in household sector becomes more than 40% in every sub-sector, namely urban, rural and estate.	Amend it to be more specific. Same as Indicator No. 4 for the Project Purpose.
10	Activity No. 1.2	Develop and update mandatory energy consumption benchmarks for selected industries.	Conduct and update energy consumption baseline analysis for selected industries.	Instead of "mandatory benchmark scheme", SLSEA decided to have "mandatory annual energy consumption reporting scheme" and "annual updating of energy consumption baseline analysis." As

11	An additional activity	n/a	Introduce mandatory annual energy consumption reporting scheme to large (to be defined) industries and commercial consumers.	explained earlier.
12	Activity No. 1.3	Introduce accreditation schemes for energy auditors, energy managers and ESCOs.	Introduce accreditation schemes for energy auditors and energy managers.	"ESCOs" were deleted. There is only one full-scale ESCO at the moment. Most of the energy service providers are undertaking mainly energy auditing. Therefore, SLSEA decided not to have an accreditation scheme for ESCOs. SLSEA is going to have an accreditation scheme for energy auditors as planned.
13	Activity No. 2.2	Develop incentive/ disincentive schemes for major appliances (CFL, ballast, fan, etc.)	Develop incentive/ disincentive schemes and pilot projects to promote high efficient CFLs.	(1) Introduction of a "pilot project" was identified as an important step to vilify a methodology and mechanism to be adopted in a proposed incentive scheme of distribution of CFL for low electricity users to be implemented island wide. (2) SLSEA plans to develop incentive/ disincentive schemes and pilot projects only for CFL within the Project Period.

6. Conclusion and Recommendations

6.1. Conclusion

The Mid-term Review Team concluded that the Project is being implemented satisfactory to some extent with some remarks on effectiveness, efficiency and sustainability. The Team expects the SLSEA counterparts, JICA Experts and stakeholders of the Project to continue their commitment and efforts to implement the Project with due attention to the recommendations specified hereinafter, and complete the activities without delay.

6.2. Recommendations

(1) Develop/ improve finance schemes

(a) Revolving fund of E-Friends I became available recently. The Project Team is recommended to review the existing loan schemes of E-Friends I and II, identify disturbing factors if any, propose necessary improvement, so that the revolving fund schemes will be utilized actively.

(b) Active promotion for potential borrowers and bankers is also crucial for promotion of

finance schemes. The Project Team, especially SLSEA counterparts, is advised to enhance promotion of the existing finance schemes to relevant stakeholders.

(c) The Project Team is advised to keep effort to formulate a new finance scheme, which will be applied not only for commercial and industrial sectors, but also for public sector and for small appliances. The scheme is needed to have a linkage with mandatory labeling schemes for small appliances.

(2) Development of incentive/ disincentive schemes

(a) VAT and import duty exemption of CFLs

The Mid-term Review Team recommends the MOPE and Project Team to develop a persuasive report on positive and negative impacts of exemption of VAT and import duty of high efficiency CFLs with scientific proof. The Review Team recommends MOPE to submitted the report to the Treasury by the end of 2009, so that the exemption will be introduced in 2010.

(b) Pilot project

The Mid-term Review Team recommends the Project Team to commence implementation of a pilot project of distribution of CFLs by early 2010, and analyse the result of the project within the Project period, so that findings of the project will be utilized for planning of CFL distribution programme to be expanded island wide.

(3) Awareness creation programme

Awareness creation programme for general public should be conducted more strategically with periodical impact evaluation in order to attain the Output 3 successfully. For example, the Mid-term Review Team recommends the Project to consider the followings:

- Develop a strategic plan for CFL promotion campaign, implement the campaign and conduct an impact assessment survey to ensure the degree and area of impact. The result of the survey will be utilized for the next planning.
- Conduct a survey on awareness level assessment of general public. The survey should be conducted scientifically so that SLSEA can identify the level of knowledge and actions taken by general public on EE&C, thereafter, identify exact targets for future necessary intervention. The result of the survey will be utilized for development of a strategic action plan for awareness programme, which will elaborate the activities in the proposed 10-year plan.

The Mid-term Review Team advises the Project Team to develop a plan for strategic awareness creation programme and campaigns with impact monitoring by the end of 2009 and start implementation at least by early 2010.

(4) Capacity Development

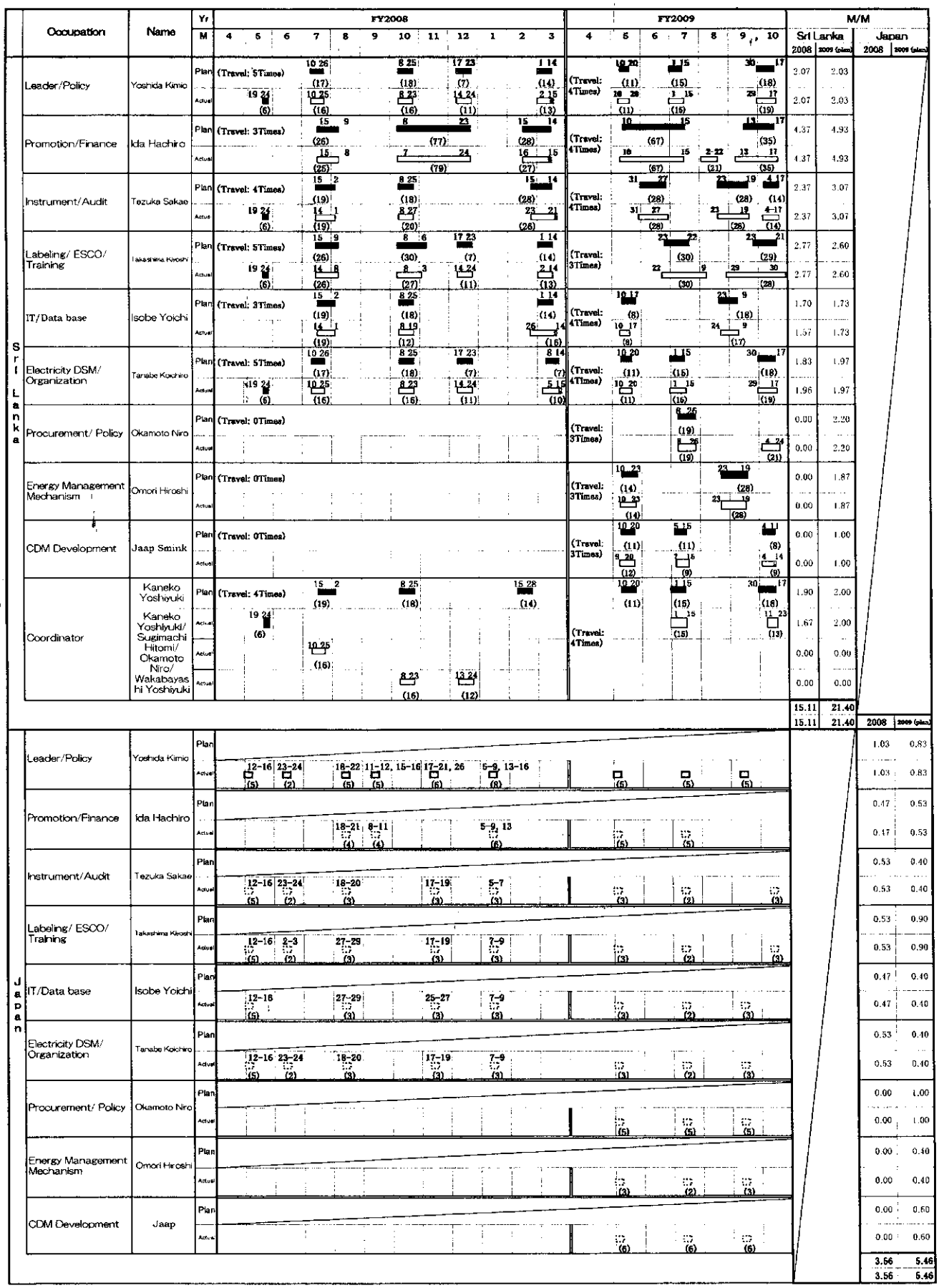
To update and upgrade technical knowledge of the SLSEA counterparts and partner

organizations, and keep their motivation to EE&C promotion, additional arrangement, such as periodical internal seminars and field trips would be useful.

ANNEXES

1. Placement Records of JICA Experts
2. Placement Records of Sri Lankan Counterparts
3. List of Participants to Counterpart Training in Japan
4. List of Equipment Provided under the Project
5. Accomplishment Grid
6. Evaluation Grid
7. Project Design Matrix (original)
8. Project Design Matrix (revised)
9. List of Abbreviations and Acronyms

ANNEX 1 Placement Records of JICA Experts



ANNEX 2 Placement Records of Sri Lankan Counterparts in SLSEA

No		Name of Counterpart Staff	Position / Organization	Field of Expertise	2008											2009					Remark
					5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	
1	Mr.	M.M.R. Pathmasiri	Director (Energy Management)	Energy Management																	Overall management of the project
2	Mr.	Chamila Jayasekera	Head (Energy Efficient Systems)	Energy Management																	Supervising regulatory components of the project
3	Mr.	K.S. Kithsiri	Head (Energy Efficiency Services	Energy Management																	Supervising services components of the project
4	Mr.	P.P.K. Wijetunga	Head (Outreach Programmes)	Media Programmes																	Handling awareness creation programmes
5	Ms	Asanka Rahubadda	Specialist Engineering	Energy Management																	Developing IT infrastructure
6	Ms	Irosha Kalugalage	Professional Engineering	Energy Management																	Conducting energy labeling programme
7	Mr.	P.S. Maldeniya	Professional Engineering	Energy Management																	Developing IT infrastructure
8	Mr.	P.S. Maldeniya	Professional Engineering	Energy Management																	Handling energy manager scheme
9	Mr.	Jude Sakaraja	Professional Enginering	Energy Management																	Handling Instrument bank
10	Mr.	Vijitha Ekanayake	Professional Enginering	Energy Management																	Handling financing, incentive disincentive mechanism
11	Mr.	Saman Elvitigala	Professional Enginering	Energy Management																	Development of energy consumption benchmark
12	Mr.	Sasanka Sanjeewa	Engineering Assistant	Energy Management																	Supporting Instrument bank
13	Mr.	Pubudu Bamunawala	Technical Assistant	Energy Management																	Supporting IT infrastructure
14	Mr.	Dayan Karunaratne	Technical Assistant	Energy Management																	Supporting energy labeling programme
15	Mr.	Lakshman Chandraratne	Technical Assistant	Energy Management																	

Note : Ms. Asanka Rahubadda is on official overseas leave for higher studies for the period of three years.

ANNEX 3 List of Participants to Counterpart Training in Japan

		Name of Counterpart Staff	Field of Expertise	Name of Training Course	Duration of Training	
					From	To
1	Mr.	P.S. Maldeniya	Energy Management	Energy Efficiency & Conservation	08.06.2008	28.07.2008
2	Mr.	Jude Sakaraja	Energy Management	Energy Conservation Technologies	11.01.2009	11.04.2009
3	Mr.	Mangala Wijethilake	Renewable Energy	Energy Conservation Technologies	11.01.2009	11.04.2009
4	Mr.	M.M.C. Ferdinando	(Secretary, P&E)	Policy Makers making	15.01.2009	22.01.2009
5	Dr.	Krishan Deheragoda	(Chairman)	Policy Makers making	15.01.2009	22.01.2009
6	Mr.	F.K. Mohideen	(AGM, CEB)	Policy Makers making	15.01.2009	22.01.2009
6	Mr.	Upali Daranagama	(DDG - Strategy)	Policy Makers making	15.01.2009	22.01.2009
6	Mr.	Harsha wickramasinghe	(DDG - Operations)	Policy Makers making	15.01.2009	22.01.2009
7	Mr.	Chamila Jayasekera	Energy Management	Energy Efficiency & Conservation	11.05.2009	27.06.2009

ANNEX 4 List of Equipment Provided under the Project

Discription of Equipment	Price (USD)	No. of Equipment	Place of Custody	Conditions of equipment	Frequency of Use
Elec. Power Meter 6300	115,820	25	SLSEA	good	1-3 times per week
Elec. Power Quality Analyzer 6310	32,938	5	SLSEA	good	1-3 times per week
Digital Multi Meter 1009	171	2	SLSEA	good	1-3 times per week
Midi Logger GL 800 B	4,927	2	SLSEA	good	1-3 times per week
Digital Thermometer MC 1000	2,872	2	SLSEA	good	1-3 times per week
IR Radiation Pyrometer IR-TAP	2,600	2	SLSEA	good	1-3 times per week
Temp. & Humidity logger 635-2	42,545	18	SLSEA	good	1-3 times per week
Voltage logger 175-S2	1,654	2	SLSEA	good	1-3 times per week
Instrumentation logger 175-S2	1,654	2	SLSEA	good	1-3 times per week
Rotation speed meter 460	300	1	SLSEA	good	1-3 times per week
Luminance meter 545	1,381	1	SLSEA	good	1-3 times per week
Data collector	n/a	4	SLSEA	good	1-3 times per week

Note: All the instrument are checked and cleaned at least once in a month.

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Verifiable Indicators	Baseline data	Progress up to Early Oct. 2009 &Future plan	Level of accomplishment and issues
Overall Goal: High efficiency in energy consumption is achieved.			
Primary energy intensity is reduced to 500 toe/ Millions-SDR by 2017.	515.43 toe/Millions-SDR in 2006	474.16 toe/Millions-SDR in 2007 The target figure in the indicator has been achieved. The Project Team proposed to amend the indicator as "Commercial energy intensity is reduced to1.8 toe/ Millions-Rs. By 2017. The base year of the above in 2002. It was 2.34 in 2007.	There is a possibility that the effects of the Project would contribute to attain the amended target figure of indicator, as infrastructure currently being enhanced by the Project.
Project Purpose: Infrastructure necessary for materializing energy efficiency activities in the country is enhanced.			
(1) Mandatory energy audit, monitoring and follow-up are conducted annually at least in 150 organization in private & public sectors. (2) Sales of energy services providers (ESCOs) are increased at least by 10%. (3) All the CFLs, ballasts and fans in markets have energy efficiency labels. (4) Penetration rate of CFLs in household sector becomes at least 40%	(1) **88%** among the samples (factories, commercial buildings, hotels, hospitals, etc.) had done some kind of energy auditing. However only 28% among them had implemented programme for energy saving. (2) Rs. 71.5 Mill in 2008 (3) No product has labels, although there is a voluntary label scheme for CFL and ballasts. (4) Percentage of CFLs over total population of lamps in sample households (Baseline survey conducted by the Project in Oct. 2008) • Rural : 34% • Estate : 24% • Urban : 57%	(1) Formulation activities have been carried out to establish a mandatory energy audit scheme. A guideline for the audit was documented. Contents of the regulation were handed over to an external legal draftsman to document a gazette notification. (In 2009, 116 energy audits, including small scale audits, have been carried out in collaboration with ESCOs) (2) Indicator is found not to be appropriate since there is only one Full-scale ESCO in Sri Lanka. The Project Team proposed to amend it as "Amount of investment to Energy Efficiency and Conservation is increased at least by 10%". Sources of verifications for the indicator are annual reports of ESCO's performance summarized by SLSEASLSLSEA and information of banks on finance to EE&C. Baseline data for the period from 15.08.2008 to 14.08.2009 was 298.1Million rupees (SLSEASLSLSEA's report). (3) No labels yet. However, all the CFLs in the market are expected to have labels in early 2010 onwards, when SLSEASLSLSEA commenced market inspection. As for ballasts and fans, it is expected that all of these items in the market have labels by the end of 2010. (4) Latest data is not available & need to wait for the result of the next baseline survey to be completed in Oct. 2009. However, according to the result of the last baseline survey, the target figure of the indicator was already attained in urban area. The Project Team proposed to modify the indicator as "Penetration rate (at least one bulb per household) of CFLs in household sector becomes more than 40% in every sub-sector, namely urban, rural and estate", as penetration rates of rural and estate	There is a probability that the Project will achieve the Project Purpose within the Project period, however the Mid-term Review Team is not totally positive as there are some concerns and delays as mentioned earlier. Continuous commitment and dedication are necessary to be given to the Project by the Project Team and senior management of MOPE and SLSLSLSEA. Especially, the Project Team is advised to give due attention to the recommendations specified in "6" of this report.SLSEA

Annex-5

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Verifiable Indicators	Baseline data	Progress up to Early Oct. 2009 &Future plan	Level of accomplishment and issues
		need to be improved. The Project will conduct a household survey with similar samples by Sep. 2010.	
Output 1: Necessary resources (rules and regulations, human resources, equipment and materials) for implementing SLSEASLSLSEA act are prepared.			
(1) Mandatory benchmark schemes are introduced in 5 prioritized sub-sectors (2) 6 number of energy auditors are accredited. (3) Accredited energy managers are appointed in 150 organizations in public and private sectors. (4) 3 full scale and 6 consulting ESCOs are accredited. (5) Mandatory labeling systems are introduced for 3 prioritized appliances (CFLs, ballasts and fans.	(1) No such scheme in any sub-sector. (2) No accredited energy auditor. No accreditation scheme. (3) No accredited energy manager. No accreditation scheme. (4) No accredited ESCOs. No accreditation scheme. (5) No mandatory labeling system for any appliance.	(1) Energy consumption baseline analysis has been completed in 2008 for the selected five industrial sectors and office buildings. Instead of "mandatory benchmark scheme", SLSEASLSLSEA decided to establish "mandatory annual energy consumption reporting scheme" and "annual updating of energy consumption baseline analysis." The indicator was revised accordingly. (2) Preparation work for accreditation scheme for energy auditors has almost being completed. Cabinet approval is needed for the regulation, which is being prepared (3) Preparation work for accreditation scheme for energy managers has almost being completed. Cabinet approval is needed for the regulation, which is being prepared. (4) The Project Team decided not to introduce an accreditation scheme for ESCOs. PDM was proposed to be revised in this respect. (5) Mandatory labeling scheme for CFLs was introduced. The labeling schemes for Ballasts and fans are under preparation. Testing facility for fans is available at laboratory, but they are not sufficient for testing to implement the mandatory labeling scheme.	Activities under the Output 1 are mainly introduction of the following legislation schemes: • Mandatory labeling of CFLs • Mandatory labeling of ceiling fans • Mandatory labeling of ballasts • Accreditation of energy managers • Accreditation of energy auditors • Mandatory energy consumption reporting • Mandatory auditing Among the above list, "mandatory labelling of CFLs" was already legislated in July 2009. All the other schemes are likely to be legislated within 2010. Therefore, the Mid-term Review Team does not have any serious concern about the progress of these activities.
Output 2 : Incentive/ disincentive mechanism for promoting energy efficiency is prepared.			

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Verifiable Indicators	Baseline data	Progress up to Early Oct. 2009 &Future plan	Level of accomplishment and Issues
(1) Number of projects on energy efficiency improvement approved for finance, is increased by 10% (finance schemes of E-friends II, Sustainable Guarantee Facilities, Sri Lanka Sustainable Energy Fund etc.) (2) More than one incentive/ disincentive schemes for appliances with energy efficiency labels are introduced.	(1) Number does not show improvement, • 3% in E-friends II sub projects • Sustainable Guarantee Facilities: 2 projects were approved for the last 2 years (2) No incentive/ disincentive scheme.	(1) Finance scheme (a) There is no progress observed for expansion of usage of existing finance schemes for EE&C in 2008. (b) A new Japanese ODA loan programme for EE&C is being formulated. However, it will take some more time for the project to be approved. (c) The Project Team engaged in formulation of the scheme with an expectation that the loan agreement of the scheme will be signed in early 2010, however later found that the signing would be made around early 2010 at earliest due to various uncontrollable factor. (d) Currently, the Team changed the priority and studying a possibility to change the implementation structures of the existing loan schemes, E-Friends I and II, so that the utilization of the revolving fund schemes to EE&C project will be expanded. (2) Preparation work for introduction of the following incentive/ disincentive schemes are planned to be introduced. However, none of them are in practice, yet. (a) Incentive for efficient CFL: A Cabinet Paper for exemption of VAT and import duty for high efficient CFLs, which have labels of more than 3-stars, was approved subject to monitoring of CBSL. SLSEASLSLSEA is preparing a report on positive and negative impacts to be created by the exemption. The report will be submitted to the Treasury for their perusal. (b) Pilot project of CFL: Preparatory work for a pilot projects for distribution of CFLs to 3,000 households is in progress with collaboration of LECO and planned to be commenced by early 2010.	The Mid-term Review Team has a concern whether the activities under the Output 2 will be completed and create a prominent outcome within the Project period. Progress of promotion of finance schemes and incentive/ disincentive schemes for EE&C programme should be accelerated to create the Output 2 completely by the end of the Project period.
Output 3 : Mass consciousness is created among general public, private and public sectors on energy efficiency improvement.			

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Verifiable Indicators	Baseline data	Progress up to Early Oct. 2009 &Future plan	Level of accomplishment and issues
(1) 5 different types of education materials are prepared and utilized (posters, leaflets, booklets, CDs and Videos). (2) Number of applications for the existing national energy award is increased by 10% in each year. (3) Awareness on use of CFL is increased.	(1) 12 different types of materials were prepared. (2) Applicants of National energy award were 15 in 2007. (3) Percentage of CFLs over total population of lamps in sample households • Rural : 34% • Estate : 24% • Urban : 57%	(1) Already developed and disseminated (2) There were 32 applicants for the National EE Award 2009-2010. It was increased by 113%. (3) See above (4) of the Project Purpose.	Programmes of "Sector specific training for industries" were carried out with follow-ups and impact monitoring. However, the Mid-term Review Team could not make sure the impact of the programme to general public and public sector, as there was no impact monitoring for the same.

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Activities

Narrative Summary	Progress up to Early Oct. 2009	Future plans
1. Develop 10 year plan for energy efficiency improvement programme	Draft 10-year plan was developed by SLSEASLSLSLSEA. The first discussion on the draft will be planned to be held on Oct. 8, 2009 with academics and specialists of the sector.	It will be finalized and authorized by Board of Directors of SLSEASLSLSLSEA and the Secretary of the MOPE by early 2010.
2. Develop and update mandatory energy consumption benchmarks for selected industries.	(1) Energy consumption data collection has been done from 212 factories, 15 hotels, 37 offices and 3 water plants. Database is under construction (2) Energy consumption baseline analysis has been completed in 2008 for the selected five industrial sectors and office buildings. SLSEASLSLSLSEA is conducting preparatory work for a mandatory annual energy consumption reporting scheme to the largest industries and commercial consumers, of which electricity usage is larger than 250,000 kwh/ month. The number of consumers fall into the category is around 150 – 160.	(1) The baseline analysis will be updated periodically. The next update is planned to be conducted in 2010. (2) The mandatory annual energy consumption reporting scheme will be introduced by early 2010.
3. Introduce accreditation schemes for energy auditors, energy managers a***nd ESCOs.***	(1) Energy auditors: 14 energy auditors have been trained in 2008. Curriculum development activities have been carried out towards certification of energy auditors. Contents of the regulation to accredit energy auditors were handed over to an external legal draftsman to document a gazette notification. (2) Energy managers: 17 *energy manager*s have been trained in 2008. Training for energy managers will be conducted from Oct. 5 – 9. Contents of the regulation to appoint accredit energy managers in bulk energy consuming establishments were handed over to an external legal draftsman to document a gazette notification. (3) ESCOs : Research of 13 energy operators was conducted. Japanese award programme has been studied. As a result, the Project Team decided not to introduce an accreditation scheme for ESCOs. It is too early to do so, as there are very few full-scale ESCOs in Sri Lanka at the moment, and such a scheme has not been introduced in many other Asian countries. ESCO will be given recognition in National EEI award.	(1) SLSEASLSLSLSEA plans to obtain a cabinet approval for the gazette notification and issue it by Nov. 2009 and implement the scheme from Jan 2010. (2) SLSEASLSLSLSEA plans to obtain a cabinet approval for the gazette notification and issue it by Nov. 2009 and implement the scheme from Jan 2010. (3) Activities of ESCOs will be further facilitated and motivated by expansion of the instrument bank of SLSEASLSLSLSEA and National EEI award.
4. Introduce mandatory labeling for major appliances (CFL, ballast, fan, etc.),	(1) CFL: Data collection was completed. Measurement method was established. Cabinet approval was given. Gazette notification for mandatory labeling was issued in July 2009. SLSEASLSLSLSEA conducted a seminar for dealers and importers of CFL to introduce the scheme in Sept 2009. (2) Ceiling fans: Data collection was completed, measurement method and labeling criteria was established. Guideline and regulation are being prepared. (3) Ballast and linear fluorescent lamps: Standard is being revised; data collection and establishment of measurement method are being conducted. (4) Motor, A/C, Refrigerator and TV: Working committees were appointed and conducting	(1) CFL: SLSEASLSLSLSEA plans to commence market inspection in Jan 2010. Surveillance will be conducted twice a year with island wide random samples. (2) Ceiling fans: Plans to obtain parliament approval to the regulation by May 2010. Establishment of a testing facility is needed. SLSEASLSLSLSEA is going to establish a testing facility for fans in SLSI next year.

Narrative Summary	Progress up to Early Oct. 2009	Future plans
	preparatory work, such as data collection, establishment of measurement methods and labeling criteria.	(3) Ballasts and linear fluorescent lamps: Guideline and regulation should be prepared. Plans to obtain parliament approval to the regulations in late 2010. (4) Motor, A/C, Refrigerator and TV : Establishment of standard will be completed by the end of 2009. However introduction of testing facility for the appliances is a difficult task , as they are very expensive. Ex: testing facility for AC is around 25 million Rupees. SLSEASLSLSLSEA is seeking foreign assistance in this regard.
5. Develop IT infrastructure for monitoring and analysis of data	(1) Technology data base was established and operated in the SLSEASLSLSLSEA website. (2) Data analysis software named "Virtual Energy Manager" was developed for tea factories. Software for other 4 sectors is under preparation. (3) Outline for instrument bank managing system has been designed. Development of the system is underway. (4) Outline for tele-metering system has been designed. Five candidate sites were identified. Negotiation with subcontractor is underway with regard to specification of board and price. (5) Periodical reporting system is being prepared.	(1) On-line booking system for instrument bank will be introduced by end 2009 or early 2010 (2) On-line tele-metering prototype system will be introduced by early 2010. (3) SLSEASLSLSEA will promote usage of the software to ESCOs and energy auditors at the occasion of seminars and training courses.
6. Expand SLSEASLSLSEA's instrument bank for energy auditors.	(1) All the planned instruments (12 varieties) were purchased by the end of FY08. (2) Operating manuals for the instrument are being prepared by SLSEASLSLSEA staff. Several sample manuals were documented by Japanese expert team for reference. (3) A maintenance system has been introduced to ensure sustainable utilization of the instrument bank. One engineer and two engineering assistants of SLSEASLSLSEA have been entrusted with the task of custodianship of instruments and the responsibility of instruments maintenance. (4) Technical specification for the instrument to be purchased in FY09 (14 varieties) was documented and distributed to representative agents in Sri Lanka for their rough estimate.	• Instrument for Financial year 2010 will be purchased by Dec. 2010. • OJT will be given to SLSEASLSLSEA C/P by Japanese experts to master the use of the equipment. • Calibration for the equipment will be done by a basic calibration package to be purchased by the Project. • Several training programme will be carried out for the ESCOs and energy auditors to introduce and learn the usage of the instruments. • Instrument bank will be given an introduction in every possible occasion, such as trainings and workshops. • On-line booking system for the instrument will be introduced.

<table>
<tr><th>Narrative Summary</th><th>Progress up to Early Oct. 2009</th><th>Future plans</th></tr>
<tr>
<td>7. Develop/ improve finance schemes to promote energy efficiency investment (Sri Lanka Sustainable Energy Fund, E-Friends II, etc.).</td>
<td>(a) E-Friends II
E-Friends II was implemented for three years from 2006 to 2008. As the following table shows, numbers and total amount of sub projects on EE&C approved for finance of E-Friends II was increased in 2007 compared with those in 2006. However they were decreased in 2008 as the fund was almost exhausted. Total amount of sub-projects on EE&C approved for finance was 3% among the total amount disbursed. At the moment, the scheme does not call for any application. Revolving Fund of the scheme will be available in 2010.
Amount and number of sub-projects on EE&C financed for E-Friends II
<table>
<tr><td>Year</td><td>2006</td><td>2007</td><td>2008</td></tr>
<tr><td>No. of projects</td><td>2</td><td>10</td><td>4</td></tr>
<tr><td>Total amount approved.</td><td>Rs. 12,360,000</td><td>Rs. 107,212,944</td><td>Rs. 18,702,850</td></tr>
</table>
(Source: Project Team)
The progress in 2007 was a result of "sector specific training for industries" conducted by SLSLSEA to the selected companies in tea industry. Seven projects out of ten approved for finance for 2007 was the projects of tea industries. A proven technology of installation of inverter to motors in tea factories and success stories of the projects implemented by other tea factories earlier inspired and encouraged the managers participated to the training to make a decision to implement the projects and then apply for the finance scheme.
(b) E-Friends I
Fund of E-Friends I was exhausted in 2008. At the moment, the scheme does not call for application. Revolving fund scheme of the scheme became available in July 2009. As it was introduced very recently, no project on EE&C was approved for finance, yet.
(c) Sustainable Guarantee Facility
• There had not been an active utilization of Sustainable Guarantee Facility. For the past two years, there were two projects obtained the Facility; both of them were renovation of buildings of private banks. This was realized as a result of an active coordination of SLSLSEA to link the applicants and a finance institution.
• So far, the Facility has not been a strong motivation for private institutions to apply for finance. All the companies applied for E-Friends II did not need the Facility as they had appropriate collateral. There has been no companies who sought finance while they did not have collateral, except for the two mentioned above.
• In order to promote the Facility, there is a need to create more awareness among the potential borrowers and bankers about the Facility as well as about the importance and benefits of EE&C. A half day promotion seminar on the Facility was carried out in 2008.</td>
<td>The Project Team firstly prioritised formation of a new ODA loan scheme for EE&C. The Team expected that the loan agreement of the scheme will be signed in early 2010, however later found that the signing would be made around early 2010 at earliest due a change of an external factor. Currently, the Team changed the priority and studying a possibility to change the implementation structures of the existing loan schemes, E-Friends I and II, so that the utilization of the scheme for energy efficiency and improvement projects will be expanded.
(1) Promotion of Sustainable guarantee facility will be continue, however expansion of applicants would be difficult, as high interest rate of bank loans is still a discouraging factor for applicants.
(2) No more fund of E-Friends II is available as fund was exhausted.
(3) Revolving fund of E- Friends II will be available although fund for E-friends II is almost exhausted. The Project Team is going to negotiate with relevant parties to modify the scheme so that it will be used for small appliances and public sector.
(4) Preparatory work for establishment of Sri Lanka Sustainable Guarantee Fund will be conducted in 2010.
(5) The proposed Japanese ODA loan will be signed before the end of the project period; however implementation would be after the project period.</td>
</tr>
</table>

Narrative Summary	Progress up to Early Oct. 2009	Future plans
	(d) A new Japanese ODA loan Conceptual framework for a new Japanese ODA loan project for EE&C, including those for public sector and small appliances is being formulating with a support of the Project Team. JICA had expected to commence the project in early 2010, however, due to various uncontrollable reasons, currently, JICA considers it would be by early 2010 at earliest for the project to be approved. A feasibility study for the project will be conducted by a local consultant farm from the end of October 2009 and will be completed in March 2010.	
8. Develop incentive/ disincentive schemes for major appliances (CFL, ballast, fan, etc.)	(1) Incentive for efficient CFL: A Cabinet Paper for exemption of VAT and import duty for CFLs with more than 3-stars was approved subject to monitoring by CBSL. SLSEASLSLSEA has to report positive and negative impacts to be created by introduction of the exemption to the Treasury. A load factor analysis should be conducted for the reporting. SLSEASLSLSEA will submit a concept paper for the analysis to JICA Sri Lanka Office so that the Office can consider allocating necessary fund for implementation. (2) SLSEADisincentive for inefficient lumps: SLSEASLSLSEA will propose Treasury to increase tax for inefficient lumps. (3) Pilot project for LECO area: Introduction of a "pilot project" for distribution of CFLs was identified as an important step to vilify a methodology and mechanism to be adopted in a proposed incentive scheme of distribution of CFL for low electricity users. Preparatory work for the pilot project for distribution of CFLs with collaboration of LECO is in progress.	(1) SLSEASLSLSEA plans to take necessary steps and realize VAT exemption for CFL with more than 3 stars in early 2009. (2) SLSEASLSLSEA will conduct inspection to the market to make sure CFLs with no star are not in the market. (3) SLSEASLSLSEA will propose Treasury to increase tax for inefficient lumps, such as fluorescent lamps in early 2010. (4) The Project Team will implement a pilot project with collaboration of LECO and CEB to 3,000 selected households by early 2010.
9. Conduct awareness creation campaigns for general public, private and public sectors.	(1) Sector specific training for industries Sector specific training programmes were conducted for tea industry and water board in 2008-2009. The training included lecture and practical sessions. The participants showed keen interest in every training programme. EEI programme identified in the training programme were conducted by the respective institutions and the effect of the programme were reported to SLSEASLSLSEA. The achievement in 2008-2009 was as follows:	(1) Sector specified training for industries: Training for Hotel sector is ready to be conducted on Oct. 19, 2009. SLSLSEA will collaborate with a NGO in tourism sector. Garment industry will be added to the programme in 2010. Tile and brick industries will be added in the future. (2) One day seminar for public and private institutions will be conducted 2-5 per months on request. (3) School programme: Training courses for In-service Advisors to improve teaching method for the unit on EEI in Grade 10 science curriculum will be conducted in 2010. (4) Media promotion for labeling of CFLs: SLSLSEA plans to implement Intensive awareness programme for CFL by newspaper, radio and TV advertisements.

Narrative Summary	Progress up to Early Oct. 2009	Future plans

Sector	No. of training courses	No. of participants	No. of institutions implemented EEI programme	% of saving from the annual consumption	Annual saving (kWh)
Tea	Feb. 12-15, 2008	25	10	1.55 – 15.75	7,058 – 93,185 274,193 in total
	July 7-11, 2008	27	5	3.2 – 8.66	11,016 – 61,180, 159,409 in total
	Sep. 7-11, 2008	24	To be reported		
	Mar. 23-25, 2009	32	To be reported		
Water board	Mar. 30 -Apr. 1, -2009	26	Completed in 7 places (being conducted in 6 places)	n/a	32,076 – 1,685,880 2,456,271 in total
Hotel	Ready to be conducted in Oct. 2009				

(2) One day seminar for public and private institutions

One day seminars for public and private institutions were conducted for the following institutions in 2008 and 2009. These are conducted according to the request of the institutions:

- Educational institutes: University of Ruhuna, University of Peradeniya and Open University
- Medical institutes: Blood Bank and Gampaha General Hospital
- Ministries and Dept.: Min. of Parliamentary Affairs, Min. of Public Administration, Min. of Local Government & Provincial Council, Min. of Religious Affairs, Min. of Higher Education, Min. of Power & Energy, Min. of Housing, Min. of Trades, Min. of Disaster Management, Min. of Internal Administration, Min. of Finance, Min. of Rural Industries, Auditor Generals Dept., Census and Statistics Dept. and Coast Conservation Dept.
- Other public sectors: NWSDB – Ratmalana and Telawala, Ceramic Corporation, National Building Research Organization, Condominium Management Authority, Divisional Secretariat-Kalutara, , Export Development Board and Coconuts Cultivation Board
- Banks: Bank of Ceylon

Private institutes: Sri Lanka Telecom, Rubber & Plastic Institute and National Chamber of Enterprises and CEAT-Kelaniya

(3) School programme

Eight and two school programme was carried out in 2008 and 2009 respectively.

(4) Media promotion

- TV, radio and newspaper advertisement
- Women newspaper programme
- "Sanraksha" -Magazine

Budget for these were secured

(5) Education materials: Materials will be utilized in school programme and others.

(6) National Energy Award; After eligible applicants conduct baseline establishment, implementation of EEI programme and measurement of the effect, the award will be given in Aug. 2010. The next award programme will be conducted in 2010-2011 with taking recommendations and lessons learned from the programme in 2009-2010 into considerations.

SLSEASLSEA

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Narrative Summary	Progress up to Early Oct. 2009	Future plans
	• "Red notice" – booklets distributed to general public (5) Education materials Five kinds of on-sheet leaflet and one booklet were produced as awareness materials with a support of JICA Experts. SLSLSEA is printing them to be distributing to general public. (6) National Energy Awards There were 32 applicants for the National EE Award 2009-2010. It was increased by 113%. SLSEA	

Accomplishment Grid – Mid-term Review of EEI

Oct. 14, 2009

Implementation Process

Item	Evaluation questions	Status on Early Oct, 2009
1. Team work	Do the project team members share their roles and responsibility appropriately?	Yes. Task-wise small groups were made with members of Japanese Experts and SLSEASLSLSEA counterparts to conduct technical transfer effectively. There are no particular issues in terms of team work.
2. Communication	Communication among the team members or between the Japanese experts and Sri Lankan Counterparts adequate?	The Japanese Experts respect self-initiative of the SLSEASLSLSEA counterparts and SLSEASLSLSEA counterparts respect expertise and experience of the Experts. Team members trust each other. There are no particular issues in terms of communication.
3. Decision making	Does decision making process in the project team efficient, transparent and participatory?	Decisions are mainly made by senior officials of the SLSEASLSLSEA team members. The decisions are shared by the Team members. There are no particular issues in terms of decision making.
4. Progress monitoring	Did the project team monitor progress of the project appropriately?	(1) Progress of daily work is monitored and checked by the Director of SLSEASLSLSEA and the leader of the Expert team. (2) Progress meetings were held approximately once in two months. (3) JCC played an important role for monitoring of progress and follow-up delays and issues, if any. (4) Progress reports were documented by the Expert Team and submitted to JICA in every six months. (5) Annual report and report for Mahinda Chintanaya were documented by SLSEASLSLSEA C/P once in a year. (6) Progress of the project activities was monitored properly in general; however, impact monitoring of awareness programme is needed to improve the programme further.
5. Capacity building of Sri Lankan C/P (senior officials of MOPE and SLSEASLSLSEA)	(1) Was the selection of participants to the counterpart training in Japan appropriate? (2) Did the training implemented effectively? (3) Was the experience and knowledge gained by the participants were utilized in daily work and shared with other members after they came back to Sri Lanka?	(1) Yes. Selection was appropriate and it was very timely and effective that the senior officials of MOPE and SLSEASLSLSEA visited Japan at the beginning of the Project period. (2) Yes. The senior officials obtained policy level input and were further motivated for EEI promotion. It was also effective that soon after they came back to Sri Lanka, a team of Japanese experts arrived in Sri Lanka, then they discussed and shared conceptual framework of the Project without delay. Training centers in Japan also highly appreciate activeness and enthusiasm shown by the Sri Lankan officials. (3) Senior officials became further committed and supportive to the Project. The Project Team and the senior officials became able to share objective and implementation methods of the Project more clearly. Their knowledge and experience are utilized at the time of policy level decisions and establishment of strategies.
6. Capacity building of Sri Lankan C/P	(1) Was the selection of participants to the counterpart training in Japan appropriate?	(1) Yes. Selection of participants for the country wise training in Japan was appropriate. All the SLSEASLSLSEA counterparts, except one, had participated the training. Necessary

(SLSEASLSLSEA C/P)	(2) Did the training implemented effectively? (3) Was the experience and knowledge gained by the participants were utilized in daily work and shared with other members after they came back to Sri Lanka? (4) Were there any particular efforts made to transfer technology of the Japanese Experts and enhance capacity of the SLSEASLSLSEA counterparts?	arrangement is being conducted for the one to participate in the nest training in 2009. (2) Yes. The training was practical, intensive and useful for the SLSEASLSLSEA staff to enhance their practical knowledge and experience on EEI. Level of raining and volume were also appropriate. (3) The participants practically y understood the new system and schemes, such as mandatory labeling and accreditation of n¥energy managers. The knowledge and experience they have gained in Japan were well utilized in their daily work. (4) Most of the SLSEASLSLSEA counterparts are very keen to absorb expertise of the Experts. Task-wise small groups mentioned above are effective for direct technical transfer. To update and upgrade technical knowledge of the SLSEASLSLSEA counterparts and keep motivation of the Team members, additional arrangement, such as periodical internal seminars and preseritations by team members, would be useful.
(5) Participation of MOPE & SLSEASLSLSEA	Were level of participation, contribution and commitment of MOPE and SLSEASLSLSEA to the project satisfactory?	Commitment and support to the Project by the senior officials of MOPE and SLSEASLSLSEA are very much appreciated by the Project Team members. Their contribution in decision making, problem solving and high-level coordination with external institutions, are highly effective for smooth implementation of the project activities.
(6) Participation of partner organizations	Were level of participation, collaboration and contribution of partner organizations, such as CEB, LECO, SLSI, SLEMA, NERD Center, Min. of Education, Univ. of Moratuwa, etc. satisfactory?	(1) The Project Team keeps cordial relationships with partner organizations. Especially, SLSI, SLEMA and Univ. of Moratuwa play crucial roles in implementation of Project activities. Local experts and consultants were playing important roles especially in technical research, documentation of strategic papers and software development and maintenance. (2) Attendances of the representatives of the partner organizations to JCC meetings were satisfactory. (3) SLSEASLSLSEA signed MOU with Min. of Education in Oct. 2009 to establish a corroboration to improve awareness creation among school children.
(7) Function of JCC	Were JCC functioned as expected? (frequency of the meetings, participation of the members, decision making and follow-ups	(1) JCC was held as planned as follows: • 1st on July 23, 2008 • 2nd on Oct. 21, 2008 • 3rd on July 10, 2009 (2) Attendance of the members, including senior officials of MOPE and SLSEASLSLSEA and representatives of the partner organizations was satisfactory. (3) JCC played an important role for monitoring of progress and follow-up delays and issues, if any.
(8) Participation of JICA	Were level of supervision and support made by JICA Sri Lanka Office the Japanese Embassy in Sri Lanka and JICA Headquarters in Japan appropriate?	(1) JICA Sri Lanka Office was very supportive in arrangement of training in Japan and monitoring of progress of the Project activities. (2) Progress monitoring and attendance to JCC of the Japanese Embassy in Sri Lanka is highly appreciated. (3) JICA Headquarters were supportive by making necessary arrangement in dispatching Japanese Expert without delay.

Evaluation Grid – Mid-Term Review of EEI Project

Oct 14. 2009

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Main Items	**Sub-Items**	
Relevance		
Policy	Is the project purpose consistent with development policy of Sri Lanka?	• Energy conservation is treated as a high priority issue by GOSL. • For example, necessity of energy conservation is highlighted in "Mahinda Chinthana", a development policy paper of the present government, by mentioning the necessity of promotion of awareness creation, investment for promoting CFLs, introduction of energy auditing. GOSL established SLSLSEA in 2007 to accelerate and facilitate programme for EEI and renewable energy. • Therefore, Project Purpose is consistent with development policy of Sri Lanka.
	Is the project purpose consistent with ODA policy of Japan and Country Strategy of JICA?	• In "Basic plan of Energy" established by GOJ in March 2007 based on the basic law on energy policy said the necessity to actively promote international cooperation on energy efficiency programme, especially to the Asian countries. • ODA Country Policy highlighted an importance to assist power sector, which is a foundation for economic development. • Country Strategy of JICA also listed power sector, including energy efficiency improvement, as an important area for assistance. • Therefore, Project Purpose is consistent with ODA Country policies of Japan and Country Strategy of JICA.
Needs	Are there strong needs of cooperation?	• Last few years, annual growth rates of GDP have been more than 5% in Sri Lanka. In order to attain further economic development, it is an urgent task for the country to realize a socio-economic structure with high energy intensity by promoting energy efficiency improvement programme, as the country is highly depends on petroleum for its energy source. • SLSEA is a new organization established in 2007 and the staff members are in need of external inputs, such as technology, knowledge, experience immediately to accomplish its mandate. It is also an urgent need of SLSEA to expand measurement instrument to facilitate energy management programme.
Priority	Does the project address priority and urgent issues in energy sector?	• Domestic and commercial sectors are the highest in the primary energy demand and industrial and domestic sectors are the highest in electricity demand in Sri Lanka (Sri Lanka Energy Balance 2007). • According to a research of SLSEA, it is assumed that possibility of EEI is 20-30% in industrial sector and 12-15% in domestic sector, • As for the transport sector, which is the largest consumer of petroleum, CEA has been implementing emission control, • Taking these factors into consideration, it is relevant for the Project to target energy demand in domestic and industrial sectors, as E energy management in those sectors are required and effective.
Suitability as a means	Does Japan have technological advantages? Can Japan's experience be utilized?	• Most of the legislation programmes to be enhanced or introduced by SLSEA under the new SLSEA act were already established in Japan under the Rationalization in Energy Use Law. Therefore, experience and technology of Japan can be utilized effectively in implementing cooperation to Sri Lanka. • JICA has implemented energy management projects in China, Argentine, Bulgaria, Turkey, Thailand, Poland and Iran. Therefore, accumulated knowledge and experience of JICA is expected to be utilized in the Project. • Currently, labeling programme and energy manager system are being developed by the Project by utilizing Japanese schemes as references.

Annex-6

Evaluation Grid – Mid-Term Review of EEI Project

Oct 14. 2009

Evaluation Items		T Evaluation result of Mid-term Review in Oct. 2009
Main Items	**Sub-Items**	
Effectiveness		
Achievement Forecast for the Project Purpose	Will the Project Purpose likely to be achieved by the end of the period of cooperation?	There is a possibility for the Project to achieve the Project purpose within the Project period; however the Review Team is not totally positive as there are some concerns and delays in creating the Outputs.
Contribution Factors	Are there any contributing factors to accelerate achievement of the Project Purpose?	● Regulatory powers provided to SLSEA by the SLSEA Act highly contributed to achieve the Project Purpose. ● Commitment and support to the Project by the senior officials of MOPE and SLSEA are very much appreciated by the Project Team members. Their contribution in decision making, problem solving and high-level coordination with external institutions, are effective for smooth implementation of the project activities. ● Increasing interest to Energy Management activities has been observed due to the high prices of fuel and electricity.
Inhibition Factors	Are there any disturbing factors to achieve the Project Purpose?	No disturbing factor so far.
Logic to attain project purpose	Will the Project Purpose be attained if all the planned outputs were created?	Yes, as resource development, introduction of incentive/ disincentive schemes and awareness creation are still recognized as the most needed infrastructure to materialize Energy Management activities.
	Is the important assumption to attain the Project Purpose still appropriate and realistic?	There is no particular issue with regard to the important assumption (stable economic growth) to attain the Project Purpose.

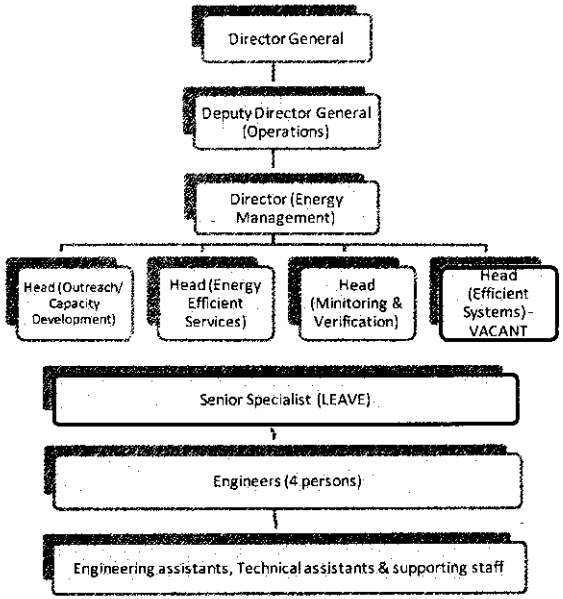
Evaluation Grid – Mid-Term Review of EEI Project

Oct 14. 2009

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Main Items	**Sub-Items**	
Efficiency		
Level of creation of outputs	Were the outputs created as planned?	(1) Output 1 is being created as schedule. There is a prospect that the Output 1 will be successfully created within the Project period. However, the following matters should be carried out with sufficient attention: (a) Establishment of regulations, including preparation of gazette notifications and obtaining cabinet approvals, should be completed timely in parallel with preparation of criteria and guideline for the new schemes. (b) Mandatory reporting and auditing should be equipped with adequate level of penalty. (c) Testing facility for fans should be introduced timely by the time enforcement of the regulation is ready. (2) Output 2 is being created, however the Review Team has concerns that there has been no prominent results yet. Progress of promotion of finance schemes and incentive/ disincentive schemes for energy efficiency improvement programmes should be accelerated to create the Output 2 completely by the end of the Project period. (3) Output 3 is being created to a certain degree. However, the Review Team is not sure the degree of direct impact created by the awareness creation programme for general public and public sector, as impacts of the programme were not monitored, while programme of sector specific training programme for industries were follow-upped and their impacts were monitored.
	Were there any disturbing factors for creation of the planned outputs or implementation of the planned activities?	● Output 1: * Wordings of SLSEA act should be amended to define responsibility of energy managers in the legislation. Preparation work is underway so that the amendment will be done by the end of 2009. * Assistance of an external professional was sought for documentation of a gazette notification for mandatory labeling of CFL. It took almost one year for staff in the office of an assistant legal draftsman to complete the documentation in three official languages, as the work was not prioritized but done as a part-time basis. * Absence of testing facility for refrigerators, A/Cs and TVs will be an obstacle to introduce mandatory labeling scheme for these appliances. SLSEA is seeking foreign assistance in this regard. ● Output 2: * Funds for E-Friends I and II were almost exhausted in 2008 and 2009. * Absence of an appropriate finance scheme with concessional interest rate and specific to energy management programme, including those for public sector and small appliances, is a problem to increase number of EE&C approved for finance.

Evaluation Grid – Mid-Term Review of EEI Project

Oct 14. 2009

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Main Items	**Sub-Items**	
Input (Human resources)	Are counterpart personnel assigned as planned and contributing to create the outputs?	● Cadre of SLSEA counterparts were fulfilled except one, i.e. "Head of Efficient systems". There is one vacancy for the period of three years for the post of "Senior Specialist", as the specialist took an official leave for study abroad. ● Compared with other Asian countries, the number of counterpart staff of Energy Management Division of SLSEA is sufficient. ● Technical level of the counterparts is satisfactory. Most of the counterparts are active and committed to their work and are contributing much to create the planned Outputs. ● Some of them mentioned they like to have more opportunity to learn more from the JCA Experts and improve their technical capacity. 
	Were JICA Experts assigned as planned and contributing to create the outputs?	● JICA Experts were assigned as planned. Expertise in energy management and rich experience of implementing technical cooperation projects in other Asian countries are contributing factors for the Project to create the planned Outputs in time.
Input (Equipment)	Was the equipment purchased as planned?	● All the planned items for Financial Year 2008 were purchased. ● Preparation for purchasing of equipment for Financial Year 2009 is underway. They will be purchased by Dec. 2009.
	Were quality and quantity of the equipment satisfactory?	● Selection of the equipment was appropriate and met the urgent needs in Sri Lanka. No particular problem with quantity and quality. Spare parts and accessories of the equipments are available with local agents in Sri Lanka.
Input (Training)	Were the counterpart training conducted as planned?	● Training for EE&C policy makers was conducted in Jan. 2009 in Japan as planned. Five senior officials of MOPE and SLSEA were participated as planned. ● Total four SLSEA counterparts participated in group training on Energy Conservation Technologies, Energy Efficiency & Conservation in Jan., May and June 2009. The training courses were conducted as planned.
	Was the selection of participants and timing of training appropriate?	● Especially, it was very timely that the senior officials of MOPE and SLSEA visited Japan at the beginning of the Project period. It was also effective that soon after they came back to Sri Lanka, a team of JICA Experts arrived in Sri Lanka, thereafter they discussed and shared conceptual framework and objective of the Project without delay.

Oct 14. 2009

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Main Items	**Sub-Items**	
	Was the experience and knowledge gained by the participants shared with other members of the Project team after they came back to Sri Lanka?	● Report of the participants and materials obtained in the training courses were shared with other staff members. ● Experience and knowledge gained in the training courses were shared among the staff in daily work.
	Was the counterpart trainings conducted so far have contributed to create the planned output?	● Senior officials became further committed and supportive to the Project after the visit. The Project Team and the senior officials became able to share objective and conceptual framework of the Project more clearly. Knowledge and experience gained during the visit were utilized at the time of policy level decision making, establishment of strategies and dissemination of energy management technologies. ● The SLSEA counterparts understood the new systems and schemes for legislation, such as mandatory labelling and accreditation of energy managers. The knowledge, experience and materials they have gained in Japan were utilized well in their daily work.
Input (Budget)	Was the Project budget of GOSL an appropriate amount?	●There is no particular budget allocation by GoSL for the Project. Annual budget of SLSEA is used for local expenses of the Project. ●Annual budget of SLSEA has been approximately 450 Million rupees. A half of the budget has been allocated to the Energy Management Division. The amount of recurrent cost of the budget is sufficient to cover the actual cost. Capital budget was sufficient to implement the Project so far, however, will not sufficient to purchase necessary capital goods in the future, such as testing facility for mandatory labeling schemes of refrigerators and A/Cs, which cost around 25 million rupees each. ●SLSEA did not have a capital budget for purchasing necessary equipment for the instrument bank, which cost around 34 million rupees, however obtained most of them under the Project. Overall, there is no serious issue with regard to the financial resources.
	Was the timing of disbursement of the project budget of GOSL appropriate?	There is no particular problem with regard to the timing of disbursement of annual budget for the Energy Management Division.
Unexpected inputs and outputs	Were there any unexpected or extra inputs or outputs so far made?	n/a
Logic to attain Outputs	Will the Outputs be attained if all the planned activities were conducted	● Yes, as resource development, introduction of incentive/ disincentive schemes and awareness creation are still considered as the infrastructure necessary for materializing EE activities.
	Are the important assumptions to create Outputs still appropriate and realistic?	● Yes. There is no particular problem with regard to the important assumptions (Commitment of GOSL on energy efficiency improvement continues & large number of counterpart personnel are not transferred) to create the Outputs.

Evaluation Grid – Mid-Term Review of EEI Project

Oct 14. 2009

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Main Items	**Sub-Items**	
Impact		
Achievement Forecast for the Overall Goal	Looking at the level of achievement of the Project Purpose so far, are there prospects that the overall goal will be attained as an effect of the Project?	The target figure in the indicator has been achieved in 2007. The Project Team proposed to amend the indicator as "Commercial energy intensity is reduced to 1.8 toe/ Million-Rs. by 2017. (Base-year is 2002. It was 2.34 in 2007). There is a possibility that the effects of the Project would contribute to attain the amended target figure of indicator, as infrastructure currently being enhanced by the Project is already a contributing factor to achieve higher efficiency in energy consumption.
	Were there any disturbing factors to attain the overall goal?	n/a
Impacts created as Ripple Effects (Positive & Negative)	- policy - technical aspect - environment - socio-economy - organization - finance	● No particular impacts created so far as ripple effects. ● Yet, several programme were conducted by inspired by the Project as follows: * CDM seminar conducted by JICA Expert Team in Mar. 2009. * Presentation at Institution of Engineering Association by Deputy Director General (Strategy) in Sep. 2008 * SAARC International Conference on Energy Efficient Labeling in Oct. 2009
Logic to attain the Overall Goal	Is the Overall Goal realistic and directly related to the Project Purpose?	● Preparation of infrastructure to promote energy management programme is still considered as an essential condition to realize a society with high efficiency in energy consumption. Therefore, the Overall Goal is realistic and directly related to the Project Purpose.
	Is the important assumption to attain the Overall Goal still appropriate and realistic?	Yes. There is no particular problem with regard to the important assumption (stable economic growth) to attain the Overall Goal.

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Sustainability		
Policy and Institutional support	Does GOSL have a policy and institutional framework to maintain the effects of the Project? For example, does GOSL have a policy and institutional set-ups to implement the proposed 10 year plan for EE&C?	● Commitment and support of the senior officials of MOPE and SLSEA is a positive factor to maintain effects of the project even after the project period. ● The proposal firstly should be elaborated and acknowledged by the stakeholders. Thereafter, there is a strong possibility for the Board of Directors of SLSEA and the Secretary of MOPE would approve the plan, as energy management is a priority and urgent issue in National Policy. ● SLSEA has an adequate authorities and regulatory powers to maintain systems and schemes introduced by the effort of the Project as well as implementing 10-year plan.
Organization	Do SLSEA and partner organizations have organizational capacity to continue and expand the regulatory systems (mandatory auditing and labeling, accreditation scheme of energy managers and auditors), promotion schemes (incentive scheme, IT infrastructure and equipment bank) & awareness creation programme implemented by the project?	● Currently, SLSEA has adequate human resources to implement their tasks. The human resources of SLSEA would be sufficient in the future, too, when a number of regulations are enforced and 10-year plan is implemented, as SLSEA will play roles of manager and facilitator for promotion of energy management, while partner organizations will take part in implementation. ● As for partner organizations, role of ESCOs will become more important in the future to further promote energy management programme. Continuous human resource development of ESCOs will be necessary in this regard.
Finance	Do SLSEA and partner organizations have financial capacity to continue and expand the regulatory systems, promotion schemes & awareness creation programme implemented by the project?	● SLSEA plays a role as a facilitator in dissemination of energy management technology while partner organizations, such as SLEMA, SLSI, NERD Center, ESCOs, are undertaking their specialized tasks in promoting and implementing energy management programmes, such as training, testing, auditing and consulting services. Such a structure contributes to minimize administration cost and number of staff of SLSEA. ● The annual budget for recurrent cost for the Energy Efficient Division of SLSEA would be sufficient for the time being to cover administration cost to maintain and expand systems and schemes introduced by the Project, unless there would be a drastic reduction of the allocation. ● Annual budget for capital cost would not be sufficient at the moment and in the future, too, to expand facility for testing of appliances and expand instrument bank. SLSEA have to seek external assistance in this regard. ● 10-year plan will be an important document for SLSEA to justify the needs of the components and convince the Treasury at the time of annual budget proposals in the future. ● To implement 10-years plan, it is important to expand financial resources by introduction of "Cess" for fossil energy and establish "Sri Lanka Sustainable Energy Fund". ● Availability of an attractive and accessible finance schemes on energy management for private and public

Oct 14. 2009

Evaluation Items		Evaluation result of Mid-term Review in Oct. 2009
Sustainability		
		institutions and domestic consumers is a crucial factor to promote energy management activities at the moment and in the future, too.
Technology	Do SLSEA and partner organizations have technical capacity to continue and expand the regulatory systems, promotion schemes & awareness creation programme implemented by the project?	• SLSEA counterparts have potential to enhance their technical capacity, with a support of JICA Experts, up to a sufficient level to further disseminate energy efficient technologies and maintain the schemes and regulations introduced by the Project. Technical input to the SLSEA counterparts should be provided periodically in the future, too, to update their knowledge and skills. • Technical capacities of partner organizations, such as SLEMA and local consultant companies on EEI and IT have been improved through participating and implementing activities of the Project. Their technical capacity will be enhanced sufficiently by the end of the Project period to continue provision of training and maintain and update IT infrastructure. Technical input to these organizations should be provided periodically in the future, too, to update their knowledge and skills. • Meanwhile in-house capacities were being developed in hotel and tea sector, and National Water Supply and Drainage Board to attend Energy Management activities continuously.

Annex - 7
Project Design Matrix (PDM-1) on 2008.7.22 ver.1
Name of the Project: Project for Promoting Energy Efficiency Improvement in Sri Lanka
Project period: 3 years (2008.05.1～2011.05)
Target area: All regions of Sri Lanka
Target groups: Sustainable Energy Authority (SEA) (direct), energy service providors (ESCOs), private and public sectors, general public (in-direct)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal High efficiency in energy consumption is achieved.	1 Primary energy intensity is reduced to 500 toe/Million-SDR by 2017.	* Reports of Central Bank * Sri Lanka Energy Balance complied by SEA	* Stable economic
Project Purpose Infrastructure necessary for materializing energy efficiency activities in the country is enhanced.	1 Mandatory energy audit, monitoring and follow-up are conducted annually at least in 150 organizations in private and public sectors. 2 Sales of energy service providers (ESCOs) are increased at least by 10%. 3 All the CFLs, ballasts and fans in markets have energy efficiency labels. 4 Penetration rate of CFLs in household sector becomes at least 40%	* Annual reports of SEA * Base line and end line survey (random sample survey) * Market survey for CFL, ballast and fan	* Stable economic growth.
Outputs			
1 Necessary resources (rules and regulations, human resources, equipments and materials) for implementing SEA act are prepared.	1.1 Mandatory benchmark schemes are introduced in 5 prioritized sub-sectors (tea, garments, desiccated coconuts, hotels and commercial buildings). 1.2 6 number of energy auditors are accredited. 1.3 Accredited energy managers are appointed in 150 organizations in public and private sectors. 1.4 3 full scale and 6 consulting ESCOs are accredited. 1.5 Mandatory labeling systems are introduced for 3 prioritized appliances (CFLs, ballasts and fans).	* Annual reports of SEA * Records of Sri Lanka Standard Institute * Records of E-friends, Sustainable Energy Guarantee and Sri Lanka Energy Fund. * Reports of Sri Lanka customs.	* Commitment of the Government of Sri Lanka on energy efficiency improvement continues.
2 Incentive/ disincentive mechanizm for promoting energy efficiency is prepared.	2.1 Number of projects on energy efficiency improvement, approved for finance, is increased by 10%. (finance: finance schemes of E-friends II, Sustainable Guarantee Facilities, Sri Lanka Sustainable Energy Fund, etc.) 2.2 More than one incentive/ disincentive schemes for appliances with energy efficiency labels are introduced.		* Large number of counterpart personnel are not transferred.
3 Mass consciousness is created among general public, private and public sectors on energy efficiency improvement.	3.1 5 different types of education materials are prepared and utilized (posters, leaflets, booklets, CDs and videos). 3.2 Number of applications for the existing national energy award is increased by 10% in each year. 3.3 Awareness on use of CFL is increased.		
Activities 1.1 Develop 10 year plan for energy efficiency improvement programme. 1.2 Develop and update mandatory energy consumption benchmarks for selected industries. 1.3 Introduce accreditation schemes for energy auditors, energy managers and ESCOs. 1.4 Introduce mandatory labeling for major appliances (CFL, ballast, fan, etc.). 1.5 Develop IT infrastructure for monitoring and analysis of data 1.6 Expand SEA's instrument bank for energy auditors. 2.1 Develop/ improve finance schemes to promote energy efficiency investment (Sri Lanka Sustainable Energy Fund, E-Friends II, etc.). 2.2 Develop incentive/ disincentive schemes for major appliances (CFL, ballast, fan, etc.) 3.1 Conduct awareness creation campaigns for general public, private and public sectors.	**Inputs** Japanese Side 1. Dispatch of JICA Experts -Energy efficiency policy and administration -Energy efficiency promotion (finance and awareness creation) -Energy efficiency technology 2. Counterpart training in Japan and/or other countries 3. Machinery and Equipment (measuring and testing equipment)	Sri Lankan Side 1. Allocation of Counterpart personnel -A Project Director -A Project Manager -Others 2. Office space for JICA Experts 3. Local cost	* Appropriate amount of budget and number of staff are allocated to SEA. **Pre-conditions**

CFL= Compact fluorescent lamp Instrument bank = A scheme of SEA to rent out instruments for the use of energy audits

ANNEX 8 Project Design Matrix (revised)

Project Design Matrix (Draft of PDM-2) * Italic = addition
Name of the Project: Project for Promoting Energy Efficiency Improvem
Project period: 3 years (2008.05.1～2011.05)
Target area: All regions of Sri Lanka
Target groups: Sustainable Energy Authority (SEA) (direct), energy service providers (ESCOs), private and public sectors, general public (in-direct)

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal High efficiency in energy consumption is achieved.	1 (1) ~~Primary~~ *Commercial* energy intensity is reduced to 1.8 ~~500~~ toe/Million~~SDR~~ *Rs.* by 2017.* *Base-year is 2002. It was 2.34 in 2007 2 (2) Electricity *load factor is increased annually by 1%* ** ** it was 55% in 2007.	* Reports of Central Bank * Sri Lanka Energy Balance complied by SEA	* Stable economic growth.
Project Purpose Infrastructure necessary for materializing energy efficiency activities in the country is enhanced.	1 Mandatory energy audit, monitoring and follow-up are conducted annually at least in 150 organizations in private and public sectors. 2 (3) *Amount of investment to Energy Efficiency and Conservation is* ~~Sales of energy service providers (ESCOs) are~~ increased at least by 10%. 3 All the CFLs, ballasts and fans in markets have energy efficiency labels. 4 (4) Penetration rate*(at least one bulb per household)* of CFLs in household sector becomes *more than* ~~at least~~ 40% *in every sub-sector, namely urban, rural and estate*. 5 (5) *10 year plan for EE&C is authorized by the ministry.*	* Annual reports of SEA * Annual reports of ESCO's performance summarized by SEA * Information of banks on finance to EE&C * Base line and end line survey (random sample survey) * Market survey for CFL, ballast and fan	* Stable economic growth.
Outputs 1 Necessary resources (rules and regulations, human resources, equipments and materials) for implementing SEA act are prepared.	1.1 A mandatory *annual energy consumption reporting* ~~benchmark~~ scheme *is* ~~are~~ introduced *to industrial, commercial and public institutions, of which electricity consumption is larger than 250,000 kwh/ months.* ~~in 5 prioritized sub-sectors (tea, garments, desiccated coconuts, hotels and commercial~~ (6) (7) 1.2 *Report on "energy consumption baseline analysis" is documented and updated every year.* 1.3 6 number of energy auditors are accredited. 1.4 Accredited energy managers are appointed in 150 organizations in public and private sectors. (8) ~~1.4. 3 full scale and 6 consulting ESCOs are accredited.~~ 1.5 Mandatory labelling systems are introduced for 3 prioritized appliances (CFLs, ballasts and fans).	* Annual reports of SEA * Records of Sri Lanka Standard Institute * Records of E-friends, Sustainable Energy Guarantee and Sri Lanka Energy Fund * Reports of Sri Lanka customs.	* Commitment of the Government of Sri Lanka on energy efficiency improvement continues.
2 Incentive/ disincentive mechanism for promoting energy efficiency is prepared.	2.1 Number of projects on energy efficiency improvement, approved for finance, is increased by 10%. (finance: finance schemes of E-friends II, Sustainable Guarantee Facilities, Sri Lanka Sustainable Energy Fund, etc.) 2.2 More than one incentive/ disincentive schemes for appliances with energy efficiency labels are		* Large number of counterpart personnel are not transferred.
3 Mass consciousness is created among general public, private and public sectors on energy efficiency improvement.	3.1 5 different types of education materials are prepared and utilized (posters, leaflets, booklets, CDs and videos). 3.2 Number of applications for the existing national energy award is increased by 10% in each year. (9) 3.3 ~~Awareness on use of CFL is increased.~~ *Penetration rate (at least one bulb per a household) of CFLs become more than 40% in every sub-sector, namely urban, rural and estate.*		
Activities 1.1 Develop 10 year plan for energy efficiency improvement programme. 1.2 *Conduct* ~~Develop~~ and update ~~mandatory~~ energy *consumption baseline* (10) *analysis* ~~benchmarks~~ for selected industries. 1.3 *Introduce mandatory annual energy consumption reporting scheme to* (11) *large (to be defined) industries and commercial consumers.* 1.4 Introduce accreditation schemes for energy auditors *and* energy (12) managers. ~~and ESCOs.~~ 1.5 Introduce mandatory labelling for major appliances (CFL, ballast, fan, 1.6 Develop IT infrastructure for monitoring and analysis of data 1.7 Expand SEA's instrument bank for energy auditors. 2.1 Develop/ improve finance schemes to promote energy efficiency investment (Sri Lanka Sustainable Energy Fund, E-Friends II, etc.). 2.2 Develop incentive/ disincentive schemes *and pilot projects to promote* (13) *high efficient* CFLs. 3.1 Conduct awareness creation campaigns for general public, private and public sectors.	**Inputs** Japanese Side 1. Dispatch of JICA Experts -Energy efficiency policy and administration -Energy efficiency promotion (finance and awareness creation) -Energy efficiency technology 2. Counterpart training in Japan and/or other countries 3. Machinery and Equipment (measuring and testing equipment)	Sri Lankan Side 1. Allocation of Counterpart personnel -A Project Director -A Project Manager -Others 2. Office space for JICA Experts 3. Local cost	* Appropriate amount of budget and number of staff are allocated to SEA. **Pre-conditions**

CFL= Compact fluorescent lamp Instrument bank = A scheme of SEA to rent out instruments for the use of energy audits

ANNEX 9 List of Abbreviations and Acronyms

CDM	Clean Development Mechanism
CEB	Ceylon Electricity Board
CFLs	Compact fluorescent lamps
E-Friends I	Environment Friendly Solution Fund Project I
E-Friends II	Environment Friendly Solution Fund Project II
EE&C	Energy efficiency and conservation
ERD	Department of External Resources
ESCOs	Energy Service Companies
GOJ	Government of Japan
GOSL	Government of Sri Lanka
JCC	Joint Coordination Committee
JICA	Japan International Cooperation Agency
LECO	Lanka Electricity Company
NOENR	Ministry of Environment and Natural Resources
MOPE	Ministry of Power and Energy
NARD Centre	National Research and Development Centre????
ODA	Official Development Assistance
PDM	Project Design Matrix
SAARC	South Asian Association for Regional Cooperation
SLSEA	Sri Lanka Sustainable Energy Authority
SLEMA	Sri Lanka Energy Managers' Association
SLSI	Sri Lanka Standard Institution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