

# **Phasing-Out of Incandescent Lamps and Energy Saving Lamps Promotion Project (PIESLAMP)**

## **TERMINAL EVALUATION**

**Submitted By**

**Umm e Zia**

International Evaluator

**Liu Caifeng**

National Evaluator

**Xu Shaoshan**

National Evaluator

November – December 2014

# Phasing-Out of Incandescent Lamps and Energy Saving Lamps Promotion Project (PIESLAMP)

## Terminal Evaluation

| PROJECT DATA   |   |                           |
|--|---|---------------------------|
| <b>Title of UNDP Supported GEF Financed Project</b>        | <b>Phasing-out of Incandescent Lamps and Energy Saving Lamps Promotion Project (PIESLAMP)</b>   |                           |
| <b>UNDP and GEF Project ID Numbers.</b>                    | UNDP Project ID: 3672<br>GEF Project ID: 4166   |                           |
| <b>Evaluation Time Frame and Date of Evaluation Report</b> | <b>Content</b>  | <b>Time</b>               |
|  | Meeting at the PMO  | Nov 17 2014               |
|  | Ongoing data gathering and interviews as requested by the TE team   | Nov 17-18, 2014           |
|  | PPT Presentation of initial TE findings and recommendations   | Nov. 27 UNDP China Office |
|  | Validation of financial and other reporting information, additional analysis  | 18-25 November 2014       |
|  | Submission of Draft TE  | 17 December 2014          |
| <b>Region and Countries included in the Project</b>        | Region: Asia Pacific<br>Country: China  |                           |
| <b>GEF Operational Program/Strategic Program</b>           | GEF Strategic Program No. 1 , Promoting Energy Efficiency in Residential and Commercial Buildings (SP-1)<br>GEF Operational Program: 5: Removal of barriers to energy efficiency and energy conservation. |                           |
| <b>Implementing Partner and Other Project Partners</b>     | UNDP China, NDRC, ERI, NECC,  |                           |
| <b>Date of Inception Workshop</b>                          | 13 October 2009   |                           |
| <b>Date of First Disbursement</b>                          | November 2009   |                           |
| <b>Original Closing Date</b>                               | 25 September 2012   |                           |
| <b>Revised Closing Date</b>                                | 31 December 2013, later revised to 31 December 2014   |                           |
| <b>Evaluation Team Members</b>                             | Ms. Umm e Zia (International Evaluator)<br>Mr. Liu Caifeng (National Evaluator)<br>Mr. Xu Shaoshan (National Evaluator)   |                           |

# Acknowledgements

---

This Terminal Evaluation report sets out findings, conclusions, lessons learnt and recommendations for the **Phasing-Out of Incandescent Lamps and Energy Saving Lamps Promotion Project (PILESLAMP)**. The report is developed in compliance with the terms of reference for the assignment. The conclusions and recommendations set out in the following pages are solely those of the evaluators and are not binding on the project management and sponsors.

The authors would like to thank all who assisted in the Terminal Evaluation, particularly the PMU and UNDP China for providing technical and logistic support, and all the stakeholders who consented to be interviewed.

# Acronyms and Abbreviations

---

|          |   |
|----------|---|
| AWP      | Annual Work Plan  |
| C&R      | Commercial and Residential  |
| CALI     | China Association for Lighting Industry                           |
| CFLs     | Compact Fluorescent Lamps   |
| CNIS     | China National Institute of Standards                             |
| CSC      | China Standards Certification Center                              |
| CTA      | Chief Technical Advisor   |
| E.E      | Energy Efficient  |
| EMCA     | Energy Management Company Association                             |
| ERI      | Energy Research Institute   |
| ESLs     | Energy Saving Lamps   |
| FGD      | Focus Group Discussion  |
| GDP      | Gross Domestic Product  |
| GEF      | Global Environment Facilities                                     |
| GOC      | Government of China   |
| IL       | Incandescent Lamps  |
| KII      | Key Informant Interview   |
| M&E      | Monitoring and Evaluation   |
| MOF      | Ministry of Finance   |
| MTR      | Mid Term Review   |
| NDRC     | National Development and Reform Commission                        |
| NECC     | National Energy Conservation Centre                               |
| NEX      | Nationally Executed   |
| NLTC     | National Lighting Test Center                                     |
| PIESLAMP | Phase-out of Incandescent Lamps and Energy Saving Lamps Promotion |
| PMO      | Project Management Office   |
| PSC      | Project Steering Committee  |
| RTA      | Regional Technical Advisor  |
| SSL      | Solid State Lighting  |
| TE       | Terminal Evaluation   |
| ToRs     | Term of References  |
| UNDAF    | United Nations Development Assistance Framework                   |
| UNDP     | United Nations Development Programmes                             |
| UNEP     | United Nations Environment Programme                              |

# Table of Contents

---

|  |    |
|--|----|
| 1. INTRODUCTION-----   | 12 |
| 1.1. Purpose of the Evaluation -----   | 12 |
| 1.2. Scope and Methodology -----   | 12 |
| 1.3. Structure of the Evaluation Report -----  | 13 |
| 2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT -----   | 15 |
| 2.1. Project Start and Duration -----  | 16 |
| 2.2. Problems that the Project Sought to Address -----   | 17 |
| 2.3. Immediate and Development Objectives of the Project -----   | 17 |
| 2.4. Main Stakeholders -----   | 17 |
| 2.5. Expected Results -----  | 19 |
| 3. FINDINGS-----   | 21 |
| 3.1. Project Formulation & Design-----   | 21 |
| 3.1.1. Stakeholder Participation in Project Design -----   | 22 |
| 3.1.2. Management Arrangements (Project Design) -----  | 22 |
| 3.1.3. Replication Approach -----  | 23 |
| 3.1.4. Assumptions and Risks-----  | 23 |
| 3.1.5. UNDP Comparative Advantage -----  | 24 |
| 3.2. Project Implementation -----  | 24 |
| 3.2.1. UNDP and Implementing Partner Implementation/Execution (*) Coordination, and<br>Operational issues----- | 25 |
| 3.2.2. Adaptive Management -----   | 28 |
| 3.2.3. Partnership Arrangements -----  | 28 |
| 3.2.4. Monitoring and Evaluation (M&E)-----  | 30 |
| 3.2.5. Project Finance -----   | 32 |
| 3.3. Project Results -----   | 37 |
| 3.3.1. Overall Results (Attainment of Objectives)-----   | 37 |
| 3.3.2. Relevance -----   | 43 |

|        |  |    |
|--------|--|----|
| 3.3.3. | Effectiveness and Efficiency           | 44 |
| 3.3.4. | Country Ownership                      | 45 |
| 3.3.5. | Mainstreaming and Sustainability*      | 45 |
| 3.3.6. | Impact                                 | 46 |
| 4.     | CONCLUSIONS, RECOMMENDATIONS & LESSONS | 48 |
| 4.1.   | Conclusion                             | 48 |
| 4.2.   | Lessons Learned                        | 48 |
| 4.3.   | Recommendations                        | 49 |

# List of Tables

---

|  |    |
|--|----|
| Table 1: Project Start and Its Duration-----   | 16 |
| Table 2: Stakeholders and their Role in the Project -----                                      | 18 |
| Table 3: Year-Wise Distribution of Sub-Contracts -----   | 29 |
| Table 4: PILESLAMP Total Allocated Resources-----  | 32 |
| Table 5: PILESLAMP GEF-Grant Fund Annual Delivery Rate -----                                   | 32 |
| Table 6: Level of GEF-Grant Expenditure per Component since the Start of the Project -----     | 33 |
| Table 7: Committed vs. Actual Co-financing from Different Sources -----                        | 34 |
| Table 8: Realization of Committed Co-Finance from Government of China (Per Component)-----     | 34 |
| Table 9: Realization of Committed Co-Finance from the Private Sector (Per Component)-----      | 35 |
| Table 10: Realization of Committed Co-financing Inputs from other Partners -----               | 36 |
| Table 11: Summary of the Realization of Committed Co-financing Inputs from all Sources -----   | 37 |
| Table 12: Component 1 – Achievements against Targets-----                                      | 38 |
| Table 13: Component 2 – Achievements against Targets-----                                      | 40 |
| Table 14: Component 3 – Achievements against Targets-----                                      | 42 |
| Table 15: Summary of Ratings of Accomplishment in achieving Various Components’ Outcomes ----- | 43 |
| Table 16: CO2 Reductions (Mtons Realized in Each Year) -----                                   | 46 |
| Table 17: CO2 Reductions (Mtons Realized Cumulatively) -----                                   | 47 |
| Table 18: Electricity Savings (GWh Realized in Each Year)-----                                 | 47 |
| Table 19: Cost Savings Realized by Consumers -----   | 47 |

# List of Annexes

---

|          |   |
|----------|---|
| Annex 01 | List of Documents Reviewed  |
| Annex 02 | Draft KII and FGD Guide Sheets  |
| Annex 03 | Detailed Mission Schedule   |
| Annex 04 | List of Stakeholders Interviewed  |
| Annex 05 | TE Report Outline   |
| Annex 06 | List of PSC Members   |
| Annex 07 | Details of Achievements at the Activity Level against the Logframe for 3 Components |
| Annex 08 | List of Research Studies  |

# Executive Summary

| PROJECT SUMMARY TABLE                               |   |                        |
|---|---|------------------------|
| <b>Goal of the Project</b>                          | The goal of PILESLAMP is the reduction in the annual growth rate of GHG emissions from the Chinese C&R sectors.   |                        |
| <b>Objective of the Project</b>                     | The project objective is the enhanced promotion and implementation of the utilization of energy saving lamps (ESLs) in China through the transformation of the local lighting products market and the phasing-out of incandescent lamp production and sale. The PILESLAMP project is expected to contribute to the reduction of GHG emissions through the transformation of the Chinese lighting market towards more energy-efficient lighting products, technologies and practices.  |                        |
| <b>Major Components and Outcomes of the Project</b> | <p>The PILESLAMP is composed of three (3) major components and their major outcomes as follows:</p> <ul style="list-style-type: none"> <li>• <b>Component 1: Lighting Industry Capacity Enhancement</b> <ul style="list-style-type: none"> <li>○ Conversion of IL manufacturers to ESL lines,</li> <li>○ Supply of high quality ESLs, and</li> <li>○ Reduction in the environmental Waste</li> </ul> </li> <li>• <b>Component 2: ESL Market Development and Product Promotion</b> <ul style="list-style-type: none"> <li>○ Awareness about ESL options and applications, especially in lower income, rural areas</li> </ul> </li> <li>• <b>Component 3: ESL Policy and Institutional Support</b> <ul style="list-style-type: none"> <li>○ Policy and institutional activities</li> <li>○ Policy proposals regarding business conversion and increasing market share of ESLs,</li> <li>○ A roadmap for IL phase-out and expanded ESL promotion.</li> </ul> </li> </ul> |                        |
| <b>Project Budget</b>                               | GEF Fund  | USD 14,000,000         |
|   | Government of China Co-Financing  | USD 27,000,000         |
|   | Private Sector Co-Financing   | USD 40,000,000         |
|   | Other Sources   | USD 3,000,000          |
|   | <b>Total Committed Funds</b>  | <b>USD 84,000</b>      |
|   | <b>Total Actual Funds Utilized</b>  | <b>USD 217,337,062</b> |

## Project Description

The objective of the PILESLAMP project is the enhanced promotion and resulting higher utilization of energy saving lamps (ESLs) in China through the transformation of the local lighting products market and the phasing-out of incandescent lamp production and sale. It is expected to contribute to the reduction of GHG emissions through the transformation of the Chinese lighting market towards more energy-efficient lighting products, technologies, and practices. The project is comprised of activities aimed at promoting the widespread adoption of energy efficient lighting products (ESLs), improving



the Chinese ESL market, and working towards the phasing-out of ILs. Moreover, the project is also in line with the GEF's global lighting program that aims to transform the global market toward efficient lighting technologies and through accelerated phase-out of inefficient lighting, thereby reducing global GHG emissions.

## Summary of Conclusion, Recommendations and Lessons

**CONCLUSION:** In conclusion, the Terminal Evaluation team has determined that the PILESLAMP design has remained highly relevant to the development context of China and the priorities of various stakeholders, including GOC, GEF, UNDP, and the private sector.

Moreover, the project has been efficiently implemented while engaging a large number of stakeholders as partners and sub-contractors. The ownership from all stakeholders has been demonstrated in exceeding committed co-financing by 290% and has led to effective implementation, resulting in over-achievement of goals and outcome-level targets. Activities with significant impact include: the development of the IL phase-out roadmap, assistance to five manufacturers for conversion from ILs to ESLs, establishment of a large ESL marketing network, and public awareness raising about EE lighting. This positive implementation environment has also led to unintended positive impact of a variety of activities.

However, ineffective annual financial planning of GEF funds due to productive collaboration between key stakeholders has resulted in a two year project delay, resulting the project to be implemented in 67% additional time. Moreover, with the rapid change in lighting technology, future projects need to focus on LED lighting.

**LESSONS LEARNED:** Based on consultations with key stakeholders and the conclusions drawn by the TE team, key lessons learnt from the PILESLAMP project design and implementation experience are as follows:

- i. The project has demonstrated that full support by Recipient country government (GOC) and cooperation between relevant ministries/departments can lead to successful projects.
- ii. Also productive engagement of the private sector can result in a multiplier effect for achieving market-related goals;
- iii. A simple and concise project document with clearly delineated roles and responsibilities and defined financial resources facilitate the implementation process;
- iv. Similarly, a good M&E system that focuses on all aspects, including co-financing and sub-contracts is key to assessing a project's progress and impacts;

- v. Efficient and effective communication and coordination arrangement are essential to project planning and implementation, such as regular meetings within PMO and with stakeholders, as well as with UNDP, NDRC, etc.;
- vi. Selection and organization of sub-contracts and delivery management is crucial for overall project performance;
- vii. Policy and standards are cost-effective tools for market transformation in China; and
- viii. Accessibility and availability in medium and small cities and rural areas can significantly increase market share of ESLs in these areas.

**RECOMMENDATIONS:** Based on its conclusions and the lessons learnt, the evaluation team recommends the following actions:

**a) Replication and Up-Scaling**

The project has made significant contributions to the promotion of EE lighting in China. To ensure sustainability, it will be important for the private and public sectors to continue collaborating and provide support to further up-scaling and replication of these activities.

**b) Documentation and Dissemination of Results:**

The project has made important progress towards the development of the EE lighting industry by undertaking research, pilots, and technology transfer, etc. Similarly, the M&E system designed and implemented by the project has worked specifically well. For future efforts and projects to build on these lessons it is important that the documents and widely disseminates its approach, processes, results, and achievements. Key recommended actions include the development of a project 'closing/exit' report, assessment of unintended positive impact, and continuation of the project website.

**c) Stakeholder Collaboration**

To ensure effective planning and implementation, it is important to have open communication lines between key stakeholders. To avoid communication problems in the future, the UNDP and PMO need communicate openly and project decisions need to be open and based on mutual trust.

## Evaluation Rating Table

| EVALUATION RATINGS             |        |   |        |
|--------------------------------|--------|---|--------|
| 1. Monitoring and Evaluation   | Rating | 2. IA& EA Execution                           | Rating |
| M&E design at entry            | HS     | Quality of UNDP Implementation                | S      |
| M&E Plan Implementation        | HS     | Quality of Execution - Executing Agency       | S      |
| Overall quality of M&E         | HS     | Overall quality of Implementation / Execution | S      |
| 3. Assessment of Outcomes      | Rating | 4. Sustainability                             | Rating |
| Relevance                      | R      | Financial resources:                          | LS     |
| Effectiveness                  | HS     | Socio-political:                              | LS     |
| Efficiency                     | S      | Institutional framework and governance:       | LS     |
| Overall Project Outcome Rating | S      | Environmental :                               | LS     |
|                                |        | Overall likelihood of sustainability          | LS     |

# 1. INTRODUCTION

## 1.1.Purpose of the Evaluation

In accordance with UNDP and GEF M&E policies and procedures, all full and medium-sized UNDP supported- GEF financed projects are required to undergo a terminal evaluation upon completion of implementation.

The **objectives of this Terminal Evaluation (TE)** seek to fulfill the following overarching objectives of the monitoring and evaluation of GEF projects:

- I. Promote accountability for the achievement of GEF objectives through the assessment of results, effectiveness, processes and performance of the partners involved in GEF activities. GEF results will be monitored and evaluated for their contribution to global environmental benefits;
- II. Promote learning, feedback and knowledge sharing on results and lessons learned among the GEF and its partners, as basis for decision-making on policies, strategies, program management, and projects and to improve knowledge and performance.

## 1.2.Scope and Methodology

The scope of the TE covers the entire UNDP/GEF-funded project and its components as well as the co-financed components of the project.

The Final Evaluation of the PILESLAMP Project was carried out at the component level and project level. During the evaluation an assessment was made of the progress towards achievement of the project outcomes and outputs, the relevance of the various project outputs, and effectiveness and efficiency of the different activities undertaken to achieve the outputs. Moreover, the inputs were analyzed by assessing the contributions made by the UNDP and its implementing partners, the appropriateness and effectiveness of the partnership strategy utilized, and sustainability of the project's outcomes and outputs.

The consultant team carried out various activities to undertake the evaluation, including literature review, development of an inception report and evaluation tools, and meetings with project stakeholders. Details of these are provided below:

### I. Development of Evaluation Tools

A detailed review of the related documents by the consultants facilitated the understanding of the various dynamics of this project. A complete list of documents reviewed during the course of the

assignment is provided in Annex 01. Based on this review, the programmatic and geographic scope of the evaluation activities as well as samples for interviews and visits was determined.

KII guide sheets developed by the consultants were utilized during the course of interviews with various stakeholders, partners, and sub-contractors, etc. In addition, FGDs/KIIs were conducted with the Project Managers and other relevant project staff. The draft KII and FGD guide sheets pertaining to the various project participants are attached in Annex 02.

The proposed evaluation methodology, developed interview tools, and schedule of evaluation were shared with the UNDP and PMO in the form of an Inception Report.

## **II. Undertaking Country Mission and Field Visits**

The International Evaluator visited China from 13 to 24 November 2014. During this time, the two National Evaluators and the International Evaluator worked together to undertake further document review, interviews, site visits, and analysis. The detailed mission schedule is presented in Annex 03.

The mission was kicked off with an introductory workshop on 14 November, attended by the evaluation team, key project stakeholders, including representatives of UNDP, NDRC, PMO, and PSC member organizations. Subsequently, during the in-country mission, interviews were held with key project stakeholders. Initially, to get an overview of the project's implementation mechanisms and associated challenges and opportunities, detailed meetings were held with the Project Management Office (PMO) staff responsible for overseeing the various Program outputs and activities. After this, key project stakeholders including UNDP, NDRC, and Sub-contractors, etc. were interviewed using the developed KII sheets. Please refer to Annex 04 for complete list of stakeholders interviewed during the TE.

## **III. Debriefing Presentation**

At the end of the mission in China, to present the findings of the TE, a de-briefing presentation was conducted by the Evaluation team on November 24 2014. The presentation was attended by the representatives of UNDP China and PILES LAMP PMO.

### **1.3. Structure of the Evaluation Report**

Led by the international evaluator, a draft report is developed according to the outline provided in Annex 05. The evidence-based report consolidates and presents an analysis of the information gathered from literature review, interviews, discussions, and site visits.

The draft report covers the criteria of relevance, effectiveness, efficiency, sustainability and impact. In addition, rating based on the obligatory rating scales is provided for (a) monitoring and evaluation (b) IA & EA execution (c) assessment of outcomes (d) sustainability.

Moreover, the draft report includes an analysis of the Project Finance and Co-finance, Mainstreaming, and Impact. To assess project finances, the project cost and funding data is analysed. Resultantly, planned and actual expenditures are presented and variances between the two is assessed and explained.

At the end of the report, Conclusions, Recommendations, and Lessons learnt from the project implementation experience are provided to inform future UNDP, GEF, and Government of China programming.

## 2. PROJECT DESCRIPTION AND DEVELOPMENT CONTEXT

The Government of China (GoC) has been undertaking Green Lighting Projects since 1996. To further strengthen the promotion of energy efficient lighting, in 2008 the National Development and Reform Commission (NDRC) and Ministry of Finance (MOF) jointly initiated an efficient lighting subsidy programme. This programme provides financial support of 50% for efficient lighting for household users and 30% for industrial and commercial users.

In response to global climate change and in recognition of a number of phasing-out actions beginning around the world, NDRC, the United Nations Development Programme (UNDP) and the Global Environment Facilities (GEF) agreed to co-operate to enable the implementation of the PILESLAMP project. Under the GoC's Green Lighting Program, PILESLAMP is the third in a series of UNDP/GEF-supported projects in efficient lighting systems.

This project directly builds on the earlier UNDP/GEF supported Green Lights Project which was completed in 2005. This previous project, officially known as "Barrier Removal for Efficient Lighting Products and Systems in China", aimed to improve the quality of Chinese efficient lighting products and stimulate the demand for those products both nationally and internationally.

The primary context of the *Phasing-out of Incandescent Lamps and Energy Saving Lamps Promotion (PILESLAMP)* project can be encapsulated in two broad themes<sup>1</sup>:

- 1) **China's domestic drive for sustainable development:** Disassociation of growth in energy consumption from the growth in GDP has been a key element of each of the last three five-year-plans published and implemented by the Chinese Government. As approximately 13% of China's electricity consumption is used for lighting, the management of this lighting consumption is a critical plank in this move to more sustainable development within China.

Further, not only does a move to more energy efficient lighting improve the overall sustainability of the economy, but typically the adoption of more efficient lighting products also leads to substantial cost savings to the consumer. Thus, a movement to more efficient lighting supports other Chinese government efforts to ease rural poverty and increase the competitiveness of industry.

- 2) **China's role as the world's dominant supplier of lighting products:** China is a leading manufacturer of efficient lighting, not just for the domestic market, but globally. Chinese industry supplies approximately 80% of the Compact Fluorescent Lamps (CFLs) used throughout

---

<sup>1</sup> PILESLAMP Annual Progress Report (APR) 2013

the world, and is an increasingly prominent supplier in the new global market for Solid State Lighting (SSL). Hence the lighting industry has significant economic and social significance through the employment of large numbers of people and the generation of over USD5 billion in export earnings.

However, until recently, China also produced in excess of 4 billion inefficient Incandescent lamps each year. Given the Chinese Government's commitment to join the international trend to completely phase-out inefficient lighting, the successful transition of these manufacturers of inefficient lighting has important economic outcomes for the country, but also significant social impact in terms of employment levels and export income.

Within the context of the Millennium Development Goals, and beyond the obvious major contribution being made to environmental sustainability (Goal 7) within China and beyond, the PILES LAMP project is also contributing to empowerment of women (Goal 3) and reducing poverty (Goal 1), albeit to a lesser extent.

## 2.1. Project Start and Duration

The project work started in October 2009 when the Inception Workshop was held. After which, project start-up activities such as organization of the Project Steering Committee, Project Management Office (PMO) and other initial work related to sub-contracting procedures and identification of proponents were accomplished in the last quarter of 2009. The date of first disbursement of funds was November 2009. Thus, Year 1 is reckoned to start basically on January 1, 2010 and therefore, the year 2010 corresponds to Year 1 of the project. Being a three-year project, the planned closing date was December 31, 2012. However, as explained in subsequent sections, due to issues with planning, the project closure has been delayed by two years, to 31 December 2014.

**Table 1: Project Start and Its Duration**

| 2009           | 2010                                   |              |    |    | 2011           |              |    |    | 2012           |    |    |              | 2013   |       |    |    | 2014   |    |       |    |  |
|----------------|--|--------------|----|----|----------------|--------------|----|----|----------------|----|----|--------------|--------|-------|----|----|--------|----|-------|----|--|
| Q4             | Q1                                     | Q2           | Q3 | Q4 | Q1             | Q2           | Q3 | Q4 | Q1             | Q2 | Q3 | Q4           | Q1     | Q2    | Q3 | Q4 | Q1     | Q2 | Q3    | Q4 |  |
| START UP       | Year 1                                 |              |    |    | Year 2         |              |    |    | Year 3         |    |    |              | Year 4 |       |    |    | Year 5 |    |       |    |  |
| PSC 1<br>Sep09 | PSC 2<br>Jan10                         |              |    |    | PSC 3<br>Jan11 |              |    |    | PSC 4<br>Jan12 |    |    |              |        | PSC 5 |    |    |        |    | PSC 6 |    |  |
| APR/PIR 2010   |  | APR/PIR 2011 |    |    |                | APR/PIR 2012 |    |    |                |    |    | APR/PIR 2013 |        |       |    |    |        |    |       |    |  |
| START UP       | Original Project Duration (3 yrs)<br>> |              |    |    |                |              |    |    |                |    |    |              |        |       |    |    |        |    |       |    |  |



## **2.2.Problems that the Project Sought to Address**

Major problems that the project sought to address include the following:

- Inadequate ability to realize the transformation by the enterprises of incandescent lamps;
- Lack of perfect quality control and supervision system for energy saving lamps;
- Weakness of controlling the pollutants generated when produce and reclaim the lamps; and
- Absence of effective mechanism to be used to promote energy saving lamps in small-medium sized cities and the rural areas.

## **2.3.Immediate and Development Objectives of the Project**

The project has aimed to achieve the objective set out in the GEF Strategic Program No. 1, which is on Promoting Energy Efficiency in Residential and Commercial Buildings (SP-1).

The goal of PILESLAMP project is the reduction in the annual growth rate of GHG emissions from the Chinese commercial and residential (C&R) sectors. The project objective is the enhanced promotion and implementation of the utilization of energy saving lamps (ESLs) in China through the transformation of the local lighting products market and the phasing-out of incandescent lamp production and sale. It is expected to contribute to the reduction of GHG emissions through the transformation of the Chinese lighting market towards more energy-efficient lighting products, technologies and practices.

The Project aims to reduce the number of IL manufacturers and shift production capacity to ESLs, stimulate sustainable demand for ESLs through a variety of market development activities, and look into the efficiency improvements through institutional and policy levers that will phase out IL manufacturing.

The characteristics of the Baseline and Alternative Scenarios and the net project impact in terms of electricity savings (GWh/year) and CO<sub>2</sub> reductions (Mtons CO<sub>2</sub> per year, and cumulative) outlined in detail in the Project Document describe the immediate and development goals of the Project through the widespread application of energy saving lamps and EE lighting systems in the Chinese commercial and residential sectors.

## **2.4.Main Stakeholders**

In general, the stakeholders of the Project encompass organizations and groups involved in the local lighting industry, raw materials supply, supply chain and market demand and economy and social issues of the phase out of the manufacture and sales of ILs. The mandates of these stakeholders are

directly or indirectly linked to the impacts of IL phase out and ESL promotion on the lighting industry and the users of lighting products in the country.

In particular, the Project's main stakeholders are shown below:

**Table 2: Stakeholders and their Role in the Project**

| <b>Stakeholder</b>                                       | <b>Role in the Project</b>  |
|--|---|
| <b>National Development and Reform council (NDRC)</b>    | Overall management of the project development and implementation activities   |
| <b>National Energy Conservation Center (NECC)</b>        | Host of the project and overseeing of the project administration and implementation activities.   |
| <b>Energy Research Institute (ERI)</b>                   | Coordination of project development   |
| <b>(China Standards Certification Center) CSC</b>        | Involved in the project development activities, implementation of ESL market development and in the promotional activities of ESL products  |
| <b>China Association of the Lighting Industry (CALI)</b> | Involved in project development activities and coordination of the implementation of the lighting industry capacity enhancement activities  |
| <b>National Lighting Test Center (NLTC)</b>              | Involved in project development activities and in the implementation of lighting industry capacity enhancement activities   |
| <b>China National Institute of Standards (CNIS)</b>      | Involved in project development activities and in the implementation of lighting industry capacity enhancement activities   |
| <b>Lighting Product Manufacturers</b>                    | Involved in the stakeholder consultation processes during the project development stage and in the demonstration activities, and in the consultations regarding ESL policy making and regulatory framework development activities |
| <b>Energy Management Company Association (EMCA)</b>      | Expected active involvement in ESL market promotion activities  |
| <b>China Academy of Lighting</b>                         | Involved in the technical capacity development activities   |
| <b>China Energy Conservation Association</b>             | Involved in the technical capacity development activities   |
| <b>Local Governments</b>                                 | Supported the development and implementation of PILESAMP project activities within their constituency and areas   |

## 2.5.Expected Results

The PILESLAMP project has aimed to enhance the use of efficient lighting in China through assisting manufacturers to convert to the production of efficient lighting from incandescent lamp manufacture; stimulation of market demand through improved promotional and fiscal stimulus particularly targeted at rural areas; and the development of roadmap that will ultimately lead to the phasing-out incandescent lamps within China. Considering that China is a major producer and exporter of lighting systems, the results expected at the national level will impact in the global level as well.

Project activities alone are expected to directly save 4 billion kWh of electricity and reduce CO<sub>2</sub> emissions by 4.4 million tons. The overall objective of the project is to achieve cumulative electricity saving of 160-216 billion kWh, with a related reduction in CO<sub>2</sub> emissions of 175-237 million tons, in the 10 years after the end of the project.

The significance of implementing the PILESLAMP project is manifested in many aspects which are as follows:

- Firstly, the conversion of incandescent lamps enterprises has meant the urgently required adjustment of the lighting industry's structure.
- Secondly, the project implementation has facilitated energy conservation and reduction of GHG emission, as well as the realization of the two binding indicators which were regulated in the 11th five-year plan, namely, 20% reduction for unit GDP energy consumption and 10% reduction for discharge amount of key pollutants.
- Thirdly, the project implementation is one of the ways to reply to the global climate changes.
- Fourthly, the project has led to the lighting industry adapting to the development of green economy, low carbon economy, and cyclic economy.

In particular, a number of outcomes resulting from full implementation of project activities and achievement of outputs were expected. These include:

- Increased volume of investments in energy saving lamp manufacturing and conversion of incandescent lamp production lines to energy saving lamps;
- Successful business transformation of incandescent lamp manufacturers to energy saving lamp producers;
- Improved availability and accessibility of energy saving lamps in the domestic market;
- Improved quality of locally manufactured energy saving lamp;
- Reduced hazardous waste pollution from energy saving lamp production and disposal;
- Improved capacity of the energy service institutes and market partners to promote energy saving lamps country widely;

- Expanded marketing channels for energy saving lamps in large/medium size cities and big towns;
- Significant improvement in the sales of energy saving lamps and reduction in the sales of incandescent lamps in the rural areas (small towns & villages);
- Improved public awareness on the benefits and application of energy saving lamps, especially in the rural areas;
- Phasing out incandescent lamps and promote energy saving lamps in China.

### 3. FINDINGS

Detailed findings of the TE evaluation are presented in this section, and include an assessment of the PILESLAMP Project Formulation and Design, Project Implementation Approach and modality, and Project Results.

The goal of the PILESLAMP project is the reduction in the annual growth rate of GHG emissions from the Chinese C&R sectors. The Project intends to achieve this goal through the transformation of the Chinese lighting market towards more energy-efficient lighting products, technologies and practices.

Specifically, the project proposed to reduce carbon emissions by an estimated 4.4 million metric tons (Mtons) per year (cumulative total of 5 Mtons) by end of the project, and five years after the project end, carbon emissions were projected to be around 17.3 – 22.9 Mtons lower each year (cumulative total of about 80.3 – 90.0 Mtons), or a reduction of about 2-3% in annual emissions compared to the estimated total 2008 emissions in China.

The project is comprised of the following three major components consisting of corresponding activities designed to achieve the project objectives.

**Component 1: Lighting Industry Capacity Enhancement** – This component involves supporting the conversion of IL manufacturers to ESL lines, activities to improve the supply of high quality ESLs, and reduction in the environmental waste in production and disposal of ESLs.

**Component 2: ESL Market Development and Product Promotion** – This component comprises of activities to improve awareness about ESL options and applications, especially in lower income, rural areas.

**Component 3: ESL Policy and Institutional Support** – This component supports policy and institutional activities that lock in the progress made through the other two components, including policy proposals regarding IL manufacturers business conversion and increasing market share of ESLs, along with a roadmap for IL phase-out and expanded ESL promotion.

#### 3.1. Project Formulation & Design

The PILESLAMP project was prepared by an expert team of international and national consultants following the guidelines for GEF-UNDP project formulation. The project was designed based on the feedback and lessons learned from the two earlier Green Lighting Projects supported by UNDP and GEF and the experiences of the GOC's 'China Green Lighting Initiative' implemented since the mid 1990's. Moreover, the design was informed by UNDP and GEF's experience of efficient lighting and climate

change projects implemented in other parts of the world. This feedback coupled with comprehensive baseline research provided a solid foundation for the planned project activities.

The evaluation team concluded that the project design was simple, comprehensive, appropriately flexible, in accordance with the implementation context, and highly responsive to the issues that the project sought to address. The project's logical framework was detailed, cohesive, and remained relevant and applicable during the course of the project implementation<sup>2</sup>. Moreover, the logframe indicators were SMART and the activities under the three different components were cost-effective, coherent, replicable, and sustainable.

In addition, specific GEF support for incremental activities and co-financing from the various stakeholders, including the GOC and private sector was specified in detail. Similarly, the implementation arrangements and responsibilities of the various stakeholders were outlined clearly in the project document. The project design has also provided a good mix of policy, advocacy, and market-led initiatives to achieve its goals and various objectives. In addition, the risks to various project components were explored in detail and mitigation strategies were provided accordingly.

The following paragraphs provide a detailed analysis of the project design:

### **3.1.1. Stakeholder Participation in Project Design**

The evaluation team found that the project was designed using a fact-based and participative approach. Stakeholders at various levels were fully consulted at the time of project formulation, and stakeholders' financial commitments and buy-in was obtained at the design stage.

Key stakeholders such as GoC agencies and institutes, industry associations, research bodies, other relevant development projects<sup>3</sup>, test labs, etc. were consulted and their experiences and recommendations were integrated into the project design and logical framework. This way, mutual trust and a sense of ownership has been inculcated in the project design from the very onset. An evidence of this are the letters of co-financing commitments received at the project design stage from various public and private stakeholders.

### **3.1.2. Management Arrangements (Project Design)**

PILESLAMP was designed to be a Nationally-Executed (NEX) by the Chinese Government. Key management arrangements outlined in the design included the role of NDRC as the Implementing

---

<sup>2</sup> The only exception to this were Activity 2.5 – financing support. This is discussed in further detail in the section on Adaptive Management.

<sup>3</sup>E.g. IFC, USAID, UNDP, etc.

Partner (or Executing Agency), the NECC as the Designated Implementing Partner, a PMO responsible for day to day management of the project activities, and CICETE responsible for financial management services. In addition, the design called for the establishment of a Project Steering Committee (PSC) with representation from all key stakeholders.

Moreover, the project document presented a detailed stakeholder involvement plan while specifying the role of each stakeholder. Similarly, an indicative list of partner categories has been outlined in the partnership strategy and linkages between PILESLAMP and other related interventions in the Chinese E.E. sector have been encouraged.

The evaluation team concluded that the project design provided a cost-effective approach, while incorporating inter-agency and inter-stakeholder collaboration and oversight at various levels of management. Moreover, the roles and responsibilities of the various stakeholders involved in the project's management has been clearly defined in the project design document.

### **3.1.3. Replication Approach**

Replication has been indoctrinated in the project design. Widespread and quick replication and uptake are inherent in the concept of efficient lighting. The project design further facilitated this advantage by including stakeholders that have the capacity for and crucial stake in promotion of E.E. lighting. Key examples in this regard include working with the NDRC, a GOC agency involved in the development and implementation of industry and energy policy as Implementing Partner (and Executing Agency); and partnership with CALI, a representative association of the Chinese lighting industry, the China Standard Certification Center (CSC), and National Lighting Testing Center (NLTC), etc.

Further, a number of project activities outlined in the logframe are specifically aimed at technology transfer and demonstration to enable replication. Some such key activities include the development of a roadmap and ESL conversion policy, conversion support to IL manufacturers, support to testing laboratories in ESL technology and related hazardous substances, establishment of an ESL promotion network, demonstration pilots in ESL installment or retrofitting, educational and awareness raising activities, promotion and establishment of ESL marketing channels. Moreover, the design planned for the development of various documents, including market studies, documentation of pilots, E.E. standards, and guidelines, etc.

### **3.1.4. Assumptions and Risks**

The project design is cognizant of the major potential risks associated with implementation of the three components, including lack of interest or financing on behalf of the manufacturers, difficulty in reaching low-income groups, ESL promotion activities having only a short term impact, and absence of policy implementation. Accordingly, practical mitigation actions were listed for each of these risks, e.g.

review of project implementation strategy including target review, discussion with stakeholders, and mobilization of additional institutional support.

The design also stipulated for the constant monitoring and revision of these risks in accordance with the implementation realities during key stages, e.g. a revision at the inception stage as well as at the time of submission of Annual Work Plans.

### 3.1.5. UNDP Comparative Advantage

The PILESLMAP project is in line with the United Nations Development Assistance Framework (UNDAF) and Country Assistance Program for China. The UNDP has abundant experience of implementing GEF E.E. projects in China, such as BRESL, EUEEP, and the 2<sup>nd</sup> China Green Lighting Project, etc. Similarly, the UNDP regional office has provided technical support to numerous E.E. and Climate Change projects in various countries across the region. This cumulative experience enabled the UNDP to provide technical support to the project formulation and input into the development of the logical framework, recruitment of international experts for the project formulation, and identification of key stakeholders, etc.

Moreover, based on this prior experience, the UNDP provided guidance for establishment of institutional coordination mechanisms to leverage the project activities through collaboration between public and private sectors.

In conclusion, the evaluation team found the process of project formulation and the project design to be **satisfactory**.

## 3.2. Project Implementation

The original project duration was three years, with an expected kick off date in the second Quarter of 2009 and closure in September 2012. The Inception Workshop was held in October 2009 followed by start-up activities such as organization of the PSC and PMO. The first disbursement of funds to the project was made in November 2009 and activities were initiated in January 2010. Hence, considering the three year planned duration, the project was to be implemented from January 2010 to December 2012. However, due to planning issues in 2011 and 2013, the closure was delayed to December 2014.

This sub-section provides an overview and assessment of the project implementation, including management arrangements, partnership arrangements, adaptive management, finance, M&E, and partner collaboration on execution.



### 3.2.1. UNDP and Implementing Partner Implementation/Execution (\*) Coordination, and Operational issues

The various stakeholders engaged in coordinated management of PILESLAMP include the Project Steering Committee (PSC), NDRC, ERI (2009 to 2011), NECC (2011 to 2014), and CICETE. The management structure of the PILESLAMP project is shown below:

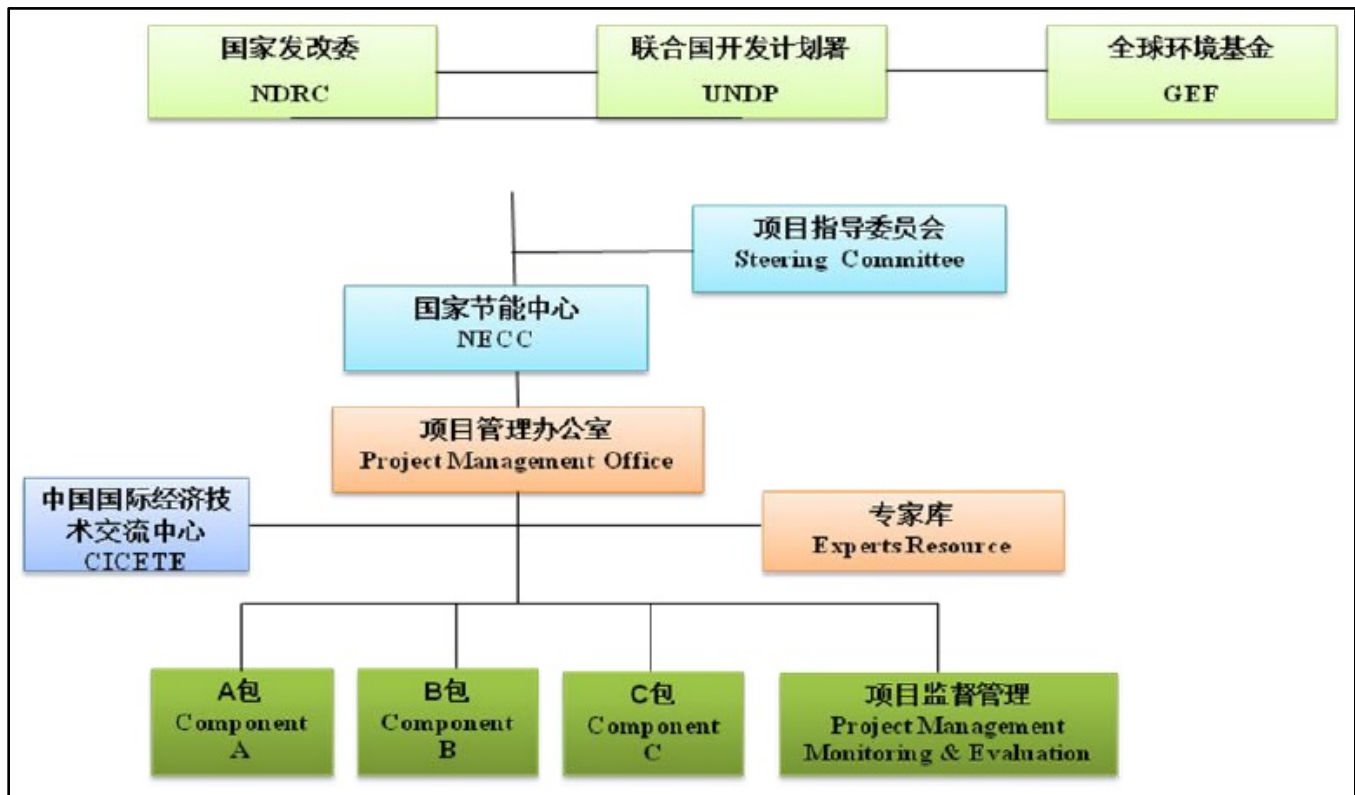


Figure 1: Project Management Structure of the PILESLAMP

The implementation and coordination role played by the various stakeholders is detailed below:

- i. **NDRC:** The NDRC has contributed to project management as the Implementing Partner (or Executing Agency). In this role, the NDRC has provided a National Project Director (NPD) who has been in charge of overall responsibilities of achievement of the project objectives, and planning, coordination, administration and financial management of the project. The NDRC is a GOC agency involved in the development and implementation of industry and energy policy. Designating NDRC as the Implementing Partner has given impetus to the policy-related activities of the project and has also ensured coordination between various relevant actors in the Chinese lighting industry.
- ii. **UNDP:** UNDP China and the UNDP-GEF Regional Technical Advisor for Climate Change in the Asia-Pacific region have provided GEF oversight. In this capacity, UNDP China has been

responsible for overall M&E, organizing project reviews, providing support in the recruitment of international consultants and technical experts, approving AWP's and budgets, and providing feedback to ensure that all reporting is carried out in line with standard UNDP-GEF procedures. The UNDP China office has persistently played its oversight role and has also been a member of the PSC. Similarly, the UNDP-GEF Regional Advisor has provided ongoing technical support and guidance to the project.

**iii. Project Steering Committee (PSC):** A PSC was established at the onset of the project and comprised of 13 representatives from key stakeholders, including NDRC, MOF, PMO, UNDP, and GEF. The PSC has met once a year since the project inception and has convened a total of six times. A list of the PSC members is provided in Annex 06. The PSC has contributed to the implementation as an advisory committee and provided guidance to project planning.

The PSC is comprised of highly relevant stakeholders in the lighting industry whose views and experiences contributed to the project design. As the goals and objectives of the PILES LAMP project are aligned with their own organizational priorities, these stakeholders have a direct interest in the success of the project. Moreover, due to their exclusive involvement in the lighting industry, the member organizations have been well placed to guide the project planning and providing advice on prioritizing planned activities in relation to the ongoing context policy and market context, e.g. the shift in focus on LED technology.

**iv. ERI and NECC:** At the start of the project, Energy Research Institute (ERI) of the NDRC was the Designated Implementing Partner (or Designated Implementing Agency). The Designated Implementing Partners has been responsible for supporting NDRC and UNDP-China in managing the project, hosting the Project Management Office (PMO), and assigning a management team from ERI to assist in the project implementation. However, in 2011, this responsibility was shifted to the National Energy Conservation Center (NECC). The PMO is headed by a Director and assisted by a Deputy Director, a team of three part-time technical experts and a part-time CTA, and three Project Managers, one responsible for each component. Project activities have been implemented by 145 sub-contractors engaged by the PMO. A service organization, CICETE, designated by NDRC and MOF has been providing financial management services to PILES LAMP.

**v. Project Management Office (PMO):** The PMO working first under the ERI and later under the NECC has performed its duties diligently by ensuring effective implementation, M&E, and stakeholder collaboration. As the NDRC is well positioned to manage E.E. projects, the placement of the PMO within an agency of the NDRC (ERI and NECC) has also leveraged the performance of the PMO.

The above mentioned entities worked effectively and efficiently to implement and monitor the project. However, on two occasions ineffective planning has led to extensive implementation delays, thereby delaying the project closure by two years, i.e. from December 2012 to December 2014.

The first major delay was caused by the transfer of PMO from ERI to NECC. The reason for this shift was the higher relevance of the NECC mandate to the project objectives. However, NECC was a newly formed institution at the time of project design and did not have the capacity to take on the project. Therefore, once the NECC was somewhat established by 2011, the NDRC prompted for the project to be moved from ERI. However, the transfer was not smooth mostly due to issues of inter-agency collaboration and the process took around seven months. Also, once the project was transferred, there was a delay of three months in the approval of the 2012 AWP, as the UNDP could not approve the devised AWP due to a significantly low delivery rate in 2011<sup>4</sup>. Hence, this additional delay was caused due to a lack of a mutual understanding of UNDP-GEF policies. In total, the project was set back by nine to ten months. The delay mostly affected hiring of new sub-contractors, whereas those already engaged continued to perform their duties according to their TORs. Moreover, the MTR was also delayed by a year and took place in mid-2012. To make up for the lost time, upon the recommendation of the MTR, the project was extended until December 2013.

However, the project faced a similar planning lapse again in 2013. Firstly, the AWP for 2013 was not submitted to the UNDP until May 2013, whereas the earlier AWP had been submitted no later than February of each year. Secondly, there was difference of opinion between UNDP and PMO on some activities contained in the AWP as well as the financial planning of activities, as the AWP did not accurately reflect the delayed submission. These issues were not resolved until September 2013 and the funds were finally credited into the PILESLAMP account in October 2013. Consequently, in a meeting held in September 2013 between the UNDP Resident Representative Office and the China National Project Office, the project closure was postponed to 31 December 2014. Similar to the past situation, the delay mostly affected award of new sub-contracts, while existing contractors continued to deliver on their activities.

Based on the above, the evaluation team concludes that the overall project management structure and arrangements have been in line with UNDP-GEF guidelines and have facilitated an efficient, participatory, and consultative approach to implementation and monitoring of project results. However, the project implementation has suffered from ineffective annual planning, and the situation has been further exacerbated by want of productive coordination between key stakeholders.

---

<sup>4</sup>According to UNDP-GEF policies, budget levels are determined based on the project delivery rate in the previous year.

Therefore, the evaluation team found the UNDP and Implementing Partner management of the project to be **Satisfactory**, but determined that the implementation / execution coordination on operational issues (specifically project annual planning) has been **Marginally Satisfactory**.

### 3.2.2. Adaptive Management

The project document remained highly relevant through the implementation period. However, to adjust the activities according to the ground reality and to ensure efficient achievement of project goals, a few targets and activities were modified. Of these, significant changes include dropping Activity 2.5 (financing options for ESL applications) and a focus on ESL technology.

A PILESLAM-sponsored study in 2010/2011 demonstrated that there were little or no gaps in availability of financing options for ESL applications. Based on this finding, the indicators and targets for Component 2 were reviewed in March 2011 by deciding to drop Activity 2.5. Instead, the PSC advised the project to re-direct the remaining available funding<sup>5</sup> for this activity to the implementation of other activities across the component, as and when required.

Moreover, the project design focused on CFL technologies. However, during the project implementation period, the LED lighting technology developed rapidly while surpassing all past expectations. Realizing the potential impact of this technology on the project's goals and objectives, the PSC approved directing some of the project's focus to the development and promotion of LED lighting. Consequently, the project supported demonstration projects related to testing and documenting of LED lighting applications to feed into GOC policies on E.E. lighting.

Another significant example of adaptive management was demonstrated in the awarding of sub-contracts to various public and private sector players of the Chinese lighting industry. This practice enabled the project to achieve its goals effectively by partnering with a wide-range of highly relevant stakeholders that were not particularly specified in the project document.

The evaluation team concludes that, while the targets and indicators stated in the project design document are relevant and appropriate, as part of the adaptive management approach, the management team can and has successfully proposed to adopt or change some approaches and implementing details, as when necessary.

### 3.2.3. Partnership Arrangements

Over the course of implementation, the project has partnered with 145 stakeholder organizations in the Chinese lighting industry. These include government agencies, industry associations, enterprises,

---

<sup>5</sup> A total of USD 130,000 GEF funding was allocated to Activity 2.5 in the Project Document

research institutes, testing laboratories, certification bodies, consultants, and media outlets. Major partnership activities included research, policy development, demonstration projects, testing new technologies and concepts, awareness raising, and managing training programs.

These partners were engaged using a sub-contracting modality, with the project having issued 104 sub-contracts (SCs) during its implementation. Of these, four sub-contracts worth USD 178,000 were cancelled due to issues such as change in targets, e.g. cancellation of activities under Activity 2.5<sup>6</sup>. Of the remaining 100 SC's, 98 SC's worth USD 11,512,000 have been satisfactorily concluded by November 2014 accounting for 96.7% of total contract value; and the remaining two are expected to conclude by project closure on 31 December 2014. The two outstanding SCs are worth USD 220,000, and include 1) Summarization and Publication of PILESLAMP achievements, and 2) International Green Lighting Workshop.

While 71 SC's were awarded to individual organizations, 29 contracts were given to two or more organizations for joint implementation. The total value of the SCs was USD 11.9 million. A year-wise distribution of SCs awards is presented in Table 3:

**Table 3: Year-Wise Distribution of Sub-Contracts**

| Year of Award | Contract value (USD) | Number of contracts |
|---------------|----------------------|---------------------|
| 2009          | 1,945,000.00         | 9                   |
| 2010          | 3,403,000.00         | 36                  |
| 2011          | 3,050,000.00         | 21                  |
| 2012          | 2,525,000.00         | 27                  |
| 2013          | 987,000.00           | 11                  |
| <b>Total</b>  | <b>11,910,000.00</b> | <b>104</b>          |

As shown in Table 3, the highest proportion of funding for SCs was spent during Years 2, 3, and 4 of the Project. This is in line with expectations from project delivery, as the first and last year of project would be expected to have comparatively lesser activities to deliver due to preoccupation with initiating or closing the project.

It is to be noted that some of the key sub-contractors were also project stakeholders, e.g. CALI. This was a positive measure as PILESLAMP objectives and plans coincide and are in-line with their own

---

<sup>6</sup>The canceled sub-contracts were:

- Development of Fluorescent lamp mercury limit value standards
- Investment and financing scheme design for promotion of efficient lighting products
- Development of energy efficiency standard for halogen tungsten lamp
- Lighting renovation scheme design in Zhongnanhai

institution's mandate and therefore provide firm motivation and project ownership in effectively accomplishing the tasks. As explained in the section on M&E, the SCs were closely monitored and have contributed significantly to implementation and achievement of PILESLAMP goals and objectives. Interviews with various stakeholders established that the SCs with highest impact included the: 1) the Development of Roadmap for Phase-out of ILs, and 2) IL Transition Pilots

The evaluation team concluded that the project's partnership with numerous stakeholders was a measure of efficiency as synergies were developed to achieve project goals. As shown in other relevant sections, the sub-contracting also had significant impact on cost efficiency, effectiveness, and sustainability of project activities. On the other hand, the evaluation team noted that managing the sheer large number of SCs by a small PMO was somewhat burdening. Consequently, in hind sight, it would have been more efficient for the PMO to reduce the number of SCs by including more activities into a single sub-contract with a contractor or group of contractors. This is particularly true in cases where more than one SC were awarded to the same organization or group.

#### **3.2.4. Monitoring and Evaluation (M&E)**

According to the project design, UNDP China, the PILESLAMP PSC, and PMO have been assigned responsibilities of M&E. In addition, the design provided a clear M&E plan and budget, including annual outcome level targets and a detailed M&E plan, a monitoring plan together with concise targets, a simple logical framework with SMART indicators, and a budget for M&E activities.

The UNDP Regional Technical Advisor (RTA) for Climate Change in the Asia-Pacific Region and UNDP CO Program Manager have effectively provided periodic oversight in implementation, including prompting timely reporting, providing guidance about reporting to ensure that the progress is implemented in line with UNDP-GEF guidelines, and providing feedback on project planning accordingly. Specifically, the UNDP China office played a critical role in advising amendments to the submitted 2012 and 2013 Annual Work Plans.

Similarly, the PILESLAMP PSC has effectively undertaken its M&E responsibilities. These include review and approval of AWP and Budgets (for endorsement to UNDP-GEF for the latter's final approval), providing guidance on the effectiveness of project implementation and linkages to UNDP and providing overall M&E of project implementation.

The PILESLAMP PMO has had the responsibility of project-level monitoring. For this purpose, the PMO has devised and implemented a comprehensive M&E plan that is responsive to the project's logical framework. The plan comprises of the following key elements:

- Project management rules
- Sub-contract bidding evaluation management rules

- M&E rules
- PMO logistic administration rules
- Duties and responsibilities of PMO staff
- Website maintenance rules

The plan was developed by the PMO team at the start of the project and was approved by the PSC. The plan was well thought out and has been subject to only slight modifications in response to the project's needs arising over time. The M&E plan complies with UNDP-GEF project reporting guidelines. In addition, the PMO has developed and made appropriate use of a Project Management System that helps in monitoring activities and tracking results.

As the project's activities and accomplishments relied on the award of a large number of varied contracts, special arrangements were made for the M&E of these SCs. While the three Project Managers at the PMO monitored the SCs under their respective component, a group of three technical experts was retained part-time to provide M&E and quality assurance services. The responsibilities of these experts included reviewing monthly progress reports submitted by the sub-contractors, and participating in quarterly workshops with the sub-contractors to review progress and provide evaluative feedback. In addition, the experts also undertook mid-term and final evaluations of each sub-contract to ensure that the outputs complied with the assigned TORs.

Moreover, the PMO undertook activities to design impact assessment tools and report impact. Of these, key activities include the annual Chinese Lighting Market Survey conducted during each year of implementation (2010-2013), methodology designed by the CTA to 'Assess Impact on Cost Savings and GHG Emission Reductions', and a publication titled 'Progress and Achievements of the PILESLAMP Project – 2009-2012'.

The evaluation team concluded that the PILESLAMP project's M&E plan was well designed and has been implemented effectively. All three responsible stakeholders, including the UNDP, PSC, and PMO have undertaken their M&E responsibilities diligently. Special arrangements made by PMO for the M&E of sub-contracts, including the Project Management software and retention of an expert team have specifically contributed to the successful and on-time completion of such a large number of sub-contracts. Similarly, the project has undertaken impact assessments to demonstrate progress towards its goals and objectives. The issue of late submission of standard UNDP-GEF progress reports by the PMO to the UNDP reported in the Mid-Term Review (MTR) has also been resolved ever since and all reports have been submitted on time. Therefore, the team found the project's M&E to be **Highly Satisfactory**.

### 3.2.5. Project Finance

The PILESLAMP project was designed to be funded by various sources, including USD 14 million from GEF and USD 70 million from the Chinese government, manufactures and other sources. Table 4 provides a break-up of the total allocated resources at project design phase.

**Table 4: PILESLAMP Total Allocated Resources**

| Grant Fund             | Committed (USD)   | Percent Committed |
|------------------------|-------------------|-------------------|
| GEF                    | 14,000,000        |                   |
| UNDP                   | --                |                   |
| Sub-Total Grant        | 14,000,000        | 16%               |
| Co-Financing           |                   |                   |
| National Government    | 27,000,000        |                   |
| Private Sector         | 40,000,000        |                   |
| Others                 | 3,000,000         |                   |
| Sub-Total Co-Financing | 70,000,000        | 84%               |
| <b>Total Budget</b>    | <b>84,000,000</b> | <b>100%</b>       |

#### I. Utilization of GEF Funds

This sub-section provides details about the utilization of allocated GEF funds amounting to USD 14 million.

Table 5 shows the summary of the approved budget, actual expenditures and delivery rate of the project on a year-to-year basis.

**Table 5: PILESLAMP GEF-Grant Fund Annual Delivery Rate**

|                         | 2009      | 2010      | 2011       | 2012      | 2013       | 2014 (Nov. 2014) |
|-------------------------|-----------|-----------|------------|-----------|------------|------------------|
| <b>Budget</b>           | 1,618,519 | 3,118,193 | 4,819,600  | 4,393,740 | 4,302,680  | 1,684,732        |
| <b>Spent</b>            | 1,347,953 | 2,549,152 | 1,989,119  | 3,837,908 | 2,617,947  | 1,522,212        |
| <b>Percent Delivery</b> | 83%       | 82%       | <b>41%</b> | 87%       | <b>61%</b> | 90%              |

The main reason for low project deliver in 2011 (41%) is the lengthy transition of seven months from ERI to NECC. Also, the low delivery rate of 61% in 2013 is due to the late submission and approval of the Annual Work Plan for that year.

Table 6 presents the percentage expenditure on a per-component basis, the following since the start of the project up to November 2014.



**Table 6: Level of GEF-Grant Expenditure per Component since the Start of the Project**

| GEF Outcome/Atlas Activity                                | Total Available Budget | Total Expenditure (2009 to Nov. 2014) | Percent Spent (2009 to Nov. 2014) |
|---|------------------------|---------------------------------------|-----------------------------------|
| Component 1: Lighting Industry Capacity Enhancement       | 7,958,900              | 8,212,503                             | 103%                              |
| Component 2: ESL Market Development and Product Promotion | 3,895,100              | 3,916,711                             | 101%                              |
| Component 3: ESL Policy and Institutional Support         | 1,111,000              | 1,007,226                             | 91%                               |
| Project Management  | 1,035,000              | 701,041                               | 68%                               |
| <b>Grand Total</b>  | <b>14,000,000</b>      | <b>13,837,480</b>                     | <b>99%</b>                        |

As of November 2014, the project has utilized 99% of the GEF-fund. The low spending (68%) under project management is due to the fact that some PMO positions, e.g. Deputy Director PMO, that were initially funded under the GEF project were performed by individuals already on the NDRC's payroll. Also, the 91% utilization under Component 3 is due to the fact that activities under this component, such as policy research and development of IL phase-out roadmap were completed well before time with lesser than expected resources. Consequently, the leftover funds from these two heads were utilized for activities under Components 1 and 2. These funding adjustments have been approved by the PSC and UNDP.

The PMO plans to expend the remaining 1% funds before project closure on 31 December 2014.

A service organization, CICETE, designated by NDRC and MOF has been providing financial management services to PILESLAMP. For its services related to foreign currency transfers and contracting CICETE charged 3% of the project funding in foreign currency, i.e. USD 420,000 for PILESLAMP. The CICETE has been responsible for tracking GEF contribution, assisting the PMO in financial reporting according to UNDP-GEF guidelines, bidding and financial management of sub-contracts, and organizing external annual audits. Interviews with relevant stakeholders confirmed that the PMO has been satisfied with the services provided by the services provided by the CICETE.

The evaluation team concluded that the GEF funding has been judiciously reallocated within the three project components and UNDP approval was secured for such adjustments. However, as demonstrated by the low delivery rate in 2011 and 2013, the process of financial planning has been dissatisfactory due to a lack of mutual agreement between UNDP and PMO and lack of understanding of UNDP-GEF financial guidelines by the PMO. The situation has resulted in a delay of two years in project implementation. Therefore, the project's financial planning is rated as ***Marginally Satisfactory***

## II. Co-Financing

As seen in Table 7, according to the project design, co-financing accounted for 83% of total resources expected for the project in either cash or in-kind contributions from stakeholders, viz., the Government of China (32%), private sector (47%) and others (4%). However, the total actual co-financing by November 2014 has reached almost three-fold (290%) of the commitments at project design. Resultantly, the total contribution from co-financing also jumped from 83% to 94% of the total expenditure.

**Table 7: Committed vs. Actual Co-financing from Different Sources**

| Co-Financing Source       | Committed (USD)   | Percent Committed Co-Finance of Total Budget | Actual Expenditure (USD) | Percent of Committed   |
|---------------------------|-------------------|--|--------------------------|------------------------|
| National Government       | 27,000,000        |  | 31,621,824               |                        |
| Private Sector            | 40,000,000        |  | 170,439,780              |                        |
| Others                    | 3,000,000         |  | 1,275,459                |                        |
| <b>Total Co-financing</b> | <b>70,000,000</b> |  | <b>203,337,062</b>       | <b>290%</b>            |
| <b>Total Funds</b>        | <b>84,000,000</b> | <b>83%</b>                                   | <b>217,337,062</b>       | <b>94%<sup>7</sup></b> |

Co-financing has been tracked by the respective contributing organization and reported periodically to the PMO. In 2014, the PMO also carried out a financial audit to confirm the total co-financing from all sources.

### a) Co-Financing by Government of China (GOC)

The realization of committed inputs from the GoC on a per-component basis is provided in Table 8.

**Table 8: Realization of Committed Co-Finance from Government of China (Per Component)**

| Components         | Planned (USD) | Actual Achievement (USD) | Percentage of Planned (%) |
|--------------------|---------------|--------------------------|---------------------------|
| <b>Component 1</b> | 5,300,000     | 5,314,465                | 100.27%                   |
| in-cash            | 3,300,000     | 5,314,465                | 161.04%                   |
| in-kind            | 2,000,000     | 0                        | 0%                        |
| <b>Component 2</b> | 20,000,000    | 25,677,358               | 128.39%                   |
| in-cash            | 15,600,000    | 22,877,358               | 146.65%                   |
| in-kind            | 4,400,000     | 2,800,000                | 63.64%                    |
| <b>Component 3</b> | 1,400,000     | 0                        | 0%                        |

<sup>7</sup> The actual co-finance is equal to 290% of the committed. Resultantly, the share of co-finance in the total expenditure rose from 83% to 94%

|                           |                   |                   |                |
|---------------------------|-------------------|-------------------|----------------|
| in-cash                   | 0                 | 0                 | -              |
| in-kind                   | 1,400,000         | 0                 | 0%             |
| <b>Project Management</b> | 300,000           | 630,000           | 210%           |
| in-kind                   | 300,000           | 630,000           | 210%           |
| <b>Total</b>              | <b>27,000,000</b> | <b>31,621,824</b> | <b>117.12%</b> |

The overall co-finance provided by the GOC exceeded by 17.12% of the committed funding. Component-wise, co-financing for Component 1 is slightly above 100%, while that for component 2 is 128.39%. Alternatively, the GOC did not provide any funding for Component 3 as the financing needs of this component were met by ‘other’ contributors<sup>8</sup>. Also, the GOC co-finance provided for Project Management stands at 210% of the committed funds. This is due to the fact that some of the project management staff that was initially planned to be funded through GEF resources has been on NDRC’s payroll. As seen in the section above, the committed GEF resources to this staff were re-directed to activities under Components 1 and 2.

#### b) Co-Financing by Private Sector

Private sector stakeholders such as manufacturers and industry associations, etc. had committed a total of USD 40 million to implementation of PILESLAMP. However, as shown in Table 9, the actual contribution from private sector is USD 170.4 million, i.e. a remarkable 426% of the total committed.

**Table 9: Realization of Committed Co-Finance from the Private Sector (Per Component)**

| Components                | Planned (US\$)    | Actual Achievement (USD) | Percentage of Planned (%) |
|---------------------------|-------------------|--------------------------|---------------------------|
| <b>Component 1</b>        | 35,000,000        | 164,618,813              | 470.34%                   |
| in-cash                   |                   | 163,798,258              |                           |
| in-kind                   |                   | 820,555                  |                           |
| <b>Component 2</b>        | 5,000,000         | 5,820,967                | 116.42%                   |
| in-cash                   |                   | 3,292,556                |                           |
| in-kind                   |                   | 2,528,411                |                           |
| <b>Component 3</b>        | 0                 | 0                        | -                         |
| in-cash                   | 0                 | 0                        |                           |
| in-kind                   | 0                 | 0                        |                           |
| <b>Project Management</b> | 0                 | 0                        | -                         |
| in-kind                   | 0                 | 0                        |                           |
| <b>Total</b>              | <b>40,000,000</b> | <b>170,439,780</b>       | <b>426.1%</b>             |

<sup>8</sup> Details of ‘other’ contributors are provided later in this section

Component-wise, the contribution to Component 1 stands at 470% and to Component 2 at 116% of the commitment, respectively. The larger share of the private sector contributions have come from the manufacturers who were involved in IL phase out.

### c) Co-Financing by Other Partners

Other sources include government agencies and research organizations working on initiatives such as the development of the roadmap for IL phase-out, research on technical strategies and policy suggestions, etc.

**Table 10: Realization of Committed Co-financing Inputs from other Partners**

| Components                | Planned (USD)    | Actual (USD)     | Percentage of Planned (%) |
|---------------------------|------------------|------------------|---------------------------|
| <b>Component 1</b>        | 1,000,000        | 322,910          | 32%                       |
| in-cash                   |                  | 83,255           |                           |
| in-kind                   |                  | 239,655          |                           |
| <b>Component 2</b>        | 1,500,000        | 39,900           | 3%                        |
| in-cash                   |                  | 0                |                           |
| in-kind                   |                  | 39,900           |                           |
| <b>Component 3</b>        | 500,000          | 912,649          | 183%                      |
| in-cash                   |                  | 829,757          |                           |
| in-kind                   |                  | 82,892           |                           |
| <b>Project Management</b> | 0                | 0                | -                         |
| in-kind                   |                  | 0                |                           |
| <b>Total</b>              | <b>3,000,000</b> | <b>1,275,459</b> | <b>43%</b>                |

Contribution from 'other sources' stood highest at 183% for Component 3. Some contribution was also made by these 'other sources' to the other two components. The lower contributions to components 2 and 3 by 'other sources' were a result of the alternative up-take of the private sector for these components.

### d) Summary of Co-financing

In summary, Table 11 provides the status of realization of the committed co-financing from various stakeholders for the Project. Total actual co-financing reached 290% of the total commitments at project design stage.

**Table 11: Summary of the Realization of Committed Co-financing Inputs from all Sources**

| Components                | Total Commitment for Co-Financing (USD) | Total Actual Co-Financing (USD) | Percentage of Committed |
|---------------------------|---|---------------------------------|-------------------------|
| <b>Component 1</b>        | <b>41,300,000</b>                       | <b>170,256,188</b>              | <b>412.24%</b>          |
| in-cash                   | 3,300,000                               | 169,195,978                     | 5127.15%                |
| in-kind                   | 2,000,000                               | 1,060,210                       | 53.01%                  |
| <b>Component 2</b>        | <b>26,500,000</b>                       | <b>31,538,225</b>               | <b>119.01%</b>          |
| in-cash                   | 15,600,000                              | 26,169,914                      | 167.76%                 |
| in-kind                   | 4,400,000                               | 5,468,311                       | 122.01%                 |
| <b>Component 3</b>        | <b>1,900,000</b>                        | <b>912,649</b>                  | <b>48.03%</b>           |
| in-cash                   | 0                                       | 829,757                         | -                       |
| in-kind                   | 1,400,000                               | 82,892                          | 5.92%                   |
| <b>Project Management</b> | <b>300,000</b>                          | <b>630,000</b>                  | <b>210%</b>             |
| in-kind                   | 300,000                                 | 630,000                         | 210%                    |
| <b>Total</b>              | <b>70,000,000</b>                       | <b>203,337,062</b>              | <b>290.48%</b>          |

Overall, the GEF funds have been utilized in a discerning manner and were complemented by significant contributions from the GOC, private sector, and other stakeholders. It is also commendable that the PMO with the help of stakeholders has been able to keep track of all the co-financing and has carried out a financial audit to confirm the co-financing.

As detailed above in the sections on Management Arrangements (Implementation) and M&E, key PILESPLAMP stakeholders, including

### 3.3. Project Results

This section provides an overview of the overall project results and assessment of the relevance, effectiveness and efficiency, country ownership, mainstreaming, sustainability, and impact of the PILESPLAMP project. Moreover, evaluation ratings for overall results, effectiveness & efficiency, and sustainability are also provided.

#### 3.3.1. Overall Results (Attainment of Objectives)

The overall goal of the PILESPLAMP project is the reduction in the annual growth rate of GHG emissions from the Chinese C&R sectors. To achieve this goal the activities were carried out related to the following three components:

- i. Component 1: Lighting **Industry** Capacity Enhancement
- ii. Component 2: ESL **Market** Development and Product Promotion
- iii. Component 3: ESL **Policy** and Institutional Support

Details of accomplishments under each component are provided below:

**i. Component 1: Lighting Industry Capacity Enhancement**

Under this component, it was planned that the project will assist at least two manufacturers in converting to ESL production, and that starting year 2, 3.5 billion ESL bulbs will be produced and 2.4 billion exported each year.

The summary of accomplishments for component 1 along with the evaluation rating is provided in Table 12:

**Table 12: Component 1 – Achievements against Targets**

| Key Tasks / Activities                              | Success Indicators   | EOP Target (Reference) | EOP Accomplishments   | Percent Achievement of Target | Rating    |
|---|--|------------------------|---|-------------------------------|-----------|
| Component 1: Lighting Industry Capacity Enhancement | Number of IL manufacturers that converted to ESL production by EOP | At least 2             | 10 supported conversions initiated (5 by project, 5 wholly by government)<br><br>5 conversions complete which were supported by project | 500%                          | HS        |
|   | Annual volume of ESL production each year starting Year 2          | 3.6 billion pieces     | 4.97 billion pieces   | 138%                          | HS        |
|   | Annual volume of ESL product exports from China starting Year 2    | 2.4 billion pieces     | 3.77 billion pieces   | 157%                          | HS        |
| <b>Overall Rating – Component 1</b>                 |  |                        |   |                               | <b>HS</b> |

According to the logical framework, the following activities were to be undertaken under Outcome 1:

- *Activity 1.1: Promotion of conversion of IL manufacturers:*
- *Activity 1.2: Improvement of supply capacity of high quality ESL:*

- *Activity 1.3: Reduction of environment-relevant /hazardous waste during ESL production and product disposal*

The reported major outputs against these activities are as follows:

The project has supported 10 manufacturers in the development of business conversion strategies and supported and completed the IL to ESL conversion of five selected manufacturers. During this process, over 1,200 staff from 31 selected IL manufacturers have been trained on various issues, including ESL conversion strategies and improved production techniques. The training was tailored to three different audiences, namely management staff, technical staff, and production workers. To develop the market for ESL lamps, the project has assisted the five converted manufacturers in setting up of 1,409 ESL sales outlets in 350 counties across 22 provinces. Resultantly, 1.6 billion ILs have been phased out by the end of 2014, accounting for 35% of IL production volume in China.

Moreover, PILESLAMP has assisted six manufacturers to produce low and micro mercury ESLs, while eight manufacturers have been supported to have clean production audits. This support has resulted in the production of 358 million safer bulbs, accounting for 9% of the ELS production volume in the country. Also, pilot recycling activities launched with public sector institutions in two provinces. So far, this has led to the recycling of 3.24 CFLs. Finally, to ensure safer production, the project has developed and published guidelines such as “The suggested purchasing handbook of China original materials, components and production devices” and trained 1,500 staff from 200 manufacturers on the procurement of raw material, and improvement of product quality and manufacturing technology.

The project has also supported two lighting companies to establish nationally recognized testing laboratories. Moreover, PILESLAMP supported national laboratories to take part in international performance comparison of high efficiency lighting products with the Netherlands, Japan, Australia, and Taiwan. The comparison results were recognized and adopted by significant international agencies, e.g. IEC, US NVLAP, etc. Moreover, the project has completed three national quality control checks for ESLs.

The details of achievements at the activity level against the logframe for Component 1 are provided in Annex 07.

## **ii. Component 2: ESL Market Development and Product Promotion**

Under this component, the project planned to increase the market share of ESL bulbs in rural pilot areas by at least 10%, increase the share of ESL in the national lighting market by 65%, have 90% households utilize ESLs (including 90% in medium and large cities & 10% in small cities and rural areas, and have 95% commercial buildings in major urban areas use ESLs each year starting Year 2.

The summary of accomplishments for component 2 along with the evaluation rating is provided in Table 13:

**Table 13: Component 2 – Achievements against Targets**

| Key Tasks / Activities                                    | Success Indicators  | EOP Target (Reference) | Accomplishments as of MTR | Percent Achievement of Target | Rating   |
|---|---|------------------------|---------------------------|-------------------------------|----------|
| Component 2: ESL Market Development and Product Promotion | Percent Increase in market share of ESL in rural pilot areas by EOP                                       | 10                     | 11                        | 110%                          | S        |
|   | Percent increase in share of ESL in the national lighting market by EOP                                   | 77                     | 81.48                     | 106%                          | HS       |
|   | Percent of households that are utilizing ESLs each year starting Year 2                                   | 90                     | 90.9                      | 101%                          | HS       |
|   | - Large and Medium-sized cities, %  |                        |                           |                               |          |
|   | - Small and rural areas, %  | 57                     | 74.3                      | 130%                          |          |
|   | Annual Percent of commercial buildings in major urban areas that are using ESLs each year starting Year 2 | 95                     | 95                        | 100%                          | S        |
| <b>Overall Rating – Component 2</b>                       |   |                        |                           |                               | <b>S</b> |

According to the logical framework, the following activities were to be undertaken under Outcome 1:

- *Activity 2.1: Strengthening of ESL promotion networks to implement large scale promotion campaigns*
- *Activity 2.2: Improvement of marketing channels for ESLs in large and medium sized cities*
- *Activity 2.3: Supporting expanded ESL marketing channels in small cities and rural areas*
- *Activity 2.4: Promotion and awareness campaign to improve demand for ESLs*



- *Activity 2.5: Facilitation of more affordable and accessible financing options for ESL applications*<sup>9</sup>

The reported major outputs against these activities are as follows:

To increase public awareness about EE lighting, from 2009 to 2014 the project fielded the ‘Light and Love Tour’ campaign in 27 rural areas of 22 provinces. During the campaign, a total of 2.64 million ESLs were distributed to over 2,500 schools and more than 600,000 households. Moreover, PILESLAMP was able to secure voluntary commitments from 12 local marketing promotion organizations and 50 lighting shopping malls to phase-out ILs. In addition, in cooperation with 12 efficient lighting enterprises, universities, and government agencies, the project has set up 21 Green Lighting Education and Demonstration Centers (GLICs). By November 2014, these centers have been visited by more than 370,000 people to learn more about EE lighting. From 2012 to 2014, the project also supported an annual lighting design competition. Due to its popularity among designers and industry players, there has been a natural uptake of the competition and two subsequent competitions have been organized.

Also, to demonstrate ESLs, the project undertook various activities. Of these, key activities include the retrofitting of seven famous buildings in China, including the Great Hall of the People and National Library of China, etc. It was estimated that the retrofitting resulted in 68% less energy consumption while providing the same illumination environment. Moreover, the project field tested 33 large government-supported projects and facilitated the retrofitting of 41 public institutions using the Energy Management Contract (EMC) mechanism. This has further resulted in conservation of 14 million KWh per year.

To spread its message on EE lighting, the project has partnered with more than 200 media sources and published articles read by 3.9 million readers. Moreover, 26 books on different aspects of EE lighting have been published and distributed widely through partners and project events. Also, to keep the public and its stakeholders informed, the project has set up a website that provides information about project research, progress, and achievements, etc. Also, a quarterly newsletter detailing the project’s progress has been developed and distributed to key stakeholders.

Also, PILESLAMP has provided support to promotion of green lighting at international events such as at the 2012 UN Climate Negotiations Assembly and demonstrated the green lighting exhibition in regional energy saving cooperation seminars of Japan, South Korea, and ASEAN.

Details of activity-level achievements against the logframe for Component 2 are provided in Annex 07.

---

<sup>9</sup> As explained in the section on Adaptive Management, Activity 2.5 has been cancelled since 2012

### iii. Component 3: ESL Policy and Institutional Support

The aim of this component was to provide policy support to Components 1 & 2. This included the development of one policy on the phasing out of the production and use of ILs, acceptance of a policy by the GOC for the widespread production and application of ESLs in the domestic market, and the development of a ready-to-implement roadmap for IL phase-out and expanded ESL promotion.

The summary of accomplishments for component 3 along with the evaluation rating is provided in Table 14:

**Table 14: Component 3 – Achievements against Targets**

| Key Tasks / Activities                                   | Success Indicators   | EOP Target (Reference) | Accomplishments as of MTR                                       | Rating    |
|--|--|------------------------|---|-----------|
| <b>Component 3: ESL Policy and Institutional Support</b> | Number of accepted policies on the phasing out of the production and use of ILs by EOP                         | 1                      | 1 completed policy  | HS        |
|  | Number of accepted policies on the widespread production and application of ESLs in the domestic market by EOP | 1                      | 2 policies on the widespread production and application of ESLs | HS        |
|  | A ready-to-implement Road map developed for IL phase-out and expanded ESL promotion by EOP                     | approved Road Map      | Completed and being implemented.                                | HS        |
| <b>Overall Rating – Component 3</b>                      |  |                        |   | <b>HS</b> |

According to the logical framework, the following activities were to be undertaken under Outcome 3:

- *Activity 3.1: Annual investigation and analysis of ESL market development*
- *Activity 3.2.1: Development of policy recommendations on IL manufacturers' business conversion*
- *Activity 3.2.2: Development of policy recommendations on increasing domestic market share of ESLs*
- *Activity 3.3.1: Development of China's roadmap of IL phase-out*
- *Activity 3.3.2: Development of China's medium and long-term plan for ESL promotion*

The reported major outputs against these activities are as follows:

The project has funded 12 policy research studies on various important topics. A complete list of the research studies is provided in Annex 08. Resultantly an important achievement under this component has been the successful development and submission of a roadmap for phase-out of IL. The roadmap

was approved and has been implemented by the GOC since 2012. Moreover, the project also developed the 'National Energy Conservation Plan in Semiconductor Lighting Industry' that has also been approved by the GOC and was issued jointly in 2013 by six national departments, including National Development and Reform Commission, Ministry of Science, the Ministry of Industry and Information Technology. In addition, the project has developed 13 national product standards or specifications. These technical documents were published and widely circulated among industry stakeholders.

In addition, the project has financed the development of an annual lighting market survey since 2009. Consequently, five surveys have been carried out between 2009 and 2014 and authoritative Chinese Market Application data has been published. The survey findings have not only determined the project's impact but have also provided strategic guidance to the industry regarding market demand.

Overall, the project has completed 56 core targets in the logical framework and has overachieved 46 of these targets. Based on an evaluation of the activities, outputs, and achievements, the evaluation team concluded that the overall results of the PILESLAMP project were **Satisfactory**.

The summary of ratings of accomplishment in achieving various Components' outcomes is shown below:

**Table 15: Summary of Ratings of Accomplishment in achieving Various Components' Outcomes**

| Component  | Rating   |
|--|----------|
| Component 1: Lighting Industry Capacity Enhancement            | HS       |
| Component 2: ESL Market Development and Product Promotion      | S        |
| Component 3: ESL Policy and Institutional Support              | HS       |
| <b>Overall Rating of the Project on Achievement of Outputs</b> | <b>S</b> |

### 3.3.2. Relevance

Energy Efficient lighting has been a key priority of the GOC since the 1990's. The first Green Lighting Project in China was launched in 1996 and, since that time, lighting has been listed as a key energy conservation field in both the "Ninth Five-year Plan" and the "Tenth Five-year Plan", and a key energy conservation project in both the "Eleventh Five-year Plan" and the "Twelfth Five-year Plan".

NDRC, the Implementing Partner of PILESLAMP is a GOC agency involved in the development and implementation of industry and energy policy and has implemented the previous two Green Lighting Projects in the country.

The Chinese lighting manufacturing industry supplies almost 80% of the lighting products to the global market. The announcement of IL phase-out by several regions such as Australia and Europe as well as

the GOCs commitment to IL phase-out has made it necessary for the local industry to keep pace with the ever growing demand of efficient lighting.

Moreover, UNDP and GEF are both committed to climate change adaptation and management internationally, and continue to support energy efficiency projects as an important tool towards reduction in GHG emissions.

Consequently, it is concluded that since its inception, the PILESLAMP project has been **relevant** to the Chinese development context and prioritized needs of all key stakeholders involved.

### 3.3.3. Effectiveness and Efficiency

The project has met or exceeded expectations against all its planned activities and outcomes. The most effective activities have included the development of a roadmap for IL phase-out, development of standards and specifications, the successful conversion of five IL manufacturers to ESL technology, support to up-gradation of testing laboratories, and awareness-raising through outreach activities and pilots.

The roadmap was efficiently developed in a short time and has been implemented by the GOC since 2012. The implementation of this roadmap has provided an immediate incentive to the private sector for converting their production lines to ESL technologies and will also lead to a progressive replacement of ILs at the consumer-end.

Moreover, the support to conversion of five manufacturers has been paired with development and training of workers from 31 manufacturers in ESL technology. This effort will ensure the long-term employability of the workers industry. Similarly, the support to various laboratories for testing ESL labs has improved the country capacity on testing of efficient and safe lighting products. In this regard, the case of the NLTC laboratory that has been chosen by the United Nations Environment Programme (UNEP) as the global efficient lighting technology center is of particular significance.

In terms of operational issues and implementation, the project's implementation arrangements have been efficiently relying on existing organizational structures that are relevant to the lighting industry in the country. Moreover, the project's M&E system has been diligently implemented and has efficiently tracked progress and impact. However, the lack of efficiency in annual financial planning has significantly delayed project implementation, and delayed project closure from 2012 to 2014.

Overall, it is concluded that the PILESLAMP project's effectiveness is **Highly Satisfactory**, while the project's efficiency has been **Satisfactory**.

### 3.3.4. Country Ownership

Both the GOC and the Chinese private sector have shown strong commitment and ownership of the PILESLAMP project.

The GOC's ownership is demonstrated by the provision of high-level NDRC staff for senior-level project management, providing policy support to efficient lighting, e.g. through acceptance and implementation of the IL roadmap, and exceeding committed levels of co-financing.

The Vice Chairman of the NDRC has frequently participated in the project's awareness-raising activities. Also, senior project management includes the PSC and NPD, both serving as Deputy Director Generals at the NDRC. Similarly, the NPC is a Principal Staff Member at the NDRC and the PMO Director is a Director-level staff of the NECC. Moreover, the GOC has shown its commitment to the project by having assigned the same staff to the project through its lifetime. The only exception is the PMO Director who was changed due to the project's relocation from ERI to NECC. The GOC has met 117% of its committed co-financing to the project.

Similarly, the private sector has participated enthusiastically in achieving the project's outcomes. Their key contributions include providing training to their employees, opting to change production lines to ESLs, participating in pilots and research, and establishment of new sales outlets. Consequently, the private sector co-financing contribution has reached 426% of the commitments at project design stage.

### 3.3.5. Mainstreaming and Sustainability\*

Sustainability of project interventions has been inherent in the mainstreaming and replication potential incorporated into the project design. Certain project implementation practices, contributions, and outcomes have ensured sustainability in particular.

The IL phase-out roadmap and other policy measures such as contribution to the 12<sup>th</sup> EE five year plan are believed to be the major determinants of sustainability. These measures have wide-reaching long term implications for private and public sectors as well as the consumers to continue switching to EE lighting.

Moreover, implementing the project through sub-contracts awarded to various public and private stakeholders, specifically industry network groups such as CALI, has resulted in capacity building of these organizations for future support to the EE lighting industry. For instance, the support to the NLTC laboratory has led to this facility being selected as the Global Efficient Lighting Technology Center by the UNEP. Consequently, this laboratory has provided support to EE lighting in various other countries in Asia, Africa, and Europe.

Moreover, by successfully facilitating the conversion of five large manufacturers using training and technology transfer as primary tools, the project has demonstrated the business case to other players in the industry. Similarly, through its pilots and other implementation experiences, the project has also developed a rich array of documented research, standards, and guidelines for EE lighting. This information is already being replicated or built upon by the implementing sub-contractors, e.g. using the developed guidelines for EE in museums, the Beijing Semi-Conductor Lighting Technology Promotion Center is now replicating the pilot of retrofitting of other museums. However, to ensure long term replicability and sustainability, it will be important to make the repertoire of information developed by the project freely available to all potential individual and organizational stakeholders, including researchers, academics, entrepreneurs, policy makers, and consumers, etc.

Moreover, as the PILESLAMP project started before the approval of the UNEP's Global Phase-out of inefficient lighting project, activities being undertaken by PILESLAMP act as a direct support to the Global project by enabling the transition of industry to facilitate sufficient supply of the high quality efficient lighting products required as international demand for ESLs increases due to countries around the globe banning the use of less efficient lighting product.

Considering the policy support, positive response of the lighting industry, and the global trends in IL phase-out, the evaluation team concludes that the PILESLAMP project is ***Likely Sustainable***.

### 3.3.6. Impact

The goal of the PILESLAMP project is to reduce carbon emissions by an estimated 4.4 million metric tons (Mtons) per year (cumulative total of 5 Mtons) by end of the project, and five years after the project end, carbon emissions were projected to be around 17.3 – 22.9 Mtons lower each year (cumulative total of about 80.3 – 90.0 Mtons), or a reduction of about 2-3% in annual emissions compared to the estimated total 2008 emissions in China.

The PMO has developed different tools to track the impact on the project goals and objectives. Accordingly, as show in Tables 16 and 17, it is ascertained that the project has exceeded its targets related to achievement of goals.

**Table 16: CO2 Reductions (Mtons Realized in Each Year)**

|                               | Target      | Realized | Percent Target Realization |
|-------------------------------|-------------|----------|----------------------------|
| Project End                   | 4.4         | 25.6     | 582%                       |
| 5 Years after End of Project  | 17.3 – 22.9 | 64.0     | 279%                       |
| 10 Years after End of Project | 13.5 – 36.6 | 54.2     | 148%                       |

**Table 17: CO2 Reductions (Mtons Realized Cumulatively)**

|                               | Target        | Realized | Percent Target Realization |
|-------------------------------|---------------|----------|----------------------------|
| Project End                   | 5             | 34.2     | 684%                       |
| 5 Years after End of Project  | 80.3 – 90     | 327.4    | 364%                       |
| 10 Years after End of Project | 174.7 – 237.4 | 573.8    | 242%                       |

Moreover, as shown in Tables 18 and 19, the project has had significant impact on electricity consumption and related consumer savings.

**Table 18: Electricity Savings (GWh Realized in Each Year)**

|                               | Target          | Realized | Percent Target Realization |
|-------------------------------|-----------------|----------|----------------------------|
| Project End                   | 4,011           | 34,199   | 853%                       |
| 5 Years after End of Project  | 15,880 – 20,832 | 85,399   | 410%                       |
| 10 Years after End of Project | 12,334 – 33,335 | 72,294   | 217%                       |

**Table 19: Cost Savings Realized by Consumers**

|                               | Annual (RMB) | Cumulative (RMB) | Cumulative (USD) |
|-------------------------------|--------------|------------------|------------------|
| Project End                   | 16.0 bn      | 21.4 bn          | 3.6 bn           |
| 5 Years after End of Project  | 40.1 bn      | 205.0 bn         | 34.2 bn          |
| 10 Years after End of Project | 33.9 bn      | 359.1 bn         | 59.9 bn          |

It is therefore concluded that the project has had **Significant** impact on its intended goal.

However, the evaluation team also realized that there are a number of areas where the project has had significant unintended impact, e.g. the NLTC laboratory gaining international recognition, the quick uptake by the public sector and manufacturers, e.g. 20 municipalities replicating the EMC modality on their own initiative, and the continuation of the lighting product competition, etc. Therefore, the evaluation team believes that it is necessary for the project to assess the impact and replication effect of such activities as these will contribute to the set of positive lessons learned and these approaches can feed into future projects.

## 4. CONCLUSIONS, RECOMMENDATIONS & LESSONS

### 4.1. Conclusion

In conclusion, the Terminal Evaluation team has determined that the PILESLAMP design has remained highly relevant to the development context of China and the priorities of various stakeholders, including GOC, GEF, UNDP, and the private sector.

Moreover, the project has been efficiently implemented while engaging a large number of stakeholders as partners and sub-contractors. The ownership from all stakeholders has been demonstrated in exceeding committed co-financing by 290% and has led to effective implementation, resulting in over-achievement of goals and outcome-level targets. Activities with significant impact include: the development of the IL phase-out roadmap, assistance to five manufacturers for conversion from ILs to ESLs, establishment of a large ESL marketing network, and public awareness raising about EE lighting. This positive implementation environment has also led to unintended positive impact of a variety of activities.

However, ineffective annual financial planning of GEF funds due to productive collaboration between key stakeholders has resulted in a two year project delay, resulting the project to be implemented in 67% additional time. Moreover, with the rapid change in lighting technology, future projects need to focus on LED lighting.

### 4.2. Lessons Learned

Based on consultations with key stakeholders and the conclusions drawn by the TE team, key lessons learnt from the PILESLAMP project design and implementation experience are as follows:

- i. The project has demonstrated that full support by Recipient country government (GOC) and cooperation between relevant ministries/departments can lead to successful projects.
- ii. Also productive engagement of the private sector can result in a multiplier effect for achieving market-related goals;
- iii. A simple and concise project document with clearly delineated roles and responsibilities and defined financial resources facilitate the implementation process;
- iv. Similarly, a good M&E system that focuses on all aspects, including co-financing and sub-contracts is key to assessing a project's progress and impacts;
- v. Efficient and effective communication and coordination arrangement are essential to project planning and implementation, such as regular meetings within PMO and with stakeholders, as well as with UNDP, NDRC, etc.;



- vi. Selection and organization of sub-contracts and delivery management is crucial for overall project performance;
- vii. Policy and standards are cost-effective tools for market transformation in China; and
- viii. Accessibility and availability in medium and small cities and rural areas can significantly increase market share of ESLs in these areas.

### 4.3.Recommendations

Based on its conclusions and the lessons learnt, the evaluation team recommends the following actions:

#### a) Replication and Up-Scaling

The project has made significant contributions to the promotion of EE lighting in China. To ensure sustainability, it will be important for the private and public sectors to continue collaborating and provide support to further upscaling and replication of these activities. In this regard, the experiences of the project need to be widely disseminated, any further barriers to conversion of manufacturers need to be explored and addressed, and pilots with high potential need to be promoted and replicated in other areas and situations.

#### b) Documentation and Dissemination of Results:

The project has made significant contributions to the development of the EE lighting industry by undertaking research, pilots, and technology transfer, etc. Similarly, the M&E system designed and implemented by the project has worked specifically well. For future efforts and projects to build on these lessons it is important that the documents and widely disseminates its approach, processes, results, and achievements.

In this regard, the PILESLAMP PMO should develop and makes public a 'closing/exit report' providing details of the various activities, outputs, processes, and stakeholder contributions, etc.

Moreover, due to strong stakeholder ownership and quick uptake by the private sector, a number of project activities have resulted in unintended positive impact, such as replication and up-scaling by voluntary government agencies and industry associations. To ensure that this impact is highlighted and the processes leading to it are fed into future project designs, it is recommended that the project needs to document some of the unintended positive impact.

Moreover, it is also recommended that the project does not close down its website. Instead, hosting rights for 10 years should be purchased and the information mentioned above as well as any other critical contributions/practices of the projects should be posted on the website to benefit future

projects/efforts. To obtain a wide audience, the website should also be linked to the online resources of other key national and international EE lighting initiatives, e.g. the GOC's lighting subsidy program, the websites of key institutional stakeholders, etc. Alternatively, all the materials related to the project can be uploaded to a section of an already existing organizational website, such as NDRC or CALI, etc.

Finally, considering the success of this project, it will be pertinent to highlight the **Chinese experience on phase-out to other countries**. This can be done in the form of dissemination of information as advised above, as well as linkage development and showcasing the project's achievements through international events and platforms, e.g. UNEP's Global Efficient Lighting Project

#### **c) Stakeholder Collaboration**

To ensure effective planning and implementation, it is important to have open communication lines between key stakeholders. To **avoid communication problems** in the future, the UNDP and PMO need communicate openly and project decisions need to be open and based on mutual trust.

#### **d) Management of Sub-Contracts**

The project has awarded more than 100 sub-contracts over the course of its implementation. Considering the extensive activity involved in M&E of the contracts, it is recommended that in the future, the **number of sub-contracts is reduced** while increasing the number of activities under a sub-contract. This is especially true for those cases where the same entity was awarded more than one contract.

Moreover, to ease the workload of a highly burdened PMO and in the interest of efficiency and effectiveness, future projects involving SCs should have a designated **Contract Manager**

#### **e) Tracking Co-Financing**

The PILESLAMP PMO and stakeholders have efficiently tracked co-financing contributions. To confirm these contributions, an external audit was also undertaken. This is an excellent initiative to ensure accountability and should be replicated in other future projects.

# Annexes

1. Annual Project Report (PIESLAMP), 13 January, 2014
2. Quarterly Project Progress Report (PIESLAMP), 10<sup>th</sup> July 2014
3. Phasing-out Incandescent Lamps and Energy saving Lamps Promotion Project, Special Auditors Report, 2009, 2010, 2011, 2012, 2013, 2014)
4. Review of Project Financial System and Analysis of Fund Utilization.
5. Review of project implementation guidelines and M&E System.
6. Combined Delivery Reports (2009, 2010, 2011, 2012 and 2013)
7. Mid Term Review (PIESLAMP), June-July, 2012
8. UNDP Project Document, Government of China and United Nations Development Programme.
9. The Policy and Development of China Phasing out Incandescent Lamp and Promotion Energy Saving Lamp, Presentation (PIESLAMP PMO)
10. Explanatory Information on the Derivation of Claimed Energy Saving (PIESLAMP), 19 October, 2014
11. Draft Final Report
12. Debriefing and Highlights on MTR Initial Findings, July 2012.
13. Institutional Stakeholders Profiles.
14. UNDP Guidance for Conducting Terminal Evaluation of UNDP-Supported, GEF-Financed Projects
15. Annual Project Progress Report (APPR) 2010 and 2011
16. Annual Project Report/Project Implementation Review (APR/PIR) 2010 and 2011
17. Annual Work Plan (2009, 2010, 2011, 2012 and 2013)
18. Audit Reports (2009, 2010, and 2011)
19. Co-financing Monitoring Data
20. GEF Grant Financial Data
21. Market Survey on Lighting Products - 2009
22. Market Survey on Lighting Products - 2010
23. Minutes of Inception Workshop, 13 October 2009, Beijing, China
24. Minutes of the Annual Project Review, Tripartite and Project Steering Committee Meeting (2009, 2010 and 2011)
25. Phase-out of Incandescent Lamps and ESL Development Road Map
26. PIESLAMP Annual Targets (Based on the Project Planning Matrix)
27. PIESLAMP Mid-term Review: Summary Report by PMO/CTA
28. PIESLAMP Organizational Structure
29. PIESLAMP Project Management Personnel
30. Project Activity Termination Application to PSC
31. Project Document of PIESLAMP PIMS 4166
32. PSC's Opinion about Annual Targets
33. Quarterly Reports (2009, 2010, 2011 and 2012 Q1/Q2)
34. Terms of Reference of Sub-Contracts Prepared/Issued (2009 – 2012)
35. Timeline of New Sub-Contracts (2012)

**KII/FGD with PMO Staff**

**Date:**

**Name(s) of Staff:**

**Position(s) in Project:**

**Contact Info:**

**Name of Interviewer:**

**QUESTIONS****I. Project Design and Adaptive Management**

1. What was the process of project design? E.g. who was the team, which stakeholders were consulted and how? What were the project linkages to earlier projects, etc?
2. Has the project design and logframe been relevant across the project duration?
3. Have there been any changes to the original project design/Log Frame?
4. If yes, how were these changes approved? Has the logframe/project document been reviewed to reflect these changes?
5. What was the reason for transferring project from ERI to NECC?
6. What problems were faced in the transfer and how were they resolved?
7. What were the key opportunities for transfer to the NECC and how were these utilized?
8. The project has well exceeded a number of goals set in the prodoc even before the MTR and more so after the MTR. Does this mean that the project design document underestimated the potential of the project?
9. Also, if these goals were exceeded, could/should the funds have been transferred to other activities or should other activities have been added to the project?

**II. Delays in Implementation**

1. What factors led to the extension of project closure from 2012 to 2014?
2. What has been the impact of these delays on project implementation and progress?
3. What measures were taken by key stakeholders to avoid any further delays?
4. What was the process for obtaining these extensions?

5. How beneficial has it been to extend the project to 2014 (decision made on Sep. 4, 2013) when according to 2013 APR: Of the seven outstanding actions, the majority are final promotional activities related to project outcomes and/or the adoption of efficient lighting in specific market sectors, and the final independent project evaluation.
6. What is the final project closing date?

### **III. Monitoring & Evaluation**

1. Does the project have an M&E Framework/Plan? If yes, what are the key elements of this framework/plan?
2. What are the various tools used to track progress on goal, outcome, and output levels?
3. What has been the process of developing and modifying this plan?
4. How helpful/effective has the M&E plan been in responding to the Project's needs?
5. What were some of the challenges faced in implementing the M&E Plan? E.g. any delays in reporting to UNDP, etc.
6. What were the causes of these challenges and how were these mitigated?
7. How helpful and SMART is the Project Logical Framework?
8. How is the logframe used for purposes of Planning, M&E, and Reporting?
9. Have there been any changes to the original project design/Log Frame? What were the reasons for these changes?
10. Is the risk assessment and management matrix being updated annually? If yes, how and by whom? Copy of all reviewed matrices

### **IV. Progress of Outputs and Activities**

1. Are there any outstanding project outputs or activities at this time?
2. If yes, what are the reasons?
3. When will these activities close out? Timeline of completion of all project outputs and activities
4. To what extent have the recommendations of the MTE been implemented? If some were not implemented, what was the reason?

### **V. Sub Contracts and Consultancies**

1. How many sub contracts and consultancies have been issued under each project component (year, topic, and budget)?
2. Have all sub contracts been completed? If no, which ones are outstanding? When are they expected to complete? What have been the reasons in implementation delay of these sub contracts?

3. What was the general process of selecting the sub-contractors and consultants?
4. What problems were faced in engaging contractors, e.g. limited capacity, delayed delivery by contractor, etc. How were these mitigated?
5. What problems were faced in managing the contractors, e.g. limited budgets, large volume of contracts, etc.
6. Which of the contracts have contributed most positively to the project's outcomes/goals?
7. Which of the contracts had the least contribution or were ineffective? Why?

#### **VI. Training& Capacity Building**

1. Under outcome 1, what was the average market share of the manufacturers who implemented the pilot?
2. List of various training and outreach activities (including budget, and people reached) under each of the three project components
3. What was the process of trainee selection?
4. Has the training/outreach impact been assessed? If yes, what have been the outcomes?
5. How can the trainings contribute to project impact and sustainability?
6. What key challenges were faced in the training program? E.g. availability of local technical knowhow, level of trainees, etc.
7. How were these challenges mitigated?

#### **VII. Communications and Outreach**

1. What are the key elements of the website?
2. How often is the site updated?
3. Who accesses the website? How is the website promoted among project stakeholders/beneficiaries?
4. How often and to who is the project newsletter distributed? What is the feedback from those utilizing the newsletter?
5. How are the project's M&E results disseminated to the stakeholders? Which stakeholders?
6. How have the lessons from the project (e.g. studies, research, etc.) been recorded and saved so that they are easily accessible to any stakeholder who wishes to build on the project's success in the future? E.g. a website, library of NDRC, etc.

#### **VIII. Personnel and Staffing**

1. What is the organogram of the PMO?
2. Has the project faced any HR challenges, e.g. insufficient or under qualified staff, high turnover, non-availability on in country technical knowhow, etc?
3. If yes, how have these been resolved?

4. How has the project been staffed in 2014 when only seven activities were outstanding? Were some of the project staff let go? If not, how were these staff placed?

**IX. Partnerships**

1. Who are the key project stakeholders under the different outcomes and what is the role of each stakeholder?
2. Were any stakeholders added after the project start? If yes, who, when, and why?
3. Which stakeholders under each component have made the most productive contribution towards the project goal?
4. Which stakeholders have made the least productive/ least active contribution?
5. What is the liaison mechanism between PMO and other institutional stakeholders? (e.g. UNDP, NDRC, etc.)
6. What is the liaison mechanism between the PMO and beneficiaries, e.g. producers?
7. What challenges have been faced with managing the partnerships? E.g. procurement, reporting, delivery of outputs, understanding the project concept, coordination and communication, etc.
8. What has been the process of selecting different partners? Could this strategy have been different/better?
9. How do the various stakeholders and partners interact to ensure communication and linkages between their respective activities?

**X. Stakeholder Collaboration**

1. What support has been provided by the UNDP China?
2. What support has been provided by the GEF Focal Point?
3. How has the collaboration between the various stakeholders leverage the project performance?
4. What key challenges have been faced by the key stakeholders in collaborating with each other? How were some of these challenges mitigated?

**XI. Steering Committee**

1. Has the PSC met regularly? If no, what have been the reasons?
2. How effective has been the PSC been performing its duties of oversight (e.g. review of Annual Work Plans, Annual Progress Reports), and guidance (e.g. linkages to UNDP corporate policy decisions) PMO linkages with UNDP-China?
3. What key role has the PSC played in guiding / facilitating the project implementation? Any specific examples?
4. How could the role of the PSC have been strengthened further?



## **XII. Finance & Co- Financing**

1. Have there been any delays or problems faced with the project's financial disbursements from the different stakeholders?
2. If yes, how did these impact project implementation?
3. How were these problems resolved?
4. Analysis of project delivery rate per year
5. Analysis of committed vs. contributed co-financing and reason for differences
6. Review of Audit Reports
7. Have regular project financial audits been undertaken? Were these audits satisfactory?
8. If not, what were the reasons and how were these issues resolved?
9. Is the Grant fund only from GEF or does the UNDP also have some contribution?
10. In the CDRs, why is there a reference to 'China Poverty Reduction'?
11. Have there been any problems with delayed or insufficient reporting from the partners or stakeholders?

## **XIII. Effectiveness**

1. To what extent has the project achieved its goals and objectives?
2. What key GOC policies/strategies was the project able to contribute to? How?
3. What factors have been critical for the success of the project to achieve its goals and objectives? E.g. GOC policies, trade environment, stakeholder collaboration, etc.
4. What have been some of the project's key successes?
5. What have been some of the project's key challenges?

## **XIV. Impact**

1. What measures have been undertaken to assess the project's impact?
2. What have been the results of these measures?
3. Which of the project activities/components have had the highest impact? Why?
4. Which of the project activities/components have had the least impact? Why?
5. Has the GHG reduction calculation methodology been finalized based on empirical results gathered during the project implementation and be evaluated in the Terminal Evaluation? The same for reduction in growth rate of CO2 emissions
6. If yes, according to these methods, what has been the project's impact?
7. Has a MTE of the phase out road-map been undertaken which was likely to be undertaken in 2014? (2013 APR) What have been the outcomes?

**XV. Sustainability**

1. What have been the key measures of sustainability/replicability embedded in the project design and delivery?
2. Which elements/results of the project are particularly sustainable? Why?
3. Which elements/results of the project are least sustainable? Why?
4. What potential challenges can the project's sustainability face?
5. How have been the various studies and reports undertaken through the project been disseminated? E.g. website, library, etc.
6. Are these sources available to the public?
7. What is the project's exit strategy? Has this been documented?
8. Has a follow up nation program in the final year of the project been designed? (Prodoc para 102)/ Has the project to GEF on SSL's been accepted? If yes, how will the PILESLAMP project link into it, e.g. in terms of personnel, knowledge, etc.?
9. Is there a way of continuation/exit strategy in place for initiatives such as the Lighting Market Surveys?

**XVI. Lessons Learned and Recommendations**

1. What have been some of the project's key lessons learnt?
2. What are your recommendations for the sustainability of project interventions?
3. What are your recommendations for design of similar future projects?

**KII with INSTITUTIONAL STAKEHOLDERS: (NPD (NDRC), NPC (NDRC), PMO Director (NECC),  
CTA (GEF), PSC, UNDP)**

**Date:**

**Name of Interviewee:**

**Organization Name:**

**Title:**

**Contact Info:**

**Name of Interviewer:**

### **BACKGROUND**

1. What particular role does your organization play with the project?
2. In your opinion, what have been the key successes of the project?
3. In your opinion, what have been the key challenges faced by the project? E.g. delays in implementation, limited project outreach, etc.
4. How could these challenges have been mitigated?

### **PROJECT DESIGN & ADAPTIVE MANAGEMENT**

1. Has the project design and logframe remained relevant over the course of the project?
2. If no, what key factors were irrelevant and how were these addressed during the course of implementation?
3. The project has well exceeded a number of goals set in the prodoc even before the MTR and more so after the MTR. Does this mean that the project design document underestimated the potential of the project? If no, what factors have led to the project surpassing its targets? E.g. GOC Policy, market demand, etc.
4. Also, if these goals were exceeded, could/should the funds have been transferred to other activities or should other activities have been added to the project?

### **DELAYS IN IMPLEMENTATION**

5. Have there been any key delays in project implementation?
6. If yes, what caused these delays? What has been the impact of these on project implementation and progress?
7. What measures were taken by key stakeholders to avoid any further delays?
8. What was the reason for transferring project from ERI to NECC?
9. What problems were faced in the transfer and how were they resolved?
10. What were the key opportunities for transfer to the NECC and how were these utilized?

11. How beneficial has it been to extend the project to 2014 (decision made on Sep. 4, 2013) when according to 2013 APR: Of the seven outstanding actions, the majority are final promotional activities related to project outcomes and/or the adoption of efficient lighting in specific market sectors, and the final independent project evaluation.

### **STAKEHOLDER COLLABORATION**

1. Which project stakeholders/beneficiaries do you deal with directly?
2. What is the mechanism for collaboration with the project? E.g. quarterly meetings, etc.
3. In your opinion, which stakeholders have played a key role in ensuring the project's success?
4. What have been some of the opportunities/positive outcomes of the stakeholder collaboration under this project? E.g. funding leverage, policy support, higher outreach, etc.
5. What have been some of the challenges in regard to collaboration among stakeholders? E.g. difference in organizational priorities, delay in reporting, etc.
6. Have these issues been resolved? How?

### **STEERING COMMITTEE**

1. Has the PSC met regularly? If no, what have been the reasons?
2. What key role has the PSC played in guiding / facilitating the project implementation? Any specific examples?
3. How effective has been the PSC been performing its duties of oversight (e.g. review of Annual Work Plans, Annual Progress Reports), and guidance (e.g. linkages to UNDP corporate policy decisions) PMO linkages with UNDP-China?
4. What challenges and opportunities has the PSC faced in overseeing the project activities? E.g. policy, stakeholder buy in, etc?
5. How could the role of the PSC have been strengthened further?

### **KEY STAKEHOLDER SUPPORT**

1. What is the UNDP's comparative advantage in being the implementing agency for this project?
2. What support has been provided by the UNDP China?
3. What support has been provided by the GEF Focal Point?
4. How has the collaboration between the various stakeholders leverage the project performance?
5. What key challenges have been faced by the key stakeholders in collaborating with each other? How were some of these challenges mitigated?

## **RELEVANCE**

1. What is the key role that your organization has played in the project's success? E.g. policy support, co-financing in cash/kind, mainstreaming into other programming, etc.
2. How does the project fit into the strategic priorities and current programming of your organization?
3. How can/will the project's successes/activities feed into future programming/strategy of your organization?
4. In addition to PILESLAMP, what other EE lighting programs has your agency been involved in? Has there been any linkage between PILESLAMP and these other programs?
5. How would you rate the comparative contributions and challenges of PILESLAMP with these other programs?

## **REPLICATION & UP-SCALING**

1. Are there any mechanisms in place for the up-scaling of the training programs implemented by the project?
2. The project has implemented a number of successful pilots. To what extent have these pilots been replicated by other stakeholders, e.g. manufacturers, testing laboratories, distribution channels, etc. How?
3. What are the potential opportunities for such replication?
4. What are the potential challenges for such replication?
5. How can these challenges be mitigated?

## **SUSTAINABILITY**

1. Will there be opportunity for the project stakeholders from the business and/or public sector to continue collaboration after project end? How
2. What can the project do to institutionalize such collaboration platforms before it closes?
3. Which of the key project activities are sustainable in the medium and long term? Why/How?
4. Which of the project activities are not sustainable in the medium and long term? Why/How?
5. What can be done to increase the chances of sustainability of some of these activities?

## **LESSONS LEARNED & RECOMMENDATIONS**

1. In your opinion, what are the key lessons learned from the project?
2. Based on the project implementation experience, what are your suggestions for improvement in future projects?

**KII with SUB CONTRACTORS & OTHERS:** (e.g. China Association of Lighting Industry,  
China Quality Certification Center, etc.)

**Date:**

**Name of Interviewee:**

**Organization Name:**

**Title:**

**Contact Info:**

**Name of Interviewer:**

### **BACKGROUND**

1. What is the mandate/role of your organization?
2. Since when has your organization been involved in the PILESLAMP Project?
3. What particular role does your organization play with the project?
4. In your opinion, what have been the key successes of the project?
5. In your opinion, what have been the key challenges faced by the project? E.g. delays in implementation, lack of project outreach, etc.
6. How could these challenges have been mitigated?

### **STAKEHOLDER COLLABORATION**

1. Which project stakeholders/beneficiaries do you deal with directly?
2. What is the mechanism for collaboration with the project? E.g. quarterly meetings, etc.
3. In your opinion, which stakeholders have played a key role in ensuring the project's success?
4. What have been some of the opportunities/positive outcomes of the stakeholder collaboration under this project? E.g. funding leverage, policy support, higher outreach, etc.
5. What have been some of the challenges in regard to collaboration among stakeholders? E.g. difference in organizational priorities, lack of time, etc.

### **STEERING COMMITTEE**

1. How effective has been the PSC been performing its duties of oversight (e.g. review of Annual Work Plans, Annual Progress Reports), and guidance (e.g. linkages to UNDP corporate policy decisions) PMO linkages with UNDP-China?
2. What key role has the PSC played in guiding / facilitating the project implementation? Any specific examples?
3. How could the role of the PSC have been strengthened further?

## **RELEVANCE**

1. What is the key role that your organization has played in the project's success? E.g. policy support, co-financing in cash/kind, business conversion, mainstreaming into other programming, etc.
2. How does the project fit into the strategic priorities and current programming of your organization?
3. How can/will the project's successes/activities feed into future programming/strategy of your organization?
4. In addition to PILESLAMP, what other EE lighting programs has your agency been involved in? Has there been any linkage between PILESLAMP and these other programs?
5. How would you rate the comparative contributions and challenges of PILESLAMP with these other programs?

## **CAPACITY BUILDING & SUPPORT**

1. How have the project activities contributed to building the capacity of your organization? (e.g. training of personnel, technology transfer, policy support, market mapping, etc)
2. Are you satisfied with the level of administrative and technical support provided by the project to your organization or to other stakeholders? If yes, why? If no, why not?
3. What were the key problems faced by your organization in receiving support from the project? E.g. funding delays, outdated or advanced technology transfer, etc.
4. How were these problems resolved?

## **REPLICATION& UP-SCALING**

1. Are there any mechanisms in place for the up-scaling of the training programs implemented by the project?
2. The project has implemented a number of successful pilots. To what extent have these pilots been replicated by other stakeholders, e.g. manufacturers, testing laboratories, distribution channels, etc. How?
3. What are the potential opportunities for such replication?
4. What are the potential challenges for such replication?
5. How can these challenges be mitigated?

## **SUSTAINABILITY**

1. Will there be opportunity for the project stakeholders from the business and/or public sector to continue collaboration after project end? How
2. What can the project do to institutionalize such collaboration platforms before it closes?
3. Which of the key project activities are sustainable in the medium and long term? Why/How?

4. Which of the project activities are not sustainable in the medium and long term? Why/How?
5. What can be done to increase the chances of sustainability of some of these activities?

#### **LESSONS LEARNED & RECOMMENDATIONS**

1. In your opinion, what are the key lessons learned from the project?
2. Based on the project implementation experience, what are your suggestions for improvement in future projects?



**ANNEX 03****DETAILED MISSION SCHEDULE**

| Content  | Date/Time  |
|--|--|
| Meeting at the PMO (summary project overview PPT from PMO, plus depth questions and exchange of additional information/Documents as required by TE team) | 17 November 2014<br>9:00 AM                      |
| Ongoing data gathering and interviews as requested by the TE team  | 17 November 2014 – 18 November 2014              |
| PPT Presentation of initial TE findings and recommendations  | 27 November 2014<br>1:00 PM<br>UNDP China Office |
| Validation of financial and other reporting information, additional analysis....   | 18 November 2014 – 25 November 2014              |
| Submission of draft TE   | 17 December 2014                                 |

**ANNEX 04****LIST OF STAKEHOLDERS INTERVIEWED**

| Name              | Designation                                    | Organization  |
|-------------------|--|---|
| Ms. Liu Shujun    | Programme Manager<br>Energy & Environment Team | UNDP Country Office - China                                     |
| Ms. Teng Yue      | Project Officer<br>Energy & Environment Team   | UNDP Country Office - China                                     |
| Mr. Stuart        | Chief Technical Advisor                        |   |
| Mr. XuZhiqiang    | PSC member                                     | National Energy Conservation Center                             |
| Ms. Yu Chong      | Expert team member                             | Energy Research Institute                                       |
| Mr. Yang Bo       | PMO Director                                   | PIESLAMP PMO  |
| Ms. Lv Fang       | PMO Vice Director                              | PIESLAMP PMO  |
| Ms. Huang         | PMO Staff                                      | PIESLAMP PMO  |
| Mr. Chen Gang     | PMO Staff                                      | PIESLAMP PMO  |
| Mr. LvWenbin      | National Project Director                      | National Development and Reform Commission (NDRC)               |
| Mr. Jiang Binrong | National Project Coordinator                   | National Development and Reform Commission (NDRC)               |
| Mr. MaXiaochen    | Finance manager                                | China International Center for Economic and Technical Exchanges |
| Ms. Chou Shuang   | Sub-contract project leader                    | Beijing Semi-Conductor Lighting Promotion Technology Center     |
| Mr. Zhao Jianping | Sub-contract project leader                    | China Academy of Building Research                              |
| Mr. WangShuxiao   | Sub-contract project staff                     | China Academy of Building Research                              |
| Ms. Liu Qian      | Sub-contract project leader                    | National Lighting Test Centre (Beijing), Beijing                |
| Ms. Jiang Yinjin  | Sub-contract project staff                     | National Lighting Test Centre (Beijing), Beijing                |
| Mr. Zhao Yuejin   | Sub-contract project leader                    | China National Institute of Standardization                     |
| Ms. Wan Zhuo      | Sub-contract project staff                     | China Association of Lighting Industry, Beijing                 |
| Mr. Chen Gang     | Sub-contract project leader                    | China Association of Lighting Industry, Beijing                 |
| Ms. Shen Ying     | Sub-contract project leader                    | Beijing Eco-island Science & Technology Co. Ltd                 |

- i.** Opening page:
  - Title of UNDP supported GEF financed project
  - UNDP and GEF project ID#s.
  - Evaluation time frame and date of evaluation report
  - Region and countries included in the project
  - GEF Operational Program/Strategic Program
  - Implementing Partner and other project partners
  - Evaluation team members
  - Acknowledgements
- ii.** Executive Summary
  - Project Summary Table
  - Project Description (brief)
  - Evaluation Rating Table
  - Summary of conclusions, recommendations and lessons
- iii.** Acronyms and Abbreviations  
(See: UNDP Editorial Manual<sup>10</sup>)
- 1.** Introduction
  - Purpose of the evaluation
  - Scope & Methodology
  - Structure of the evaluation report
- 2.** Project description and development context
  - Project start and duration
  - Problems that the project sought to address
  - Immediate and development objectives of the project
  - Baseline Indicators established
  - Main stakeholders
  - Expected Results
- 3.** Findings  
(In addition to a descriptive assessment, all criteria marked with (\*) must be rated<sup>11</sup>)
- 3.1** Project Design / Formulation
  - Analysis of LFA/Results Framework (Project logic /strategy; Indicators)
  - Assumptions and Risks
  - Lessons from other relevant projects (e.g., same focal area) incorporated into project design
  - Planned stakeholder participation

---

<sup>10</sup> UNDP Style Manual, Office of Communications, Partnerships Bureau, updated November 2008

<sup>11</sup> Using a six-point rating scale: 6: Highly Satisfactory, 5: Satisfactory, 4: Marginally Satisfactory, 3: Marginally Unsatisfactory, 2: Unsatisfactory and 1: Highly Unsatisfactory, see section 3.5, page 37 for ratings explanations.

- Replication approach
- UNDP comparative advantage
- Linkages between project and other interventions within the sector
- Management arrangements

### 3.2 Project Implementation

- Adaptive management (changes to the project design and project outputs during implementation)
- Partnership arrangements (with relevant stakeholders involved in the country/region)
- Feedback from M&E activities used for adaptive management
- Project Finance:
- Monitoring and evaluation: design at entry and implementation (\*)
- UNDP and Implementing Partner implementation / execution (\*) coordination, and operational issues

### 3.3 Project Results

- Overall results (attainment of objectives) (\*)
- Relevance(\*)
- Effectiveness & Efficiency (\*)
- Country ownership
- Mainstreaming
- Sustainability (\*)
- Impact

## 4. Conclusions, Recommendations & Lessons

- Corrective actions for the design, implementation, monitoring and evaluation of the project
- Actions to follow up or reinforce initial benefits from the project
- Proposals for future directions underlining main objectives
- Best and worst practices in addressing issues relating to relevance, performance and success

## 5. Annexes

- ToR
- Itinerary
- List of persons interviewed
- Summary of field visits
- List of documents reviewed
- Evaluation Question Matrix
- Questionnaire used and summary of results
- Evaluation Consultant Agreement Form

| Position             | Name           | Organization   |
|----------------------|----------------|--|
| <b>Leader</b>        | Xie Ji         | Department of Resource Conservation and Environment Protection, NDRC                                 |
| <b>Deputy Leader</b> | Guo Wensong    | Ministry of Finance, MOF   |
|                      | Carsten Germer | UNDP China   |
| <b>Member</b>        | Xu Luping      | Department of High and New Technology Development and Industrialization, MOST                        |
|                      | You Young      | Department of Energy Saving and Comprehensive Utilization, MIIT                                      |
|                      | Xiong Jing     | Ministry of Environment Protection   |
|                      | Zhao Zesheng   | Department of City Construction, MHUD  |
|                      | Wang Yingjun   | Department of Metrology and General Administration of Quality Supervision, Inspection and Quarantine |
|                      | Liu Chengmao   | National Government Offices Administration   |
|                      | Han Wenke      | Energy Research Institute, NDRC  |
|                      | Xu Zhiqiang    | National Energy Conservation Center, NECC  |
|                      | Chen Yansheng  | China Association of Lighting Industry, CALI   |
|                      | Pan Xun        | Global Environment Facility-China, GEF China   |

## 项目指标

## TARGETS

| Strategy and Expected Outcomes/Outputs  |   | Indicators (Outcomes and Output Level)  | October 2014  | Rating |
|---|---|---|---|--------|
|   |   |   |   |        |
| <b>GOAL :</b><br>Reduction of GHG emissions from the use of lighting products in the commercial and residential (C & R) sectors in China.   | 1 | CO2 emission reduction from C&R by end -of prject, MMT/yr   | 25.6 million tons   | HS     |
|   | 2 | Reduction in the annual growth rate of CO2 emissions by EOP (compared to BAU),%                         | 1.87  | HS     |
| <b>Objective:</b><br>Enhanced promotion and implementation of the utilization of energy saving lamps (ESLs) in China through the transformation of the local lighting products market and the phasing-out of incandescent lamp production and sale. | 3 | Reduction in total electricity usage in the Commercial & Residential (C&R) sectors by EOP, GWh/yr       | 34,199 GWh  | HS     |
|   | 4 | % improvement in market share of ESLs by EOP, %   | 18  | S      |
| <b>COMPONENT 1: LIGHTING INDUSTRY CAPACITY ENHANCEMENT</b>  |   |   |   |        |
|   | 5 | No. of IL manufacturers that converted to ESL production by EOP ( supported by project and Government ) | 10 supported conversions initiated (5 by project, 5 wholly by government)<br><br>5 conversions complete which were supported by project | HS     |
|   | 6 | Annual volume of ESL production starting Year 2 (billion pieces)  | 4.97  | HS     |

|   |    |   |        |    |
|---|----|---|--------|----|
|   | 7  | Annual volume of ESL product exports from China starting Year 2 (billion pieces)  | 3.77   | HS |
| <b>Activity 1.1 : Promotion of conversion of IL manufacture</b>         | 8  | No. of IL manufacturers that were trained on all aspects of IL to ESL production conversion by EOP  | 31     | S  |
|   | 9  | No. IL to ESL conversion pilot projects implemented until EOP (which is supported by project)   | 5      | HS |
|   | 10 | No of trained IL manufacturers that have developed business plans for IL to ESL production conversion by EOP                                    | 10     | HS |
|   | 11 | No. of IL manufacturers that start replicating pilot conversion projects: convert (partly and/or full) to ESL production by EOP(self financed ) | 2      | S  |
|   | 12 | Cumulative value of investments (US\$ million) on IL production conversion by EOP   | 27.31m | HS |
|   | 13 | Cumulative value of investments on ESL manufacturing by EOP (US\$ million)  | 31.31m | HS |
| <b>Activity 1.2: Improvement of supply capacity of high quality ESL</b> | 14 | Annual % of locally manufactured ESLs that meet established quality criteria starting Year 2,%  | 88     | S  |
|   | 15 | No. of new and amended EE and performance standards for ESLs proposed by EOP  | 9      | HS |

|  |    |  |                     |    |
|--|----|--|---------------------|----|
|  | 16 | Annual volume of locally made ESLs (billion pieces) starting Year 1<br>1. Produced<br>2. Exported<br>3. Sold and used domestically | 4.97<br>3.77<br>1.2 | HS |
|  | 17 | No. of local ESL manufacturers that have ISO 9000 Quality Control Certifications by EOP  | 120                 | S  |
|  | 18 | No. of national laboratories that can carry out tests on hazardous substances in ESL by EOP  | 3                   | HS |
| <b>Activity 1.3: Reduction of environment-relevant /hazardous waste during ESL production and product disposal</b> | 19 | No. of lamp manufacturers that were trained on cleaner ESL production processes minimizing Hg content and (hazardous) waste by EOP | 51                  | S  |
|  | 20 | No. of local lamp manufacturers assisted with cleaner production audits by EOP   | 9                   | HS |
|  | 21 | No. of local lamp manufacturers employing clean production processes by EOP  | 8                   | S  |
|  | 22 | No. of waste ESL recycling/recovery facilities built and operational by EOP  | 5                   | S  |
| <b>COMPONENT 2: ESL MARKET DEVELOPMENT AND PRODUCT PROMOTION</b>   |    |  |                     |    |
|  | 23 | % market share of ESL in rural pilot areas by EOP, %   | 12.36               | S  |
|  | 24 | % market share of ESL in the national lighting market by EOP, %  | 85                  | S  |



|   |    |  |              |    |
|---|----|--|--------------|----|
|   | 25 | Annual % market share of residential-used ESL starting year 2:<br>1. Large and medium-size cities, %<br>2. Small cities and rural areas, % | 90.9<br>74.3 | HS |
|   | 26 | Annual % of commercial buildings in major urban areas that are using ESLs starting Year 2, %   | 95           | S  |
| <b>Activity 2.1: Strengthening of ESL promotion networks to implement large scale promotion campaigns</b> | 27 | A widely known, widely-supported and improved ESL promotion network established by EOP   | 12           | HS |
|   | 28 | No. of ESL promotional schemes developed under the project and implemented in the provinces by EOP   | 12           | HS |
|   | 29 | No. of ESL promotional schemes developed by the ESL promotion network and implemented in the provinces by EOP                              | 20           | S  |
|   | 30 | No. of local energy conservation centers, that are active members of the ESL promotion network by EOP                                      | 12           | S  |
|   | 31 | No. of local energy service providers that benefited (in terms of projects contracts) from the ESL promotion network by EOP                | 21           | S  |
| <b>Activity 2.2: Improvement of marketing channels for ESLs in large and medium sized cities</b>          | 32 | No. of signed and implemented voluntary commitment programs by EOP   | 50           | S  |

|   |    |   |         |    |
|---|----|---|---------|----|
|   | 33 | Annual average % change in the volume of ESL and IL sales from the retailers that implemented the voluntary commitment programs starting Year 2,% | 20      | S  |
|   | 34 | Annual % market share of residential-used ESL sales in large/medium size cities and big towns starting Year 2                                     | 90.9    | S  |
|   | 35 | No. of operational GLICs established by EOP   | 21      | S  |
|   | 36 | No. of participants in the 'Green Lights Partnership' program   | 106     | HS |
|   | 37 | Annual No. of visitors into GLICs starting year 2   | 370,000 | S  |
| <b>Activity 2.3: Supporting expand ESL marketing channels in small cities and rural areas</b> | 38 | No. of supermarkets participate in pilot program for small cities selling ESL by EOP  | 164     | HS |
|   | 39 | No. of towns with operating marketing channels established in pilot rural areas by EOP  | 647     | HS |
|   | 40 | Annual % increase in no. of ESL retailers in pilot small cities and rural areas starting Year 2   | 42      | HS |
|   | 41 | Annual % increase of ESL sales in pilot small cities and rural areas starting Year 2  | 54      | S  |
|   | 42 | % market share of ESL in pilot small cities and rural areas by EOP,%  | 18      | S  |
|   | 43 | % share ESL types that are available at about 8 RMB in small cities and rural areas by EOP  | 10.5    | S  |

|   |    |  |  |    |
|---|----|--|--|----|
| <b>Activity 2.4: Promotion and awareness campaign to improve demand for ESLs</b>                            | 44 | No. of ESL awareness raising and promotion events designed and carried out by EOP                                  | 4  | HS |
|   | 45 | No. of types of ESL promotional materials produced and disseminated each year starting Year 1                      | 26   | S  |
| <b>Activity 2.5: Facilitation of more affordable and accessible financing options fore ESL applications</b> | 46 | No. of promotion workshops on ESL projects for the financial sector conducted by EOP                               | According to MTR recommendation, this activity is cancelled. | -  |
|   | 47 | No. of guidebooks on ESL project evaluation and ESL project design and financing printed and distributed by EOP    | According to MTR recommendation, this activity is cancelled. | -  |
|   | 48 | No. of banks & financial institutions that are interested in supporting ESL projects by EOP                        | According to MTR recommendation, this activity is cancelled. | -  |
|   | 49 | No. of training courses for the banking/financial institutions designed and conducted by EOP                       | According to MTR recommendation, this activity is cancelled. | -  |
|   | 50 | No. of identified and/or designed financing schemes that are acceptable to banks and financial institutions by EOP | According to MTR recommendation, this activity is cancelled. | -  |
|   | 51 | No. of banks and financial institutions that are adopting financing schemes developed under the project by EOP     | According to MTR recommendation, this activity is cancelled. | -  |
| <b>COMPONENT 3: ESL POLICY AND INSTITUTIONAL SUPPORT</b>  |    |  |  |    |
|   | 52 | No. of accepted policies on the phasing out of the production and use of ILs by EOP                                | 1  | HS |

|  |    |   |      |    |
|--|----|---|------|----|
|  | 53 | No. of accepted policies on the widespread production and application of ESLs in the domestic market by EOP   | 2    | HS |
|  | 54 | A ready-to-implement roadmap developed for IL phase-out and expanded ESL promotion by EOP   | 1    | HS |
| <b>Activity 3.1: Annual investigation and analysis of ESL market development</b>                         | 55 | No.of annual reports produced and published together with an analysis of trends by EOP  | 6    | S  |
|  | 56 | % Increase in sales of ESLs by EOP,%  | 42.3 | HS |
| <b>Activity 3.2.1: Development of policy recommendations on IL manufacturers business conversion</b>     | 57 | Comprehensive policy study on the conversion of ILs manufacturing completed, accepted and submitted to relevant GOC agencies (including NDRC) by EOP              | 1    | HS |
|  | 58 | Recommended IL phase out policy/legislation/regulation (IL policies) from completed policy study developed, and fed into the GOC law making process by EOP        | 2    | HS |
| <b>Activity 3.2.2: Development of policy recommendations on increasing domestic market share of ESLs</b> | 59 | One comprehensive policy study on increasing the domestic market share of ESLs completed, accepted and submitted to relevant GOC agencies (including NDRC) by EOP | 2    | HS |
|  | 60 | Relevant policy/legislation/regulation (ESL policies) from completed policy study developed, and fed into the GOC law making process by EOP                       | 2    | HS |

|   |    |   |   |    |
|---|----|---|---|----|
| <b>Activity 3.3.1: Development of China's roadmap of IL phase-out</b>                     | 61 | An accepted and ready for implementation roadmap for IL phase-out and expanded ESL promotion by EOP | 4 | HS |
| <b>Activity 3.3.2: Development of China's medium and long-term plan for ESL promotion</b> | 62 | An accepted and ready for implementation medium and long term plan for ESL promotion                | 2 | HS |

| Strategy and Expected Outcomes /Outputs  | The Policy Research   |
|--|---|
| <b>COMPONENT 3: ESL POLICY AND INSTITUTIONAL SUPPORT</b>   |   |
|  | <p>The research of matched policies for the implementation of IL phase-out roadmap</p> <ol style="list-style-type: none"> <li>1. Policy development proposals on taxation policy on phasing-out incandescent lamps</li> <li>2. Development of China's special medium and long-term plan for ESL</li> </ol> <p>research of China's Roadmap for the Phase-out of Incandescent Lamps</p>   |
| <b>Activity 3.1: Annual investigation and analysis of ESL market development</b>                         | <ol style="list-style-type: none"> <li>1、 Survey of the China Lighting Market in 2009、 2010、 2011、 2012、 2013</li> <li>2、 Investigation of public electricity conservation indicator from lighting sector</li> </ol>  |
| <b>Activity 3.2.1: Development of policy recommendations on IL manufacturers business conversion</b>     | <p>CALI: Planning of IL manufactures business conversion</p> <ol style="list-style-type: none"> <li>1. Technical strategies and policy suggestions to enable transition from inefficient lighting products to efficient solid state alternatives</li> <li>2.The research of matched policies for the implementation of IL phase-out roadmap</li> </ol>  |
| <b>Activity 3.2.2: Development of policy recommendations on increasing domestic market share of ESLs</b> | <ol style="list-style-type: none"> <li>1. Policy development proposals on taxation policy on phasing-out incandescent lamps</li> <li>2. Research of feasibility and policy recommendations for phase-out IL and promotion CFL in market</li> </ol> <ol style="list-style-type: none"> <li>1. Research the mid-term review proposal to evaluate the effect of the phasing-out roadmap</li> <li>2. Strategic research of green lighting in China</li> </ol> |

|   |   |
|---|---|
| <b>Activity 3.3.1:<br/>Development of<br/>China's roadmap<br/>of IL phase-out</b>                         | <ol style="list-style-type: none"> <li>1. Research of China's Roadmap for the Phase-out of Incandescent Lamps</li> <li>2. The research of matched policies for the implementation of IL phase-out roadmap</li> <li>3. Development of China's special medium and long-term plan for ESL</li> <li>4. Technical strategies and policy suggestions to enable transition from inefficient lighting products to efficient solid state alternatives</li> </ol> |
| <b>Activity 3.3.2:<br/>Development of<br/>China's medium<br/>and long-term plan<br/>for ESL promotion</b> | <ol style="list-style-type: none"> <li>1. Development of China's special medium and long-term plan for ESL</li> <li>2. Strategic research of green lighting in China</li> </ol>   |