TERMINAL EVALUATION

Project ID:	4173
Project Name:	Lighting Market Transformation in Peru
Countr(ies):	Peru
Implementing Agency:	UNEP

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I. Overview

A. Description

Project name Lighting Market Transformation in Peru	
Country Peru	
GEF ID 4173	Implementing Agency UNEP
Executing Entity Ministry of Energy and Mines (MEM)	
Trust Fund GET	Project Type FSP
Objective To accelerate transformation of the lighting market in Peru through enhanced promotion and implementation of the utilization of energy saving lamps (ESLs) and the phasing-out of incandescent lamp (ILs) imports and sales.	

B. Key Dates

CEO Endorsement/Approval 9/12/2012	Agency Approval 11/21/2012
Implementation Start 12/2/2012	First Disbursement 3/1/2013
Expected MTR 11/30/2014	MTR Submission 5/6/2026
Actual MTR	Expected Completion 4/30/2018
Actual Completion 4/30/2018	Actual TE 10/1/2018
TE Submission 5/6/2026	Final Disbursement

C. Disbursements

Project Financing 1,799,600.00	Cumulative Disbursement 1,411,016.67

II. PROGRESS STATUS AND ISSUES

A. Main Terminal Evaluation Findings

The evaluation findings indicate that "Lighting Market Transformation in Peru" was moderately successful in generating the expected outputs and outcomes. The project effectively supported enhanced consumer awareness and increased energy-saving lighting (ESL) sales (component 5), and informed urban market actors (importers, distributors and retailers) of the advantages of LED and energy-saving lighting technology (Component 4). The project was moderately successful in developing an enabling regulatory and institutional framework (Component 1) and unsuccessful in its efforts to establish mechanisms and a facility for compact fluorescent lamp (CFL) recycling and disposal. After the project was approved, its focus was shifted from the promotion of CFLs to LED technology, which offers advantages in energy efficiency and environmental safety; this was done effectively and represented good adaptive management.

The project identified the appropriate bottlenecks in its design. The project´s design and implementation strategy addressed key issues and mandates that contained in landmark Law 27345 for the "Efficient Use of Energy" (DS 53/2007). Although market transformation towards ESL technology was already underway, the project addressed the need to ensure that minimum energy efficiency standards were met among the various incoming lighting products from different manufacturers and countries, which were found to have high variance in their performance. Related to this, the project also responded to the need to ensure energy efficiency labeling to inform consumers and enforce appropriate product information. While prices for LED lightbulbs have stabilized and are approximate to those for equivalent CFLs, and the combination of market trends and investment portfolios in energy efficiency do not suggest a finance gap, the US$ 25 million agreement between the Directorate for Energy Efficiency and the Energy Security Investment Fund for the replacement of CFL with LED bulbs among low-income households should broaden access to energy-efficient lighting. There is likely to be a slower uptake in the use of LED in rural areas, albeit more influenced by availability than income.

Project interventions were generally appropriate in addressing the main challenges related to lighting market transformation in Peru, by focusing efforts on updating the ESL regulatory framework through minimum performance standards, lighting standards for the public sector, mandatory labeling and quality control. However, achievement levels in terms of results and impact fell below expectations: The minimum performance standards have yet to be approved, mandatory labeling only came into effect towards the end of the project, and the environmental threats posed by accelerated CFL substitution and disposal were not been addressed in a satisfactory manner.

Project outcomes addressing consumer and market actor awareness were fully achieved. This is reflected in the consumer surveys that followed the awareness campaigns, and in the sustained increase of LED imports and sales. These outcomes were driven for the most part by ongoing market trends and consumer receptivity to ESL technologies, with the project assuming a supportive role through information dissemination, awareness raising and the approval of mandatory energy efficiency labelling for lighting products. The importation and sale of LED bulbs have absorbed a growing share of the national lighting market and presently surpass those of CFLs, with IL bulbs in process of being phased out. Likewise, the main importers, distributors and vendors of lighting products are more aware of the advantages of ESLs, in part due to the training workshops and information dissemination activities conducted by the project.

Pilot initiatives were implemented to promote LED with some demonstration impact. Minimum targets for the replacement of inefficient lighting in public buildings were exceeded, although there was little impact on public lighting systems (one pilot project was implemented in the town of Aguas Calientes, Cusco province). A greater scale of impact is expected over the next year, through a recent agreement between the

General Directorate for Energy Efficiency (DGEE), the Energy Security Investment Fund (FISE) and national energy regulatory entity OSINERGMIN for the allocation of US$ 25 million to replace CFLs with LED bulbs in low-income households on a national scale. This would address the financial gap of shifting the national lighting market to improved ESL technologies, complementing the gradual reduction in the price of LED bulbs that are currently equivalent to CFLs in terms of cost to the consumer.

The project was moderately successful in establishing a regulatory and institutional framework for accelerated ESL market transformation. The early consolidation of enabling regulatory and institutional frameworks was essential towards enabling the full achievement of key outcomes and the project objective. This was partially achieved through the approval of mandatory energy efficiency labelling for lighting products (with efficiency ratings and color coding), and the adoption of LED lighting specifications for the public sector that will influence future procurements. Technical LED specifications could be lowered for rural public lighting systems by applying wattage equivalent to those of existing sodium vapor lamps, enhancing energy efficiency and cost savings. Minimum energy performance standards for lighting products that are consistent with EC standards were designed and are currently being reviewed by the Ministry of Energy and Mines; however, final approval by government decree requires clearance at different levels and could take an additional two or three years.

The project contributed to improvements in the institutional framework for ESL market transformation. Monitoring of compliance with energy efficiency labelling was assumed by the National Institute for the Defense of Competition and Protection of Intellectual Property (INDECOPI), a government entity that promotes competitiveness and information transparency. However, interviewed distributors and retailers have noted that enforcement is directed at lighting product vendors, and not the importer or distributor which bears primary responsibility for compliance. Another project-related advance is the electrical residue disposal plans (RAE) that will be required for public enterprises and will be monitored by PRODUCE (Ministry of Production); however, institutional capacities are not in place to implement the RAEs, nor are there provisions for enforcement or non-compliance. Although the planned quality control and verification system was not implemented under the project´s second component, one national laboratory has upgraded its facilities and is in process of receiving international accreditation for this purpose.

The project was less effective in establishing an operational system for lighting product verification and quality control, and was unable to develop CFL recycling and disposal mechanisms. There was less progress towards establishing a quality control and verification system for incoming light bulbs, which is fundamental to enforce energy efficiency standards given the high variance in performance between different brands and countries of manufacture. The government´s decision to not authorize the participation of Customs in this initiative undermined the viability of the project´s second component and outcome. The present situation does not enable the enforcement of minimum energy performance standards that are presently in process of review and approved.

More concerning is the lack of an organized system for CFL recollection, recycling and disposal. In retrospect, the third project component and outcome were not feasible (and less so given short timelines) due to the lack of technical capacity – there is no CFL recycling and collection is limited to five urban enterprises that dispose used bulbs in underground landfills designated for electric waste. This raises potential environmental and health risks associated with the inadequate disposal of CFLs as they are increasingly replaced and discarded, particularly in the smaller municipalities and rural areas that are not served by collection services.

The project objective is in process of being achieved, and the continued transformation of Peru´s lighting market is highly likely. Lighting transformation is driven by global lighting technology and market tendencies that directly influence the national market, as demonstrated over the past decade by the influx of compact fluorescent lamps (CFLs) in replacement of incandescent lighting, followed by the sustained growth

of LED imports and sales over CFLs and incandescent lighting (IL), which are in process of being phased out. Indeed, the national lighting market has been highly receptive to ESL technology and consumers are generally informed and responsive. While consumer awareness of ESL is likely to be higher in urban areas that have greater access to information, the ongoing transformation process is likely to decrease the availability of CFLs on a national scale.

The project´s has played a supportive role by catalyzing regulatory improvements and raising consumer awareness through energy efficiency labeling, technical specifications for LED lighting, and promotional campaigns. The combined effect of these initiatives has clearly enhanced conditions for accelerated market transformation. However, full achievement of the project objective and goal require (i) the approval of minimum energy performance standards for lighting products and (ii) implementation of a national quality control and verification system for incoming lighting products.

Negative environmental impacts are likely to the extent that national stocks of CFLs are replaced and discarded without adequate collection or disposal facilities. A potentially negative impact of Peru´s ongoing lighting market transformation are the environmental and health risks that are associated with mercury residues contained in CFL bulbs. For this reason, the project devoted one of its components to the development of recycling/disposal mechanisms and facilities. The failure to advance in this direction is a significant shortcoming that could lead to environmentally hazardous situations as national stocks of CFLs are expended over the next three to five years, particularly in the smaller municipalities and rural areas that are outside the urban grid. This is a significant risk that requires attention on the part of the Ministry of Energy and Mines, the General Directorate for Energy Efficiency and the Ministry of Environment in particular.

B. Stakeholder Engagement

The project´s institutional arrangements were inclusive. The combination of project steering and technical committees enabled the incorporation of public, private and civil society stakeholders, ensuring technical guidance and oversight. In this respect, the project strategy assumed a catalytic function by articulating different actors around a common goal. However, the sustained engagement of the different institutions and stakeholders was undermined by frequent staff changes and required considerable coordination effort on the part of the project team.

C. Gender Equality

Gender was not an issue in the project´s design and not directly relevant to the lighting market, where gender trends are not detected in selecting lighting technologies. Gender participation in the project has been mentioned.

D. Knowledge Management

N/A

III. Core Indicators

IV: Co Financing

Sources of Co-financing	Name of Co-financier	Type of Co-financing	Investment Mobilized	Anticipated at CEO($)	Materialized at MTR($)	Materialized at TE($)
Recipient Country Government	MINEM	Grant		3,299,404.00		6,501,826.00
Recipient Country Government	MINEM (Energy and Mining)	In-kind		1,000,596.00		
Recipient Country Government	COFIDE (dev. and Mining	Grant		3,540,000.00		172,484.00
Recipient Country Government	COFIDE (dev. and Mining	In-kind		2,360,000.00		
Recipient Country Government	MVC (Housing)	Grant		1,509,434.00		885,609.00
Recipient Country Government	FONAM	In-kind		512,340.00		1,419,031.00
Recipient Country Government	MINAM	In-kind		304,756.00		553,840.00
Private Sector	Philips	Grant		400,000.00		1,353,517.00
Private Sector	Power companies	In-kind	Recurrent expenditures			1,274,952.00
Recipient Country Government	Municipal governments	In-kind	Recurrent expenditures			499,622.00
Recipient Country Government	OSINERO	In-kind	Recurrent expenditures			9,688.00
Recipient Country Government	EMAPE	In-kind	Recurrent expenditures			115,273.00
Recipient Country Government	Petroperu	In-kind	Recurrent expenditures			71,274.00
Other	Universidad San Agustin	In-kind	Recurrent expenditures			81,267.00

Total Co-financing		**12,926,530.00**	**0.00**	**6,264,073.00**

Comments

V: ENVIRONMENTAL AND SOCIAL SAFEGUARDS

Overall Project/Program Risk Classification

PIF	CEO Endorsement/Approval	MTR	TE
			Not available at this stage

Measures to address identified risks and impacts

VI. ANNEX

Uploaded Document

Document Category	Prefix	Title
M and E Document	Terminal Evaluation (TE)	4173_2018_TE_UNEP_PERU_CCM_FSP_SPCC_Market_Lighting_in_Peru