

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

MEXICO

OPTIMA ENERGIA ENERGY EFFICIENT ROADWAY LIGHTING

(ME-L1166)

ENVIRONMENTAL AND SOCIAL MANAGEMENT REPORT (ESMR)

MAY 2015

This document was prepared by the Project Team consisting of: Matthew McClymont (SCF/SMU), Project Team Leader; Patrick Doyle (SCF/SMU); Ignacio Fernandez Stearns (SCF/SMU); and Vanessa Matos (SCF/SMU); under the supervision of: Kelle Bevine, Unit Chief (SCF/SMU).

I. INTRODUCTION

Country: Mexico
Sector: Energy Efficiency and Renewable Energy
Name: Optima Energia Energy Efficient Roadway Lighting
Borrower: CELSOL S.A.P.I. de C.V (Optima Energia)
Proposed A Loan: US\$9.25 million
Environ. Class.: Category C

II. PROJECT DESCRIPTION

- 2.1 The Project consists of the installation of an energy efficient municipal public lighting system in the municipality of Ensenada. The overall objective is to help Optima Energia finance climate change mitigation projects in the public lighting sector while providing operational savings and improved public safety to municipalities and the communities they serve. The Project includes the installation of approximately 25,000 energy efficient luminaires.

A. Environmental and Social Settings

- 2.2 The Project will be located in the municipality of Ensenada, Baja California, Mexico. Ensenada is a coastal city, the third largest in the state of Baja California. It is the municipal seat and cultural and commercial center of Ensenada Municipality, one of five into which the state is divided. The city of Ensenada has a population of 466,814 and a total of 25,000 street lights.
- 2.3 The Project encompasses urban, suburban and surrounding sectors that are entirely anthropized with residential, commercial, and industrial infrastructure (see Figure 1). Therefore, the site cannot be described as a natural habitat since the site has already been impacted broadly by human settlements.
- 2.4 The Project involves retrofitting the existing street and public lighting system with energy efficient luminaires. All existing high-pressure sodium vapor (HPS) fixtures will be replaced with new LED fixtures. No more than 2% of the installations will be entirely new fixtures on streets and areas that are already urbanized but lack lighting, following the municipality's instructions.



Figure 1

B. Project Schedule and Workforce

- 2.5 It is estimated that the construction phase will last 4 months, during which the 25,000 luminaires will be replaced. The Project is expected to employ approximately 60 workers during the construction phase, organized in 20 crews of three (one driver, one electrician, and one helper).
- 2.6 Optima Energia evaluates contractors by conducting site visits and audits to determine the qualifications and procedures of each firm. Once a contractor is selected, the installer crews are trained by Optima personnel to ensure proper understanding of the uninstallation and installation procedures following the appropriate manuals (*Manual para Instalación y Pruebas de falla en Luminarias de Tecnología LED Modelo XSL*). Additionally, Optima Energia supervisors will supervise 5 crews

each. Under Mexican federal labor laws, each contractor is responsible for ensuring the safety and training procedures of their personnel are followed, and must follow applicable laws at all times.

III. COMPLIANCE STATUS AND PROJECT STANDARDS

A. Appraisal Process and Local Requirements

- 3.1 The Project has low environmental risk with an indirect potential risk consisting of the disposal of the HPS during the construction phase, which is the responsibility of the municipality. According to Article 31 of the "*Ley de prevención y gestión integral de residuos*" the municipality will be required to present a disposal plan to the Semarnat (*Secretaría del Medio Ambiente y Recursos Naturales*) and act accordingly. Article 42 of the Law allows for the municipality to sub-contract such service from a specialized company only after the firm has been registered in the Semarnat.
- 3.2 According to Bank's Environmental Safeguards Policy, specifically Directive B.03, the Project has been classified as Category "C" as the potential negative environmental and social impacts and risks are likely to cause minimal or no negative environmental and associate social impacts and risks. This operation does not involve physical modification of the environment or generation of solid waste, effluents or gas emissions. The Project is clearly designed to produce positive environmental outcomes. The Project triggers the following directives of IDB's OP-703 Environmental and Safeguards Policy: B.1 Bank Policies; B.2, Country Laws and Regulations; B.3, Screening and Classification; B.7, Supervision and Compliance; and B.11, Pollution Prevention and Abatement. The OP-704 Natural and Unexpected Disasters Policy will also be triggered as the Project occurs in an earthquake and hurricane area.
- 3.3 Table 1, below, illustrates the Project's capacity to comply with IDB's various policies and directives.

Table 1: Compliance with IDB Policies and Directives

Policy / Directive	Applicable Aspect	Compliance Rationale
B.1 Bank Policies	Compliance with applicable IDB policies	The Project is currently in full compliance with all IDB policies and directives.
B.2 Country Laws and Regulations	Compliance with country laws and regulations	The Project is in compliance with all Mexican laws and regulations.

Policy / Directive	Applicable Aspect	Compliance Rationale
B.3 Screening and Classification	Application of appropriate classification	The Project has been screened using the Bank's toolkit and has been classified as a <u>Category C</u> operation.
B.4 Other Risk Factors	N/A	N/A
B.5 Environmental Assessment Requirements	Due to the nature of the Project, Category C, it is not required to develop an environmental assessment.	According to the " <i>Ley de prevención y gestión integral de residuos</i> " the municipality will be required to present a disposal plan to the Semarnat (environmental agency). The same law gives the municipality the possibility of sub-contracting such service from a specialized company (which has to be previously registered in the Semarnat)
B.6 Consultations	N/A	N/A
B.7 Supervision and Compliance	Monitoring of borrower's compliance with all Bank's environmental and social safeguard requirements	The Project will submit at least one compliance report during the installation and annual compliance reports during the operation phases.
B.8 Transboundary Impacts	N/A	N/A
B.9 Natural Habitats and Cultural Sites	N/A	N/A
B.10 Hazardous Materials	N/A	N/A
B.11 Pollution Prevention and Abatement	Pollution control and CO2 emissions	The Project will implement the adequate waste management program during the installation of the luminaires. The project will reduce the country's CO2 emissions by reducing electricity consumption and eliminate mercury pollution by replacing existing sodium vapor fixtures with LED.
B.12 Project Under Construction	N/A	N/A
B.13	N/A	N/A

Policy / Directive	Applicable Aspect	Compliance Rationale
Noninvestment and Flexible Lending Instruments		
B.14 Multiple Phase and Repeat Loans	N/A	N/A
B.15 Co-financing Operations	N/A	N/A
B.16 In-country Systems	N/A	N/A
B.17 Procurement	N/A	N/A
OP-710 involuntary Resettlement	N/A	N/A
OP-765 Indigenous Peoples	N/A	N/A
OP-704 Disaster Risk Management	Hurricane zone	The Project could be affected by tropical storms and hurricane events.
OP-761 Gender Equality in Development	N/A	N/A
OP-102 Access to Information	Project information disclosure	IDB will make all relevant Project documentation available on its website.

B. Project Requirements and Standards

- 3.4 The Project's operations generate minimal environmental impacts that could pose a risk to the surrounding environment. The Project does not require an environmental license or an environmental impact assessment. The indirect potential risk consisting of the disposal of the HPS during the construction phase will be the responsibility of the municipality, who must follow the "*Ley de prevención y gestión integral de residuos*". During the construction phase, Optima Energia and its sub-contractors will follow occupational safety standards according to "*Norma Oficial Mexicana NOM-031-STPS-2011 (Construcción-Condiciones de seguridad y salud en el trabajo)*".

IV. KEY ENVIRONMENTAL AND SOCIAL IMPACTS AND RISKS

A. Environmental and Social Impacts and Risks

- 4.1 The potential negative environmental and social impacts and risk identified for the Project are minimal due to the nature of the activities that will be carried out during the installation and operational phases. During the installation of the LED luminaires, the main impacts and risks will be those related to the health and safety of the workers since they will be working at heights; generation of solid waste, mainly, due to the disposal of the HPS fixtures by the municipality. In the case of the operational phase, no risks and impacts are predicted other than those related to generation of solid waste because of decommissioning of the Project.

B. Positive Impacts

- 4.2 The project will reduce greenhouse gas emissions through reductions in electricity consumption by replacing 25,000 lamps with LED luminaires. The project is expected to save 13 million kilowatt-hours in electricity and abate approximately 7,400 tons of CO₂ per year or 150,000 tons over the 20 years of useful life of the luminaires. The Project also has highly visible impacts for citizens providing a demonstration effect that is highly replicable throughout large urban areas in Mexico.
- 4.3 The replacement of high pressure sodium (HPS) fixtures with light emitting diodes (LED) luminaires is expected to result in an elimination of potential mercury pollution from lamp fixtures into the surrounding environment. Table 2 below illustrates the mercury content of each technology. The luminaires are also in compliance with the “Dark Sky” certification for light pollution at night.

Table 2: Comparison of Mercury Content in Lighting Fixtures

Metric	HPS (High Pressure Sodium)	LED (Light Emitting Diodes)
Mercury content per lamp	22.1 mg	0 mg
Useful Life	3 years	20 years

- 4.4 Municipalities in Mexico often face challenges with the provision of street lighting, which represents the second highest sources of complaints amongst the communities to the municipalities. Improving the quality of light enables a safer environment for citizens. The absence of street lighting can make pedestrians more vulnerable to assault or burglaries and harms commercial activity. Furthermore, white light applications such as LED can reduce traffic accidents and increase the sense of security perceived by citizens. Figure 2 illustrates the difference in quality of light between HPS and LED.



V. MANAGEMENT AND MONITORING OF ENVIRONMENTAL, SOCIAL, HEALTH AND SAFETY AND LABOR IMPACTS AND RISKS

A. Monitoring and Supervision

- 5.1 Implementation of the environmental and social safeguards for the Project will be monitored and supervised through an Environmental, Social and Health and Safety Compliance Report (ESHSCR). It is expected that one ESHSCR will be delivered to the Bank during the installation phase and one ESHSCR for the operation phase.

VI. REQUIREMENTS TO BE INCLUDED IN THE LEGAL AGREEMENTS

- 6.1 The conditions described below are required to be fulfilled for the Project throughout the life of the loan, in form and substance satisfactory to IDB. The IDB will require within its Loan Agreement that the Project and each Project party (Sponsor, Borrower, or Company) and other Project Environmental parties, including construction companies and operators, and any contractors and sub-contractors will, at all times during the life of the Loan Agreement, comply with the following requirements:
- a. All applicable environmental, social, health and safety, and labor regulatory requirements of Mexico.
 - b. All requirements associated with any environmental, social, health and safety, and labor related permits, authorizations, or licenses that apply to the Project, the Borrower or any party responsible for executing the Project or its mitigation measures
 - c. All environmental, social, health and safety, and labor requirements of the Project contracts and any subsequent modifications

- d. All aspects and components of all of the Project's environmental, health and safety, social and labor documents
- e. All relevant IDB policies such as the Environment and Safeguards Compliance Policy (OP-703), the Disaster Risk Management Policy (OP-704) and the Disclosure of Information Policy (OP-102), the Involuntary Resettlement policy (OP-710), the Operational Policy on Indigenous Peoples (OP-765) and the Gender and Equity in Development Policy (OP-270) and their respective guidelines.

SAFEGUARD SCREENING FORM

PROJECT DETAILS	
IDB Sector	ENERGY-ENERGY EFFICIENCY AND RENEWABLE ENERGY IN END USE
Type of Operation	Other Lending or Financing Instrument
Additional Operation Details	
Country	MEXICO
Project Status	
Investment Checklist	Generic Checklist
Team Leader	McClymont, Matthew (matthewm@IADB.ORG)
Project Title	Optima Energia Energy Efficient Roadway Lighting
Project Number	ME-L1166
Safeguard Screening Assessor(s)	Fernandez Stearns, Ignacio Jesus (ignaciofe@IADB.ORG)
Assessment Date	2015-05-13

PROJECT CLASSIFICATION SUMMARY		
Project Category: C	Override Rating:	Override Justification:
		Comments:
Conditions/ Recommendations	<input checked="" type="checkbox"/> No environmental assessment studies or consultations are required for Category "C" operations. <input checked="" type="checkbox"/> Some Category "C" operations may require specific safeguard or monitoring requirements (Policy Directive B.3).Where relevant, these operations will establish safeguard, or monitoring requirements to address	

	<p>environmental and other risks (social, disaster, cultural, health and safety etc.).</p> <p>☒ The Project Team must send the PP (or equivalent) containing the Environmental and Social Strategy (the requirements for an ESS are described in the Environment Policy Guideline: Directive B.3) as well as the Safeguard Policy Filter and Safeguard Screening Form Reports.</p>
--	--

SUMMARY OF IMPACTS/RISKS AND POTENTIAL SOLUTIONS

Identified Impacts/Risks	Potential Solutions

DISASTER RISK SUMMARY

Disaster Risk Category: Moderate

Disaster/ Recommendations	<ul style="list-style-type: none"> The reports of the Safeguard Screening Form (i.e., of the Safeguards Policy Filter and the Safeguard Classification) constitute the Disaster Risk Profile to be included in the Environmental and Social Strategy (ESS). The Project Team must send the PP (or equivalent) containing the ESS to the ESR. The Borrower prepares a Disaster Risk Management Summary, based on pertinent information, focusing on the specific moderate disaster and climate risks associated with the project and the proposed risk management measures. Operations classified to involve moderate disaster risk do not require a full Disaster Risk Assessment (see Directive A-2 of the DRM Policy OP-704). The Project Team examines and adopts the DRM summary. The team remits the project risk reduction proposals from the DRMP to the engineering review by the sector expert or the independent engineer during project analysis or due diligence, and the financial protection proposals to the insurance review (if this is performed). The potential exacerbation of risks for the environment and population and the proposed risk preparedness or mitigation measures
---------------------------	--

	<p>are included in the Environmental and Social Management Report (ESMR), and are reviewed by the ESG expert or environmental consultant. The results of these analyses are reflected in the general risk analysis for the project. Regarding the project implementation, monitoring and evaluation phases, the project team identifies and supervises the DRM approaches being applied by the project executing agency.</p> <ul style="list-style-type: none"> Climate change adaptation specialists in INE/CCS may be consulted for information regarding the influence of climate change on existing and new natural hazard risks. If the project requires modification or adjustments to increase its resilience to climate change, consider (i) the possibility of classification as an adaptation project and (ii) additional financing options. Please consult the INE/CCS adaptation group for guidance.
--	---

SUMMARY OF DISASTER IMPACTS/RISKS AND POTENTIAL SOLUTIONS	
Identified Impacts/Risks	Potential Solutions
<p>Significant hurricane and other winds may occur in the project area and the likely severity of impacts is major or extreme.</p>	<p>The Disaster Risk Management Plan should secure a design for the project at an acceptable level of the storm and flood risks for the project and address potential exacerbated risks for people and the environment during construction and operation, as specified in the Disaster Risk Assessment, which must take into consideration changes in the frequency and intensity of tropical storms that could occur with climate change. The DRMP includes risk reduction measures (siting and engineering options), disaster risk preparedness and response (contingency planning, etc.), as well as the financial protection (risk transfer, retention) of the project. The DRM Plan takes into account existing vulnerability levels and coping capacities, the country's disaster alert and prevention system, general design standards, coastal retreat and other land use regulations and civil defense recommendations in coastal areas. However, the options and solutions are sector- and even case-specific and are selected based on a cost analysis of equivalent alternatives. The amplified uncertainties due to climate change may be considered in hazard scenarios and an efficient combination of measures</p>

	in the DRMP.
Tropical Storms are prevalent in the project area and the likely severity of impacts is moderate.	The Disaster Risk Management Plan should secure a design for the project at an acceptable level of storm risks for the project and address potential exacerbated risks for people and the environment during construction and operation, which must take into consideration changes in the frequency and intensity of tropical storms that could occur with climate change. Appropriate measures to reduce risks (predominantly engineering), prepare for impact (predominantly environmental and social safeguards) and to include financial protection will need to be included.

ASSESSOR DETAILS	
Name of person who completed screening:	Fernandez Stearns, Ignacio Jesus (ignaciofe@IADB.ORG)
Title:	
Date:	2015-05-14

COMMENTS
No Comments

SAFEGUARD POLICY FILTER REPORT

PROJECT DETAILS	
IDB Sector	ENERGY-ENERGY EFFICIENCY AND RENEWABLE ENERGY IN END USE
Type of Operation	Other Lending or Financing Instrument
Additional Operation Details	
Investment Checklist	Generic Checklist
Team Leader	McClymont, Matthew (matthewm@IADB.ORG)
Project Title	Optima Energia Energy Efficient Roadway Lighting
Project Number	ME-L1166
Safeguard Screening Assessor(s)	Fernandez Stearns, Ignacio Jesus (ignaciofe@IADB.ORG)
Assessment Date	2015-05-14

SAFEGUARD POLICY FILTER RESULTS		
Type of Operation	Loan Operation	
Safeguard Policy Items Identified (Yes)	Activities to be financed by the project are in a geographical area and sector exposed to natural hazards* (Type 1 Disaster Risk Scenario).	(B.01) Disaster Risk Management Policy- OP-704
	Type of operation for which disaster risk is most likely to be low.	(B.01) Disaster Risk Management Policy- OP-704

	The Bank will make available to the public the relevant Project documents.	(B.01) Access to Information Policy- OP-102
	The operation is in compliance with environmental, specific women's rights, gender, and indigenous laws and regulations of the country where the operation is being implemented (including national obligations established under ratified Multilateral Environmental Agreements).	(B.02)
	The operation (including associated facilities) is screened and classified according to their potential environmental impacts.	(B.03)
	The Bank will monitor the executing agency/borrower's compliance with all safeguard requirements stipulated in the loan agreement and project operating or credit regulations.	(B.07)
	The operation has the potential to pollute the environment (e.g. air, soil, water, greenhouse gases...).	(B.11)
Potential Safeguard Policy	No potential issues identified	

Items(?)		
Recommended Action:	<p>Operation has triggered 1 or more Policy Directives; please refer to appropriate Directive(s). Complete Project Classification Tool. Submit Safeguard Policy Filter Report, PP (or equivalent) and Safeguard Screening Form to ESR.</p> <p>The project triggered the Disaster Risk Management policy (OP-704). A Disaster Risk Assessment (DRA) may be required (see Directive A-2 of the DRM Policy OP-704) in case of high risk, a limited DRA in case of moderate risk. Next, please complete a Disaster Risk Classification along with Impact Classification.</p>	
Additional Comments:		

ASSESSOR DETAILS	
Name of person who completed screening:	Fernandez Stearns, Ignacio Jesus (ignaciofe@IADB.ORG)
Title:	
Date:	2015-05-14

COMMENTS
No Comments