

CARIBBEAN DEVELOPMENT BANK

TWO HUNDRED AND SEVENTY-FIRST MEETING OF THE BOARD OF DIRECTORS

TO BE HELD IN JAMAICA

MAY 16, 2016

PAPER BD 57/16

STREET LIGHT RETROFITTING PROJECT – SAINT LUCIA
(President's Recommendation No. 921)

The attached Report appraises a proposal for a loan to the Government of Saint Lucia (GOSL) to replace all of its high pressure sodium and mercury vapour street lights (approximately 21,500) with high efficiency light-emitting diode systems. The expected outcome of the project is a reduction of Saint Lucia's street lighting energy consumption and associated greenhouse gas emissions. The project will be implemented by the Saint Lucia Electricity Services Limited (LUCELEC). The project is estimated to cost approximately USD11.779 mn, with counterpart contribution of GOSL and LUCELEC of the equivalent of USD1.146 mn.

2. On the basis of the Report, I recommend:

- (a) a loan to GOSL of an amount not exceeding the equivalent of ten million, six hundred and three thousand United States dollars (USD10.603 mn) (the Loan) from the Ordinary Capital Resources of the Caribbean Development Bank (CDB) consisting of:
 - (i) an amount not exceeding the equivalent of four million six hundred and three thousand United States dollars (USD4.603 mn) allocated from CDB's Equity and Market Resources; and
 - (ii) an amount not exceeding the equivalent of six million United States dollars (USD6 mn) allocated from resources provided by the European Investment Bank (EIB) to CDB under the Climate Action Line of Credit; and
- (b) grant to GOSL of an amount not exceeding the equivalent of thirty thousand United States dollars (USD30,000) from CDB's SFR allocated from resources provided from the EIB Grant Facility for Climate Action Support to CDB.

3. I also recommend:

- (a)

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.
- (b) waivers of CDB's Guidelines for Procurement:

(ii)

- (i) in respect of the procurement of LED lights and disposal of removed lamps, to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries. [REDACTED]; and
- (ii) to permit LUCELEC to apply the private sector procurement methods permitted under CDB's Lending Policies (2013) to reflect industry commercial practices.

on the terms and conditions set out and referred to in Chapter 7 of the attached Report.

4. Funds are available within CDB's existing resources and/or borrowing programme for the relevant disbursement period.

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PUBLIC DISCLOSURE AUTHORISED

CARIBBEAN DEVELOPMENT BANK



**APPRAISAL REPORT ON
STREET LIGHT RETROFITTING PROJECT - SAINT LUCIA**

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Considered at the Two Hundred and Seventy-First Meeting
of the Board of Directors on May 16, 2016.

Paper BD 57/16

Director	-	Daniel Best
Projects Department		
Division Chief	-	L. O'Reilly Lewis
Economic Infrastructure Division		

MAY 2016

This Report was prepared by an Appraisal Team comprising:

L. O'Reilly Lewis, Senior Operations Officer, Coordinator; Peter Manning, Operations Officer, Financial Analyst; Peter Werner, Energy Specialist; Annicia Gayle-Geddes, Operations Officer, Social Analyst; Valerie Isaac, Operations Officer, Environment; Ann-Marie Warner, Country Economist; Takem Enaw, Legal Counsel; and Tracie Richards, Coordinating Secretary.

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CURRENCY EQUIVALENT

Dollars (\$) throughout refer to Eastern Caribbean Dollars (XCD) unless otherwise stated.

USD1.00 = XCD2.70
XCD1.00 = USD0.37

ABBREVIATIONS

ADD	-	Annual Daily Demand
BMCs	-	Borrowing Member Countries
BOD	-	Board of Directors
BOP	-	Balance of Payments
BOSL	-	Bank of Saint Lucia
CALC	-	Climate Action Line of Credit
CC	-	Climate Change
CDB	-	Caribbean Development Bank
CFO	-	Chief Financial Officer
CGA	-	Country Gender Assessment
CIS	-	Customer Information System
CPA	-	Country Poverty Assessment
CRI	-	Colour Rendering Index
CRS	-	Climate Risk Screening
DMA	-	District Metering Area
E&M	-	Equity and Market
EIB	-	European Investment Bank
EMP	-	Environmental Management Plan
ERR	-	Economic Rate of Return
ESA	-	Electricity Supply Act
ESRP	-	Environmental and Social Review Procedures
ESPS	-	Energy Sector Policy and Strategy Study
FDI	-	Foreign Direct Investment
FY	-	Fiscal Year
GDP	-	Gross Domestic Product
GOSL	-	Government of Saint Lucia
HDPE	-	High-Density Polyethylene
HPS	-	High Pressure Sodium
IDC	-	Interest During Construction
IWG	-	Interagency Working Group
km	-	kilometres
LED	-	Light-emitting diode
LUCELEC	-	Saint Lucia Electricity Services Limited
m	-	metres
MDD	-	Maximum Daily Demand
MDGs	-	Millennium Development Goals
mld	-	million litres per day
mm	-	millimetres
mn	-	million
MV	-	Mercury Vapour
MW	-	Megawatt
NEP	-	National Energy Policy

NPL	-	Non-Performing Loans
NPRS	-	National Poverty Reduction Strategy
NPV	-	Net Present Value
NSPP	-	National Social Protection Policy
OCR	-	Ordinary Capital Resources
O&M	-	Operations and Maintenance
p.a.	-	per annum
PC	-	Project Coordinator
PCR	-	Project Completion Report
PMU	-	Project Management Unit
PPES	-	Project Performance Evaluation System
PV	-	Photovoltaic
RE	-	Renewable energy
ROR	-	Rate of Return
SCADA	-	Supervisory Control and Data Acquisition
SCC	-	Social Cost of Carbon
SCF	-	Standard Conversion Factor
SDG	-	Sustainable Development Goals
SIA	-	Social Impact Assessment
SpCF	-	Specific Conversion Factor
TA	-	Technical Assistance
TAP	-	Trade Adjustment and Poverty
TOR	-	Terms of Reference
UNFCCC	-	United Nations Framework Convention for Climate Change
USD	-	United States Dollar
VAT	-	Value Added Tax
XCD	-	Eastern Caribbean Dollar

MEASURES AND EQUIVALENTS

1 hectare (ha)	=	2.47 acres
1 kilometre (km)	=	0.621 mile (mi)
1 square kilometre (km ²)	=	0.386 square mile (mi ²)
1 metre (m)	=	3.281 feet (ft)
1 millimetre (mm)	=	0.039 inch (in)
1 square metre (m ²)	=	10.756 square feet (ft ²)

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COUNTRY DATA: SAINT LUCIA

	2011	2012	2013	2014	2015
PER CAPITA GDP (current market prices; \$)	20,598	20,933	21,101	22,010	22,444
GROSS DOMESTIC PRODUCT (GDP)					
GDP at Current Market Prices (\$mn)	3,483.1	3,540.1	3,602.8	3,799.0	3,878.3
Sectoral distribution of current GDP (%)					
Agriculture	2.5	2.8	3.2	2.8	3.0
Mining & Quarrying	0.2	0.2	0.2	0.2	0.2
Manufacturing	3.7	3.5	3.1	2.8	2.8
Utilities	3.8	3.9	4.2	5.0	4.9
Construction	7.9	7.5	6.6	5.5	6.2
Transport & Communication	19.4	18.7	19.1	18.5	18.5
Hotels & Restaurants	14.6	15.1	16.5	18.1	16.8
Wholesale & Retail Trade	8.8	8.4	7.9	7.7	7.7
Financial & Business Services	23.2	23.5	23.2	23.8	24.0
Government Services	12.3	12.5	12.8	12.4	12.4
Other Services	5.8	5.7	5.3	5.0	5.3
Less Imputed Service Charge	2.1	2.0	2.1	1.9	1.8
GDP at Basic Prices (\$mn)	3,020.2	3,077.9	3,067.7	3,198.6	3,208.3
GDP at constant 2006 Prices (\$mn)	2,957.0	2,925.8	2,929.8	2,942.2	3,065.4
Annual rate of growth in GDP (%)	0.7	(1.1)	0.1	0.4	4.2
MONEY AND PRICES (\$ mn)					
Consumer prices (av. annual % change)	2.8	4.2	1.5	3.5	(1.0)
Money supply (M1; annual % change)	6.5	2.6	(0.8)	7.7	2.7
Total domestic credit(net)	3,597.6	3,903.5	3,977.2	3,579.5	3,269.2
Private sector (net)	3,887.5	4,084.6	4,051.4	3,778.6	3,522.9
Public sector (net)	(1.0)	162.4	307.9	257.1	266.7
Non-bank financial institutions (net)	(288.9)	(343.5)	(382.1)	(456.2)	(520.4)
Estimated Tourism Expenditure (USD mn)	575.6	593.5	653.2	746.4	...
Current Revenues	836.0	810.5	866.9	915.4	978.2
Current Grants	0.0	0.0	0.0	0.0	0.0
Current Expenditures	776.6	863.3	867.6	878.9	911.0
Current Account Surplus/ (Deficit)	59.3	(52.8)	(0.7)	36.5	67.2
Capital Revenue and Grants	79.1	68.8	55.7	53.5	75.2
Capital Expenditure and Net Lending	366.1	344.8	268.5	234.6	266.1
Overall Surplus/ (Deficit)	(227.7)	(328.8)	(213.5)	(144.6)	(123.7)
BALANCE OF PAYMENTS (USD mn)					
Merchandise Exports (f.o.b)	192.3	212.4	200.3	157.1	180.3
Merchandise Imports (c.i.f)	613.2	566.4	546.0	583.2	570.0
Trade balance	(421.0)	(353.9)	(345.7)	(426.1)	(389.7)
Net Balance on services account	177.6	206.1	217.3	261.5	...
Income (net)	(19.8)	(35.3)	(26.0)	(25.6)	...
Transfers (net)	20.5	6.3	4.7	9.6	...
Current Account Balance	(242.7)	(176.8)	(149.6)	(250.9)	...
Capital and Financial Account	244.1	203.3	120.8	142.9	...
Capital Account	34.0	32.9	20.7	31.0	...
Financial Account	210.1	170.4	100.1	111.9	...
FDI	80.9	73.6	92.0	72.7	...
Overall Balance	7.8	16.4	(39.8)	66.9	...
Change in Imputed Reserves	(8.0)	(16.4)	39.8	(66.9)	...

Data for 2012 are provisional.

(ii)

COUNTRY DATA: SAINT LUCIA

	2011	2012	2013	2014	2015
TOTAL PUBLIC DEBT (USD mn)					
Total public debt	841.9	937.5	983.8	1,032.2	1,070.4
Domestic debt outstanding	425.5	505.2	497.5	505.8	645.0
External debt outstanding	416.5	432.3	486.3	526.5	425.4
External Debt Service	71.2	92.6	153.7	99.3	127.3
Amortisation	34.1	51.8	97.5	46.6	76.2
Interest Payments	37.1	40.8	56.2	52.7	51.1
External debt service as % of exports of goods and services	7.0	14.0	...	...	...
Total debt service as % of current revenue	39.2	26.8	22.9	23.5	26.4
AVERAGE EXCHANGE RATE					
Dollar(s) per US dollar	2.7	2.7	2.7	2.7	2.7
POPULATION					
Mid-Year Population ('000)	169.1	169.1	170.7	172.6	172.8
Population Growth Rate (%)	2.1	0.0	1.0	1.1	0.1
Crude Birth Rate	13.7	14.2	...	...	...
Crude Death Rate	7.6	7.1	...	...	...
Infant Mortality Rate	20.1	...	...	...	...
EDUCATION					
Net School Enrollment Ratio (%)					
Primary	89.0	90.0	89.0	...	...
Secondary	85.0	85.0	83.0	...	...
Pupil-Teacher Ratio					
Primary	18.0	17.0	16.2	...	...
Secondary	16.0	14.0	13.1	...	...
LABOUR FORCE					
Unemployment Rate (%)	21.2	21.4	23.3	24.4	24.1
Male	19.2	19.4	21.3	20.9	21.4
Female	23.3	23.7	25.5	28.4	27.4
Participation Rate (%)	69.0	70.0	71.8	72.2	72.2
Male	74.0	76.0	....	....	....
Female	64.0	65.0	....	....	....

COUNTRY DATA: SAINT LUCIA

	2000	2010	2014
INDICATORS OF HUMAN DEVELOPMENT			
HEALTH AND EDUCATION			
Life Expectancy at Birth (years)	74.0	77.0	75.1
Male	...	74.3	77.8
Female	...	79.9	72.4
Human Development Index	0.683	0.730	0.729
HOUSING AND ENVIRONMENT			
Improved water source (% of population with access)		95.6	96.3
Improved sanitation facilities (% of population with access)		88.5	90.5
Households with electricity (%)	86.6	92.7	...

Source(s):GOSL and United Nation's Human Development Indicators

... not available

Data as at April 2016

LOAN AND PROJECT SUMMARY

Financial Terms and Conditions			
Borrower:	Government of Saint Lucia (GOSL)	Amortisation Period:	Ordinary Capital Resources (OCR): 8 years
Executing Agency:	Saint Lucia Electricity Services Limited (LUCELEC)	Grace Period:	OCR: 3 years
		Disbursement Period:	First Disbursement Date: September 30, 2016 Terminal Disbursement Date: December 31, 2018
Source	Amount (USD'000)		
OCR - Loan: Equity and Market (E&M) Tranche	4,603	Interest Rate: E&M Tranche	2.97 % per annum (p.a.) variable
OCR Loan: European Investment Bank-Climate Action Line of Credit (EIB-CALC) Tranche	6,000	Interest Rate: EIB-CALC Tranche (effective)	1.67 % p.a. (indicative)
Sub-Total Loan	10,603	Commitment Fee:	1% p.a. on the undisbursed balance of the Loan, commencing from the 60 th day after the date of the Loan Agreement.
EIB-Grant	30		
Counterpart	1,146		
TOTAL:	11,779		
Risk Management			
Country Rating:	This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.		
Outlook:			
(as at March 31, 2016)		(USD)	
Undisbursed:		45,710,191	
Outstanding Loans:		142,386,914	
Exposure (Outstanding + 50% Undisbursed): Availability:	This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.		
Incremental Capital Adequacy Charge: N/A			
Office of Risk Management Commentary			
This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.			

Project Summary

Project Outcome and Description:

The expected outcomes of the Project are: (a) significantly lower street lighting energy consumption and greenhouse gas emissions associated with energy savings; and (b) enhancement of LUCELEC’s capacity in climate change planning. The proposed project consists of the following components:

- (a) Project Preparation Studies;
- (b) Light-Emitting Diode (LED) Street Lamps;
- (c) LED Street Lamps Installation;
- (d) Consumption Monitoring Equipment;
- (e) Climate Risk Screening Study (CRS);
- (f) Disposal of replaced street lamps;
- (g) Project Management and Administration; and
- (h) Engineering Services.

Exceptions to Caribbean Development Bank’s (CDB) Policies:

- (a) [REDACTED]
- (b) Waivers of CDB’s Guidelines for Procurement:
 - (i) in respect of the procurement of LED lights and disposal of removed lamps, to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries. [REDACTED] ; and
 - (ii) to permit LUCELEC to apply the private sector procurement methods permitted under CDB’s Lending Policies (2013) to reflect industry commercial practices.

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank’s Information Disclosure Policy.

CDB Country Outcomes – Key Outputs:

CDB's Results Framework:

No	Indicator	2016	2017	2018
1.	Energy savings as a result of Energy Efficiency /Renewable Energy interventions (/MWh/year)	0	2,000	5,300

Gender Marker Summary:

Gender Marker	Analysis	Design	Implementation	Monitoring and Evaluation	Score	Code
	0.5	0	0	0	0.5	NO ¹

¹ **NO:** no contribution to gender equality, it is not reflected in the project, or appears as a formal reference only.

1. STRATEGIC CONTEXT AND RATIONALE

LOAN REQUEST

1.01 By letter dated January 12, 2016, GOSL requested financing from CDB to replace all of its High Pressure Sodium (HPS) and Mercury Vapour (MV) street lights (approximately 21,500) with high efficiency light-emitting diode systems.

MACROECONOMIC CONTEXT

1.02 Recovery in the Saint Lucian economy has become more entrenched, supported by growth in main trading partners, low oil prices and returning investor confidence. In 2015, real economic activity grew by approximately 4.1%, due to a significant expansion in private sector construction which spilled over to real estate, renting and business activities, and a rebound in agriculture. Unfortunately, the increase in economic activity thus far has been insufficient to have a significant impact on the labour market as unemployment remains stubbornly high, especially among vulnerable groups such as females and the youth¹. Public finances showed some strengthening during the year in tandem with the increase in real economic activity, and the implementation of revenue enhancing measures, such as reduction in VAT exemptions, along with curtailment in expenditures.

1.03 Macroeconomic prospects are currently positive based largely on further expansion in the tourism and construction sectors. However, the country remains susceptible to unfavourable movements in the global economy, natural hazards and lingering structural rigidities, which will need to be addressed more frontally if it is to accelerate and sustain economic growth and improve social outcomes. GOSL has made some attempts to strengthen public finances, however, measures aimed at improving efficiency through *inter alia* improving labour productivity, targeting of social expenditures, further streamlining of exemptions/concessions, and the use of alternative and renewable energy can help to provide additional fiscal space for capital investments. In this regard, prioritisation of projects, will be critical and necessitates that GOSL focus on interventions with high development impact, building in adaptation and mitigation measures as appropriate to strengthen resilience and support long term savings. A summary of the Saint Lucia economic review is provided at Appendix 1.1.

SOCIAL CONTEXT

Population and Demographic Characteristics

1.04 The population of Saint Lucia steadily increased from 100,893 in 1970 to the estimated mid-year population of 169,115 in 2012, with a population density of 813 per sq. mile. Males represented 49.4% of the population and females 50.6%.² The population is relatively youthful with approximately 50% below 30 years of age. Like other countries in the region, Saint Lucia is experiencing a demographic transition with decreasing birth rate and increasing life expectancy. Life expectancy for Saint Lucians was 75.1 years in 2014, with 77.8 and 72.4 years for females and males respectively³.

¹ The average unemployment rate in 2015 was 24.1% compared to 24.4% in 2014. Female unemployment stood at 26.9% while that for males was 21.4%. Youth unemployment averaged 40.7% in 2015.

² The Central Statistics Office of St. Lucia's *Annual Statistical Digest 2012*.

³ United Nations Development Programme, *Human Development Report 2015*.

Poverty and Human Development

1.05 Saint Lucia ranks as a country of high human development, with an index of 0.729 and is placed 89 of 188 countries.⁴ Human development progress is evident in areas such as health, sanitation, and education. Notwithstanding, the latest available Country Poverty Assessment (2006)⁵ showed that 29% of the population was poor, and an additional 11.5% vulnerable to fall into poverty in the event of shocks such as natural disasters and/or economic crises. The CDB-supported *National Poverty Reduction Strategy* (2011) aimed at facilitating an integrated framework for poverty reduction, underscores the nexus of poverty with the environment, and public safety and citizen security.

1.06 According to the *Saint Lucia Country Gender Assessment* (CGA 2015), 22% of firms identified crime, theft and disorder as major constraints to doing business in the country. The CGA (2015) stated that 120 rapes were reported in the previous 12 months, which included crimes that had not been reported to the police based on the 2010 Census.

1.07 Street lighting is an ubiquitous public good which contributes to public safety and the security of citizens and non-residents such as tourists. This project will improve the reliability and effectiveness of the street lighting infrastructure in Saint Lucia. It will positively contribute to improved citizen security as well as improved road safety for motorists and pedestrians

ENERGY SECTOR ANALYSIS

Organisation, Structure and Regulation

1.08 LUCELEC is a public company whose shares are listed on the Eastern Caribbean Stock Exchange. It is the sole provider of electricity service and functions to a great extent autonomously, being primarily answerable to its shareholders, via a Board of Directors. The current makeup of LUCELEC shareholders include: Light and Power Holdings Ltd. (20%); First Citizens Bank Ltd. (20%); National Insurance Corporation (16.79%); Castries City Council (16.33%); GOSL (12.44%); and individual shareholders (14.44%). The Organisational Chart of LUCELEC is set out at Appendix 1.2.

1.09 LUCELEC operates under the Electricity Supply Act, 1994 which sets out LUCELEC's role and functions. Amendments to the Electricity Supply Act were approved in 2016 limiting LUCELEC's monopolistic licence to power generated from fossil fuels. The Electricity Supply Act sets out:

- (a) LUCELEC's exclusive statutory license that expires in 2045 to generate, transmit and distribute electricity to domestic, commercial and industrial users;
- (b) energy tariffs structure and a revision cycle of five years for these electricity rates;
- (c) an allowed return of return (ROR) on average contributed capital within a range of 2% - 7% above the cost of the most recent long-term bond issued by GOSL, subject to a minimum return of 10% and provisions if ROR deviates from the specified benchmarks; and
- (d) import and land ownership rights of LUCELEC.

⁴ Ibid.

⁵ The Country Poverty Assessment measures absolute poverty, that is, household consumption of quantitative basic food and non-food requirements; as well as the qualitative aspects of poverty.

Energy and Electricity supply

1.10 Saint Lucia, like most of CDB's Borrowing Member Countries (BMCs), exhibits a high dependence on imported petroleum products to power its economy. Ninety-eight percent of the total energy supply of 3,061 barrels of oil equivalent⁶ is imported, utilising significant foreign exchange earnings and making it vulnerable to external shocks. The national fuel bill in Saint Lucia represents as much as 16.5% of gross domestic product⁷, and two-thirds of the fuel supply is used to generate electricity. Despite the current downward pressure on oil prices, electricity costs to the consumer, including GOSL, remain relatively high, adversely influencing economic planning and development. GOSL's expenses for utility services including electricity in the financial year 2013/2014 amounted to USD11.4 mn representing around 3.3% of the GOSL total expenditure⁸.

Renewable Energy and Energy Efficiency Deployment

1.11 To date approximately 432 kW of distributed solar photovoltaic (PV) has been installed and LUCELEC has published a Request for Proposals for its own 3 MW solar PV plant, in which phase one is scheduled for commissioning by end of 2016. Furthermore, GOSL together with LUCELEC and other partners are exploring wind and geothermal resources to increase the share of renewables in the total energy matrix. Besides activities in renewable energy (RE), GOSL accomplished lighting efficiency upgrades in several public buildings, with international development support.

Street lighting service

1.12 Saint Lucia's street lighting system consists of island-wide approximately 21,500 lamps island-wide, mainly HPS and a few hundred mercury vapour lamps. Approximately 500 additional lights per year are installed based on individual request or street upgrades. The Ministry of Infrastructure decides on individual street lighting requests after a verification visit and forwards the installation request to LUCELEC. Street lighting planning is also done by the Ministry of Infrastructure. Damaged street lamps are identified during routine inspections or through reports by citizens for the utility's attention.

1.13 LUCELEC is charged with responsibility for the purchase, installation, operation and maintenance of the street lamps. For its service, LUCELEC is paid according to the street lighting tariff which consists of a base rate and a flexible fuel surcharge. In January 2016 the tariff was set at \$0.781/kWh. Being controlled by photocells, street lamps work autonomously from dusk till dawn. Based on the average operation time of 4,380 hours and the technical specification of the lamps the energy consumption of the whole network is calculated and used to determine the operating costs of the whole network for billing.

COUNTRY SECTOR STRATEGY

1.14 The National Energy Policy (NEP) of Saint Lucia was approved in 2010⁹ and elaborates the Government's strategy for establishing a secure and sustainable energy supply, promoting energy efficiency across all sectors, including the utilisation of energy efficiency technology. NEP is guided, among others, by the themes of energy security and reliability, exploitation of indigenous renewable energy resources and higher efficiency in energy production, conversion and use. This direction has been concretized in the Budget Speech of 2013, aiming for a 20% reduction of energy consumption by public

⁶ IDB: Challenges and Opportunities for the Energy Sector in the Eastern Caribbean; 2015

⁷ Energy Snapshot: Saint Lucia; Energy Transition Initiative 2015

⁸ http://www.caribbeanelections.com/eDocs/budget/lc_budget/lc_budget_2013.pdf

⁹ http://www.credp.org/Data/STL_NEP_Jan2010.pdf

infrastructure¹⁰. In relation to climate change mitigation, GOSL's Intended National Determined Contribution¹¹ under the United Nations Framework Convention for Climate Change, set a conditional target of 16% reduction in emissions by 2025 (against the 2010 baseline), and 23% by 2030.

1.15 In addition to revising the Energy Supply Act, GOSL created the National Utilities Regulatory Commission¹² dealing with licences, tariffs and customer complaints. These activities and the plan to establish a National Energy Transition Strategy¹³ are part of the Government's effort to achieve its 35% target of renewable power supply by 2020¹⁴.

LINKAGES TO CDB'S COUNTRY AND SECTOR STRATEGY AND POVERTY GOALS

1.16 CDB's commitment to Climate Change and Sustainable Energy agendas, as elaborated in its Strategic Plan 2015-2019, and Energy Sector Policy and Strategy (2015) (ESPS), highlights promotion of EE and RE as priority areas for support by CDB, ultimately contributing to the climate mitigation focus. Energy security is also adopted as a cross-cutting theme in the Bank's work. Providing appropriate financing to incentivize investment in both EE and RE has been occupying the attention of the Bank since its last strategic plan period. CDB is therefore keen to support this initiative, which will have regional demonstration effect.

1.17 The Project is consistent with the United Nation's Sustainable Development Goals (SDG), in particular Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all. The Project contributes to SDG targets of an improved rate of energy efficiency and increased share of renewable energy. The Project is also consistent with:

- (a) CDB's Strategic Objective of "supporting inclusive and sustainable growth and development".
- (b) CDB's Corporate Priority to "promote environmental sustainability" and the cross-cutting theme of energy security.
- (c) CDB's ESPS which has as one of its areas of focus "promoting Energy Efficiency for more affordable and stable energy costs, and for establishment of a green economy".
- (d) Saint Lucia's 2013-2016 Country Strategy Paper outcome of Improved Efficiency of Social and Economic Infrastructure.

RATIONALE FOR PROJECT

1.18 GOSL has been a leading advocate for renewable energy and energy efficiency in the Caribbean and has prioritised energy efficiency as a major tool to reduce demand side energy consumption. Supported by Saint Lucia's NEP, clean and sustainable energy technologies are being prioritised to transition to a lower carbon economy, and contribute to climate change mitigation.

1.19 Street lighting is an important national service, facilitating the personal safety for both residents and non-residents. Adequate service is particularly critical in the capital and large towns that are hosts to many tourists during the season and the tourism sector is the major revenue and foreign exchange earner

¹⁰ http://www.caribbeanelections.com/eDocs/budget/lc_budget/lc_budget_2013.pdf

¹¹ Communicated to the UNFCCC on November 17, 2015

¹² To be operational in 2016

¹³ <http://www.govt.lc/news/saint-lucia-assesses-energy-transition-strategy>

¹⁴ <http://www.govt.lc/news/prime-minister-commits-to-higher-national-renewable-energy-target>

for Saint Lucia. Safe operation for the transportation sector, as well as the security of private and public property are also dependent on adequate street lighting. GOSL's expenses for street lighting amounts to approximately \$10 mn per year (over the last three years) which represents around 33% of the GOSL's total spending for electricity.

1.20 Retrofitting street lights to LED lamps will therefore lead to major benefits for Saint Lucia. These include:

- (a) reducing GOSL's street lighting electricity bill by approximately 58%, thereby enabling additional fiscal space to focus on its development initiatives;
- (b) reducing the total quantity of oil imported into Saint Lucia; and
- (c) potential capacity credit associated with reduced requirement for generation due to a significant reduction in electricity consumption for street lighting. Demand side reductions in electricity could result in a deferral of investment in generation and the avoidance of costs that could otherwise be transferred to the consumer via the electricity tariff.

1.21 In addition, CDB will provide a grant to GOSL for a CRS of LUCELEC's production and transmission facilities. This will assist the company in systematically examining its vulnerability to projected climate change impacts, and will assist it in its long-term infrastructure development planning.

2. PROJECT DESCRIPTION

PROJECT OUTCOME

2.01 The expected outcomes of the Project are: (a) significantly lower street lighting energy consumption and greenhouse gas emissions associated with energy savings; and (b) enhancement of LUCELEC's capacity in climate change adaptation planning. A Design and Monitoring Framework is presented at Table 2.1. Details of the project are provided at Appendix 2.1.

PROJECT DESCRIPTION

2.02 The proposed project consists of the following components:

- (a) Project Preparation Studies - These included a pilot testing study undertaken by LUCELEC to select the appropriate lamps, as well as field testing of about 350 LED street lamps.
- (b) LED street lamps.
- (c) LED street lamp Installation.
- (d) Consumption monitoring equipment – These will be installed in selected areas to test the actual energy consumption of the lamps in field conditions.
- (e) CRS (Appendix 2.2).
- (f) Disposal of replaced street lamps.
- (g) Project management and administration.
- (h) Engineering services.

TABLE 2.1: DESIGN AND RESULTS MONITORING MATRIX

Narrative Summary	Performance Indicators/Targets			Data Sources/Reporting Mechanisms	Assumptions
1. IMPACT: To contribute to improving St. Lucia's energy security.	Annual Savings of 380,000 imperial gallons of imported oil by 2020.			LUCLEEC's production records.	<u>Assumptions for Achieving Goals</u> Transformation and production efficiency of the fossil fuel plant remains as projected.
2. OUTCOME: 1. Significantly lower street lighting energy consumption and greenhouse gas emissions associated with energy savings 2. Enhanced capacity of LUCELEC in climate change adaptation planning.	1. Annual savings in street lighting energy consumption of 6,500 MWh/year by December 31, 2019. 2. Annual Saving in CO ² of 3,900 tonnes by December 31, 2019. 3. Recommendations of CRS implemented by LUCELEC by			1. LUCELEC's production records. 2. LUCELEC's management reports. 3. GOSL electricity bills.	<u>Assumptions for Achieving Purpose</u> Carbon content per unit of fuel utilised remains constant.
3. OUTPUTS: 1. Fully installed and commissioned LED street lights. 2. CRS with recommendations.	1. 21,500 LED lights installed by September 30, 2018. 2. CRS accepted by June 30, 2017.			1. Project Completion Report (PCR). 2. LUCELEC's records. 3. Consultant's monthly reports. 4. Climate Risk Screening Study consultant reports.	<u>Assumptions for Achieving Project Outputs</u> Installation in accordance with construction specifications.
4. INPUTS	(\$000)			1. Monthly progress reports from the Project Coordinator (PC). 2. Quarterly Reports on Investment Cost of the Project. 3. CDB disbursement records. 4. CDB supervision visits and reports.	<u>Assumptions for Provision of Inputs</u> 1. GOSL and LUCELEC are able to provide counterpart funds as required. 2. Inflation does not exceed 2.3% p.a.
	CDB	GOSL	Total		
Project Preparation		945	25,865		
Engineering Services					
Project Management and Administration	25,1900	1,829	2,099		
Contingencies					
IDC and Commitment Fees	3,518	320	3,838		
Total Financing	28,708	3,094	31,802		
USD Equivalent	10,633	1,146	11,779		

RESULTS MONITORING FRAMEWORK

	(Baseline) 2016	Targets					Report and Frequency	Responsibility for Data Collection
		2017	2018	2019	2020	2025		
Project Impact Indicators:								
Annual Savings of imported oil (imperial gallons/year)	0	119,000	310,000	380,000	380,000	380,000	Annually	Ministry of Energy
<u>Outcome Indicators:</u>								
Annual savings in street lighting energy consumption (MWh/year)	0	2,000	5,300	6,500	6,500	6,500	Annually	Ministry of Energy
Annual savings in CO2 (tonnes)	0	1,200	3,200	3,900	3,900	3,900	Annually	Ministry of Energy
CRS recommendation implemented by LUCELEC (Yes/No)	No	No	Yes	N/A	N/A	N/A		PC
<u>Output Indicators:</u>								
Total LED lights installed (number)	350	13,400	21,500	21,500	21,500	21,500	Quarterly	PC
CRS report accepted by LUCELEC (Yes/No)	No	Yes	N/A	N/A	N/A	N/A	CRS consultant's report	PC

LESSONS LEARNED

2.03 The project design has been informed by lessons drawn from the experience of CDB and other development partners in the implementation of projects in the energy sector of CDB's BMCs. These are summarised in Table 2.2.

TABLE 2.2: LESSONS INCORPORATED INTO PROJECT DESIGN

No.	Description	Project Response
1.	The type of lamp must be chosen carefully to ensure it is appropriate for the use intended.	The LED lamp was selected on the basis of pilot testing based on the review of publications and technical specification of various street lighting models from reputable suppliers with high quality standards and experience, LUCELEC's invited 5 manufacturers to provide suitable LED lamps to replace its existing street lights. Bench and field testing were conducted to verify the technical specification and robustness, measurements of energy consumption and illumination levels and installation and maintenance requirements.
2.	Effective measurement and monitoring is necessary to assess impact of efficiency improvements and verify savings.	Consumption Monitoring Equipment has been included in the project to measure the actual energy consumption of a sample of the lamps in field conditions.

3. FINANCING STRUCTURE AND COSTS

PROJECT COSTS

3.01 The Project is estimated to cost \$31.8 mn which will be financed with resources from CDB and GOSL. Cost estimates for the Project were prepared by engineering consultants engaged by LUCELEC. The costs were based on designs and physical contingencies that were deemed acceptable to CDB staff. A summary of the Project Cost and Financing Plan is shown in Table 3.1, and a detailed Project Cost, Phasing and Financing Plan is presented at Appendix 3.1.

TABLE 3.1: SUMMARY OF PROJECT COST AND FINANCING
(\$'000)

Items	CDB				GOSL	Total
	E&M	CALC Loan	Grant	Total		
1. Project Preparation ¹						
2. LED Street Lights						
3. Consumption monitoring equipment						
4. Installation Costs	10,499	14,610	81	25,190	2,774	27,964
5. Waste disposal						
6. Climate Risk Screening						
7. Engineering Certification						
8. Project Management and Administration						
Base Cost	10,499	14,610	81	25,190	2,774	27,964
9. Contingencies	1,285	1,036	81	2,320	320	2,642
Total Project Cost	11,784	15,646	81	27,511	3,095	30,606
10. IDC	644	554		1,198		2,396
11. Commitment Fee						
Total Financing	12,428	16,200	81	28,709	3,095	31,804
USD	4,603	6,000	30	10,633	1,146	11,779
Percentage Financing	39	51	0	90	10	100

¹ LUCELEC's contribution

3.02 The proposed project conforms to the relevant eligibility criteria set out by EIB under the Finance Contract between EIB and CDB providing for CALC. It is proposed that an amount of USD6,000,000 be allocated to the Project from CALC. In accordance with the Finance Contract, the interest rate payable by recipients of the resources provided by EIB to CDB under CALC shall consist of CDB's OCR rate minus the relevant interest rate subsidy applied to each disbursement made to CDB under the Finance Contract, varying between 0% and 3% p.a. as calculated pursuant to Article 3.01 thereunder. The indicative interest rate subsidy is currently 1.3%.

3.03 The project will be financed by:

- (a) a loan to GOSL from CDB's OCR not exceeding the equivalent of USD10,603,000 (the Loan), from CDB's OCR comprising:
 - (i) an amount not exceeding the equivalent of USD4,603,000 from CDB's E&M Resources (the E&M Tranche); and
 - (ii) an amount not exceeding the equivalent of USD6,000,000 allocated from resources provided to CDB under the Finance Contract (EIB-CALC Tranche).
- (b) a grant to GOSL not exceeding the equivalent of USD30,000 (the Grant) from resources provided by the EIB Grant facility for climate action support to CDB; and
- (c) counterpart funding of \$3,095,000 from GOSL and LUCELEC .

3.04 As discussed in paragraph 1.16, incentivising investment in both EE and RE has been occupying the attention of the Bank since its last strategic plan period, as these are high priority, cross-cutting themes for the organisation. However, high indebtedness and fiscal challenges have largely not allowed BMC governments to prioritise spending for EE investments.

3.05 The Project will be the first among BMCs that will be replacing its entire network of street lamps in a relatively short period of time, thereby accelerating the accrual of substantial savings on expenditure for street lighting. CDB is supporting this initiative through the provision of concessionary CALC resources for the Project. The financial burden may be further mitigated through the provision of a larger proportion of loan financing and a reduction in the required cash counterpart contribution. This combination of concessionary resources and an increased proportion of lending will serve to incentivise RE and EE investments.

3.06 Both OCR portions (E&M Tranche and EIB-CALC Tranche), will be repayable over a period of 11 years, inclusive of a 3-year grace period, at an interest rate that is variable, and currently 2.97%, p.a. However, the EIB-CALC portion of the OCR loan attracts an interest rate subsidy which is currently estimated at 1.3% p.a., yielding an indicative interest rate of 1.67%, p.a. A commitment charge of 1% p.a. will be payable on the undisbursed balance of the Loan, commencing from the 60th day after the Loan agreement.

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

4. PROJECT VIABILITY

TECHNICAL ANALYSIS

General

4.01 In keeping with GOSL's strategy to reduce carbon emissions and decrease energy consumption, the Project was identified as a priority for energy efficiency improvements as significant savings can be achieved with reasonable investments. In preparation for this Project, GOSL conducted in 2013 pilot testing of LED lamps at Jeremie Street and John Compton Highway. In 2014, a more comprehensive pilot was executed by LUCELEC in cooperation with GOSL, investigating different types of LED lamps. In addition to the identification of a suitable supplier, the aim of the pilot was to gain experience on technical qualities of LED street lighting luminaires, their installation requirements, operation and the testing and evaluation of LED street lamps.

Options considered

4.01 Two options, induction and LED lamps, were considered. Induction lamps represent a more efficient alternative than existing high pressure sodium (HPS) lamps, reducing energy consumption by approximately 30%. However, LED technology is a more efficient technology, achieving energy savings of around 58% in comparison to HPS lamps. Because of the lower efficiency and the mercury content of induction lamps, this solution was not considered. Within the past few years LED street lighting has become a mature technology and various countries in the region have embarked on replacement projects using LEDs. LED is recognized as the new standard for street lighting due to its high efficiency, flexible lighting design and robustness. Solar photovoltaic powered LED lamps were not considered as a viable solution because of the significant higher investment costs and stringent maintenance requirements for batteries and panels.

The selected Option - LED Lamps

4.02 To date, LUCELEC has installed and operated 350 LED street lights of the preferred supplier in the pilot project to collect further experience and verify results. Main benefits of the selected LED street luminaires confirmed by the pilot project are:

- (a) High efficiency, reducing energy consumption by about 58% in comparison to HPS, leading to lower electricity costs and lower carbon emissions.
- (b) Higher lighting quality and improved visibility of objects by higher Colour Rendering Index (CRI) (70 vs. 22 for HPS) and colour temperature of 5,000K, more uniform light distribution and adjustable distribution patterns.
- (c) Long nominal lifetime of >100,000 hours, tool-less and modular design decreasing frequency of repair and maintenance costs.
- (d) Redundant design ensuring lighting in the event of a single LED failure.

Design Considerations

4.03 Dispersion patterns are part of the light engine module and will be selected according to the specific needs of the location to allow an optimal illuminance without compromising safety issues. Available

dispersion patterns are described in Appendix 4.1. The new street lamps will be installed at the same location as the old ones, reusing existing street lighting poles and cabling. The risk of structural damages by replacing the lamps is very low as LED luminaries have lower or similar weight to HPS lamps. The replacement of the existing lamps also gives LUCELEC the opportunity to inspect the structural condition of poles and address potential issues. The pilot testing of the selected LED street lamps, has demonstrated compatibility with local power parameters and ensured that there are no power quality issues which could affect the operation negatively. As in the current networks, LED street lamps will be individually controlled by photocells.

4.04 The energy savings are derived from the comparison of efficiency of the existing and the new lamps which are approximately 85 lm/W and 110 lm/W, respectively. To achieve similar or better illuminance levels, the intention is to replace the existing 250W and 70W HPS lamps with LED lamps having 99W and 46W, respectively. The pilot project confirmed the higher efficiency of LED lamps, including their power supply and determined an average energy savings of 58%. It is planned to install photocells, including monitoring devices, on 100 lamps across the network to verify the calculated energy consumption and predicted savings.

STREET LIGHTING TARIFF SAVING TO GOSL

4.05 The government's savings in electricity costs will be derived from the reduction in its street lighting electricity bill payable to LUCELEC, less its incremental debt service costs and counterpart expenses. Key assumptions are found in Appendix 4.2.

4.06 The reduction in street lighting electricity costs will be based on the reduction in consumption of the new LED lights as they are installed over the implementation period from Q3 2016 to Q4 2018. This reduction will be offset by debt service costs incurred for the CDB financing as well as counterpart Project expenses. The financing costs include commitment fees, interest expense and principal repayment over the amortization period of 8 years, which follows a grace period of 3 years. Counterpart expenses will include installation costs, disposal costs and project management and administration.

4.07 GOSL savings in electricity costs net of debt service obligations average approximately \$2.4 mn p.a. between 2016 and 2031. This comprises average savings of \$1.1 mn p.a. between 2019 and 2026 while the debt is being serviced and more than \$5 mn p.a. after 2026. GOSL will experience a net positive impact on its cash flow from year 3. Details of these savings can be found in Appendix 4.3.

ECONOMIC ANALYSIS

4.08 The economic benefits of the Project are assessed based on a comparison of the "with project" and "without project" scenarios. Without the Project, it is assumed that street-lighting would be provided by less energy efficient HPS lights. With the Project, the HPS lamps would be replaced with more efficient LED lights over a period of approximately 30 months, reducing the electricity required to provide this service.

4.09 The economic benefits of the Project include a reduction in fuel consumption and operations and maintenance (O&M) costs, as well as a decline in CO₂ emissions, as a result of the use of the more energy efficient lights. It is estimated that an average of approximately 364,000 imperial gallons of diesel consumption p.a. between 2017 and 2035 will be forgone, based on an average annual reduction in electricity consumption of 6,236 MWh per year. In addition, an average annual 3,810 tonnes of CO₂ emissions will be avoided during the analysis period.

4.10 In addition, replacement of HPS lights with LED lights will result in maintenance cost savings. Even though the upfront cost of a new LED light is higher than an HPS light, the expected life of LED light components is longer than for HPS lights. For example, the expected life of LED light components is about 20 years, while the components of an HPS light last from 15 years for the fixture to only 6 years for the lamp. Based on the frequency of replacement of the components of both types of lights and their related costs, the annualized maintenance cost for HPS lights has been calculated at \$89.5/light/year, while the annualized maintenance cost for LED lights is \$48.9/light/year. Details can be found in Appendix 4.4.

4.11 In valuing the avoided carbon emissions, the analysis drew on the work of the United States Interagency Working Group (IWG), on the Social Cost of Carbon (SCC). SCC is a comprehensive estimate of climate change damage and includes agricultural productivity, human health and property damage from increased flood risk. IWC based these estimates on a linking of global climate and economic models, allowing for the valuation of economic damage associated with increasing CO₂ emissions. Its purpose is to monetize the damage caused by CO₂ for incorporation into benefit-cost analyses such as this one. Based on the work, a value of USD40/tonne of CO₂ was used in this analysis.

Incremental Economic Rate of Return

4.12 The incremental economic rate of return is based on the assumptions listed in Appendix 4.4, with details of those calculations shown in Appendix 4.5. The Project provides an estimated Economic Rate of Return (ERR) of 18%. This ERR is a conservative estimate of the benefits to the society, given that there are other qualitative benefits such as improved security to citizens and tourists. This Project will also help to reduce Saint Lucia's reliance on imported fuel, decreasing its exposure to fluctuations in fuel prices and the cost of hedging which is currently part of LUCELEC's financial management strategy.

Sensitivity Analysis

4.13 A sensitivity analysis was carried out to determine the sensitivity of the ERR to changes in key variables. The results of this analysis are shown in Table 4.1 below. This analysis shows that the ERR of this Project is more sensitive to changes in capital costs (i.e. capital costs include a physical contingency averaging 8%) than it is to changes in any of the other variables reviewed. However, for all of the variables under review, the rate of return was above the threshold of 12%. This analysis indicates that the Project is resilient to changes in those variables.

Switching Values

4.14 For the ERR of this Project to fall to 12%, capital costs would have to increase by 35%. Pilot testing of the existing and proposed LED street lights shows that energy savings of 0.30 mWh/year/lamp can be expected. For the ERR to fall to 12%, this savings would have to be lower by 32%. The cost of fuel is an important factor in determining the ERR of this project. Comparing past crude oil prices to LUCELEC's cost of diesel fuel, an approximate link can be observed and estimated between these two variables. In this analysis the unit fuel cost is assumed to be \$0.49/kWh based on the average over the past 3 years, corresponding to a crude oil price of approximately USD85/barrel. A crude oil price of USD\$70/barrel would imply a unit fuel cost of \$0.40/kWh, yielding an ERR of 15%. To fall to the benchmark ERR of 12% unit fuel costs would be \$0.29/kWh, corresponding to a crude oil price of around USD50/barrel. The changes required in these variables to reduce the ERR to 12% show the robustness of the Project.

TABLE 4.1: SENSITIVITY ANALYSIS

Scenario	ERR %		Switching value
	+10%	-10%	
1. Capital costs	16%	20%	35%
2. Reduction in energy consumption	20%	16%	-32%
3. Fuel costs	19%	16%	-40%
4. Generation Operations and maintenance	18%	18%	N/A
5. Street light maintenance cost savings	18%	17%	N/A

Macro-economic Impact Assessment

4.15 The Project is expected to have a favourable impact on the economy particularly as it relates to the balance of payments, and fiscal accounts. While in the short term, the importation of materials would have a negative impact on the balance of payments, over a longer time horizon, the import bill is expected to be lower due to the substitution of energy efficient and more resilient technology. Similarly, a negative impact on the fiscal accounts is anticipated in the near term as a result of counterpart expenditures however, over the long term, the savings derived from lower utility outlays should have a net favourable effect. Debt service obligations could also impact the fiscal accounts adversely, however, this is mitigated by the blending of CDB’s equity and market resources with EIB CALC resources to yield a weighted average interest rate of 2.23% (indicative) - lower than Saint Lucia’s average cost of debt which stood at 5.28% at 2015. The Project is also consistent with the objectives of GOSL’s debt management strategy to reduce roll-over risk and reliance on short term instruments given that at present, short term obligations account for more than half of total debt.

ENVIRONMENTAL ASSESSMENT

4.16 The Project will be implemented inside existing rights of way and there are no issues of loss of productive land or encroachment on any environmentally sensitive receptors. It is categorised “B” based on CDB’s Environmental and Social Review Procedures (ESRP), as it will result in a limited number of specific environmental impacts which can be effectively mitigated if they are planned and monitored for compliance. The main environmental issue is ensuring the appropriate disposal of the scrap lamps, as the MV and HPS lamps contain very small amounts of mercury which is a hazardous material⁸ and which needs to be disposed of properly. The Saint Lucia Solid Waste Management Act requires safe management and export of the hazardous waste to a facility approved by the Planning Authority responsible for Physical Development.

4.17 LUCELEC normally contracts certified companies located overseas to dispose of its industrial wasted abroad. LUCELEC will procure the services of an appropriate hazardous waste management facility overseas to dispose of the MV and HPS lamps. As a condition precedent to installation works, LUCELEC will be required to submit to CDB, evidence in form and substance, acceptable to CDB, that it has obtained all environmental permits necessary for the operation of the Project, including permits for the disposal of hazardous waste, from the relevant authority(ies).

4.18 During Project implementation, there may be short-term disruption of vehicle and pedestrian traffic around the Project work sites. Potential occupational hazards/emergencies exist through falls and

⁸ Mercury is classified as hazardous waste under Schedule 1 of Saint Lucia Solid Waste Management Act, 2004.

electric shocks. These impacts are manageable with proper planning and mitigation measures. A draft Environmental Management Plan (EMP) will be prepared by the Engineering Consultant for this purpose. The EMP will include arrangements for proper vehicular traffic control, pedestrian safety, use of appropriate personal protection equipment and instructions for safe storage and disposal of the lamps.

4.19 LUCELEC has institutionalised environment, health and safety considerations in its operations in keeping with internationally-accepted norms and practices for this type of industry. LUCELEC conducts training on its health and safety procedures for sub-contractors and their workers at least 3 to 4 times per year⁹. Sub-contractors will follow LUCELEC's corporate Occupation Health and Safety procedures.

4.20 Each installation contract will incorporate appropriate requirements for the sub-contractors who will be responsible for implementing the mitigation measures in the EMP. During implementation, the Engineering Consultants will monitor the contractors' operations for conformance with the mitigation measures stipulated in the EMP. LUCELEC's Environmental Officer will also undertake routine and random monitoring of specific environmental requirements of the EMP.

SOCIAL AND GENDER IMPACT ASSESSMENT

4.21 As a category "B" Project under ESRP:

- (a) the Project is expected to have minimal adverse social impacts on the population.
- (b) there are no major social issues or conflicts that would adversely affect the planned intervention.

4.22 Net social development benefits are expected. The Project will benefit residents and non-residents of Saint Lucia with the provision of street lighting with improved luminosity (measured by luminous intensity).¹⁰ Improved luminosity enhances citizen security in areas of personal safety, road safety for pedestrians and motorists, security of public and private property, and overall crime prevention. Further, the projected reduction in electricity expenditure in the medium to long term opens fiscal space.

4.23 The nature of the Project does not directly contribute to improving gender equality. Given the gender imbalances in the construction sector, mainly men are expected to benefit from this Project. The Gender Marker Analysis is at Appendix 4.6. Given the gender disparity in the energy sector, mainly men are expected to benefit from employment opportunities resulting from Project implementation. The Project will, however, benefit from a CDB-supported Technical Assistance (TA) project¹¹ on Gender Analysis Training aimed at increasing gender mainstreaming in the National Sustainable Development Plan, sector policies, project design, and evidence-based decision-making for government officials and other partners such as utility companies.

⁹ LUCELEC annually assesses contractors to determine whether or not to award certification for different aspects of its operations e.g., high tension wiring, street lighting.

¹⁰ Luminous intensity measures the "quantity of visible light that is emitted in unit time per unit solid angle" (<http://www.britannica.com/science/luminous-intensity>).

¹¹ Board Paper BD72/14.

5. RISK ASSESSMENT AND MITIGATION

5.01 A summary of key risks impacting the Project is outlined in Table 5.1.

TABLE 5.1: SUMMARY OF RISK ASSESSMENT AND MITIGATION

Risk Type	Description	Mitigation Measures
Implementation	Environmental: Occupational health and safety, dust and air pollution risks during construction.	LUCELEC has established health and safety standards that all of its contractors must adhere to. The supervising engineering consultants will monitor the contractors' compliance with EMP.
Implementation	Environmental: Pollution of the environment from inadequate disposal of its replaced street lamps.	LUCELEC has an established procedures for exporting of hazardous waste for disposal at certified hazardous waste disposal facilities.
Operational	Climate change impacts on LUCELEC infrastructure performance	LUCELEC has committed to undertaking a CRS with a view towards improved climate resilience of its operations.

6. IMPLEMENTATION AND PROJECT MANAGEMENT

THE BORROWER AND THE EXECUTING AGENCY

6.01 The Borrower is GOSL and the Executing Agency is LUCELEC. Details of the Executing Agency are set out at Appendix 6.1.

PROJECT MANAGEMENT AND IMPLEMENTATION

Project Management

6.02 Project management will be undertaken by LUCELEC. LUCELEC has been effective in implementing all electricity projects in Saint Lucia. LUCELEC will assign project management staff, as required, to ensure the successful completion of the Project. CDB staff are satisfied that LUCELEC has the project management and administrative capacity to execute the Project on behalf of GOSL.

6.03 It will be a condition precedent to first disbursement of the Loan that a PC is assigned by LUCELEC from its staff, whose qualifications and experience are acceptable to CDB, to manage the Project. The responsibilities of the PC are set out at Appendix 6.2.

6.04 Engineering consultants will be engaged to assist LUCELEC during project implementation. They will be required to certify the LED installation works. It will be a condition precedent to disbursement in respect of installation works that LUCELEC select and engage consultants, whose qualifications and experience are acceptable to CDB, to undertake the engineering supervision services required during the implementation of the Project. The costs of these services will be financed by CDB. The draft Terms of Reference (TOR) for the Engineering Consultants is set out at Appendix 6.3. A Project Management Organisational Chart is set out in Appendix 6.4.

Implementation Schedule

6.05 The Project is projected to be implemented over a period of 31 months commencing from Board approval. Installation works are estimated to take 24 months, commencing by September 2016. The proposed Project Implementation Schedule is presented in Appendix 6.5.

PARTICIPATION OF BENEFICIARIES AND STAKEHOLDERS

6.06 The preparation and appraisal of this project benefitted from a consultative process. Meetings were held with representatives of LUCELEC and various Government Ministries including, *inter alia*, Finance; Infrastructure; and Sustainable Development. Overall, the discussions provided opportunities for feedback as stakeholders' opinions and concerns were expressed and, as necessary, have been incorporated in the project design. Stakeholder participation will be strengthened both during the implementation and post implementation stages of the Project. GOSL has been proactive in using its public information systems to promote energy efficiency and renewable energy, and will utilise this same medium to keep the public informed about the project.

DISBURSEMENTS

6.07 Disbursement of the CDB Loan will be made in accordance with CDB's Guidelines for the Withdrawal of Loan Proceeds. It is expected that the first disbursement from the Loan will be made by September 30, 2016. The Loan is expected to be fully disbursed by December 31, 2018. An Estimated Quarterly Loan Disbursement Schedule is presented in Appendix 6.6.

PROCUREMENT

6.08 LUCELEC is a limited liability company whose shares are currently held by both public and private sector entities, with the private sector representing the majority shareholding. Procurement shall be in accordance with CDB's Guideline's for Procurement (2006). The Borrower is GOSL and not LUCELEC, however, given that LUCELEC is the ultimate beneficiary and a majority privately-owned utility responsible for carrying out procurement under the Project, a waiver CDB's Guidelines for Procurement (2006) is being sought to permit LUCELEC to apply the private sector procurement methods permitted under CDB's Lending Policies (2013) to reflect industry commercial practices.

6.09 It is also further recommended that a waiver of CDB's Guidelines for Procurement (2006), in respect of procurement related to the LED lamps and disposal of the removed lamps under the Project, be granted to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB member countries. The value of the waiver being requested is USD8.5 mn. In order to comply with the requirements of the Finance Agreement with EIB, the contract of the successful bidder must include a "Covenant of Integrity" in the form attached at the Annex to the Procurement Plan provided at Appendix 6.7.

MONITORING AND REPORTING

6.8 The results of the Project will be measured in accordance with the indicators set out in the Design and Monitoring Framework at Table 2.1. It will be a condition of the Loan that LUCELEC shall furnish or cause to be furnished to CDB, the Reports listed in Appendix 6.8 in such form or forms as CDB may require, not later than the times specified therein for so doing.

PERFORMANCE EVALUATION RATING

6.9 The composite performance rating based on CDB's Project Performance Evaluation System (PPES) has been estimated at 6.1. This is a 'highly satisfactory' rating, which suggests that there is a good probability that the Project will achieve its objectives. The details of PPES are presented in Table 6.1.

TABLE 6.1: PROJECT PERFORMANCE EVALUATION SYSTEM RATING

CRITERIA	SCORES	JUSTIFICATION
Strategic Relevance	7.0	The Project supports GOSL’s policy objectives of becoming a carbon neutral economy and energy independence through the development of indigenous renewable energy sources. It is consistent with CDB’s strategic objective of “supporting inclusive and sustainable growth and development”, the corporate priority to “strengthen/modernise social and economic infrastructure” and the cross-cutting theme of energy security. It is therefore accorded high strategic relevance.
Poverty Relevance	4.0	Socio-economic benefits directly related to poverty are not immediate.
Efficacy	7.5	The Project is designed to significantly reduce GOSL’s energy consumption over a relatively short space of time.
Cost Efficiency	6.5	ERR of 18% is based on conservative quantifiable benefits of fuel substitution and avoided maintenance cost. The environmental benefit associated with reduction in CO ² emissions and the avoided capacity cost have not been quantified.
Institutional Development Impact	5.0	The climate risk screening assessment will provide LUCELEC with a formal framework for assessing its climate resilience.
Sustainability	7.0	The Project will reduce LUCELEC street lighting related maintenance costs.
Composite Score	6.1	Highly Satisfactory

7. TERMS AND CONDITIONS

7.01 The proposed financing for the Project is as follows:

- (a) a loan to GOSL of an amount not exceeding the equivalent of ten million, six hundred and three thousand United States dollars (USD10,603,000) to assist GOSL in financing the replacement of all of its high pressure sodium and mercury vapour street lamps with high efficiency LED street lamps (the Loan Component); and
- (b) a grant to GOSL of an amount from CDB's SFR not exceeding the equivalent of thirty thousand United States dollars (USD30,000) allocated from resources provided under the EIB Grant Facility for Climate Action Support to CDB to be used by LUCELEC in financing climate risk screening (the Grant Component) (together with the Loan Component, the Project).

7.02 It is recommended that CDB lend to GOSL an amount from CDB's OCR not exceeding the equivalent of ten million six hundred and three thousand United States dollars (USD10,603,000) (the Loan) consisting of:

- (a) an amount not exceeding the equivalent of four million, six hundred and three thousand United States dollars (USD4,603,000) allocated from CDB's Equity and Market resources (the Equity and Market Tranche); and
- (b) an amount not exceeding the equivalent of six million United States dollars (USD6,000,000) allocated from resources provided by EIB to CDB pursuant to the Finance Contract between CDB and EIB providing for CALC (the EIB-CALC Tranche)

to assist GOSL in financing the Loan Component of the Project, on CDB's standard terms and conditions, and on the following terms and conditions:

- (1) **Repayment:** Repayment of the Loan shall be made in thirty-two (32) equal or approximately equal and consecutive quarterly instalments commencing three (3) years after the date of the Loan Agreement.
- (2) **Interest:** Interest rate to be paid quarterly:
 - (a) at the rate of two decimal nine seven per cent (2.97%) p.a. (variable) on the Equity and Market Tranche withdrawn and outstanding from time to time; and
 - (b) at the rate of one decimal six seven per cent (1.67%) p.a. (variable) on the EIB-CALC Tranche withdrawn and outstanding from time to time.
- (3) **Commitment Charge:** A commitment charge at the rate of one percent (1%) p.a. shall be payable on the amount of the Loan unwithdrawn from time to time. Such charge shall accrue from the sixtieth (60th) day after the date of the Loan Agreement and shall be payable quarterly.

(4) **Disbursement:**

- (a) The first disbursement of the Loan shall be made by September 30, 2016, and the Loan shall be fully disbursed by December 31, 2018, or such later date as CDB may specify in writing.
- (b) Except as CDB may otherwise agree:
 - (i) the Loan shall be used exclusively to finance the components of the Project allocated for financing by CDB as shown in the Project Cost, Phasing and Financing Plan for the Project at Appendix 3.1 up to the respective limits specified therein; and
 - (ii) total disbursements shall not exceed in the aggregate of 90% of the Project cost.
- (c) The Loan shall not be used to meet any part of the cost of the Project which consists of identifiable taxes and duties.
- (d) The Loan shall not be used to finance any activity set out in Appendix 7.1.

(5) **Procurement:**

- (a) Except as provided in sub-paragraphs (b) and (c) below, procurement shall be in accordance with the procedures set out and/or referred to in the Loan Agreement between CDB, GOSL and LUCELEC, or such other procedures as CDB may from time to time specify in writing. The Procurement Plan approved by CDB is set out in Appendix 6.7. Any revisions to the Procurement Plan shall require CDB's prior approval in writing.
- (b) In respect of the procurement of LED lights and disposal of removed lamps, a waiver of CDB's Guidelines for Procurement is sought to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries. [REDACTED]
- (c) LUCELEC is allowed to apply the private sector procurement methods permitted under CDB's Lending Policies (2013) to reflect industry commercial practices.

(6) **Condition Precedent to First Disbursement of the Loan:**

PC, referred to in sub-paragraph 8(a) below, shall have been assigned.

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

(7) **Conditions Precedent to Disbursement in relation to Installation Works Component:**

CDB shall not be obliged to disburse any amount of the loan in respect of the Installation Works Component until GOSL shall have provided evidence, satisfactory to CDB, that:

- (a) the engineering consultants referred to in sub-paragraph 8 (b)(ii) below, shall have been engaged; and

- (b) environmental permits referred to in sub-paragraph 8(b)(v) below, shall have been obtained.

(8) **Other Conditions:**

- (a) Except as CDB may otherwise agree, GOSL shall execute the Project through LUCELEC and shall make the Loan available to LUCELEC for this purpose and shall take all necessary steps to facilitate and require the performance of LUCELEC of its obligations described herein.

- (b) LUCELEC shall:

- (i) assign from its staff a person acceptable to CDB as PC to carry out the duties set out at Appendix 6.2. The qualifications and experience of any person subsequently appointed/assigned to the position of PC shall be acceptable to CDB;
- (ii) in accordance with the procurement procedures applicable to the Loan select and engage engineering consultants to carry out the services set out in the TOR at Appendix 6.3;
- (iii) carry out the Project at all times with due diligence and efficiency, with management personnel whose qualifications and experience are acceptable to CDB, and in accordance with sound technical, environmental, financial and managerial standards and practices;
- (iv) institute and maintain organisational, administrative, accounting, and auditing arrangements for the Project acceptable to CDB;
- (v) provide evidence acceptable to CDB that it has obtained from the relevant authorities all environmental permits necessary for the operation of the Project, and shall execute, implement and operate the Project in compliance with all laws and regulations, particularly environmental laws and regulations relating to the disposal of hazardous waste, to which the Project is subject;
- (vi) adequately maintain the infrastructure financed under the Project; and
- (vii) furnish CDB with all the reports listed in Appendix 6.8 in such form or forms and substance as CDB may require, not later than the times specified therein for doing so.

(9) GOSL shall:

- (a) maintain in force all legislations, rights of way or use or easement and all permits necessary for the execution and operation of the Project; and
- (b) except as CDB may otherwise agree, contribute towards the Project an amount not exceeding the equivalent of three million and ninety-five thousand dollars (\$3,095,000), which shall be expended on the components of the Project allocated

for financing by GOSL as shown in the Project Cost, Phasing and Financing Plan of the Project.

(10) Except as CDB may otherwise agree, Section 3.11 of the General Provisions shall not apply to this Loan.

(11) GOSL and LUCELEC shall jointly and severally:

(a) warrant and undertake that neither has committed, and no person to its present knowledge has committed, any of the following acts, and that GOSL and LUCELEC will not commit, and no person with their consent or prior knowledge will commit, any such act, that is to say:

(i) the offering, giving, receiving or soliciting of any improper advantage to influence the action of a person holding a public office or function or a director or employee of a public authority or public enterprise or a director or official of a public international organisation in connection with any procurement process or in the execution of any contract in connection with those elements of the Project financed by the Loan; or

(ii) any act which improperly influences or aims improperly to influence the procurement process or the implementation of the Project financed under the Loan to the detriment of GOSL or LUCELEC, including collusion between tenderers.

For the purposes of these sub-paragraphs, the knowledge of any employee of GOSL or LUCELEC involved as a manager of the Project shall be deemed the knowledge of GOSL or LUCELEC, as appropriate. GOSL and LUCELEC, severally, undertake to inform CDB if either becomes aware of any fact or information suggestive of the commission of any such act;

(b) acknowledge that CDB or EIB may be obliged to divulge such documents relating to GOSL or LUCELEC and the Project to the Court of Auditors of the European Union (Court of Auditors), and/or European Anti-Fraud Office (OLAF) as are necessary for the performance of that party's tasks under European Union Law;

(c) permit persons designated by CDB or EIB or, as the case may be, authorised representatives of the Court of Auditors and/or the European Commission and/or OLAF, to visit the premises of LUCELEC and/or GOSL and the sites, installations and works comprising the Project, and to conduct such checks as they may wish, or ensure that they are so provided, with all necessary assistance for this purpose;

(d) arrange to maintain, in a single location, for inspection during six (6) years from the date of the Loan Agreement, the full terms of the Loan Agreement, as well as all material documents pertaining to the procurement process and to the execution of the contract and shall procure that CDB and EIB may inspect the contractual documents that the contractor is obliged to retain under its supply contract;

- (e) except as CDB may otherwise agree, furnish or cause to be furnished to CDB within three (3) months of Project completion, a completion report on the implementation and on the early operation stage of the Project, including its climate action aspects, in content and in form specified in Appendix 6.8, or otherwise as CDB may require; and
- (f) unless CDB has given its prior consent in writing, retain title to and possession of all or substantially all of the assets comprising the Project or, as appropriate, replace and renew such assets and maintain the Project in substantially continuous operation in accordance with its original purpose, provided that CDB may withhold its consent only where the proposed action would prejudice CDB's interests as a lender to GOSL or would render the Project ineligible for financing by CDB pursuant to the Finance Contract.

7.03 It is also recommended that CDB make a grant to GOSL from CDB's SFR allocated from resources provided under the EIB Grant Facility for Climate Action Support of an amount not exceeding the equivalent of thirty thousand United States dollars (USD30,000) (the Grant) to be used by LUCELEC in financing climate risk screening, on CDB's standard terms and conditions, and on the terms and conditions set out below:

(1) **Disbursement:**

- (a) Except as CDB may otherwise agree, and subject to sub-paragraph (b) below, disbursement of the Grant shall be made as follows:
 - (i) an amount not exceeding the equivalent of ten thousand United States dollars (USD10,000) (the Advance) shall be paid to GOSL as an advance on account of expenditure in respect of the Climate Risk Screening consultancy (the Consultancy) after receipt by CDB of:
 - (aa) a request in writing from GOSL for such funds;
 - (bb) a signed copy of the contract between GOSL and the consultant; and
 - (cc) evidence acceptable to CDB that the condition precedent to first disbursement of the Grant set out in sub-paragraph (3) below has been satisfied.
 - (ii) the balance of the Grant shall be paid to GOSL periodically after receipt by CDB of an account and documentation, satisfactory to CDB, in support of expenditures incurred by GOSL in respect of the Consultancy.
- (b) CDB shall not be under any obligation to make:
 - (i) the first such payment under sub-paragraph (1)(a)(ii) above until CDB shall have received account and documentation, satisfactory to CDB, in support of expenditures incurred by GOSL with respect to the Advance above;

- (ii) any payment under sub-paragraph (1)(a)(ii) above until CDB shall have received the requisite number of copies of the reports or other deliverables, in form and substance acceptable to CDB, to be furnished for the time being by the Consultants to GOSL and LUCELEC, respectively, and CDB in accordance with the Consultancy; and
- (iii) payments exceeding the equivalent of twenty-seven thousand United States dollars (USD27,000), representing ninety percent (90%) of the amount of the Grant, until CDB shall have received:
 - (aa) the requisite number of copies of the final reports or other deliverables, in form and substance acceptable to CDB to be furnished by the Consultants in accordance with the TOR at Appendix 2.2; and
 - (bb) certified statements of the expenditures incurred by GOSL or LUCELEC in respect of and in connection with the Grant.
- (c) The first disbursement of the Grant shall be made by December 31, 2016, and the Grant shall be fully disbursed by December 31, 2017, or such later dates as CDB may specify in writing.

(2) **Procurement:**

- (a) Subject to paragraph (b) below, procurement of consultancy services shall be in accordance with the procedures set out and/or referred to in the Grant Agreement or such other procedures as CDB may from time to time specify in writing. The Procurement Plan for the Project is set out in Appendix 6.7. Any revisions to this Plan shall require CDB's prior approval in writing.
- (b) Country eligibility shall be extended to countries eligible for procurement under EIB-funded projects, which are not CDB Member Countries.

(3) **Condition Precedent to First Disbursement of the Grant:**

The condition precedent to first disbursement of the Loan shall have been satisfied.

(4) **Other Conditions:**

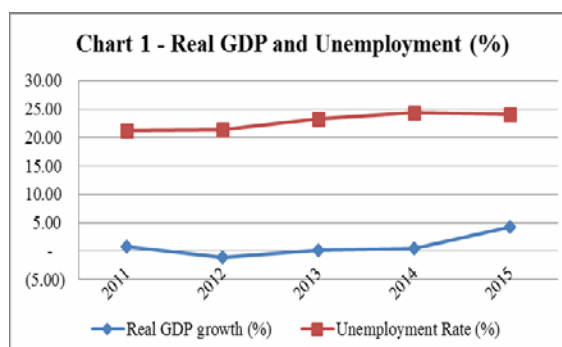
- (a) Except as CDB may otherwise agree, GOSL shall:
 - (i) carry out the Grant Component through LUCELEC; and
 - (iii) make the proceeds of the Grant available to LUCELEC for financing the Consultancy.
- (b) Except as CDB may otherwise agree, LUCELEC shall:
 - (i) carry out the Grant Component of the Project; and

- (ii) use the proceeds of the Grant exclusively for financing the Consultancy.
- (c) LUCELEC shall:
 - (i) in accordance with the procurement procedures applicable to the Grant, select and engage a competent and experienced consultant to carry out the services set out in the TOR at Appendix 2.2; and
 - (ii) within a time frame acceptable to CDB implement such recommendations arising from the Consultancy, as may be acceptable to CDB.
- (d) Except as CDB may otherwise agree GOSL shall:
 - (i) meet or cause to be met:
 - (aa) any amount by which the cost of the Grant Component exceeds the amount set out in the Project Cost, Phasing and Financing Plan (the Budget); and
 - (bb) the cost of any other items needed for the purpose of, or in connection with, the Grant Component.
 - (ii) provide or cause to be provided, all other inputs that may be required for the punctual and efficient carrying out of the Grant Component not being financed by CDB.
- (e) CDB shall be entitled to suspend, cancel or require a refund of the Grant, or any part thereof, if the Loan, or any part thereof is suspended, cancelled, or called in, except that GOSL shall not be required to refund any amount of the Grant already expended in connection with the Grant Component and not recoverable by GOSL.

MACROECONOMIC CONTEXT

Overview

1. Recovery in the Saint Lucian economy has become more entrenched, supported by growth in main trading partners, low oil prices and returning investor confidence. In 2015, real economic activity grew by approximately 4.1%, due to a significant expansion in private sector construction which spilled over to real estate, renting and business activities, and a rebound in agriculture (see Chart 1). Unfortunately, the increase in economic activity thus far has been insufficient to have a significant impact on the labour market as unemployment remains stubbornly high



especially among vulnerable groups such as females and the youth. Public finances showed some strengthening during the year in tandem with the increase in real economic activity, and the implementation of revenue enhancing measures such as an increase in the fuel surcharge and reduction in VAT exemptions, along with curtailment in expenditures. The high unemployment rate, along with lingering low consumer confidence and high NPLs was a drag on commercial banking activity, notwithstanding the reduction in the minimum savings rate. As a result, credit to the private sector declined further in 2015. Public finances showed some strengthening during the year in tandem with the increase in real economic activity and previously announced revenue enhancing measures. Curtailment in expenditure also aided the fiscal effort although in the case of capital expenditures this may have been driven in large part by concerns about being able to raise the required capital.

Public Sector

2. There appeared to be some strengthening in public finances on account of increased revenue collections and curtailment in spending (see Table 1). Factors contributing to the improved outturn included the rise in economic activity, reductions in exemptions (eg VAT, import duties), and the raising of VAT on hotels. Consequently, total revenue increased by 6.7%, up from 4.8% a year earlier. Grants on the other hand, declined by 12.8%, and perhaps reflects a normalization when previous years' collections were boosted by inflows in support of the constituency development programme

On the expenditure side, the outturn was consistent with government's stance on trying to restrict spending. This was evident in the reduction in goods and services, and wages and salaries which were lower on account of the wage and hiring freeze in addition to natural attrition. Interest payments and current transfers (in nominal terms) however inched up slightly as the stock of debt obligations continued to rise and government sought to address socio-economic challenges.

With respect to capital investment, the outturn was reflective in part of some financing constraints given

	2013	2014	2015
TOTAL REVENUE AND GRANTS	25.7	25.3	26.1
Capital Grants	1.7	1.6	1.3
Capital Revenue	0.0	0.0	0.0
Current Revenue	24.0	23.7	24.8
Tax Revenue	22.6	22.5	23.5
Taxes on Income	6.2	5.8	5.9
Tax on Property	0.2	0.2	0.2
Tax On Goods And Services	6.1	6.2	6.5
Taxes on International Trade	10.1	10.4	10.8
Non-Tax Revenue	1.4	1.2	1.3
TOTAL EXPENDITURE	32.5	28.9	28.6
Current Expenditure	24.2	23.3	22.9
Wages and Salaries	10.9	10.0	9.7
NIC	0.2	0.3	0.3
Retiring Benefits	1.8	1.9	1.9
Interest Payments	3.7	3.9	3.8
Goods & Services	4.5	4.5	4.4
Current Transfers	3.1	2.8	2.9
Capital Expenditure	8.3	5.7	5.6
Current account balance	-0.2	0.5	1.9
Overall balance	-6.8	-3.6	-2.4
Primary balance	-3.1	0.2	1.4
Public Sector Debt	73.7	73.5	74.5

lack of investor appetite for long term debt. At the end of the year the stock of public sector debt had crept up to 74.5% of GDP from 73.5% a year earlier with the majority of the additional debt being contracted from domestic sources.

Prospects and Issues

3. The prospects for Saint Lucia are cautiously optimistic with the increase in economic activity estimated at 2% over the near to medium term. Continued growth in main trading partners should translate to growth, particularly in the tourism sector, while the accommodation-related projects should boost construction in the near to medium term and provide more capacity for tourism expansion in the next two to three years. There are however notable downside risks to the tourism outlook namely: (i) continued appreciation of the US dollar which could place the island at a competitive disadvantage; (ii) visitor's concerns about safety given recent terror attacks; (iii) the Olympics games in Rio 2016, and; (iv) US general elections.

4. Government has introduced structural reforms to facilitate private sector growth. These include: (i) customs modernization such that documents are processed online by the requisite agencies minimizing customers' wait time, and; (ii) the introduction of a 24 hour work day at Port Vieux Fort. In addition, plans are in progress to: (i) extend the 24 hour work day the main port at Castries; (ii) increase the use of alternative energy utilizing a mix of geothermal, solar and possibly wind; (iii) commence operations of the commercial court in 2016; and (iv) enact legislation to upgrade the foreclosure process and address insolvency which would greatly assist commercial banks.

5. With respect to public finances, there are likely to be competing influences which could see overall deficits in the region of 3 to 4% of GDP over the medium term. While the potential benefits from the introduction of the Economic Citizenship Programme in 2016 could be significant, gains could be eroded by greater spending associated with impending elections and the end of the wage freeze (March 2016). In addition to which GOSL has also announced a further increase in the VAT threshold and reforms to personal income tax which administratively more efficient will result in a loss of XCD8mn.

6. Persistent primary deficits along with low growth and the impact of natural hazards have conspired to place the debt trajectory on an unsustainable path unless corrective actions are taken (eg elimination of untargeted subsidies, full implementation of the beneficiaries register, streamlining of employment programmes, further reduction in concessions and exemptions). Consequently, the importance of debt management has become even more critical in ensuring that repayment is not unduly onerous and is made in a timely manner. Saint Lucia is now facing some roll-over risks due to weak market appetite for long term instruments. These developments also suggest that there is a need to reduce GOSL's reliance on capital markets by utilizing more project/concessional financing. However this will require that GOSL carefully plans its PSIP focusing on priority areas.

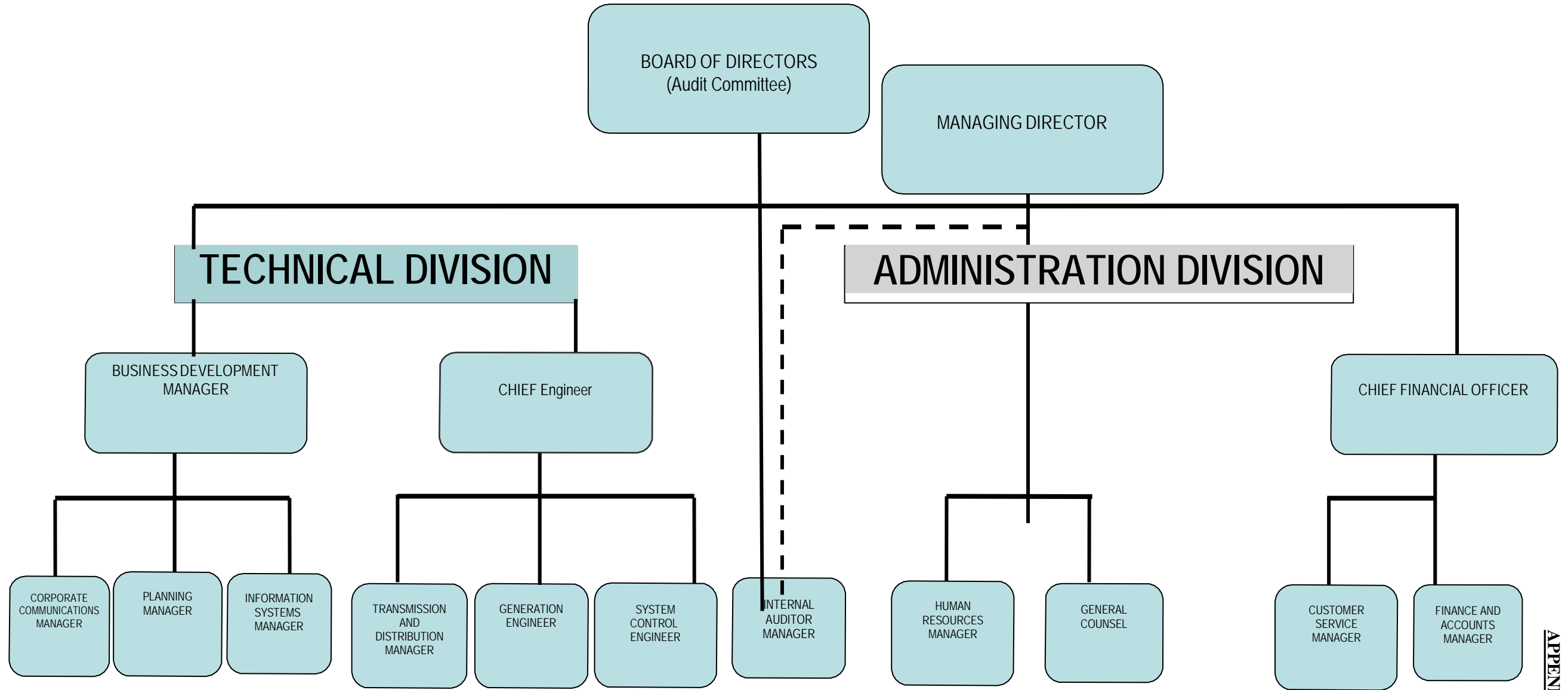
7. In formulating stabilization and growth-enhancing policies and interventions however, it is necessary to consider the gender implications as males and females are disproportionately affected. In the Saint Lucian context this is necessary given that: (i) the burden of care typically falls on females; (ii) female unemployment is higher; (iii) female participation in the labour force is lower, and (iv) a greater portion of females' earnings is directed toward the household which could have positive economic benefits if females are afforded additional employment opportunities.

Table 2 – SELECTED ECONOMIC INDICATORS

Economic Indicator	2012	2013	2014	2015	2016	2017
Real GDP growth (% change)	-1.1	0.1	0.4	4.1	2.5	2.0
Inflation (% change)	4.2	1.5	3.5	-1.0	0.9	1.0
External Current account balance (% of GDP)	-13.5	-11.2	-7.6	-7.4	-8.1	na
Primary balance (on fiscal year basis)	-5.8	-2.1	0.2	1.4	0.2	0.2
Public Sector debt (% GDP)	71.5	73.7	73.5	74.5	75.9	77.3

Source: CDB and IMF

ORGANISATIONAL CHART - SAINT LUCIA ELECTRICITY SERVICES LTD



DETAILS OF THE PROJECT

PROJECT PREPARATION

1. The project preparation included two pilot projects comparing HPS lamps and different LED street lighting luminaires. Pilot testing was conducted to verify the technical specification and robustness, measurements of energy consumption, energy savings and illumination levels and installation and maintenance requirements. Furthermore the pilot assisted LUCELEC to identify a suitable supplier. In addition, the project preparation included the installation of 350 LED lamps in selected areas for further collect operation experience.

Estimated Base Costs – ██████████

LED STREET LIGHTS

2. Elements of this component are:

- (a) The replacement of 21,587 existing street lamps with LED fixtures. LED luminaires will be mounted at the exact same location as the current HPS and MV lamps utilizing existing infrastructure (poles and wiring). Main characteristics of the LED street lighting luminaires are described in the table below;

Characteristic	70 Watt HPS replacement	250 Watt replacement
Power consumption	46W	99W
Color Temperature* (CCT)	4000K (Standard)	4000K (Standard)
Color Rendering Index* (CRI)	~70	~70
Fixture Efficacy* (Lm/W)	109	118
Fixture Output* (Lm)	5,000	11,720
LED L70 (Hours)	> 100,000 hours (@ 350mA)	> 100,000 hours (@ 350mA)

- (b) The purchase of 5% spare LED fixtures to ensure quick replacement in case of failure.

Estimated Base Costs – ██████████

CONSUMPTION MONITORING EQUIPMENT

3. This component includes the purchase and installation of the monitoring equipment for 100 selected LED fixtures. This will enable LUCELEC to capture energy consumption of the lamps in field conditions, allowing the validation of expected savings and monitor operation.

Estimated Base Costs – ██████████

INSTALLATION COSTS

4. The proposed work include the installation cost for the replacement of the 21,587 existing street lamps with the LED fixtures.

Estimated Base Costs – ██████████

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

WASTE DISPOSAL

5. LUCELEC will put appropriate procedures in place to ensure appropriate disposal of the scrap lamps and dismantled fixtures.

Estimated Base Costs – ██████

CLIMATE RISK SCREENING

6. The Climate Risk Screening will assist the LUCELEC in systematically examining the vulnerability of its facilities to projected climate change impacts. Further details are described in Appendix 2.2

Estimated Base Costs – ██████

ENGINEERING CERTIFICATION

7. The responsibilities of the engineering consultant are described in Appendix 6.3.

Estimated Base Costs – ██████

PROJECT MANAGEMENT AND ADMINISTRATION

8. Project management will be undertaken by LUCELEC which will assign project management staff, as required, to ensure the successful completion of the Project.

Estimated Base Costs – ██████

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

DRAFT TERMS OF REFERENCE

CLIMATE RISK SCREENING OF LUCELEC INFRASTRUCTURE IN SAINT LUCIA

1. INTRODUCTION

1.01 The Government of Saint Lucia (GOSL) has approached the Caribbean Development Bank (CDB) for funding for a street lighting replacement project. The project aims to replace approximately 21,500 street lamps across the island with high efficient LED models. The CDB is providing financing to the Government of Saint Lucia (GOSL) for the project.

1.02 Streetlights in Saint Lucia, and the accompanying infrastructure, are exposed to multiple natural hazards. This exposure could include vulnerability to heavy rainfall events, lighting strikes and strong winds.

1.03 It is proposed that a climate risk screening of the Saint Lucia Electricity Services Ltd. (LUCELEC) production and transmission infrastructure be undertaken to identify any vulnerable areas and to recommend resilient measures to address the issues identified through future activities.

2. COUNTRY CONTEXT

2.01 Saint Lucia is already experiencing some of the effects of climate variability and change through damages from severe weather systems and other extreme events, as well as more subtle changes in temperatures and rainfall patterns. Modelled projections indicate that mean temperatures will increase up to 3.6°C in Saint Lucia over the 21st century. The Global Climate Model (GCM) projections from a 15- model ensemble indicate that Saint Lucia should warm by up to 1.2°C by the 2030s, 1.8°C by the 2050s, 2.1°C by the 2060s, 3.1°C by the 2080s; and 3.6°C by the 2090s, relative to the 1970-1999 mean.

2.02 Current climate and future projections relevant for Saint Lucia show: (a) increasing hurricane intensity in the north Atlantic with larger peak wind speeds and more intense precipitation; (b) following global projections, sea-level rise of up to 0.56 m by 2090 depending on the model, and for the Caribbean, by 0.24 m by mid-century; (c) for rainfall, a drying trend with decreasing one day maximum and 5 day maximum by the end of the century; and (d) both minimum and maximum temperatures increasing and expected to increase at a faster rate.

2.03 Disasters and the associated impacts threaten lives and the economic, social, developmental and environmental progress made in the region over the past decades. Because of their role to provide safety especially during the active periods of hazard impacts and also as post-disaster assets, street lighting infrastructure deserve special attention.

3. OBJECTIVES

3.01 The objective of this work is to conduct a climate risk screening of LUCELEC's major infrastructure and to provide LUCELEC with recommendations on measures to increase its resilience.

4. SCOPE OF WORK

4.01 The consultant will undertake a rapid climate risk screening of the street lighting infrastructure in Saint Lucia:

- (a) Based on secondary information provide a general classification and zoning of natural hazards and risk level of major electricity infrastructure for existing and future climate conditions;

- (b) Identify resilience measures to address the impacts of the identified hazards such as expected wind gusts conditions for climate change scenarios that incorporate increase intensity of hurricanes (category 4 and 5 hurricanes), flooding conditions, erosion susceptibility, etc.
- (c) Develop recommendations for the major geographical zones on actions to enhance resilience to climate related events.

4.02 The consultant should begin with a consultation with key stakeholders who may be knowledgeable of existing vulnerabilities in the system given the previous occurrence of extreme weather or climate related events. This would include identifying the key characteristics of the existing assets for street lighting, including their location.

5. REPORTING

5.01 The consultant would provide Climate and Natural Hazards Risk Classification of the key street lighting infrastructure in Saint Lucia, including a corresponding map indicating the specific parts of the system that are vulnerable and require upgrading. The report would also include recommendations of measures to increase the resilience of the street lighting infrastructure.

6. QUALIFICATIONS AND EXPERIENCE

6.01 The **Climate Change and Disaster Risk Specialist** will take the lead in conducting the climate vulnerability assessment. He/she will be responsible for collecting and analysing existing relevant information on climate change, including identifying the climate change parameters to be assessed; collection of relevant local and regional data; analysis of the available information and need for complementation. This specialist will also conduct the required tasks to assess natural hazards and to identify existing vulnerabilities. At least five years' work experience in the area of climate change impacts, adaptation and mitigation is required.

6.02 The **structural engineer** will be responsible for the characterization and technical assessment of the related infrastructure. He/she will conduct interviews with relevant stakeholders and undertake site visits to inform the assessment. In addition, he/she will lead in the engineering analysis that will link the climate change impacts with any design considerations. The candidate must be a registered/licensed professional engineer with at least seven years' experience in construction.

7. DURATION

7.01 The assignment should be completed in a period not to exceed 60 calendar days.

BUDGET

(USD)

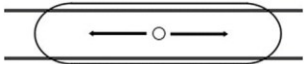
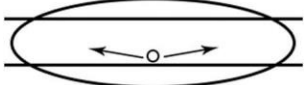
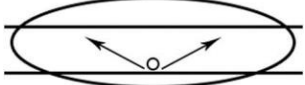
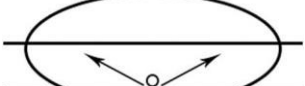
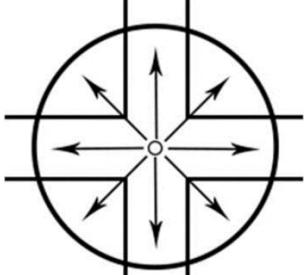
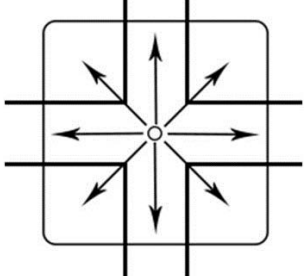
PROJECT COST, PHASING AND FINANCING PLAN

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

PROJECT COST, PHASING AND FINANCING PLAN

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LED LIGHTING DISTRIBUTION TYPES

	<p>The Type I distribution is good for lighting walkways, paths and sidewalks. This type of lighting is meant to be placed near the centre of the pathway. This provides adequate lighting for smaller pathways. Type I is a two-way lateral distribution having a preferred lateral width of 15 degrees in the cone of maximum candlepower. The two principal light concentrations are in opposite directions along a roadway. This type is generally applicable to a luminaire location near the centre of a roadway where the mounting height is approximately equal to the roadway width.</p>
	<p>The Type II distribution is used for wide walkways, on ramps and entrance roadways, as well as other long, narrow lighting. This type is meant for lighting larger areas and usually is located near the roadside. You'll find this type of lighting mostly on smaller side streets or jogging paths. Type II light distributions have a preferred lateral width of 25 degrees. They are generally applicable to luminaires located at or near the side of relatively narrow roadways, where the width of the roadway does not exceed 1.75 times the designed mounting height.</p>
	<p>The Type III distribution is meant for roadway lighting, general parking areas and other areas where a larger area of lighting is required. Type III lighting needs to be placed to the side of the area, allowing the light to project outward and fill the area. This produces a filling light flow. Type III light distributions have a preferred lateral width of 40 degrees. This distribution is intended for luminaires mounted at or near the side of medium width roadways or areas, where the width of the roadway or area does not exceed 2.75 times the mounting height.</p>
	<p>The Type IV distribution produces a semi-circular light meant for mounting on the sides of buildings and walls. It's best for illuminating the perimeter of parking areas and businesses. The intensity of the Type IV lighting has the same intensity at angles from 90 degrees to 270 degrees. Type IV light distributions have a preferred lateral width of 60 degrees. This distribution is intended for side-of-road mounting and is generally used on wide roadways where the roadway width does not exceed 3.7 times the mounting height.</p>
	<p>Type V produces a circular distribution that has the same intensity at all angles. This distribution has a circular symmetry of candlepower that is essentially the same at all lateral angles. It is intended for luminaire mounting at or near centre of roadways, centre islands of parkway, and intersections. It is also meant for large, commercial parking lot lighting as well as areas where sufficient, evenly distributed light is necessary</p>
	<p>Type VS produces a square distribution that has the same intensity at all angles. This distribution has a square symmetry of candlepower that is essentially the same at all lateral angles. It is intended for luminaire mounting at or near centre of roadways, centre islands of parkway, and intersections. It is also meant for large, commercial parking lot lighting as well as areas where sufficient, evenly distributed light is necessary. Type VS is used where the light pattern needs a more de-fined edge.</p>

ASSUMPTIONS TO GOVERNMENT SAVINGS

REPLACEMENT OF EXISTING STREETLIGHTS

- (a) There are currently 21,587 High Pressure Sodium (HPS) street lights installed in Saint Lucia, each consuming a weighted average of 0.52 MWh/year of electricity.
- (b) The HPS lights will be replaced by LED streetlights between Q3, 2016 and Q4, 2018. The LED lamps each consume a weighted average of 0.22 MWh/year of electricity

SAVINGS

- (a) Electricity savings are calculated as the difference between the consumption of electricity if the lighting replacement was not done vs. consumption of electricity with the replacement of the HPS street lights.
- (b) The street lighting tariff is currently (\$0.781/kWh) as per LUCELEC website and for the purpose of this analysis has been fixed at this level. If the actual tariff is higher the savings shown in appendix 4.3 would be even higher

DECREASE IN GOVERNMENT STREET LIGHTING BILL

- (a) The government's "base" street lighting bill will be on the assumption that the HPS lights were not replaced.
- (b) The reduction to the government "base" street lighting bill will be electricity savings based on the number of existing HPS lights replaced with LED, and the reduced consumption of the new lights versus the existing.

DEBT SERVICE COSTS

- (a) Debt service costs include interest payments and principal repayments (n.b. principal balance includes interest during construction and commitment fees). No additional debt service will be incurred during implementation.
- (b) The loan will be repaid over a period of 11 years, inclusive of a grace period of 3 years. The current effective interest rate is 2.23%, (i.e. weighted average of current CDB – OCR and OCR CALC estimate). It is assumed that effective interest rates will increase aligned with forecast LIBOR rates over the tenor of the loan

STREET LIGHTING COSTS - GOVERNMENT SAVINGS

	LED lights - proportion of total (year end) (%)	LED lights installed (year end) (#)	Electricity Savings (mWh)	Electricity Savings (\$)	Debt Service Costs (\$)	Counterpart expenses (\$)	Net savings to GOSL (\$)
2016	0%	0	0	0	0	420,778	(420,778)
2017	63%	13,492	2,043	1,595,403	0	864,463	730,940
2018	100%	21,587	5,311	4,148,047	0	865,086	3,282,961
2019	100%	21,587	6,537	5,105,289	4,221,213	0	884,075
2020	100%	21,587	6,537	5,105,289	4,183,493	0	921,795
2021	100%	21,587	6,537	5,105,289	4,108,591	0	996,698
2022	100%	21,587	6,537	5,105,289	4,036,792	0	1,068,497
2023	100%	21,587	6,537	5,105,289	3,937,679	0	1,167,610
2024	100%	21,587	6,537	5,105,289	3,836,789	0	1,268,500
2025	100%	21,587	6,537	5,105,289	3,723,912	0	1,381,377
2026	100%	21,587	6,537	5,105,289	3,609,850	0	1,495,439
2027	100%	21,587	6,537	5,105,289	0	0	5,105,289
2028	100%	21,587	6,537	5,105,289	0	0	5,105,289
2029	100%	21,587	6,537	5,105,289	0	0	5,105,289
2030	100%	21,587	6,537	5,105,289	0	0	5,105,289
2031	100%	21,587	6,537	5,105,289	0	0	5,105,289

ASSUMPTIONS TO THE ECONOMIC ANALYSIS

1. For the purpose of this analysis, benefits and costs are stated in constant 2016 prices.
2. The analysis was performed for a 20-year period of operation, aligned with the expected life of the new LED lights.
3. The financial costs of the capital works have been converted to their economic costs after excluding price contingencies and applying a conversion factor of 0.88 to adjust for price distortions. These calculations are shown in Table 1.
4. Conversion factors for the different price components are shown in Table 2 below.

TABLE 1: OVERALL CONVERSION FACTOR FOR THE PROJECT

Items	SpCF	Financial Costs	Economic Costs
1. Project preparation studies	0.77	945	731
2. LED street lights	0.91	24,131	21,959
3. Consumption monitoring equipment	0.91	45	41
4. Installation costs	0.71	2,155	1,520
5. Waste disposal	0.71	1,210	853
6. Engineering certification	0.91	297	270
7. Project Management & administration	0.91	1,448	1,318
Total Base Cost and Physical Contingency		30,231	26,692
Overall Conversion factor			0.88

TABLE 2: CONVERSION FACTORS FOR COST ADJUSTMENT

Items	Shadow Rate	Standard Conversion Factor	Base Factor
Skilled Labour	1.00	0.91	0.91
Unskilled Labour	0.70	0.91	0.64
Materials Local	0.80	0.91	0.73
Materials Foreign	1.00	0.91	0.91
Equipment	1.00	0.91	0.91

Replacement of Existing Streetlights

5. There are currently 21,587 High Pressure Sodium (HPS) (2,927 250-Watt and 18,660 70-Watt) streetlights installed in Saint Lucia. Testing of the 70-Watt streetlights shows that they actually consume approximately 96 Watts of electricity, which is 37% above the rated specification. It is assumed the 250 Watt lights will also consume a similar proportion more than their rated specification of energy consumption.
6. The HPS lights will be replaced by LED lights between Q3, 2016 and Q4, 2018.

7. The 70-Watt HPS lights will be replaced by 47-Watt LED lights, consuming 0.19 MWh per year of electricity. The 250 Watt HPS lights will be replaced by 99 Watt LED lamps, consuming 0.4MWh per year of electricity.

Identification and Valuation of Economic Benefits

8. The main benefit of the project is the reduction in consumption of electricity of the LED street lights compared to the HPS street lights. The valuation of this benefit is calculated based on the avoided cost of generation through fuel costs and operating and maintenance (O&M) costs. In addition, economic benefits from reduction in CO₂ emissions has been included in this analysis.
9. The following information was used in the calculation of the economic benefits related to energy production:
- (a) Fuel costs per kWh generated - \$0.49/kWh, based on the historical resource costs over the past 3 years
 - (b) O&M costs per kWh generated - \$0.07/kWh as per historical data and advised by LUCELEC
10. In addition, the project will result in reduced street light maintenance costs. While the upfront cost of an LED light is higher than an HPS light, the components of an LED light have a longer useful life than the components of an HPS light. Therefore the annualized material costs for maintenance will be reduced, and the frequency of maintenance visits will also be lower, reducing labour costs.
11. The following information was used in the calculation of the economic benefits related to maintenance costs:
- (a) Maintenance cost - \$124/visit.
 - (b) Warranty period: LED light – 10 years; HPS light – 0 years.
 - (c) Landed cost and expected life of streetlight components is shown in Table 3 below:

TABLE 3: MAINTENANCE COST

Description	HPS			LED		
	Cost of component	Life (years)	# of replacements in 20 year cycle	Cost of component	Life (years)	# of replacements in 20 year cycle
Lamp	27	5.7	3.5	213	20	1.0
Photocell	81	9.1	2.2	106	20	1.0
Power Supply	108	9.1	2.2	213	20	1.0
Fixture	189	15	1.3	531	20	1.0
Weighted average material cost per lamp over 20 years (XCD)	760			1,063		
Combination of maintenance trips	10%					

Number of maintenance trips in 20 years	179,077	77,713
Maintenance costs (first 10 years) XCD	19,311,432	4,818,218
Maintenance costs (years 11 – 20) (XCD)	19,311,432	19,289,550
Maintenance cost per lamp per year (XCD)	89.5	48.9
Maintenance cost savings (XCD)	40.6	

12. The weighted average material cost is based on the cost of each component and the frequency of their replacement. The projections assume a linear failure rate of components. The number of maintenance visits is based on number of replacements for the components and assumes that 10% of those visits would involve replacement of more than 1 component. Total maintenance costs over the 20 year cycle are calculated based on material costs plus the cost of maintenance visits (i.e. the number of visits times the cost per visit). As LED lights have a 10 year warranty, they do not incur material costs over the first 10 years of their useful life.
13. Valuation of the CO₂ emissions avoided by the project was carried out using data from the Social Cost of Carbon (SCC) model. SCC is an estimate of the economic damage associated with a small increase in carbon dioxide (CO₂) emissions. SCC is used in benefit costs analyses by development agencies, and is used extensively in making regulatory decisions. Economists estimate the social cost of carbon pollution by linking together a global climate model and a global economic model. The resulting models are called Integrated Assessment Models (IAM). IAM allow economists to take a unit of carbon emissions and translate that into an estimate of the cost of the impact that emissions could have on health, property, and quality of life in monetary terms:
- (a) The social cost of carbon is USD 40/tonne for 2016.
 - (b) The replacement of these streetlights will reduce carbon emissions by an average of 3,810 tonnes of CO₂ p.a. between 2017 and 2035

ECONOMIC RATE OF RETURN

PROJECT YEAR		0	1	2	3	4	5	6	7	8	9
	Unit	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
Energy savings	MWh	-	2,043	5,311	6,537	6,537	6,537	6,537	6,537	6,537	6,537
Fuel cost savings	\$'000	0	999	2,598	3,197	3,197	3,197	3,197	3,197	3,197	3,197
O&M savings	\$'000	0	133	345	425	425	425	425	425	425	425
Social cost of carbon avoided	\$'000	0	274	712	876	876	876	876	876	876	876
Maintenance cost savings	\$'000	0	135	350	431	431	431	431	431	431	431
Total Economic Benefits	\$'000	0	1540	4,005	4,929	4,929	4,929	4,929	4,929	4,929	4,929
Capital Expenditure	\$'000	5,085	15,575	6,392							
Net Benefits		-5,085	-14,035	-2,387	4,929	4,929	4,929	4,929	4,929	4,929	4,929

ERR= 18%

ECONOMIC RATE OF RETURN

PROJECT YEAR		10	11	12	13	14	15	16	17	18	19
	Unit	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035
Energy savings	MWh	6,537	6,537	6,537	6,537	6,537	6,537	6,537	6,537	6,537	6,537
Fuel cost savings	\$'000	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197	3,197
O&M savings	\$'000	425	425	425	425	425	425	425	425	425	425
Social cost of carbon avoided	\$'000	876	876	876	876	876	876	876	876	876	876
Maintenance cost savings	\$'000	431	431	431	431	431	431	431	431	431	431
Total Economic Benefits	\$'000	4,929	4,929	4,929	4,929	4,929	4,929	4,929	4,929	4,929	4,929
Capital Expenditure	\$'000										
Net Benefits		4,929	4,929	4,929	4,929	4,929	4,929	4,929	4,929	4,929	4,929

ERR= 18%

GENDER MARKER ANALYSIS

Project Cycle Stage	Criteria	Score
Analysis: Introduction/ Background/ Preparation	Consultations with women/girls/men/boys and relevant gender-related or sector-related public or private organisations have taken place.	0
	Social analysis identifies gender issues and priorities.	0.25
		0.25
Design: Project Proposal/ Definition/ Objective/ Description	Macroeconomic analysis identifies gender issues and priorities. To address the needs of women/girls and men/boys concrete interventions to reduce existing gender disparities have been designed. Effect on project outcome is direct.	0
	Project objective / outcome includes gender equality.	0
Implementation: Execution	Implementation arrangements (gender mainstreaming capacity building or gender expertise in implementing agency) to enhance the gender capacity of the implementing agency. Effect on project outcome is indirect.	0
	Terms of reference of project coordinating unit / project management unit include responsibilities of gender mainstreaming, especially at the levels of the project coordinator/director and the M&E officer.	0
Monitoring and Evaluation: Results-Monitoring-Framework (RMF)	Sex-disaggregated data included in the baselines, indicators and targets of the RMF.	0
	<i>Or</i> Collection of sex-disaggregated data required for M&E (stated and budgeted in Project)	
At least one gender-specific indicator at the outcome and/or output level in the RMF.		0

THE BORROWER AND THE EXECUTING AGENCY

THE BORROWER

1. For the purpose of financing general development in Saint Lucia, under Section 3(1) of the Loans (Caribbean Development Bank) Act 1972 (the Act), GOSL, acting on behalf of Saint Lucia, is authorised to borrow from CDB such sums as may be required by GOSL.
2. Any agreement between GOSL and CDB in respect of sums borrowed from CDB pursuant to the power conferred by the Act shall be applied and appropriated to the purposes for which they were borrowed as specified in the agreement, provided that where any part of such sums cannot be applied to the said purpose such part may be applied to such other purpose as may be approved by the Minister responsible for Finance (the Minister) and CDB. Any such agreement must be made in the name of Saint Lucia, and may be signed on behalf of Saint Lucia by the Minister or any other person authorised in writing by him. A copy of any such agreement shall be laid before Saint Lucia's House of Assembly as soon as practicable after it has been executed.
3. GOSL can issue bonds, promissory notes, or other instruments in such terms as may be necessary for the purpose of giving effect to the terms of any agreement which may be entered into with CDB pursuant to the powers conferred by section 3 (1) of the Act. Any such bonds, promissory notes or other instruments may be signed on behalf of GOSL by the Minister or any other person authorised in writing by the Minister.
4. All sums borrowed by GOSL, on behalf of Saint Lucia, pursuant to Section 3 of the Act, and all interests and other charges payable on such sums, are charged on and payable out of the Consolidated Revenue Fund and assets of Saint Lucia.

THE EXECUTING AGENCY

Legal Status

5. LUCELEC (the Company) was incorporated in Saint Lucia, as a private limited liability company pursuant to Saint Lucia's commercial code in November 1964. On August 11, 1964 the company changed its status to a public company enabling it to offer its shares to the regional public in the Organization of Eastern Caribbean States. The Company operates under an exclusive statutory license, under the Electricity Supply Act of 199 (as amended). The Company has exclusive right to generate and distribute power from fossil fuel to domestic, commercial and industrial users in Saint Lucia. The Company has a separate and distinct personality from those of its directors and shareholder. As an incorporated company, it has the capacity, rights, powers, and privileges of an individual and is empowered to carry on business and conduct its affairs as such, except for those commercial activities which are restricted by Saint Lucia's Companies Act 1996.

Management and Shareholding

6. The powers of LUCELEC are exercised by BOD, which is responsible for the management of its business and affairs. It currently has eleven (11) directors that make up its BOD, ten (10) of whom are non-executive directors. The directors come from different occupational or professional backgrounds, however, all of them are nationals of Saint Lucia. The current makeup of LUCELEC shareholders include: Light and Power Holdings Ltd. (20%); First Citizens Bank Ltd. (20%); National Insurance Corporation (16.79%); Castries City Council (16.33%); GOSL (12.44%); and individual shareholders (14.44%). The composition of the BOD is such that the interest of minority shareholders is being protected by a director appointed by them.

RESPONSIBILITIES OF PROJECT COORDINATOR

1.01 The Project Coordinator (PC) will be responsible for coordinating and monitoring all aspects of the implementation of the Project. PC will be supported by the administrative staff. PC's duties will include, but will not be limited to:

- (a) managing the selection and engagement of Engineering Supervision and Climate Risk Screening Consultants and supervising these consultancies;
- (b) leading the management of all procurement related to the project;
- (c) expediting the submission to the Caribbean Development Bank (CDB) claims for disbursement/reimbursement;
- (d) liaising with CDB on all technical and administrative aspects of the Project;
- (e) preparing and submitting to CDB, a Quarterly Report on the Investment Cost of the Project in the form specified by CDB, within two (2) weeks after the end of each calendar quarter, commencing with the quarter following the commencement of the assignment;
- (f) keeping separate accounts for project-related expenditures and disbursement activities;
- (g) submitting to CDB, within two (2) weeks after the end of each month, the monthly reports prepared by the Engineering Supervision Consultant;
- (h) submitting to CDB, reports on the results of the Design and Monitoring Framework;
- (i) submitting to CDB, the Completion Report within three (3) months after the date of issue by the Engineering Consultants of a certificate of practical completion of the Contract; and
- (j) preparing and submitting to CDB, a Project Completion Report, within three (3) months after practical completion of the works.

DRAFT TERMS OF REFERENCE

ENGINEERING SUPERVISION OF STREET LIGHT RETROFITTING PROJECT
SAINT LUCIA

1. BACKGROUND

1.02 The Government of Saint Lucia (GOSL) has received financing from the Caribbean Development Bank (CDB) for retrofitting of street lights in the country. The project aims to replace approximately 22,000 street lamps across the island with high efficient LED models. The installation will be undertaken by contractors certified by LUCELEC.

2. OBJECTIVES

2.01 The objective of this consultancy is to provide independent certification and reporting of the proposed works. The consultant will also be required to prepare an environmental management plan. The consultant will be responsible for ensuring contract compliance with contract document.

3. SCOPE OF WORK

3.01 The Engineering Consultant will undertake the following tasks:

- (a) preparation of a detailed environmental monitoring plan and ensure its integration into contract documents;
- (b) technical inspection of LED installation for compliance with the contract documents;
- (c) environmental monitoring during installation;
- (d) certification of work done for payment;
- (e) consultation and advice to LUCELEC during installation.
- (f) preparation of monthly reports on the progress of the works, indicating any engineering difficulties affecting their efficient and timely execution, commencing one month after the start date as defined in the construction contract;
- (g) issuance of certificates of completion to the contractor upon completion of the construction contract; and
- (h) preparation of a Completion Report on installation of the Project within three months after the date of issue of a certificate of practical completion of the Project.

4. QUALIFICATIONS AND EXPERIENCE

- (a) **Key Expert No. 1: Civil Engineer (Team Leader):**
 - (i) Education: BSc. in Civil Engineering.

(ii) Experience: At least 10 years' experience in construction and project management.

(b) **Key Expert No. 2: Environmental Management Specialist:**

(i) Education: BSc. in Environmental or Natural Resource Management

(ii) Experience: 5 years' experience in construction waste management.

4.01 It is envisaged that part-time inputs would be required from the following other experts:

(a) Surveyors.

(b) CAD Technicians.

(c) Sociologist.

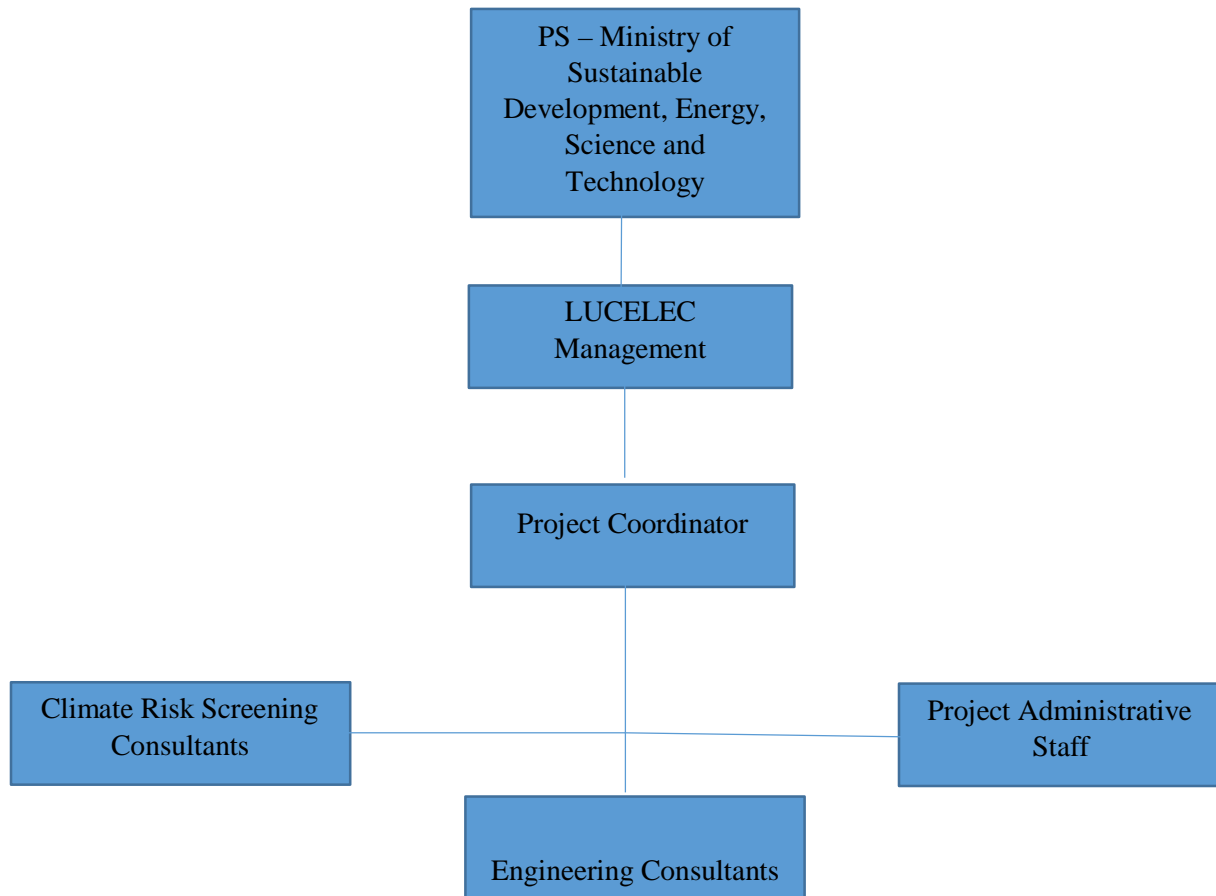
5. DURATION

5.01 The assignment expected to last for a period of approximately 18 months calendar days.

BUDGET
(USD)

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

PROJECT MANAGEMENT ARRANGEMENTS



ESTIMATED QUARTERLY LOAN DISBURSEMENT SCHEDULE
 (\$'000)

YEAR	QUARTER	E&M - LOAN	CALC - GRANT	CALC - LOAN	FINANCE CHARGES	TOTAL	CUMULATIVE DISBURSEMENT
2016	Q3	1,612	0	3,068	81	4,761	4,761
	Q4	393	81	0	83	558	5,319
	SUB-TOTAL	2,005	81	3,068	164	5,319	5,319
2017	Q1	2,922	0	4,720	49	7,691	13,010
	Q2	442	0	0	108	550	13,560
	Q3	2,967	0	4,720	130	7,818	21,378
	Q4	442	0	0	134	575	21,953
SUB-TOTAL		6,772	0	9,441	421	16,634	21,953
2018	Q1	2,088	0	3,137	149	5,374	27,327
	Q2	440	0	0	150	590	27,917
	Q3	440	0	0	155	595	28,512
	Q4	38	0	0	159	197	28,709
SUB-TOTAL		3,007	0	3,137	613	6,756	28,709
TOTAL		11,784	81	15,646	1,198	28,709	28,709

PROCUREMENT PLAN

A. **General**

1. **Project Information:**

Country: Saint Lucia
 Borrower: Government of Saint Lucia
 Project Name: Street Light Retrofitting Project
 Project Executing Agency: LUCELC

2. **Bank’s Approval Date of the Procurement Plan:** May 16, 2016

3. **Period Covered By This Procurement Plan:** June 2016 to December 2017

B. **Goods and Works and Non-Consulting Services**

1. **Prior Review Threshold:** Procurement decision subject to prior review by the Bank as stated in Appendix 2 to the Guidelines for Procurement:

	Procurement Method	Prior Review Threshold (USD)	Comments
1.	LIB (Goods)	█	Tender Documents for works will be subject to prior review.
2.	NCB (Works)	█	Procurement procedures of LUCELEC apply.

2. **Prequalification.** Yes

3. **Reference to Project Operational/Procurement Manual:** CDB’s Guidelines for Procurement (2006).

4. **Any Other Special Procurement Arrangements:**

- (a) A waiver to permit LUCELEC to apply the unrestricted competitive procurement allowed for under CDB Lending Policies (2013).
- (b) A waiver to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.
- (c) Bidders must submit the “Covenant of Integrity¹” in the form attached hereto at the Annex.

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank’s Information Disclosure Policy.

¹ http://www.eib.org/attachments/thematic/procurement_en.pdf.

4. Procurement Packages with Methods and Time Schedule:

1	2	3	4	5	6	7	8
Ref No.	Contract (Description)	Estimated Cost (USD)	Procurement Method	Prequalification (Yes/No)	Bank Review (Prior/Post)	Expected Bid-Opening Date	Comments
1.	LED Lights and Consumption Monitoring	██████████	LIB	No	Post	Completed	-
2.	LED installation – Package 1	██████████	NCB	No	Post	August 2016	-
3.	LED installation – Package 2	██████████	NCB	No	Post	August 2016	-
4.	LED installation – Package 3	██████████	NCB	No	Post	January 2016	-
5.	LED installation – Package 4	██████████	NCB	No	Post	January 2017	-
6.	LED installation – Package 5	██████████	NCB	No	Post	January 2017	-
7.	Waste Disposal	██████████	NCB	No	Post	March 2017	-

C. Consulting Services

- Prior Review Threshold:** Procurement decision subject to prior review by the Bank as stated in Appendix 1 to the Guidelines for the Selection and Engagement of Consultants:

	Selection Method	Prior Review Threshold	Comments
1.	FBS	██████████	-

- Short list comprising entirely of national consultants:** N/A
- Reference to (if any) Project Operational/Procurement Manual:** CDB Guidelines for Selection and Engagement of Consultants (2011).
- Any Other Special Procurement Arrangements:** N/A
- Procurement Packages with Selection Methods and Time Schedule:**

1	2	3	4	5	6	7
Ref No.	Assignment (Description)	Estimated Cost	Selection Method	Review by Bank	Expected Proposal Submission Date	Comments
5.	Engineering Consultant	██████████	FBS	Prior	July 2016	-
6.	Climate Screening Consultant	██████████	FBS	Prior	December 2016	-

D. Implementing Agency Capacity Building Activities with Time Schedule

PLW: Schedule to be coordinated with GOSL in the third quarter of 2016.

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank’s Information Disclosure Policy.

E. Summary of Proposed Procurement Arrangement

Project Component	CDB (USD'000)									NBF (USD'000)		Total Cost (USD'000)
	Primary	Secondary			Other					Country	Institution	
	ICB	LIB	RCB	NCB	Shopping	FBS	FA	QCBS	ICS			
1. Project Preparation												
2. LED Street Lights												
3. Consumption monitoring equipment												
4. Installation costs												
5. Waste disposal												
6. Climate Risk Screening												
7. Engineering Certification												
8. Project Management and Administration												
Contingencies												
IDC and Commitment Fees												
Total												

DC	Direct Contracting	NCB	National Competitive Bidding
FA	Force Account	QBS	Quality Based Selection
ICB	International Competitive Bidding	QCBS	Quality and Cost-Based Selection
LIB	Limited International Bidding	FBS	Fixed Budget Selection
NBF	Non-Bank Financed	ICS	Individual Consultant Selection

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

COVENANT OF INTEGRITY
to the Government of Saint Lucia
from a Tenderer, Contractor, Supplier or Consultant to be attached to its
Tender (or to the Contract in the case of a negotiated procedure)

“We declare and covenant that neither we nor anyone, including any of our directors, employees, agents, joint venture partners or sub-contractors, where these exist, acting on our behalf with due authority or with our knowledge or consent, or facilitated by us, has engaged, or will engage, in any Prohibited Conduct (as defined below) in connection with the tendering process or in the execution or supply of any works, goods or services for [*specify the contract or tender invitation*] (the “**Contract**”) and covenant to so inform you if any instance of any such Prohibited Conduct shall come to the attention of any person in our organisation having responsibility for ensuring compliance with this Covenant.

We shall, for the duration of the tender process and, if we are successful in our tender, for the duration of the Contract, appoint and maintain in office an officer, who shall be a person reasonably satisfactory to you and to whom you shall have full and immediate access, having the duty, and the necessary powers, to ensure compliance with this Covenant.

If: (i) we have been, or any such director, employee, agent or joint venture partner, where this exists, acting as aforesaid has been, convicted in any court of any offence involving a Prohibited Conduct in connection with any tendering process or provision of works, goods or services during the five years immediately preceding the date of this Covenant; or (ii) any such director, employee, agent or a representative of a joint venture partner, where this exists, has been dismissed or has resigned from any employment on the grounds of being implicated in any Prohibited Conduct; or (iii) we have been, or any of our directors, employees, agents or joint venture partners, where these exist, acting as aforesaid has been excluded by the Caribbean Development Bank (CDB), the European Union institutions or any major Multi-lateral Development Bank (including World Bank Group, African Development Bank, Asian Development Bank, European Bank for Reconstruction and Development, European Investment Bank or Inter-American Development Bank) from participation in a tendering procedure on the grounds of Prohibited Conduct, we give details of that conviction, dismissal or resignation, or exclusion below, together with details of the measures that we have taken, or shall take, to ensure that neither this company nor any of our directors, employees or agents commits any Prohibited Conduct in connection with the Contract [*give details if necessary*].

In the event that we are awarded the Contract, we grant the Government of Saint Lucia (GOSL), CDB, the European Investment Bank (EIB) and auditors appointed by any of them, as well as any authority or European Union institution or body having competence under European Union law, the right of inspection of our records and those of all our sub-contractors under the Contract. We accept to preserve these records generally in accordance with applicable law but in any case for at least six (6) years from the date of substantial performance of the Contract.

For the purpose of this Covenant, Prohibited Conduct includes²:

- (a) **Corrupt Practice** is the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence improperly the actions of another party;

² Most definitions are those of the IFI Anti-Corruption Task Force’s Uniform Framework of September 2006.

- (b) **Fraudulent Practice** is any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;
- (c) **Coercive Practice** is impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of any party to influence improperly the actions of a party;
- (d) **Collusive Practice** is an arrangement between two or more parties designed to achieve an improper purpose, including influencing improperly the actions of another party;
- (e) **Obstructive Practice** is: (a) deliberately destroying, falsifying, altering or concealing of evidence material to the investigation; and/or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation; or (b) acts intended to materially impede the exercise of CDB or the EIB's contractual rights of audit or access to information or the rights that any banking, regulatory or examining authority or other equivalent body of the European Union or of its Member States may have in accordance with any law, regulation or treaty or pursuant to any agreement into which the EIB has entered in order to implement such law, regulation or treaty;
- (f) **Money Laundering** as defined in EIB's Anti-Fraud Policy;
- (g) **Terrorist Financing** as defined in EIB's Anti-Fraud Policy;
- (h) **Corrupt practices, fraudulent practices, collusive practices and coercive practices** as defined in CDB's Guidelines for Procurement; and
- (i) **Project Owner** means GOSL.

Note: This Covenant must be sent to CDB and EIB together with the contract in the case of an international procurement procedure (as defined in CDB's Guidelines for Procurement). In other cases, it must be kept by GOSL and made available upon request from CDB or EIB. The Covenant is not mandatory for contracts awarded prior to CDB or EIB involvement in the Project. Nevertheless, recipients of CDB financing who are seeking or may seek to utilise resources provided by EIB to CDB in a project, are advised to include it in order to promote integrity among the tenderers/contractors. This is particularly relevant in the case of a recipient of CDB financing who has already implemented a number of previous CDB-financed projects and is considering further CDB financing utilising resources provided by EIB to CDB.

Name: _____

In the capacity of: _____

Signed: _____

Duly authorised to sign the bid for and on behalf of: _____

Dated on: _____ day of _____

APPENDIX 6.8

REPORTING REQUIREMENTS

Report Implementation	Frequency	Deadline for Submission	Responsibility	
1.	Monthly progress reports on LED Installation Works by the Engineering Consultants.	Monthly	Within three weeks of the end of each calendar month commencing one month after engagement.	PC
2.	Report on Investment Cost (Sample Guidelines in Annex 1).	Quarterly	Within six weeks of the end of each quarter commencing with the quarter following the assignment of PC, until construction is completed.	PC
3.	Completion Report for Installation Works prepared by the Engineering Consultants.	-	Within three months of the date of issue of a certificate of practical completion for infrastructure contract.	PC
4.	LUCLEEC Project Implementation Completion Report.	-	Within three months of practical completion.	PC

REPORT ON INVESTMENT COST OF PROJECT
(\$'000)

Elements of Project	Expenditure for this Quarter	Cumulative Expenditure to Date	Projected Expenditure for the Quarter			Estimated Expenditure to Complete Project	Latest Estimate of Expenditure	Project Estimate as per Appraisal Report	Variance Favourable/ (Adverse)	Comments/Reasons for adverse Variance and Financing Proposals to Meet Cost Overrun
			Ending	Ending	Ending					
(1)	(2)	(3)	(4)	(4)	(4)	(5)	(6)	(7)	(8)	(9)
Project Preparation										
LED Street Lights										
Consumption monitoring equipment										
Installation costs										
Waste disposal										
Climate Risk Screening										
Engineering Certification										
Project Management and Administration										
Base Cost										
Physical Contingencies										
Price Contingencies										
Sub-Total										
IDC										
Commitment Charge										
Total Project Costs										

This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

**GUIDELINES FOR COMPLETION OF
REPORT ON PROGRESS OF INVESTMENT COST**

1. Elements of Programme - The elements of the Programme as outlined in the Appraisal Report must be recorded in this column. If it becomes necessary to further sub-divide the main elements of the Programme, then the sub-elements should be grouped to facilitate the determination of the expenditure related to the main elements identified in the Appraisal Report.
2. Expenditure for this Quarter - The expenditure incurred in the quarter to which the report relates in respect of each element of the Programme must be recorded in this column.
3. Cumulative Expenditure to Date - The expenditure incurred in respect of each element of the Programme from the commencement of the Programme to the end of the quarter to which the report relates must be recorded in this column.
4. Projected Expenditure for Quarter - An estimate of the expenditure to be incurred in each of the next three quarters must be recorded in the columns 4₁, 4₂, and 4₃.
5. Estimate of Expenditure to complete Programme - This column should be completed only in respect of those elements of the Programme, construction/installation of which stretches beyond three quarters from the end of the quarter to which the report relates. Where a programme extends over more than one year - four quarters - an estimate of the expenditure to be incurred in the period subsequent to the year must be recorded in this column.
6. Latest Estimate of Expenditure - The amounts to be recorded in this column should be derived by adding columns 3, 4₁₂₃, and 5. The amounts recorded in this column should be the best estimate of expenditure to be incurred in respect of each element of the Programme. These amounts may be less or greater than the appraised expenditure.
7. Programme Estimates as per Appraisal Report - The estimate of expenditure to be incurred in respect of each element of the Programme, as outlined in the Appraisal Report, must be recorded in this column.
8. Variance - The difference between columns 6 and 7 must be recorded in this column. Where the amount in column 6 is less than that in column 7, a favourable variance results. An adverse variance results where the amount in column 6 is greater than that in column 7.
9. Comments - An explanation should be given for each variance which is more than 10% of the programme estimates as per Appraisal Report.

EXCLUDED ACTIVITIES

GOSL shall not finance, with the proceeds of the Loan, any activity involving:

- (a) ammunition and weapons, military/police equipment or infrastructure. Includes explosives and sporting weapons;
- (b) projects which result in limiting people's individual rights and freedom, or violation of human rights, as per EIB's Statement of Environmental and Social Principles and Standards, in particular 6, 46 and 47;
- (c) projects unacceptable in environmental and social terms, such as projects in protected areas, critical habitats and heritage sites or without adequate compensation/mitigation, as per EIB's Statement of Environmental and Social Principles and Standards, in particular 58, 71 and 72;
- (d) ethically or morally controversial projects, such as sex trade and related infrastructure, services and media, animal testing, gambling and related equipment, hotels with in-house casinos or tobacco;
- (e) activities prohibited by national legislation (only where such legislation exists); and
- (f) projects with a political or religious content.