CARIBBEAN DEVELOPMENT BANK

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

TO BE HELD IN THE TURKS AND CAICOS ISLANDS

MAY 22, 2017

PAPER BD 47/17
PAPER BD 47/17 Corr.1

ENERGY EFFICIENCY MEASURES AND SOLAR PHOTOVOLTAIC PLANT ST. VINCENT AND THE GRENADINES

(President's Recommendation No. 940)

The attached Report appraises a proposal by the Government of St. Vincent and the Grenadines (GOSVG) to: (a) replace all of its high pressure sodium and mercury vapour street lamps (approximately 7,220) with high efficiency light-emitting diode (LED) street lamps; (b) implement energy efficiency measures in 20 Government buildings; and (c) construct a 400 kW solar photovoltaic (PV) plant. The project is estimated to cost approximately USD6.026 mn, with counterpart contribution from GOSVG and St. Vincent Electricity Services Limited (VINLEC) of the equivalent of USD0.545 mn and USD0.306 mn respectively.

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

(a) a loan to GOSVG from the Caribbean Development Bank's (CDB) Ordinary Capital Resources (OCR) of an amount not exceeding the equivalent of four million, one hundred and ninety-six thousand United States dollars (USD4,196,000) (the Loan) comprising:

(i) an amount not exceeding the equivalent of two million, one hundred and seventy-seven thousand United States dollars (USD2,177,000) allocated from CDB's Equity and Market (E&M) resources; and

(ii) an amount not exceeding the equivalent of two million and nineteen thousand United States dollars (USD2,019,000) allocated from resources provided by the European Investment Bank (EIB) to CDB under the Climate Action Line of Credit (CALC); and

(b) a grant to GOSVG from CDB's Special Funds Resources (SFR) comprising;

(i) an amount not exceeding the equivalent of five hundred and fifty-four thousand Euros (EUR554,000) allocated from resources provided by the European Union (EU) Caribbean Investment Facility (CIF) to CDB under the EU Contribution Agreement for the implementation of the action entitled: "Sustainable Energy for the Eastern Caribbean (SEEC) Programme"; and

(ii) an amount not exceeding three hundred and sixteen thousand Pounds Sterling (GBP316,000) allocated from resources provided by the Government of the United Kingdom of Great Britain and Northern Ireland through its Department for International Development (DFID);

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

3. I also recommend waivers of CDB's Guidelines for Procurement (2006):

(a) to permit VINLEC to use unrestricted competitive procurement methods that reflect industry commercial practices for the procurement and installation of LED street lamps and consumption monitoring equipment.

(b) to extend eligibility for procurement to:

(i) countries eligible for procurement under EIB and EU-funded projects, which are not CDB Member Countries, where EIB CALC and EU-CIF SEEC resources are being used together with CDB's E&M resources for the supply and installation of LED street lamps ; and

(ii) countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, where EU-CIF SEEC resources are being used together with CDB's E&M resources for the supply and installation of the PV plant, for the Building Energy Efficiency Works and for inspection and certification engineering services.

(c) in respect of the procurement of air conditioning units and associated parts for the Energy Efficiency Building Upgrade Component, to extend eligibility of the source and origin of equipment to all countries.

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

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

CARIBBEAN DEVELOPMENT BANK

APPRAISAL REPORT

ON

ENERGY EFFICIENCY MEASURES AND SOLAR PHOTOVOLTAIC PLANT ST. VINCENT AND THE GRENADINES

Considered at the Two Hundred and Seventy-Sixth Meeting of the Board of Directors on May 22, 2017

BD 47/17
AR 17/5 SV

Director *Projects Department*	*Mr. Daniel M. Best*
Division Chief *Economic Infrastructure Division*	*Mr. L. O'Reilly Lewis*

MAY 2017

This Report was prepared by an Appraisal Team comprising:

Peter Manning, Operations Officer (Analyst)/Coordinator; Albert Gillings, Operations Officer (Civil Engineer); Peter Werner, Sustainable Energy Specialist; Elbert Ellis, Social Analyst; Paul Saunders, Environmental Specialist; Christine Dawson, Economist; Takem Enaw, Legal Counsel; and Karene Daniel, Coordinating Secretary.

CURRENCY EQUIVALENT

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

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

ABBREVIATIONS

AC	-	Air Conditioning
BMC	-	Borrowing Member Countries
BOD	-	Board of Directors
BRAGSA	-	Buildings, Road and General Service Authority
CDB	-	Caribbean Development Bank
CO_2	-	Carbon Dioxide
CRS	-	Climate Risk Screening
CVA	-	Climate Vulnerability Assessment
CWSA	-	Central Water and Sewerage Authority
DFID	-	Department for International Development
E&M	-	Equity and Market
EA	-	Energy Audit
EC	-	Engineering Consultant
ECCB	-	Eastern Caribbean Central Bank
ECCU	-	Eastern Caribbean Currency Union
EE	-	Energy Efficiency
EER	-	Energy Efficiency Ratio
EIB CALC	-	European Investment Bank Climate Action Line of Credit
ERR	-	Economic Rate of Return
ESMP	-	Environmental and Social Management Plan
EU	-	European Union
EU-CIF	-	European Union Caribbean Investment Facility
GDP	-	Gross Domestic Product
GHG	-	Greenhouse Gas Emissions
GIZ	-	Deutsche Gesellschaft für Internationale Zusammenarbeit
GM	-	Gender Marker
GOSVG	-	Government of St. Vincent and the Grenadines
HDI	-	Human Development Index
HPS	-	High Pressure Sodium
IAM	-	Integrated Assessment Models
ISP	-	Implementation Support Plan
IWG	-	Interagency Working Group
kWh	-	Kilowatt Hour
LED	-	Light-Emitting Diode
M&E	-	Monitoring and Evaluation
MNSA	-	Ministry of National Security, Air and Seaport Development
MOU	-	Memorandum of Understanding
MV	-	Mercury Vapour
MWh	-	Megawatt hours
NEAP	-	National Energy Action Plan
NEP	-	National Energy Policy
NPL	-	Non-Performing Loans

O&M	-	Operations and Maintenance
OCR	-	Ordinary Capital Resources
OIE	-	Office of Independent Evaluation
OLAF	-	European Anti-Fraud Office
ORM	-	Office of Risk Management
p.a.	-	per annum
PC	-	Project Coordinator
PCR	-	Project Completion Report
PE	-	Project Engineer
PPES	-	Project Performance Evaluation System
PV	-	Photovoltaic
RE	-	Renewable Energy
RMF	-	Results Monitoring- Framework
SA		Special Account
SCC	-	Social Cost of Carbon
SDG	-	Sustainable Development Goals
SEEC	-	Sustainable Energy for the Eastern Caribbean
SFR	-	Special Funds Resources
SSIP		Site Specification Investigation for PV Plant
SVG	-	St. Vincent and the Grenadines
SWMU	-	Solid Waste Management Unit
TOR	-	Terms of Reference
UNFCCC	-	United Nations Framework Convention for Climate Change
USD	-	United States dollar
VAT	-	Value Added Tax
VINLEC	-	St. Vincent Electricity Services Limited

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)

TABLE OF CONTENTS

APPENDICES

COUNTRY DATA : ST. VINCENT AND THE GRENADINES

	2009	2010	2011	2012	2013	2014	2015
PER CAPITA GDP (current market prices; $)	16,672	16,828	16,702	17,117	17,816	17,965	18,206
GROSS DOMESTIC PRODUCT (GDP)							
GDP at Current Market Prices ($mn)	1,822.3	1,839.3	1,825.5	1,870.9	1,947.3	1,965.4	1,991.7
Demand Components:							
Total Consumption	1,867.8	1,862.3	1,884.6	1,964.2	2,061.9	2,084.3	2,007.7
Gross Capital Formation	482.9	533.2	464.3	475.7	523.8	491.2	516.6
Goods & Non-Factor Services	(528.5)	(556.2)	(523.3)	(569.0)	-638.4	-610.1	-532.5
GDP at Market Prices	1,822.3	1,839.3	1,825.5	1,870.9	1,947.3	1,965.4	1,991.7
GVA at Basic Prices	1,525.9	1,556.5	1,555.2	1,592.5	1,668.2	1,667.7	1,674.1
Gross domestic savings ratio (%)	(2.5)	(1.3)	(3.2)	(5.0)	(5.9)	(6.1)	(0.8)
Agriculture, Livestock and Forestry	6.5	6.7	7.0	6.8	7.1	7.3	7.0
Fishing	0.6	0.5	0.5	0.4	0.5	0.5	0.5
Mining & Quarrying	0.3	0.3	0.2	0.2	0.1	0.2	0.2
Manufacturing	5.3	5.7	5.1	5.0	5.2	5.8	5.8
Electricity & Water	4.1	4.6	4.3	4.2	3.9	3.7	3.2
Construction	9.5	9.0	8.8	8.5	8.7	7.7	8.2
Wholesale & Retail Trade	14.8	14.3	14.0	14.5	14.4	14.6	13.7
Hotels & Restaurants	2.3	2.0	2.5	2.7	2.8	2.6	2.7
Transport, Storage and Communications	14.6	14.0	13.9	13.9	13.5	13.3	13.3
Financial Intermediation	7.3	7.3	6.1	6.1	5.9	6.1	6.2
Real Estate, Renting and Business Activities	15.1	15.2	15.6	15.1	14.7	15.1	15.1
Public Administration, Defence & Compulsory Social Security	9.4	10.8	11.5	12.0	12.4	13.1	13.4
Education	5.2	5.2	5.5	5.7	5.5	5.4	5.7
Health and Social Work	2.9	3.1	3.2	3.4	3.4	3.3	3.3
Other Community, Social & Personal Services	2.7	2.2	2.4	2.2	2.3	1.9	2.0
Activities of Private Households as Employers	0.3	0.3	0.3	0.3	0.3	0.3	0.3
GDP at Current Factor Cost ($mn)	1,525.9	1,556.5	1,555.2	1,592.5	1,668.2	1,667.7	1,674.1
GDP at Constant 2006 Prices ($mn)	1,419.6	1,386.5	1,389.9	1,407.9	1,443.1	1,445.8	1,455.0
Annual rate of growth in GDP (%)	(2.0)	(2.3)	0.2	1.3	2.5	0.2	0.6
MONEY AND PRICES ($ mn)							
Consumer prices (av. annual % change)	0.4	1.5	3.2	2.6	0.8	0.2	(1.7)
Money supply (M1; annual % change)	(7.6)	(3.9)	(4.0)	9.0	3.7	13.9	2.7
Total domestic credit(net)	1,029.2	892.0	906.7	959.5	998.9	1,020.2	4.8
Estimated Tourism Expenditure (USD mn)	90.1	86.2	91.7	94.1	92.3	93.2	95.7
CENTRAL GOVERNMENT FINANCES ($ mn)							
Current Revenue	466.5	483.8	462.5	472.6	462.6	532.3	518.3
Current Expenditure	469.8	473.2	495.2	488.9	491.3	508.9	512.1
Current Account Balance	(3.2)	10.7	(32.7)	(16.3)	(28.7)	23.4	6.2
Capital Revenue	1.5	1.0	10.4	5.4	34.3	0.7	11.3
Capital Expenditure and Net Lending	106.0	78.4	63.0	54.2	151.8	125.2	99.9
Primary Balance after grants	20.1	(0.2)	(3.1)	5.9	(72.2)	(34.7)	(12.9)
Overall Balance after grants	(30.9)	(52.6)	(49.1)	(38.5)	(120.1)	(80.4)	(57.6)
BALANCE OF PAYMENTS (USD mn)							
Merchandise Exports (f.o.b)	53.4	45.0	43.4	48.7	49.2	53.3	51.3
Merchandise Imports (c.i.f)	293.8	297.7	292.3	314.6	325.6	319.1	294.6
Trade balance	(240.4)	(252.7)	(248.9)	(265.9)	(272.1)	(265.6)	(243.3)
Net Balance on services account	44.7	47.1	55.0	55.5	35.6	39.6	46.1
Income (net)	(13.0)	(17.4)	(12.9)	(11.7)	0.1	(0.0)	(3.2)
Transfers (net)	11.4	10.0	7.9	7.4	13.6	44.1	44.4
Current Account Balance	(197.3)	(213.0)	(198.9)	(214.7)	(222.8)	(182.4)	(156.1)
TOTAL PUBLIC DEBT (USD mn)							
Total public debt	408.9	440.2	456.7	495.0	535.5	578.7	590.1
Domestic debt outstanding	201.9	168.0	173.4	221.7	235.7	249.9	248.8
External debt outstanding	207.0	272.1	283.3	273.4	299.8	328.8	341.3
Debt Service	25.8	26.5	43.0	43.3	48.8	49.2	50.2
Amortisation	17.4	20.6	25.9	27.0	31.1	32.3	33.7
Interest Payments	8.4	7.9	17.1	16.3	17.7	16.9	16.6
Total debt service as % of current revenue	23.8	30.3	27.6	26.5	27.7	26.2	27.6
AVERAGE EXCHANGE RATE							
Dollar(s) per US dollar	2.7	2.7	2.7	2.7	2.7	2.7	2.7

COUNTRY DATA : ST. VINCENT AND THE GRENADINES

	2009	2010	2011	2012	2013	2014	2015
POPULATION							
Mid-Year Population ('000)	108.8	108.9	109.1	109.2	109.3	109.4	109.6
Population Growth Rate (%)	0.0	0.1	0.2	0.1	0.1	0.1	0.2
Crude Birth Rate	…	…	…	…			
Crude Death Rate	…	…	…	…			
Infant Mortality Rate	…	…	…	…			
EDUCATION							
Net School Enrolment Rate (%)							
Primary	87	89	…	…	74	97	96
Secondary	77	98	…	…	69	96	89
Pupil-Teacher Ratio							
Primary	17	16	16	16	16	16	15
Secondary	17	18	17	15	15	15	15

COUNTRY DATA : ST. VINCENT AND THE GRENADINES

	1980	1990	2000	2010	2013	2014	2015
INDICATORS OF HUMAN DEVELOPMENT							
HEALTH							
Life Expectancy at Birth (years)	67	70	70	70			
Male	65	68	…	66	71	69	
Female	70	72	…	74	75	74	
Dependency Ratio	1	1	…	…			
Male	1	1	…	…			
Female	1	1	…	…			
Human Development Index	…	…	…	0.733	0.719	0.720	0.722

Source(s): ECCB Research Dept., GOSVG
… not available
Data as at March 2017

LOAN AND PROJECT SUMMARY

Financial Terms and Conditions			
Borrower:	Government of St. Vincent and the Grenadines (GOSVG)	**Amortisation Period:**	10 years (excluding grace period)
Executing Agency:	St. Vincent Electricity Services Limited (VINLEC)	**Grace Period:**	3 years
		Disbursement Period:	First Disbursement Date: September 30, 2017 Terminal Disbursement Date: December 31, 2019

Source	**Amount (USD'000)**		
Ordinary Capital Resources (OCR) Loan: Equity and Market (E&M) Tranche	2,177	**Interest Rate: E&M Tranche**	3.3% per annum (p.a.) variable
OCR Loan: European Investment Bank-Climate Action Line of Credit (EIB-CALC) Tranche	2,019	**Interest Rate: EIB-CALC Tranche (indicative)**	2.22 % p.a. variable
Sub-Total Loan	**4,196**	**Commitment Fee:**	1% p.a. on the undisbursed balance of the Loan, commencing from the 60th day after the date of the Loan Agreement.
Special Funds Resources (SFR) Other Special Funds (OSF) Grant:			
European Union – Caribbean Investment Facility (EU-CIF) Sustainable Energy for the Eastern Caribbean (SEEC)	587[1]		
Department for International Development (DFID) SEEC	392[2]		
Counterpart	851		
Total:	**6,026**		
Sector Code:	23183	**Sector:**	Energy conservation and demand-side efficiency

Risk Management	
Country Rating: **Outlook:**	This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

[1] EU-CIF SEEC grant amount is EUR554,000 converted to USD at March 21, 2017

[2] DFID SEEC grant amount is GBP316,000 converted to USD at March 21, 2017

Lending	(USD '000)
Undisbursed:	8 mn
Outstanding Loans:	90 mn
Exposure (Outstanding + 50% Undisbursed):	[redacted]

Office of Risk Management Commentary: [redacted]

Project Summary

Project Outcome and Description:

The expected outcome of the Project is reduced consumption of fossil-fuel generated electricity through Energy Efficiency (EE) measures and Renewable Energy (RE) substitution, contributing to lower Green House Gas (GHG) emissions.

Exceptions to CDB's Policies:

With respect to CDB's Guidelines for Procurement (2006), waivers are sought:

(a) to permit VINLEC to use unrestricted competitive procurement methods that reflect industry commercial practices for the procurement and installation of LED street lamps and consumption monitoring equipment. [redacted];

(b) to extend eligibility for procurement to:

(i) countries eligible for procurement under EIB and EU-funded projects, which are not CDB Member Countries, where EIB CALC and EU-CIF SEEC resources are being used together with CDB's E&M resources for the supply and installation of LED street lamps. [redacted]; and

(ii) countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, where EU-CIF SEEC resources are being used together with CDB's E&M resources for the supply and installation of the PV plant, for the Building Energy Efficiency Works and for inspection and certification engineering services. [redacted].

(c) in respect of the procurement of air conditioning units and associated parts for the Energy Efficiency Building Upgrade Component, to extend eligibility of the source and origin of equipment to all countries. [redacted]

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	2018	2019	2020
1.	Energy savings from Renewable Energy substitution for fossil fuel generated electricity (MWh/year)	306	606	602
2.	Energy savings as a result of Energy Efficiency measures (MWh/year)	653	2,231	2,612

Gender Marker Summary

Gender Marker	Analysis	Design	Implementation	Monitoring and Evaluation	Score	Code
	0.50	0	0	0	0.50	**NO**[3]

[3] 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 April 12, 2017, GOSVG requested financing from CDB to: (a) replace all of its High Pressure Sodium (HPS) and Mercury Vapour (MV) street lamps (approximately 7,220) with high efficiency Light Emitting Diode (LED) street lamps; (b) implement energy efficiency measures in 20 government buildings; and (c) construct a PV plant.

MACROECONOMIC CONTEXT

1.02 Economic activity strengthened in SVG during 2016 with a full recovery to pre-crisis output levels anticipated. Real gross domestic product (GDP) is projected to increase by 2.8%, a pick-up from an average growth of 1.2% p.a. during the 5-year period since 2011. Notwithstanding a pick-up in price pressures during 2016, deflation (a reduction in the general price level) persisted as a result of falling and moderately low fuel and food prices, respectively. The annual average inflation rate was negative 0.15%.

TABLE 1.1: SELECTED ECONOMIC INDICATORS
(% GDP, unless otherwise indicated)

Item	2012	2013	2014	2015	2016p
Real GDP (factor cost, % increase)	1.3	2.5	0.2	0.6	2.8
Inflation (average)	2.6	0.8	0.2	(1.7)	(0.15)
Public Capital Expenditure (% GDP)	8.1	7.8	6.4	5.0	3.4
Primary Fiscal Balance (excl. grants)	-0.2	-5.0	-2.7	-1.1	1.6
Primary Fiscal Balance (incl. grants)	0.4	-3.7	-0.7	0.1	2.6
Overall Fiscal Balance (incl. grants)	-1.9	-6.2	-3.0	-2.1	0.6
Total Public Sector Debt	71.4	74.3	79.5	80.0	82.7
Central Government Debt Service (% current revenue)	26.5	27.7	26.2	27.6	27.1
Stock of budgetary arrears ($ mn)	77.3	70.3	89.3	60.3	57.0
Central Government Deposits ($ mn)	142.0	105.0	94.0	71.0	66.0
Gross Domestic Product (market prices, $ mn)	1,871	1,947	1,965	1,992	2,046

Source: GOSVG; CDB, Eastern Caribbean Central Bank (ECCB) estimates.

1.03 Fiscal consolidation resulted in an overall fiscal surplus in 2016 (see Table 1.1). Tax revenues increased consistent with the acceleration in economic activity as well as tax reforms introduced to improve the sustainability of public finances, including a broadening of the base of the Value-Added Tax (VAT) system through reduced tax exemptions. Capital spending was sharply compressed to 3.4% of GDP, or 35% of the approved capital budget.

1.04 The stock of public debt stood at 82.7% of GDP at-end 2016. Government's large investment spending associated with airport development and a spate of natural disasters since 2010 had necessitated borrowings which have sharply increased the public debt burden. Additional costs associated with sustaining airport operations[4], rising pension liabilities and natural disaster effects in the future could exacerbate fiscal pressures over time and worsen debt sustainability.

1.05 Maintaining a strong macroeconomic framework will be essential for GOSVG to build much-needed fiscal space, optimise growth opportunities, and place the public debt more firmly on a declining path toward the Eastern Caribbean Currency Union (ECCU) target of 60% of GDP by 2030. The

[4] The Central Government has budgets to provide a $5mn subvention to the airport in 2017.

Government is undertaking a comprehensive review of its fiscal framework aimed at, inter alia, reducing debt service cost. SVG's high dependence on imported oil reinforces vulnerability to external market shocks, contributes to its macroeconomic problems and to dampening competitiveness and long-term growth. While PetroCaribe[5] credit has allowed budget space for SVG, debt to Venezuela now comprises a large share of its growing total debt burden. GOSVG's recent thrust to promote renewable energy to achieve a more sustainable energy mix is welcomed. The macro-impact of reducing energy costs and improving efficiencies will directly enhance fiscal space and public debt sustainability, strengthen competitiveness and help improve growth.

SOCIAL CONTEXT

Human Development and Well-Being

1.06 The Human Development Report (2016)[6] classified SVG within the high human development category with a Human Development Index (HDI) of 0.722. Human development progress is evident in areas of health, education and life expectancy. Average life expectancy is 69.2 and 73.7 years for males and females, respectively. Despite these improvements as evidenced by the upward trajectory of the HDI rank[7] over time, SVG is challenged to address factors that threaten to plunge vulnerable cohorts of the population into poverty in the event of an economic shock or natural hazard event. The stubbornly high unemployment level is a critical factor that exacerbates this vulnerability. Unemployment increased from 21.5% at the time of the census (2012) to 25.1%, as captured by the 2015 Labour Force Survey (LFS)[8]. Although women's participation in the labour market increased from 45.2% in 2001 to 56.1% in 2012, the gender gap remains significant. In 2012, men's labour force participation rate was 70.2%. Unemployment among women and men stood at 24.3% and 19.4%, respectively. In 2015, the trend continued, with unemployment estimated at 38.5% and 28.2%, for women and men, respectively. Youth unemployment exceeded 40%.

Citizen Security

1.07 As is the case in other Borrowing Member Countries (BMCs), GOSVG and stakeholders have realised the significant social and economic costs to the country resulting from the impacts of citizen security (including crime and violence and anti-social behaviours). Stakeholder discussions during the Country Gender Assessment process[9] confirmed that a wide cross section of community residents had deep concerns about their security (CGA, 2016:84), particularly with respect to risks to personal safety as they traversed their communities after daylight hours. The United Nations Development Programme (UNDP) *Citizen Security Survey* (2010)[10], conducted in seven Caribbean countries also revealed that many citizens had similar concerns about their security. Recognising the impact of the built environment on citizen security, improving the reliability of street lighting was highlighted as an important response in efforts to improve the safety and well-being of residents. See Appendix 1.1 for Macro Social Context.

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5 GOSVG joined PetroCaribe - an alliance of some Caribbean and Latin American nations with Venezuela to purchase oil on preferential payment terms - in 2005.

6 United Nations Development Programme – Human Development Report: *Human Development for Everyone.* Published by UNDP Headquarters, 1 UN Plaza, New York.

7 According to various UNDP reports, HDI indices for SVG for the period 2013-2015 are as follows: 2013 (0.733); 2014 (0.719); and 2015 (0.720).

8 The Labour Force Survey was conducted in 2015 by the Statistical Office, Central Planning Unit, Ministry of Finance.

9 The CGA was undertaken by GOSVG with CDB support.

10 UNDP (2012). *Caribbean Human Development Report: UNDP Citizen Security Survey 2010, Summary of Findings.*

ENERGY SECTOR ANALYSIS

Organisation, Structure and Regulation

1.08 The state-owned company VINLEC is the sole provider of utility-scale electricity on St. Vincent and four of the Grenadine islands, with the remainder supplied by private entities. The utility is governed by its Board of Directors and is responsible for the generation, transmission, distribution and sale of electricity for a period of 60 years, expiring in 2033. VINLEC is subject to the Electricity Supply Act (1973), which is the guiding instrument for its operations in the energy sector. Additionally, in the absence of a regulator, the Act provides for VINLEC, with the Minister's approval, the right to grant sub-licenses to generate, transmit, distribute, and sell electricity under certain terms and conditions and within a specified area.

1.09 The Ministry of National Security, Air and Sea Port Development (MNSA) has overall responsibility for the energy sector. The Energy Unit within the Ministry coordinates the formulation and implementation of energy policy as well as initiatives related to renewable energy (RE) and energy efficiency (EE). The Ministry of Foreign Affairs, Foreign Trade and Consumer Affairs is responsible for the import and taxing of petroleum product imports. The Ministry of Finance is in charge of setting and controlling fuel prices.

1.10 The National Energy Policy (NEP) of SVG was approved in March 2009 and is further detailed in the National Energy Action Plan (NEAP) which was published in January 2010. The Plan speaks to the Government's strategy to reduce energy intensity through best practices in EE and energy conservation and increased energy independence. In regard to EE, GOSVG aims to implement this Policy among others, through encouraging energy audits (EAs) and retrofitting public buildings with EE equipment.

Energy and Electricity Supply

1.11 SVG, like many of CDB's BMCs, exhibits a high dependence on imported petroleum product, representing 96% of the total national energy use, including energy for electricity generation. In 2013, 1,500 barrels of oil equivalent per day[11] were imported, and approximately one-third was used to generate electricity. This utilises significant foreign exchange earnings and increases the vulnerability of the economy to external shocks. In 2012, the national fuel bill in SVG represented as much as 10% of GDP[12], with electricity-related fuel imports equivalent to about 5.2% of GDP.[13]

1.12 VINLEC has an installed generation capacity of 58.3MW, of which 5.6MW comes from three hydropower plants, with the remainder provided by diesel generators and a very small share by solar PV. However, the hydropower capacity is reduced by approximately 50% during the dry season. In 2016, VINLEC's net generation of electricity was 148,245MWh with around 22% coming from renewable sources. The annual generation growth is forecasted at 6.9% p.a., which is likely to be too optimistic, considering the relatively moderate growth of 2.5% p.a. between 2007 and 2012. Even though oil prices over the past 2 years were lower than average, electricity costs to the consumer remain relatively high, adversely influencing economic development. Of the 12 utilities surveyed in the Eastern Caribbean Sub-Region, VINLEC's tariffs are the 5th highest in the domestic customer category, 3rd highest in the commercial customer category and 2nd highest in the industrial customer category[14].

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11 IDB Challenges and Opportunities for the Energy Sector in the Eastern Caribbean, 2015
12 Energy Snapshot: SVG; Energy Transition Initiative 2015
13 SVG, The Government's National Energy Policy Energy Policy, 2009
14 Caribbean Association of Electric Utilities Tariff Survey 2014

RE and EE Deployment

1.13 SVG's NEAP identified a goal of generating 60% of all electricity output from renewable energy sources by 2020. With its recently started geothermal drilling project, GOSVG has reinforced its commitment to a higher share of RE in its energy matrix. However, due to the large amount of preparatory work required, it is unlikely that the geothermal plant, which could supply up to 50% of the electricity demand, will be operational before 2020. To date, VINLEC has installed 5.6MW of hydropower and 570kW of solar PV. While there is limited data available for small RE installations, it is estimated that there are up to 200kW of additional distributed solar PV systems at domestic and commercial customers. VINLEC continues to encourage customers to invest in small-scale solar PV through its interconnection programme. In 2010, GOSVG conducted walk-through EAs in 70 public buildings and implemented a few EE measures; however, much remained to be done. In 2016, 20 of these public buildings were targeted under a CDB-funded technical assistance (TA) project which undertook EAs to prepare a comprehensive EE refurbishment programme. The energy audits showed that the energy index for individual buildings in the project scope are often more than 40% higher than the recommended benchmark. Typically, the energy consumption in a building is distributed between AC 50%, lighting 30% and office equipment/appliances 20%. Therefore, retrofitting lighting and AC offer the highest energy savings potential.

Street Lighting Service

1.14 In SVG, street lighting consumed 3,232 MWh in 2016 which accounted for 2.1% of national electricity consumption and approximately 26% of public sector consumption. In SVG, the street lighting system consists of approximately 8,120 lamps country-wide, of which the majority are HPS. In 2013, a pilot-project was conducted to assess the suitability of LED street lamps, verify potential energy savings and identify a potential supplier. Subsequently, around 900 lamps were replaced with LED lamps during the 2013 pilot-project or during regular maintenance programs. Typically, new street lamps are requested through VINLEC, resulting in the installation of on average 70 additional street lamps per year. Damaged street lamps are identified during routine inspections or through reports by citizens and scheduled for repair by VINLEC.

1.15 VINLEC is responsible for the purchase, installation, operation and maintenance of street lamps. For its service, VINLEC bills GOSVG according to the street lighting tariff. The average tariff for 2016 was USD0.34 /kWh[15], which covers the cost for electricity including the variable fuel surcharge (which is adjusted monthly based on the cost of fuel) as well as maintenance costs. Being controlled by photocells, street lamps work autonomously from dusk till dawn. Based on the average operation time of 4,380 hours per year per lamp and the technical specification of the lamps, the energy consumption of the entire network is calculated and used to determine the operating costs of the network for billing purposes.

Electricity Consumption of Public Buildings

1.16 The electricity consumption of the public buildings is estimated at around 8,100MWh per year, representing 6% of national electricity consumption. This results in electricity costs of USD2.3 million[16] per year which is paid to VINLEC by the Ministry of Finance. The energy performance of buildings is largely dependent on the age of the building and their associated AC and lighting equipment. Currently, there are no robust guidelines to ensure that EE equipment is purchased for replacement and new construction. However, GOSVG is currently working with Organisation of Eastern Caribbean States, CARICOM Regional Organisation for Standards and Quality and the National Standards Bureau to establish EE benchmarks and design principles for buildings and appliances. With regard to building

[15] Base tariff 0.565 XCD/kWh plus average fuel surcharge for 2016.
[16] Based on the tariff of 0.78XCD/kWh.

maintenance, there are no dedicated facility managers for each building but the Buildings, Roads and General Service Authority (BRAGSA) is notified about maintenance needs. Minor maintenance works with a value up to $10,000 are performed by a repair crew from BRAGSA, while larger maintenance requests are channelled through the Ministry of Finance to make a budget allocation. There are separate AC Maintenance Units in the Ministry of Finance, Health and Transport with particular responsibilities for AC operation and repair in main offices buildings of these three ministries.

COUNTRY SECTOR STRATEGY

1.17 Two of the guiding principles of the NEP and NEAP are strengthening of the national economy by reducing dependence on imported fossil fuel and continued/further exploitation of indigenous energy resources. The NEAP calls for a reduction of energy consumption of 15% by 2020 and specifically addresses the need to improve EE in government buildings to showcase energy efficiency technology and design. The CDB-financed EAs conducted in 2016 together with the outcomes of this project contribute to these goals. The strategy also notes that higher energy security, diversification of the energy matrix and improved EE will save financial resources supporting the financial sustainability of GOSVG[17].

1.18 In relation to climate change mitigation, GOSVG's National Determined Contribution[18] under the United Nations Framework Convention for Climate Change (UNFCCC) Paris Agreement, set a target to reduce GHG emissions by 22% by 2025 in comparison to the business as usual scenario.

LINKAGE OF PROJECT TO CDB'S COUNTRY AND SECTOR STRATEGY AND POVERTY GOALS

1.19 CDB's commitment to Climate Change and Sustainable Energy agendas, as elaborated in its Climate Resilience Strategy 2012 - 2017, 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 a cross-cutting theme in the Bank's work. Providing appropriate financing to incentivise investment in both EE and RE has been occupying the attention of the Bank since its last strategic planning period. CDB is therefore keen to support this initiative, where the EE building component, in particular, will have regional demonstration effect.

1.20 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 EE and increased share of RE by 2030. The Project outcomes are aligned with regional energy intensity and renewable electricity targets proposed in the Caribbean sustainable Energy Roadmap and Strategy. 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 focus area of "promoting Energy Efficiency for more affordable and stable energy costs, and for establishment of a green economy".

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17 Energy Action Plan for SVG 2010

18 The Intended Nationally Determined Contributions for SVG, UNFCC

(d) CDB's Country Strategy for SVG, which focuses (among other things) on enhancing sustainable development through environmental protection, including the reduction of its dependence on imported energy[19].

RATIONALE

1.21 Public infrastructure contributes significantly to the national energy consumption and therefore increases GHG emissions from electricity generated by fossil fuels. The high energy cost of street lighting and public buildings impacts GOSVG's fiscal sustainability especially during volatile oil prices. Street lighting is an important public service that enhances safety for both citizens and visitors and the security of private and public property. In addition, street lighting is important to maintaining safety in the transportation sector by providing safe levels of lighting along the country's road network. SVG's plans for increasing the share of energy produced from RE relies heavily on the development of the proposed geothermal plant. However this is unlikely to be completed by 2018 as originally forecast[20].

1.22 Replacement of existing street lamps with LED lamps, implementation of energy efficiency measures in Government buildings and installation of a PV plant will collectively provide the following key benefits to SVG:

(a) Reduction of the quantity of diesel imported into the country by 179,000 IG p.a. and exposure to the volatility of fuel prices.

(b) Reduction in GOSVG's electricity billing from VINLEC by $2 mn p.a., increasing the fiscal space to fund development initiatives.

(c) Contribution to meeting SVG's target of reduction of GHG emissions by 22% by 2025.

1.23 In addition, adequate government building infrastructure including EE lighting and AC will provide a more comfortable environment for employees and those conducting business in these facilities, leading to greater productivity and promotion of a healthier environment.

2. PROJECT DESCRIPTION

PROJECT OUTCOME

2.01 The expected outcome of the Project is reduced consumption of fossil-fuel generated electricity through EE measures and RE substitution, contributing to lower GHG emissions. A Design and Monitoring Framework is presented at Table 2.1. Details of the project are provided at Appendix 2.1.

2.02 The proposed project consists of the following components:

(a) LED Street Lamp Supply and Installation: The supply of approximately 7,220 LED street lamps plus 5% spares, consumption monitoring equipment, installation by VINLEC crews and the disposal of the old street light fixtures and lamps.

(b) EE Building Measures: The supply and installation of EE equipment in 20 public buildings including an energy management system for the Financial Services complex as

[19] Country Strategy Paper 2014-2018 – St. Vincent and the Grenadines, BD 14/14
[20] St. Vincent and the Grenadines Intended Nationally Determined Contribution

a design-supply-install contract. In addition capacity building in EE will be provided through training to the building occupants

(c) Solar PV Plant: The supply and installation of a 400kW ground mounted solar PV plant as a design-supply-install contract

(d) Land: The land on which the PV plant will be constructed

(e) Inspection and certification engineering Services: The preparation of bid documents and support to the bid process, performance inspection and certification of amounts due for payment for the Building Energy Efficiency works. Also includes certification of works and amounts due for payment related to the street lighting replacement.

(f) Site Specific Investigations for the PV plant: The conduct of site specific investigations and climate risk assessment of the proposed PV plant site. Preparation of design specifications for the plant

(g) Project Management: A dedicated Project Coordinator, along with administrative support from VINLEC and GOSVG.

TABLE 2.1: DESIGN AND RESULTS MONITORING MATRIX

Narrative Summary	Performance Indicators/Targets	Data Sources/Reporting Mechanisms	Assumptions
1. IMPACT: To contribute to improving energy security in SVG.			
2. OUTCOME: Reduced consumption of fossil-fuel generated electricity through EE measures and RE substitution, contributing to lower GHG emissions.	**From 2020 onwards:** 1. A reduction in street lighting energy consumption of 1,527 MWh/year. 2. A reduction in energy consumption of the buildings in the project scope of 1,085 MWh/year. 3. Energy production by the PV plant averaging 562 MWh/year. 4. A reduction in Carbon dioxide (CO_2) emissions by VINLEC averaging 2,188 tonnes.	1. VINLEC's production records. 2. VINLEC's management reports. 3. GOSVG electricity bills.	**Assumptions for Achieving Outcome** Carbon content per unit of fuel utilised remains as per baseline assumptions.
3. OUTPUTS: 1. Fully installed LED street lamps. 2. Government building energy efficiency measures implemented. 3. PV plant installed and commissioned.	1. 7,220 existing HPS/MV street lamps replaced with LED lamps. To be operational by September 30, 2019. 2. EE measures for 20 Government buildings implemented by December 31, 2018. 3. 400 kW PV plant constructed and commissioned by May, 2019	1. Project Completion Report (PCR). 2. VINLEC records. 3. Consultant's progress reports.	**Assumptions for Achieving Project Outputs** Installation works not delayed by natural hazard events.

4. INPUTS	**($000)**					
	CDB	**GOSVG**	**VINLEC**	**TOTAL**		
1. LED street Lamps Supply and Installation 2. PV plant 3. Land for PV plant 4. Building Energy Efficiency	10,744	924	415	12,083	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.	**Assumptions for Provision of Inputs** 1. Inflation does not exceed 1.8% p.a. in 2018 and 2019.
5. Engineering Services: 6. Project Management and Administration	1,202	447	297	1,946		
7. Contingencies 8. IDC and Commitment Fees	2,029	100	113	2,242		
Total Financing	**13,975**	**1,471**	**825**	**16,271**		
USD Equivalent	**5,175**	**545**	**306**	**6,026**		

RESULTS MONITORING FRAMEWORK

	(Baseline) 2017	Targets					Report and Frequency	Responsibility for Data Collection
		2018	2019	2020	2021	2022		
Project Impact Indicators:								
Annual Savings of imported diesel by VINLEC (IG/year)	0	54,013	159,825	181,065	180,794	180,525	Annually	VINLEC
Outcome Indicators:								
Annual savings in street lighting energy consumption in SVG (MWh/year)	0	382	1,146	1,527	1,527	1,527	Annually	VINLEC
Annual savings in Government building energy consumption in St. Vincent (MWh/year)	0	271	1,085	1,085	1,085	1,085	Annually	VINLEC
Annual electricity production of PV plant (MWh/year)	0	306	606	602	597	592	Annually	VINLEC
Annual savings in CO_2 by VINLEC (tonnes)	0	661	1,955	2,215	2,212	2,208	Annually	VINLEC
Output Indicators:								
LED lamps installed at year end in SVG (number)	0	3611	7,220	7,220	7,220	7,220	Quarterly, during installation	PC
Government buildings where energy efficiency recommendations have been implemented at year end (number)	0	20	20	20	20	20	Quarterly, during installation	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 LED street lamp to be procured must be suitable for the environment where they are to be used.	VINLEC undertook a rigorous testing process to gain experience on the technical qualities, installation requirements and operational performance of various LED street lamps. Nine vendors participated in the process. Based on the results of this process, VINLEC selected a preferred vendor for the supply of LED lamps that best met local operational needs and has since procured and installed approximately 900 LED lamps from this source. VINLEC has indicated that the operational experience with these LED lamps has been very positive.
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 and verify the actual energy consumption of buildings and a sample of the lamps in field conditions.
3.	Disposal of disused HPS and MV lamps must consider their hazardous waste content.	The project makes provision for the adequate disposal of the disused lamps containing hazardous waste materials.
4.	Appropriate environmental, social and engineering assessments should be undertaken to inform the design of the project.	Environmental, social and engineering assessments have been incorporated into the Project design to inform the specifications of the PV plant. In addition, a Climate Risk and Vulnerability Analysis as required for CALC funding will be conducted on the transmission and distribution infrastructure which includes street lamps. The condition of the Government buildings where EE measures are proposed was taken into account in the recommendations that were made during the EAs.

3. FINANCING STRUCTURE AND COSTS

PROJECT COSTS

3.01 The Project is estimated to cost $16.3 mn which will be financed with resources from CDB, GOSVG and VINLEC. Cost estimates for the supply of the LED street lamp fixtures are based on unit rates received from VINLEC. Estimates of street lamp installation costs have been derived from prevailing rates for skilled labour and anticipated installation productivity as provided by VINLEC. CDB staff are satisfied that VINLEC has the capacity to install the LED street lamps within the projected timing. Equipment and installation costs for the Building EE Upgrade component of the Project are based on

information resulting from the CDB-financed EAs carried out in 2016. Equipment and installation costs for the PV plant are based on standard equipment and labour rates for this type of Project. Consultancy services are based on current rates for professional services. CDB staff are satisfied that adequate contingencies have been provided to ensure the completion of the proposed components. 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(a). Appendix 3.1(b) contains a summary of the Project Cost in Currency of Origin with funding sources in their currencies of origin.

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

	CDB					Counterpart		
Items	**OCR Loan**	**EIB CALC Loan**	**EU-CIF Grant[21] (XCD equiv.)**	**DFID Grant[22] (XCD equiv.)**	**Total**	**GOSVG**	**VINLEC**	**Total**
1. LED Street Light Supply and Installation								
2. PV plant					10,745	924	415	12,083
3. Land for PV plant								
4. Building Energy Efficiency								
5. Engineering Services					1,201	447	297	1,945
6. Project Management and Administration								
Base Cost					**11,946**	**1,371**	**712**	**14,028**
7. Physical Contingencies[23]					1,534	100	113	1747
8. Price Contingencies[24]								
Total Project Cost					**13,480**	**1,471**	**825**	**15,775**
9. IDC					494			494
10. Commitment Fee								
Total Financing					**13,974**	**1,471**	**825**	**16,269**
USD					**5,175**	**545**	**306**	**6,026**
Percentage Financing					**86**	**9**	**5**	**100**

3.02 The proposed supply and installation of LED street lamps conforms to the relevant eligibility criteria set out by EIB under EIB-CALC. It is proposed that an amount of USD2.019 mn be allocated to the Project from the resources provided by EIB to CDB under the EIB-CALC Finance Contract. A Climate Resiliency Study of VINLEC's Transmission and Distribution infrastructure which includes street lighting (the Climate Risk Screening [CRS] Consultancy) is being conducted as part of the "Building Resilience of the Electricity Sector to Geophysical and Climate- Related Hazards for Electricity Sector" Technical Assistance Project for approval by CDB's Board of Directors (BOD). The conduct of that CRS allows this project to meet the relevant eligibility criteria set out by EIB under the EIB-CALC Facility for Climate Action Support. In accordance with EIB-CALC, the interest rate payable by recipients of the EIB Loan

[21] EU CIF grant amount is EUR554,000 converted to XCD at March 21, 2017.
[22] DFID grant amount is GBP 316,000 converted to XCD at March 21, 2017.
[23] This information if withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy
[24] ibid

resources shall consist of CDB's OCR rate minus the relevant interest rate subsidy applied to each disbursement made to CDB under EIB-CALC, varying between 0% and 3% p.a. as calculated pursuant to Article 3.01 thereunder. The indicative interest rate subsidy is currently approximately 1.08%.

3.03 At its Two Hundred and Sixty-Eighth meeting held on October 15, 2015, CDB's BOD considered Paper BD99/15 entitled "Sustainable Energy for the Eastern Caribbean Programme: Ratification of Contribution by European Union – Caribbean Investment Facility (EU-CIF) and Contribution by the Government of the United Kingdom of Great Britain and Northern Ireland, through the Department for International Development (DFID)" and:

(a) ratified the execution by CDB of the "European Union (EU) Contribution Agreement with an International Organisation" dated June 10, 2015 in Brussels, for the purpose of financing the SEEC Programme in an amount of EUR4,450,000 (the EU-SEEC Contribution Agreement); and

(b) approved CDB entering into a Memorandum of Understanding (MOU) with the Government of the United Kingdom of Great Britain and Northern Ireland, acting through DFID, for the purpose of financing the SEEC Programme in an amount of GBP2,500,000.

3.04 The MOU between CDB and DFID was executed on October 15, 2015 (SEEC DFID). In the context of CDB's efforts to address energy security challenges of its BMCs, the SEEC Programme has been developed as a multi-donor loan and grant facility, providing grant and blended concessional loan resources. The SEEC Programme combines CDB loan with EU-CIF and DFID grant resources. A main focus of the SEEC Programme is enabling EE/RE investments in the public sector leading to reduced energy consumption and increased sustainability in the energy sector. The proposed supply and installation of LED street lamps and disposal of the removed fixtures, building efficiency measures and PV plant conform to the relevant eligibility criteria under the SEEC Programme. It is proposed that allocations of EUR554,000 and GBP316,000 be made to the Project from the EU-CIF and DFID resources respectively.

3.05 The Project will be financed by:

(a) a loan to GOSVG from CDB's OCR of an amount not exceeding the equivalent of USD4,196,000 comprising:

  (i) an amount not exceeding the equivalent of USD2,177,000 allocated from CDB's E&M resources (the E&M Tranche); and

  (ii) an amount not exceeding the equivalent of USD2,019,000 allocated from the EIB-CALC (EIB-CALC Tranche); and

(b) a grant to GOSVG from CDB's SFR comprising;

  (i) an amount not exceeding the equivalent of EUR554,000 allocated from EU-CIF SEEC resources; and

  (ii) an amount not exceeding the equivalent of GBP316,000 allocated from SEEC DFID resources;

(c) counterpart funding of $2,296,000 comprising:

(i) $1,471,000 from GOSVG including the land required for the PV plant, office support, EE capacity building and public relations; and

(ii) $825,000 from VINLEC including office support, the assignment of a project Manager and public relations.

3.06 The SEEC grant funds noted in 3.05 (b) above will be disbursed in the USD equivalent at the conversion rate applicable at the time of disbursement. The cost of purchasing goods and services are therefore subject to exchange rates fluctuations. Since the amount of the SEEC grant funds are fixed, a contingency of 2% has been included to the loan amounts to mitigate the exchange rate risks. The SEEC grant amounts shown in Table 3.1 above have been converted to USD-based on exchange rates as at March 21, 2017 for consistency with other funding sources.

3.07 Both the E&M Tranche and the EIB-CALC Tranche will be repayable over a period of 10 years, following a 3-year grace period. CDB's E&M rate is currently 3.30% (variable) p.a. However, the EIB-CALC Tranche attracts an interest rate subsidy of approximately 1.08% (variable) p.a. to the E&M rate, yielding an indicative interest rate of 2.22%, 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.

4. PROJECT VIABILITY

TECHNICAL ANALYSIS

General

4.01 This Project design was informed by the recommendations of a technical assistance project under the SEEC Programme in 2015-2016, to conduct comprehensive EAs for 20 public buildings. The building selection was based on walk-through EAs in 70 buildings conducted in 2010. The consultancy provided the necessary details to develop the proposed project and convince stakeholders about the financial feasibility of the proposed EE/RE projects. VINLEC, through funding from the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) conducted a pilot-project in 2013, testing different types of LED lamps. In addition to the identification of suitable suppliers, the aim of the pilot was to gain experience with the operation of the lamps. The testing indicated that the lamp offered by one particular regional vendor best met VINLEC's requirements. Since the conclusion of the pilot testing, VINLEC has purchased and installed approximately 900 LED lamps from this supplier, and has reported very positively on their operation.

Street Lighting Retrofitting Options

4.02 As a result of the lower efficiency and the mercury content of induction lamps, this option was not considered in this assessment. 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 recognised as the new standard for street lighting due to its high efficiency, flexible lighting design and robustness. Studies have demonstrated that grid-tied LED street lamps are a more cost-effective option than solar PV powered systems, if an electric grid is available. By adjusting pole spacing and LED illumination, further energy savings might be achievable. However, additional costs for poles and wiring increases the cost of this solution which will result in a lower cost efficiency.

LED Street Lamps

4.03 Main benefits of the LED street lamps confirmed by the pilot project were:

(a) high efficiency, reducing energy consumption by more than 50% in comparison to HPS and MV, leading to lower electricity costs and lower carbon emissions;

(b) higher lighting quality and improved visibility of objects by higher Colour Rendering Index (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; and

(d) redundant design ensuring lighting in the event of a single LED failure.

LED Street Lighting Design Considerations

4.04 The new street lamps will be installed at the same location as the old ones, reusing existing street lighting poles and cabling. Variable dispersions patterns can be used to allow optimal illuminance without compromising safety. The risk of structural damage by replacing the lamps is very low as LED lamps have lower or similar weight to HPS lamps. The replacement of the existing lamps also gives VINLEC the opportunity to inspect the structural condition of poles and to address potential issues. The successful operation of 900 LED street lamps has demonstrated compatibility with local power parameters. As is the case with existing lamps, LED street lamps will be individually controlled by photocells. The conduct of the CRS on the Transmission and Distribution infrastructure which includes street lighting, will make recommendations to mitigate the impact of climate change for implementation by VINLEC.

4.05 The reduction in energy consumption is derived from the comparison of efficiency of the existing and the new lamps which is higher than 80 lm/W. To achieve similar or better illuminance levels, the intention is to replace the existing 250 W, 150 W, 100 W and 50 W HPS lamps with LED lamps having wattages lower than 145 W, 100 W, 90 W and 35 W, respectively. Based on these values, an average reduction in energy consumption of 50% has been determined. It is planned to install monitoring devices on 100 lamps across the network to verify the calculated energy consumption and predicted reduction.

EE Upgrade of Public Buildings

4.06 To prepare the proposed project, 20 public buildings were selected for detailed EAs, according to achievable absolute energy consumption. The EAs established an energy consumption baseline and identified appropriate EE recommendations to improve the energy performance. The energy consumption of all inspected buildings account for 2,850 MWh. According to the EAs, total energy savings of selected measures are estimated at 1,015 MWh p.a., reducing the energy costs by $0.86 mn or 35.6% of the baseline total. Details of the EA results are described in Appendix 4.1. The most typical recommendations were:

(a) Improvement of air condition system efficiency: This includes: (i) reduction of building heat load through proper sealing of air leaks, application of solar reflective paint or films at the roof and windows respectively; and (ii) replacement of outdated AC with inverter type systems with an energy efficiency ratio (EER) higher than 13;

(b) Improvement of lighting system: This includes the replacement of fluorescent tubes with LED lamps and installation of lighting sensors in strategic intermittently occupied areas; and

(c) Enhancement of facility management practices: This includes the installation of basic monitoring equipment and, in the case of the Financial Complex, the installation of an Energy Management System in conjunction with capacity building. GIZ has agreed to support this aspect of the project by providing training for facility managers/facility point persons, awareness raising about EE behaviour among building occupants and energy management advisory services to support the introduction of good energy management practices.

Solar PV Plant

4.07 It is proposed to install a 400kW ground-mounted PV plant which is more cost effective, easier to maintain and more resilient to climate hazards than distributed roof-top systems. The system will generate on average 567 MWh per year, representing 0.4% of the total electricity demand in SVG. Details of the assessment are described in Appendix 4.2. In the proposed arrangement, VINLEC would be the owner and operator of the PV plant. The now decommissioned landfill location adjacent to the closed Arnos Vale airport was proposed as the site for the PV plant. VINLEC has demonstrated strong interest in construction of a PV plant at this site following a preliminary assessment. In 2014, VINLEC began working with CDB on preparation of site studies and started the process of obtaining permission to use the site for this purpose. They have since reiterated their wish to construct a PV plant at this location. The generated electricity will reduce VINLEC's fossil fuel consumption by 31,920 gallons per year, resulting in CO_2 emission reductions of 391 tonnes per year. The proposed system will occupy approximately 2,500 m^2 of land. The quality and performance specification of the proposed system shall include the following:

(a) all PV modules must be sourced from a Tier 1 manufacturer and should be of the same manufacturer and specification;

(b) the selected PV modules should supply >80% of warranted power output after 25 years;

(c) equipment shall comply with applicable international and national standards; and

(d) total performance ratio of the system should be higher than 70%.

STREET LIGHTING AND BUILDING EE TARIFF BENEFITS TO GOSVG

4.08 GOSVG's savings in electricity billing will be derived from the reduction in the street lighting and government buildings electricity bills payable to VINLEC. The reduction in electricity costs will be based on the lower electricity consumption of the new LED street lamps as they are installed (implementation period of Q1 2018 to Q3 2019) and proposed EE building upgrade measures (implementation in Q4 2018). GOSVG's combined savings in electricity billings will average approximately $2.06 mn p.a. between 2018 and 2037. Key assumptions are found in Appendix 4.3, with details of the savings in Appendix 4.4.

ECONOMIC ANALYSIS

4.09 The economic benefits of the project are assessed based on a comparison of the "with project" and "without project" scenarios. Without the project, street lighting will be provided by less energy efficient HPS/MV lamps; the 20 government buildings included in the scope of the Project will continue

to consume the estimated baseline levels of electricity and the proposed PV plant will not be put into service. With the Project, the existing HPS/MV lamps will be replaced with more efficient LED lamps over a period of approximately 18 months ending in Q3 2019, total energy consumption of the 20 audited government buildings will be reduced from their baseline values by approximately 36% after Q4 2018 and the PV plant will produce an average of 567 MWh/year over the 20-year life of the Project (approximately 0.4% of net electricity generation) after it is commissioned by Q2 2019.

4.10 The key economic benefits of the Project include a reduction in diesel fuel consumption and a decline in CO_2 emissions as a result of the reduction in electricity production from fossil fuels. It is estimated that an average of approximately 172,000 IG p.a. of diesel consumption between 2018 and 2037 will be avoided, based on an average annual reduction in electricity consumption of 3,047MWh p.a. In addition, an average of 2,100 tonnes of CO_2 emissions p.a. will be avoided during the analysis period.

4.11 Further, replacement of HPS/MV lamps with LED lamps will result in maintenance cost savings through reduced material costs and maintenance visits over time. Even though the upfront cost of a new LED lamp is higher than an HPS lamp, the expected life of LED lamp components is longer. The expected life of LED lamp components is about 20 years, while the components of an HPS/MV lamp range from 15 years for the fixture to only 6 years for the light. The analysis determined that the annualised maintenance cost for HPS lamps is $74.5/lamp/year, compared to $38.9/lamp/year for LED lamps.

4.12 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. IWG based these estimates on a linking of global climate and economic models, allowing for the valuation of economic damage associated with increasing CO_2 emissions and thereby enabling the damage caused by CO_2 to be monetised for incorporation into cost-benefit analyses. Based on this work, a value of USD46/tonne of CO_2 was used in this analysis.

Incremental Economic Rate of Return

4.13 The incremental rate of return is based on the assumptions listed in Appendix 4.5, with details of those calculations shown in Appendix 4.6. The project provides an estimated Economic Rate of Return (ERR) of 14%. 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 and improved working conditions in the government buildings, leading to higher productivity. The Project will also help to reduce SVG's reliance on imported fuel, decreasing its exposure to fluctuations in fuel prices and reduce maintenance costs for EE building equipment.

Sensitivity Analysis

4.14 A sensitivity analysis was carried out to determine the sensitivity of the ERR to the changes in key variables. The results of this analysis are shown in Table 4.1 below. This analysis shows that the ERR of the Project is more sensitive to changes in capital costs than it is to changes in any of the other variables reviewed. For all of the variables under review, the rate of return was above the threshold of 12% when they were varied by 10%. This analysis indicates that the project is resilient to changes in key variables likely to affect project outcomes.

TABLE 4.1 SENSITIVITY ANALYSIS

Scenario	ERR %		Switching value
	+10%	-10%	
Base Case	14	14	
1. Capital Costs	12	16	9
2. Reduction in Forecasted Energy Consumption of LED Lamps *vs*. HPS Lamps	14	13	-22
3. Building Efficiency Measures	14	13	-30
4. Fuel Costs	15	12	-13
5. Items 2 and 3 combined	15	12	-12

4.15 For the ERR of the Project to fall to 12%, capital costs would have to increase by 9%, or the electricity savings of an LED lamp vs. an HPS lamp would have to be lower by 22%. However, as capital costs are based on known rates and include a weighted average physical contingency of 9%, including 20% on the PV plant and building efficiency measures, the risk of the ERR falling below 12% due to an increase in this variable is relatively low. The empirical evidence provided by the pilot projects in SVG and Saint Lucia have confirmed the energy savings which can be achieved by replacing HPS/MV with LED street lamps. As such, the probability of not achieving forecasted reductions in energy consumption is minimal. The analysis also indicates that energy savings realised by the building efficiency measures would have to be 30% lower than expected for the ERR to fall to 12%. Given the analysis conducted in the EAs, it is unlikely that the actual savings achieved would be lower by this amount.

4.16 The cost of fuel is an important factor in determining the ERR of this project. As fuel costs increase, so too do the economic benefits realised by the Project. In this analysis the unit fuel cost is assumed to be $0.41/kWh based on the average fuel price over the past three years which corresponds to a crude oil price of USD63/barrel and the 2016 efficiency [MWh/IG] of the plant. To fall to the benchmark ERR of 12%, average crude oil price would have to be less than USD53/barrel over the 20-year analysis period. As recent forecasts suggest that fuel prices are expected to increase, the results of this analysis further suggest the robustness of the Project.

ENVIRONMENTAL ASSESSMENT

4.17 A field reconnaissance was carried out by CDB staff as part of the appraisal process to establish the potential environmental and social risks and for categorisation of project activities. Based on the scope of works and the fact that these works will take place within existing rights of way, the potential social and environmental impacts are not considered significant. The Project is categorised "B" for social and environmental impacts based on CDB's Environmental and Social Review Procedures (ESRP), as the E&S risks are readily identifiable and the required mitigation measures are known and can be easily addressed and monitored for compliance.

Street Lighting and EE Upgrade of 20 Government Buildings

4.18 The replacement of the street lamps, upgrading of AC units, sealing of air leaks and the replacement of fluorescent tubes with LED lamps, will generate significant amounts of waste material, including bulbs, scrap lamps, AC units and refrigeration units. The most significant risk is pollution associated with improper disposal of the MV and HPS bulbs that contain small amounts of mercury, a hazardous material which could migrate to groundwater or become airborne. The St. Vincent Solid Waste Management Act, 2000 requires that any waste generated does not present risk to human health, safety or

the environment. The Solid Waste Management Unit (SWMU) of the Central Water and Sewerage Authority (CWSA) has in place facilities and systems to manage the appropriate disposal of hazardous substances and waste. The existing landfill has dedicated areas for hazardous waste and for "white waste" (metal appliances and other metal waste, such as the lamps and AC Units). In light of the limited and specialized nature of the disposal operation, VINLEC and the EU will be required to make specific arrangements with SWMU for waste disposal[25]. The project cost includes services for the appropriate disposal of the existing lamps fixtures and AC units and related materials.

4.19 Other potential risks are associated worker occupational injuries during the installation process; community exposure to installation hazards from improperly secured work sites and the short-term disruption of vehicle and pedestrian traffic around work sites. These impacts will be mitigated through sound planning, the application of appropriate health and safety and the emergency response procedures by VINLEC and the EU.

The Construction of a Solar PV Electricity Generation Plant

4.20 The PV plant location is the Arnos Vale decommissioned landfill, and will cover 2,500 square metres of land. The SWMU undertook an engineered closure of the site, in accordance with best practice. The area was covered with three metres of soil, shaped and graded, compacted and grassed. The long-term environmental impacts of the Project are expected to be positive increasing SVG's share of renewable energy production. As a condition precedent to construction, VINLEC is required to undertake site specific investigations, the results of which will be used to guide design and define the requirements for construction. The contingency element of the budget for this component has been adjusted to make allowance for any additional costs that may arise post investigations. The Terms of Reference (TOR) for the investigations are provided at Appendix 4.7.

4.21 It is expected that the environmental impact of the PV plant will be minimal and greatly outweighed by the environmental benefits of less diesel burnt to produce electricity and the corresponding reduction of CO_2 emissions and other greenhouse gases associated with burning fossil fuels. The potential adverse project impacts are associated with site preparation/clearing, vegetation removal, excavation dust and air pollution, noise, occupational health and safety and waste management. These impacts are limited to the construction phase and are temporary in nature. Potential environmental effects of the PV plant during the operational stage are related to waste that may contain glass, and PV cells and the volume of water used for cleaning the solar panels to remove dust and saline residue. There will be some visual impact with the addition of the solar panel arrays on the site, including the possibility of some glare from the panels.

4.22 The site is vulnerable to high winds and heavy rainfall from storms and related weather systems. A Climate Vulnerability Assessment (CVA) is include in the scope of work for the site specific investigations for the PV plant that will inform its design specifications. The foundations and racking system will be designed to withstand hurricanes, which will reduce any potential hazard of panels being lifted up and blown onto adjacent properties. Adequate drainage will be installed to mitigate flooding during a heavy rainfall event. The proposed PV modules will not utilise hazardous materials. Main parts of the solar PV panels and racking system are expected to be fully recycled at the end of their useful life. VINLEC will prepare a decommissioning plan to manage disposal of the PV equipment one year prior to its scheduled decommissioning. It will be a condition precedent to disbursement in relation to contract for the construction of the PV plant, that the site specific investigations be completed.

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[25] VINLEC and EU will be required to provide details of the quantity of waste, type, timeframe for the activity and daily volumes to be delivered to the landfill. Based on this information, an estimate of the disposal cost will be calculated given the inputs required from SWMU such as; staff, equipment costs, materials and specialised personalised protective equipment.

Environmental and Social Management Plan

4.23 An Environmental and Social Management Plan (ESMP), including a grievance mechanism, will be prepared by the Engineering Consultant (EC) in consultation with the Sustainable Development Unit, of the Ministry of Economic Planning, Sustainable Development, Industry, Internal Trade, Information and Labour, and other stakeholders to address all three elements of the project. The ESMP will include, among other aspects, arrangements for proper vehicular traffic control, pedestrian safety, use of appropriate personal protection equipment and instructions for safe handling and storage of the fixtures, AC Units and bulbs, proper disposal of construction waste, dust emissions etc. The contract for the disposal of old street lamps and fixtures will specify the requirements for the safe dismantling, packing, transportation and ultimate disposal of the waste. Each installation contract will incorporate appropriate requirements for the sub-contractors who will be responsible for implementing the mitigation measures in the ESMP. Monitoring of the upgrade and installation operations during implementation, will be undertaken by EC and CDB staff to ensure compliance with the mitigation measures stipulated in the ESMP. EC will provide regular reports on compliance as part of the routine periodic project monitoring reports. As a condition precedent to installation and upgrading works of each component, GOSVG will be required to submit to CDB, evidence in form and substance, acceptable to CDB, of all the required environmental and/or waste management agreements and permits.

Positive Impacts

4.24 Environmental benefits of the Project include reduced CO_2 emissions. This will contribute to GOSVG in achieving its target under the Nationally Determined Contribution, of an unconditional, economy-wide reduction in greenhouse gas (GHG) emissions of 22% compared to its business as usual scenario by 2025. Initial calculations indicate the following savings per annum: Energy savings of street lighting system: 1,430 MWh (without line losses); Energy savings from building EE: 1,015 MWh (without line losses) and savings from the Energy generation from PV plant: averaging 562MWh. Based on the conversion factor of 0.727 tonnes Co_2 per MWh, the total emission reduction is 2,188 tonnes per year.

SOCIAL AND GENDER IMPACT ASSESSMENT

4.25 With a category "B" classification under the ESRP, the project is expected to impact the population of St. Vincent and the project islands of the Grenadines. It will have limited to no adverse social impacts on the population and no major social issues or conflicts are expected to stymie implementation.

4.26 Overall, net social development benefits are expected. The provision of LED street lighting is anticipated to reduce light trespass[26], improve lighting quality and acuity[27]. These positive impacts are expected to contribute to improved well-being of residents in communities, enhance citizen security by improving personal safety, and road safety for pedestrians and motorists. In addition, and as experienced elsewhere[28], such enhancements are likely to contribute to overall crime prevention across communities in SVG.

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[26] *https://www.quora.com/What-are-the-benefits-of-LED-street-lamps*. Unlike conventional incumbent technologies, LEDs are inherently directional light sources. Consequently, the light can be placed where it is most needed, thereby reducing light going in unwanted directions (such as into residences through windows).

[27]. *Ibid.* LEDs provide greater options on colour and generally provide whiter light with better colour rendering. Whereas other light sources typically create "hot spots" with more light than needed immediately beneath the fixture and "cold spots" surrounding the hot spot, LEDs can provide a more uniform light distribution that further improves visibility.

[28] *Ibid.* Before and after installing new LED streetlamps, Los Angeles found that crime (such as burglary, theft, and vandalism) rates dropped by 10% between 2009 and 2011. Officials in Los Angles believed that improved light quality was an important

4.27 The improvements in air conditioner systems' efficiency within government buildings/offices are expected to enhance the working environment by improving the comfort level of staff. This is likely to contribute to increased productivity. The projected reduction in electricity expenditure to be realised from the introduction of the building efficiency measures and the LED street lighting is expected to contribute to improving fiscal space. Such savings could create opportunities for GOSVG to invest additional resources in the social sector in an effort to improve efficiency and effectiveness in the delivery of targeted social programmes.

4.28 Indirect contributions to poverty reduction are likely but will not be measured under the Project. In addition, the Project will make no direct contribution to gender equality. Similarly to other BMCs, labour market segmentation continues to influence labour market participation in the construction and utility sectors in SVG. In this regard, men are expected to benefit disproportionately from the direct income-earning opportunities created during implementation. As part of due diligence during project appraisal, CDB staff held discussions with VINLEC with respect to identifying strategic approaches to increase the participation of women during project implementation. The Gender Marker Analysis is at Appendix 4.8.

4.29 In order to minimise disruption during Project implementation, VINLEC and GOSVG agencies will utilise their Public Relations and Information Programmes to keep the public informed about the Project's progress and expected benefits.

MACROECONOMIC IMPACT ASSESSMENT

4.30 The Project, given its narrow scope (efficiency gains are confined to public sector end-users) and small-sized investment, will have positive but limited direct macroeconomic impacts. These direct impacts will be largely focused on Government's budget and the import bill. Over time, public expenditure savings are expected from lower electricity bills associated with reduced energy usage which should outweigh additional debt payments associated with the project's loan financing, leading to direct cost savings to GOSVG. The CDB loan and financing terms are consistent with Government's debt management strategy to reduce reliance on expensive, short term instruments and to lengthen debt maturities, and is consistent with a sustainable debt path. The foreign exchange impact is also expected to be positive driven by lower quantity of fuel imports associated with a reduced energy usage, although the net effects will depend on the movement of future fuel prices. Collectively, when taken together with GOSVG's other RE/EE energy investments programmed including geo-thermal energy, the economy-wide impacts are expected to be more substantial, providing for long-term energy security and considerable cost savings for commercial and other end-users. In so much as these energy measures reduce pressure on the demand for energy (or costs) and energy consumption, improved energy efficiency is expected, over time, to reduce the costs of doing business in SVG, bolster the global competitiveness of local businesses, and promote additional growth. Additional growth is expected to improve the public debt ratio and debt sustainability over the long-run. For households, increased efficiency is expected to have net positive income effects, boost household spending, improve economic welfare and elevate the standard of living of residents with second round effects on economic activity, employment, and government revenue. Higher incomes, more jobs, and better quality of life are among the potential results. Reduced reliance on fossil energy, both for production and consumption, will also help smooth the economy's response to future market price changes.

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factor in the reduced crime rate, deterring criminals who took advantage of poor colour rendering and "cold spots" produced by earlier technology.

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: Pollution of the environment from inadequate disposal of replaced street lamps and equipment replaced as part of the building efficiency improvement works.	The project design makes provision for the engagement of the SWMU to handle hazardous waste resulting from the street lighting replacement. An ESMP will guide all works executed under this Project to minimise negative environmental impacts.
Implementation	Resources: Implementations delays due to inadequate internal capacity to support timely execution of the Project.	A PC and an EC will be funded under the Project to augment project execution capacity.
Operational	Reduced electricity production due to dust on PV panels.	VINLEC will be required to implement an appropriate maintenance programme as recommended by the vendor to ensure that the equipment is adequately maintained. VINLEC is familiar with maintenance of this equipment, as they already operate and maintain a PV plant at their Lowman's Bay facility.

6. IMPLEMENTATION AND PROJECT MANAGEMENT

THE BORROWER AND THE EXECUTING AGENCY

6.01 GOSVG is the Borrower and will implement the Project through the Energy Unit in MNSA with responsibility for implementation of the EE building upgrade component. VINLEC will be the Executing Agency with responsibility for the PV plant and the LED street lamp supply and installation. Details of the Borrower and Executing Agency are set out at Appendix 6.1.

PROJECT MANAGEMENT AND IMPLEMENTATION

Project Management

6.02 The Energy Unit has limited experience in project implementation using multilateral development banks financing and shall engage a PC to manage the Project administration. Procurement management support will be provided to the Energy Unit from the Procurement Unit of Ministry of Economic Planning, Sustainable Development, Industry, Information and Labour Government that has experience in public procurement for multilateral development banks. In addition, the Energy Unit will select and engage an EC to carry out: (a) site specific investigations; and (b) inspection and certification of all mechanical and electrical installations. It will be a condition precedent to first disbursement of the Loan that GOSVG select and engage the services of a PC, in accordance with the applicable procurement procedures, who shall

report to the Director of the Energy Unit and have overall responsibility for the Project. The TOR for PC are set out in Appendix 6.2. It will be a condition precedent to disbursement with respect to the installation of PV plant works that VINLEC select and engage a consultant for PV site specific investigation specified in Appendix 4.7. Also, it will be a condition precedent to disbursement with respect to all mechanical and electrical works that GOSVG select and engage a consulting firm for inspection and certification services specified in Appendix 6.3. CDB will finance the consulting firm and the PC.

6.03 VINLEC shall assign from within its staff, a Project Engineer (PE) to oversee the implementation of the LED street lights and PV plant and report to the PC (see Appendix 6.4). VINLEC will be responsible for the procurement, storage, installation, replacement and disposal of street lights. VINLEC's more recent financial statements indicate that the company is well capitalized and is in a reasonably strong financial position as indicated by return on assets of around 4% and debt equity ratio of 0.85. CDB staff is satisfied that VINLEC has the financial, managerial and technical capabilities to effectively execute the LED lamp replacement component of the Project. The Project Management organisational chart is set out in Appendix 6.5.

Implementation Schedule

6.04 The Project will be implemented over a period of 28 months commencing from Board approval. The component with the longest completion time is the street light replacement which is expected to be completed by Q3 2019 base on available resources and typical installation rates. The expected completion times for the EE building upgrade and the PV plant are Q4 2018 and Q2 2019, respectively. The proposed Project Implementation Schedule is presented in Appendix 6.6, and an Implementation Support Schedule is shown at Appendix 6.7.

PARTICIPATION OF BENEFICIARIES AND STAKEHOLDERS

6.05 The preparation and appraisal of this project were undertaken through a consultative process, coordinated through the Energy Unit, which will continue to be the focal point for communication between GOSVG and CDB during implementation of the Project. Other Ministries/agencies of GOSVG, including: the Ministry of Transport, Works, Urban Development and Local Planning; the Ministry of National Mobilisation, Social Development, Family, Gender Affairs; Persons with Disabilities and Youth; the Central Water and Sewerage Authority; and the Ministry of Health along with VINLEC participated in consultations to inform the Project's design. The discussions afforded opportunities for feedback from stakeholders on their opinions and concerns and these have been incorporated into design of the Project, where necessary. GOSVG, VINLEC and the Agency for Public Education have well-established public information programmes which will be utilised to inform the public about the Project and its expected benefits, and to keep them apprised of traffic management arrangements, implementation progress and any related matters during the installation process. These communications activities will be part of the Project Management and Administration component of the Project.

PROCUREMENT

6.06 The Energy Unit will be responsible for procuring goods and services for the EE Building upgrade, Project Management and Engineering Services components and VINLEC will be responsible for procuring goods and services for LED Street Lighting and Solar Photovoltaic Plant components. The procurement of goods, works and non-consultancy services shall be undertaken in accordance with CDB's Guidelines for Procurement (January 2006) and the procurement of consultancy services shall be undertaken in accordance with CDB's Guidelines for the Selection and Engagement of Consultants by Recipients of CDB Financing (October 2011). However, as a utility VINLEC employs standard industry commercial practices for procurement, rather than following the public procurement procedures that apply to the country's line

ministries. Therefore, in accordance with the approach taken under similar such projects with utilities, a waiver of the aforementioned Guidelines for Procurement is sought to permit VINLEC to use unrestricted competitive procurement methods for the procurement of LED street lamps and consumption monitoring equipment, reflecting industry commercial practises.

6.07 In accordance with the relevant Financing Agreements, where EIB CALC and EU-CIF SEEC resources are being used together with CDB's E&M resources for the supply and installation of LED Street Lamps, a waiver is sought to extend eligibility for procurement to countries eligible for procurement under EIB and EU-funded projects which are not CDB Member Countries. In addition, where EU-CIF SEEC resources are being used together with CDB's E&M resources for the supply and installation of the PV Plant, for the Building Energy Efficiency Works and inspection and certification engineering services, a waiver is sought to extend eligibility for procurement to countries eligible for procurement under EU-funded projects which are not CDB Member Countries.

6.08 For EIB-financed contracts where the costs exceed the prevailing EU procurement thresholds, procurement notices for requirements financed by CALC are required to be published in the Official Journal of the EU and bidders for the contracts in question will be required to submit the "Covenant of Integrity" in the form attached in the Annex to the Procurement Plan at Appendix 6.8.

6.09 In respect of the procurement of AC units and associated parts for the EE Building Upgrade Component, a waiver of CDB's Guidelines for Procurement (2006) is sought to extend eligibility of the source and origin of equipment to all countries, given the limited availability of units that meet the required energy efficiency performance standards. However, the supplier of the air conditioning equipment shall be required to conform with the eligibility requirements stated in the aforementioned guidelines.

6.10 VINLEC previously undertook an open competitive procurement exercise to procure LED street lamps that included a thorough and time-consuming testing process. CDB is satisfied with the procurement process previously undertaken and, subject to evidence that the prices offered reflect prevailing market prices, shall permit Direct Contracting as the procurement method for supplying the LED street lamps to ensure standardisation with the existing LEDs in use, in accordance with paragraph 3.07 of the aforementioned Guidelines for Procurement.

DISBURSEMENTS

6.11 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, 2017. The Loan is expected to be fully disbursed by December 31, 2019. An Estimated Quarterly Loan Disbursement Schedule is presented in Appendix 6.9.

6.12 GOSVG shall, for the purposes of the Project, open and maintain a Special Account (SA) at a commercial bank in SVG, acceptable to CDB, on terms and conditions acceptable to CDB. The SA shall be operated in accordance with the terms and conditions set out in Appendix 6.10. GOSVG shall establish, and during the implementation period of the Project, maintain adequate internal controls for the proper operation of the SA, including the use of Statements of Expenditure (SOE) prepared and certified by GOSVG, in form and substance acceptable to CDB, to support all withdrawal applications. GOSVG shall retain the SOE and supporting documentation for inspection and verification and shall permit CDB or its nominee to perform an annual performance audit of the SA and all disbursements made against SOE in relation to the Project. It shall be a condition of the loan that the SA shall have been established.

MONITORING AND REPORTING

6.13 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 GOSVG shall furnish or cause to be furnished to CDB, the Reports listed in Appendix 6.11 in such form or forms as CDB may require, not later than the times specified therein for so doing. Coordination of the arrangements between GOSVG and VINLEC will be facilitated through an MOU acceptable to CDB in form and substance, which will formalise the roles and responsibilities of the respective parties. It will be a condition precedent to first disbursement of the Loan that GOSVG submit to CDB an original signed copy of the MOU. An indicative list of the topics to be covered is found in Appendix 6.12.

PERFORMANCE EVALUATION RATING

6.14 The composite performance rating based on CDB's Project Performance Evaluation System (PPES) has been estimated at 5.9. This is a '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 the policy objective of GOSVG's NEP and NEAP which speak to the need for energy efficiency and conservation. 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.
Poverty Relevance	4.0	The socio-economic benefits of the Project make an indirect contribution to poverty reduction.
Efficacy	7.0	The Project's design, is expected to reduce GOSVG's energy consumption and contribute to lower GHG emissions.
Cost Efficiency	5.9	ERR of 14% is based on conservative quantifiable benefits of fuel substitution and avoided maintenance cost.
Institutional Development Impact	5	Improved capacity in energy management behaviours and practices through awareness training
Sustainability	6.0	The Project will reduce GOSVG's energy cost and maintenance as it relates to the 20 targeted buildings and street lighting system. VINLEC will benefit from replacement of fossil fuels for electricity generation by renewable energy. VINLEC will received new, more efficient street lamps that will reduce its fuel expenses and maintenance costs.
Composite Score	**5.9**	**Satisfactory**

7. TERMS AND CONDITIONS

7.01 The proposed financing for the Project is as follows:

(1) a loan to GOSVG of an amount not exceeding the equivalent of four million one hundred and ninety-six thousand United States dollars (USD4,196,000) to assist GOSVG in financing the replacement of existing lamps with LED lamps, the implementation of energy efficiency measures in some government buildings and the installation of a PV plant (the Loan Component); and

(2) a grant from CDB's SFR to GOSVG to assist GOSVG in financing, amongst other things, consultancy services, the replacement of existing lamps with LED lamps and project management services (the Grant Component)

(together, the Project)

7.02 It is recommended that CDB lend to GOSVG from CDB's OCR an amount not exceeding the equivalent of four million one hundred and ninety-six thousand United States dollars (USD4,196,000) (the Loan) comprising:

(a) an amount not exceeding the equivalent of two million one hundred and seventy-seven thousand United States dollars (USD2,177,000) (the E&M Tranche); and

(b) an amount not exceeding the equivalent of two million and nineteen thousand United States dollars (USD2,019,000) allocated from resources provided by EIB to CDB under the EIB CALC (the EIB CALC Tranche),

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

(1) **Repayment**: Repayment of the Loan shall be made in forty (40) equal or approximately equal and consecutive quarterly instalments commencing three (3) years after the date of the Loan Agreement.

(2) **Interest**: Interest shall be paid quarterly:

(a) at the rate of three decimal three per cent (3.3%) p.a. (variable) on the E&M Tranche withdrawn and outstanding from time to time; and

(b) at the rate of two decimal twenty two per cent (2.22%) 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 (60^{th}) 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, 2017, and the Loan shall be fully disbursed by December 31, 2019, or such later dates as CDB may specify in writing.

(b) Except as CDB may otherwise agree:

(i) the Loan shall be used 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(a) up to the respective limits specified therein; and

(ii) total disbursements shall not exceed in the aggregate of seventy percent (70%) of the cost of the Project.

(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), (c), and (d) , respectively, below, procurement shall be in accordance with the procedures set out and/or referred to in the Loan Agreement between CDB, GOSVG and VINLEC, 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 6.8. Any revisions to the Procurement Plan shall require CDB's prior approval in writing.

(b) Unrestrictive procurement methods may be utilised for procurement in respect of the supply and installation of LED street lamps to reflect industry commercial practices.

(c) In respect of procurement related to the supply and installation of LED street lamps, where CDB E&M resources are utilised together with EU-CIF SEEC resources, eligibility for procurement shall be extended to countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, in accordance with the EU Eligibility Rules set out in Appendix 7.2.

(d) In respect of procurement related to the supply and installation of LED street lamps, where CDB's E&M resources are utilised together with CALC resources and EU-CIF SEEC resources, eligibility for procurement shall be extended to countries eligible for procurement under EIB and EU-funded projects, which are not CDB Member Countries. Procurement notices for requirements financed by CALC are required to be published in the Official Journal of the EU and bidders for the contracts in question will be required to submit the "Covenant of Integrity" in the form attached in the Annex to the Procurement Plan at Appendix 6.8.

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

(a) MOU referred to sub-paragraph 9(d)(iv) below, shall have been signed;

(b) PE referred to in sub-paragraph 9(e)(iv) below, shall have been assigned; and

(c) PC referred to in sub-paragraph (3)(b) of Section 7.03 shall have been engaged.

(7) **Conditions Precedent to Disbursement in relation to Installation Works for the LED Streetlight Supply and Installation Component, the PV Plant Component and the Building Energy Efficiency Component:**

(a) VINLEC and GOSVG shall have received all requisite statutory, planning and environmental permits, licences and/or other approvals in respect of the installation works, including permits for the disposal of hazardous waste; and

(b) consultants referred to in sub- paragraph (9)(d)(vi) below shall have been engaged.

(8) **Condition Precedent to Disbursement in relation to contracts for the construction of the PV Plant:**

CDB shall not be obliged to disburse any amount of the loan in respect of contracts for the PV plant until the site specific investigations into the proposed location of the PV plant have been completed by a consultant and the results are made available to guide, design and define the requirements for construction.

(9) **Other Conditions:**

(a) Except as CDB may otherwise agree, GOSVG shall:

(i) execute the LED Street Light Supply and Installation component, the Engineering Services component and the Solar PV plant component (the VINLEC Components) through VINLEC;

(ii) make the proceeds of the Loan applicable to the VINLEC Components available to VINLEC for the purpose of executing those components; and

(iii) take all necessary steps to facilitate and ensure the performance by VINLEC of its obligations set out and referred to herein.

(b) As a condition of making the Loan available to VINLEC, VINLEC shall undertake to observe and perform the obligations on its part to be observed and performed as set out and referred to herein.

(c) Except as CDB may otherwise agree, Section 3.11 of the General Provisions, which requires that debt service payments be made by the Executing Agency on behalf of the Borrower, shall not apply to this Loan.

(d) GOSVG shall:

(i) contribute to the Project an amount of not less than the equivalent of one million, four hundred and seventy-one thousand dollars ($1,471,000), which shall be expended in a timely manner on the components of the Project designated for financing by GOSVG as shown in the Project Cost, Phasing and Financing Plan of the Project, unless CDB shall otherwise specify in writing;

(ii) if VINLEC is unable to meet its administrative and other operating expenses from its own resources, make adequate arrangements in a timely manner to enable VINLEC to do so;

(iii) implement the EE building upgrade component through the Energy Unit of the MNSA;

(iv) in form and substance, acceptable to CDB, provide to CDB a signed MOU between the GOSVG and VINLEC concluding the role and responsibilities of GOSVG and VINLEC in connection with the execution of the Project. The MOU shall contain as a minimum those matters set out in Appendix 6.12;

(v) keep or procure that the air conditioning, fixtures and other infrastructure financed under the Project are kept in good repair and condition and shall provide the financial and other resources required to adequately maintain the air-conditioning, fixtures and other infrastructure financed from the Loan;

(vi) in accordance with the procurement procedures applicable to the Loan, select and engage supervision consultants to carry out the services set out in the TOR at Appendix 6.3; and

(vii) for the purposes of the Project, open and maintain a Special Account at a commercial bank in SVG acceptable to CDB on the terms and conditions set out in Appendix 6.10 and in accordance with paragraph 6.12 of this report.

(e) VINLEC shall:

(i) contribute to the Project an amount of not less than the equivalent of eight hundred and twenty-five thousand dollars ($825,000), which shall be expended in a timely manner on the components of the Project designated for financing by VINLEC as shown in the Project Cost, Phasing and Financing Plan of the Project, unless CDB shall otherwise specify in writing;

(ii) ensure that the proceeds of the Loan are used exclusively for the Project;

(iii) keep its staff at levels consistent with financial prudence and technical and administrative competence;

(iv) for the duration of the Project, assign from among its staff as PE, a person with qualifications and experience acceptable to CDB to carry out the duties and responsibilities set out in Appendix 6.4. The qualifications and experience of any person subsequently assigned to the position of PE shall be acceptable to CDB;

(v) in accordance with the procurement procedures applicable to the Loan, select and engage if required by VINLEC, contractors to carry out the Street Light Supply and Installation Component;

(vi) post Project information on its website as well as on other media to inform stakeholders of Project progress and also use its existing customer complaints mechanism to deal with grievances related to the Project;

(vii) keep the lamps, fixtures and other infrastructure financed under the Project in good repair and condition and shall provide the financial and other resources required to adequately maintain the lamps, fixtures and other infrastructure financed from the Loan;

(viii) except as CDB may otherwise agree, furnish to CDB, the reports listed in Appendix 6.11 in the forms specified, or in such form or forms as CDB may require, not later than the times/periods specified therein for so doing; and

(ix) 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 interest as lender to GOSVG or would render the Project ineligible for financing by CDB under the EIB CALC Finance Contract.

(f) GOSVG and VINLEC shall:

(i) maintain in force all rights of way or use and all permits necessary for the execution and operation of the Project;

(ii) implement and operate the Project in compliance with all laws and regulations to which GOSVG, VINLEC or the Project is subject and in particular, in compliance with applicable environmental laws and regulations;

(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) use their public information systems to keep the general public and key civil society organisations informed about the Project;

(vi) each warrant and undertake that it has committed, and no person to its present knowledge has committed, any of the following acts, and that it will not commit, and no person with its consent or prior knowledge will commit, any such act, that is to say:

(aa) 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

(bb) 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 GOSVG or VINLEC, including collusion between tenderers.

For the purposes of these sub-paragraphs, the knowledge of any employee of GOSVG or VINLEC involved as a manager of the Project shall be deemed the knowledge of GOSVG or VINLEC, respectively. GOSVG and VINLEC undertake to inform CDB if it becomes aware of any fact or information suggestive of the commission of any such act.

(vii) acknowledge that CDB or EIB may be obliged to divulge such documents relating to GOSVG or VINLEC 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;

(viii) 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 GOSVG and/or VINLEC 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;

(ix) 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;

(x) 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 Annex 2 to Appendix 6.11, or otherwise as CDB may require; and

(xi) within a time frame acceptable to CDB implement such recommendations arising from the consultancies, as may be acceptable to CDB;

7.03 It is also recommended that CDB make a grant to GOSVG from CDB's SFR comprising:

(a) an amount not exceeding the equivalent of five hundred and fifty-four thousand Euros (EUR554,000) allocated from the EU-CIF SEEC resources; and

(b) an amount not exceeding the equivalent of three hundred and sixteen thousand Pounds Sterling (GBP316,000) allocated from the DFID SEEC resources,

to assist GOSVG and VINLEC in financing the Grant Component as set out in the Project Cost, Phasing and Financing Plan (the Budget) on CDB's standard terms and conditions, and on the following terms and conditions:

(1) **Disbursement**:

(a) Except as CDB may otherwise agree, and subject to sub-paragraph (b) below, disbursement of the Grant shall be made periodically after receipt by CDB of:

(i) a request in writing from VINLEC for the funds; and

(ii) an account and documentation, satisfactory to CDB, in support of expenditures incurred by VINLEC in respect of, and in connection with, the Grant Component.

(b) CDB shall not be under any obligation to make:

(i) the first payment pursuant to sub-paragraph (1)(a) above until CDB has received evidence, acceptable to CDB, that the conditions precedent to first disbursement of the Grant set out in sub-paragraph (3) below has have satisfied;

(ii) the first payment in respect of the Site Specification Investigation for PV plant (SSIP) Consultancy until CDB shall have received a copy of the signed contract between VINLEC and the consultant for the services in respect of the SSIP Consultancy;

(iii) any payment in respect of the SSIP Consultancy 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 consultant to VINLEC, and CDB, respectively, in accordance with the TOR at Appendix 4.7; and

(iv) payments representing ninety percent (90%) of the amount of the Grant, until CDB shall have received certified statements of the expenditures incurred by GOSVG or VINLEC in respect of and in connection with the Grant Component.

(c) The first disbursement of the Grant shall be made by September 30, 2017, and the Grant shall be fully disbursed by December 31, 2019, or such later dates as CDB may specify in writing.

(2) **Procurement**:

(a) Subject to paragraphs (c) and (d) below, procurement 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 6.8. Any revisions to this Plan shall require CDB's prior approval in writing.

(b) In respect of procurement related to the PC and SSIP Consultancy, country eligibility shall be extended to countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, in accordance with the EU Eligibility Rules set out in Appendix 7.2

(c) In respect of procurement related to the Supply and Installation Component, where CDB's E&M resources are being utilised together with EIB CALC and EU-CIF SEEC resources, eligibility for procurement shall be extended to countries eligible for procurement under EIB and EU -funded projects, which are not CDB Member Countries. Procurement notices for requirements financed by CALC are required to be published in the Official Journal of the EU and bidders for the contracts in question will be required to submit the "Covenant of Integrity" in the form attached in the Annex to the Procurement Plan at Appendix 6.8.

(d) In respect of procurement related to the supply and installation of LED street lamps, where CDB E&M resources are utilised together with EU-CIF SEEC resources, eligibility for procurement shall be extended to countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, in accordance with the EU Eligibility Rules set out in Appendix 7.2.

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

(a) The conditions precedent to first disbursement of the Loan shall have been satisfied;

(b) PC referred to in sub-paragraph 4(d), below shall have been engaged; and

(c) SSIP Consultant referred to in sub-paragraph 4(c)(i)(aa), below shall have been engaged.

(4) **Other Conditions**:

(a) Except as CDB may otherwise agree, GOSVG shall:

(i) execute the SSIP Consultancy portion of the Grant Component through VINLEC;

(ii) make the proceeds of the Grant for the SSIP Consultancy available to VINLEC for the purpose of executing the consultancy; and

(iii) take all necessary steps to facilitate and ensure the performance by VINLEC of its obligations herein.

(b) As a condition of GOSVG making a portion of the Grant available to VINLEC, VINLEC shall undertake to observe and perform the obligations on its part to be observed and performed, as set out and required herein.

(c) VINLEC shall:

(i) in accordance with the procurement procedures applicable to the Grant, select and engage:

(aa) a consultant to carry out the SSIP Consultancy in accordance with the TOR at Appendix 4.7; and

(bb) within a time frame acceptable to CDB implement such recommendations arising from the SSIP consultancy, as may be acceptable to CDB; and

(d) GOSVG shall in accordance with the procurement procedures applicable to the Grant, select and engage PC to carry out the services set out in the TOR at Appendix 6.2.

(e) GOSVG and VINLEC shall:

(i) explicitly acknowledge DFID Funding, in writing and verbal communications about activities related to the DFID Funding, to the public or third parties, including in announcements, and through use, where appropriate, of DFID's "UK aid – from the British people" logo ('UK aid logo') in accordance with DFID standards for use of the UK aid logo, unless otherwise agreed in advance by DFID or CDB and in all cases subject to security and safety considerations of CDB;

(ii) ensure that each deliverable produced by the consultant(s) under the Project contains the following statements:

"This technical assistance operation is financed under the second envelope of the Cotonou Agreement."; and

"The authors take full responsibility for the content of this report. The opinions expressed do not necessarily reflect the view of the European Investment Bank.".

(f) Except as CDB may otherwise agree GOSVG and VINLEC 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 Budget at Appendix 3.1; and

(bb) the cost of any other items needed for the purpose of, or in connection with, the Grant Component; and

(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.

(g) CDB shall be entitled to suspend, cancel or require a refund of the Grant, or any part thereof, if either:

(i) the Loan, or any part thereof is suspended, cancelled, or called in; or

(ii) the EU-CIF SEEC or the DFID SEEC resources, allocated for the Grant Component, or any part thereof, is suspended, cancelled or required to be refunded,

except that neither GOSVG nor VINLEC shall be required to refund any amount of the Grant already expended in connection with the Grant Component and not recoverable by GOSVG or VINLEC.

MACROECONOMIC AND MACRO SOCIAL CONTEXT

MACROECONOMIC CONTEXT

Real Sector

1. Macroeconomic data points to continuing economic expansion in SVG during 2016. Real GDP is projected to increase by 2.8 per cent (%), an acceleration on 0.6% in 2015 and 0.2% in 2014. Since bottoming out in 2010, GDP growth has remained on an upward trajectory over six consecutive years (2011-2016), albeit at a relatively low rate that has averaged 1.2% per annum. During this period, while public sector spending has supported domestic demand and staved off economic contraction, frequent natural disasters, tightening financing constraints and a slow global recovery had stymied a quicker recovery to pre-crisis GDP levels.

2. A full recovery to pre-crisis output levels is now anticipated in 2016. Overall growth was broad-based with the economy's recovery gaining a surer footing as both agriculture and tourism expanded. These sectors are projected to contribute more to growth as construction, which has also underpinned growth in recent years, weakened as large public infrastructure projects and, in particular, the Argyle International Airport wound down. Total visitor arrivals increased, reflecting growth in arrivals by both air and sea. Stayover arrivals, which contributes more significantly to value added, registered an increase of 4.5%[1] to 78,751 visitors, for an average stay of 13 days. The growth was attributed to increases in arrivals from most source markets including the USA (3.6%), the Caribbean (12.9%), and Canada (6.6). Stayover visitors from the United Kingdom declined by 2%. Yachting (0.2%) and cruiseship passenger visitors (22.3%) to the island also increased. SVG hosted several regional meetings and conferences during the year giving a boost to the strong influx of Caribbean visitors.

3. Growth in stayover arrivals provided impetus for increased activity in other economic sectors including wholesale and retail trade, transportation and agriculture. Banana, cocoa and root crop production are all expected to be higher in 2016 spurred, as well, by on-going local efforts to resuscitate banana production and export, diversify into higher value-added crops and agri-business, better manage disease and pests, and improve crop yield, total output and production quality. In the construction sector, private foreign direct investment within the exclusive and high-end market on the Grenadine Islands of Mustique, Bequia and Canouan remained upbeat focusing primarily on tourism-related projects, including hotel and mariner construction. Relatedly, the real estate market continued to expand since regaining its strength in 2012, with continuing land sales earmarked for tourism development, including on the north of mainland St Vincent. The manufacturing sector is expected to expand on the back of strong beverage production in 2016 which should offset declines in the grains (animal feed and flour) segment of the sector. SVG faces fierce competition for flour, malt beverages and poultry feeds from Grenada, Trinidad, Barbados, Guyana and Jamaica.

Prices and Unemployment

4. Deflation persisted in 2016 as a result of lower average fuel (petrol), electricity and food prices. Average inflation for the year stood at negative 0.15 %, following a decline of 1.7% in 2015. Inflationary pressures did emerge during the year, however, as upward price movements evident in some heavily-weighted categories of the consumer basket of items caused the 12-month inflation rate, while remaining negative, to trend upwards (and become less negative) throughout the year.

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[1] Although stayover arrivals remain below their pre-crisis peak level, and trails the recovery in the wider ECCU.

5. Measured on a point-to point basis, the 12-month inflation rate at December was 1.0%. Higher prices for food and beverage items as well as for house rental charges were caused, in part, by one-time changes to tax policy as part of budgetary measures introduced in 2016 to widen the tax base and raise revenue. In particular, VAT was applied on previously zero-rated and exempt food items. These notwithstanding, the electricity consumption charge and the price for petrol continued to trend down in 2016, dampening upward price pressures.

6. The latest labour market survey statistics available (2015 Labour Market Survey) show unemployment at a high 25.1%. This compares with a national average of 21.5% from the 2012 Population and Housing Census and 18% from the 2010 labour market survey. Disaggregated by gender, 30.3% of women were unemployed while for men, the unemployment rate stood at 20.8%. Unemployment was highest within the youth category (15-25 years) at 72.5%.

Central Government Operations and Debt

7. Fiscal consolidation continued in 2016. The primary balance moved into surplus of 2.6% of GDP, from a deficit of 0.7% of GDP for the same period last year. Meanwhile, an overall balance of 0.6% was posted, compared with a deficit of 2.9% in 2015. This improvement reflected a strong increase in revenues, coupled with a sharp cut in capital spending. Since 2014, the authorities have managed to narrow its overall fiscal deficit from a high of 6.2% of GDP (2013) through new tax measures, improved tax administration, and sharp cutbacks in capital spending. In May 2016, Moody's Rating Services changed the outlook on SVG's B3 rating from negative to stable. The stable outlook reflected Moody's expectation that the fiscal deficit would remain moderate over the next two years.

8. Current revenues increased by 13.5% to $589.3 mn, consistent with the acceleration in economic activity and important budget reforms instituted for improving the sustainability of public finances as well as intensified collection of tax arrears. Budget measures included a broadening of the base of the VAT system through reduced exemptions, the extension of VAT to previously zero-rated items; increase in excise taxes on alcoholic and other beverages; increase in vehicle and car licenses and other fees, as well as enhancements in tax administration. Revenues were supplemented by $22 mn of grant inflows.

9. Although current expenditures continued to rise (by 3.4%), propelled by a 1.5% salary adjustment paid to civil servants in January, increases in domestic interest costs, and in transfers and subsidies, overall spending declined by 2% to $600.18 mn, as Government sharply compressed capital spending. Capital expenditure declined by 29.4% to $70 mn (2.8% of GDP), continuing a gradual, annual downtrend from 7.8% of GDP in 2013. Public investment spending was primarily limited to externally-financed projects such as the CDB-financed South Leeward Highway, and others funded by the World Bank[2], and the ALBA Bank (for the construction of the international airport at Argyle). Although current expenditures were higher, spending on goods and services declined due to a reduction in outlays on office supplies, materials and maintenance services. As Government tightened the reins on expenditure, the authorities managed to reduce the stock of budgetary arrears from $60.3 mn at the beginning of the year to $36.7 mn (1.7% of GDP) at end-December.

10. While GOSVG generated fiscal savings on its operations, financing needs were high due to large "below the line" amortization payments and outstanding short-term facilities (including its commercial bank overdraft and budget arrears) requiring clearance. Principal payments alone increased by 16.2% to $106 mn, 5.2% of GDP. To meet its financing needs, GOSVG relied on the issuance of new securities primarily in the form of privately placed domestic bonds, external multi-lateral and bi-lateral loan facilities,

[2] The WB Group has currently two active lending operations that include a disaster vulnerability reduction project (USD65.1 mn) approved in 2011.

commercial overdraft facilities (rose to $55.8 mn) and short-term cash advances from the Eastern Caribbean Central Bank (ECCB).

11. Total public debt reached $1,693.9 mn (82.7% of GDP) during 2016, representing an increase of 6.3% over the stock position at 2015. Although debt service exceeded new loan disbursements, the debt stock was adjusted upwards to include the stock of PetroCaribe debt outstanding ($112 mn, 5.4% of GDP) not incorporated in the Government's debt statistics. SVG's external debt (57% of GDP) accounts for 68% of the total stock with most of the debt held with CDB and Venezuela (ALBA Bank and Petroleos de Venezuela, S.A). Debt servicing accounted for 27% of current revenue.

Financial Sector

12. The commercial banking sector in SVG remains sound. At end-June 2016, banks' capital adequacy ratio was above the regulatory requirement of 8%. Non-performing loans (NPL), however, remain above regulatory minimum of 5%, albeit with increased provisioning. With modest growth in credit to the private sector in 2016 relative to 2015, liquidity has remained high and profits low. In the current competitive environment, banks are instituting higher fees and consolidating their operations to lower costs and mitigate risks. One bank, Republic Bank of Trinidad and Tobago, imposed a $25 annual fee for savings accounts in May 2016. In addition, First Caribbean International Bank/Canadian Imperial Bank of Commerce terminated banking relations with local, non-bank financial institutions during 2016. These measures resulted in large deposit migration to the lone indigenous bank. To date, this bank has lost one correspondent banking relationship.

TABLE 1: FINANCIAL SOUNDNESS INDICATORS, 2012-16

Indicator		2012	2013	2014	2015	2016-Q2
NPL/Total Loans	SVG	7.4	8.3	10.0	8.7	9.0
	ECCU	15.2	18.3	17.9	17.0	12.7
Provisions for Loan Losses/NPL	SVG	31.9	34.8	31.0	36.2	38.3
	ECCU	31.3	38.5	46.8	44.2	44.0
Liquid Assets/Current Liabilities	SVG	38.4	41.7	42.2	42.9	42.7
	ECCU	28.2	29.5	33.1	36.5	37.2
Tier 1 Capital/ Risk Weighted Assets	SVG	18.4	17.9	19.6	20.2	24.5
	ECCU	16.3	11.3	9.9	13.4	15.8
Return on Average Equity	SVG	-3.1	-2.4	-4.2	3.8	1.3
	ECCU	5.7	-4.4	0.7	7.9	1.1
Return on Average Assets	SVG	1.0	0.5	-0.2	0.8	0.2
	ECCU	0.7	-0.1	0.2	0.8	0.3
Source: Eastern Caribbean Central Bank						

External Sector

13. The merchandise trade deficit widened by 6.6% to $385.9 mn at September 2016 relative to that of the corresponding period of 2015. This was the result of a rise in the value of non-oil imports (the value of oil imports declined) and, in particular, the import of machinery & transport equipment, coupled with a 10.2% contraction in total exports. The reduction in export earnings from domestic goods was largely associated with the fall-off in manufactured food exports including rice and flour. The recovery in tourism is expected, however, to lead to a narrowing of the external current account deficit. The current account deficit is projected to narrow from 21.2% of GDP to 19% of GDP but continues to be among the widest in

the ECCU, largely reflecting the construction of the international airport and the absence of a citizenship-by-investment programme.

Outlook

14. Growth is expected to gradually increase to 3% by 2020. SVG's potential growth is expected to rise on the back of its large public infrastructure investments and a strengthening in the global economy, although the transition to more diverse sources of growth will likely take time. The new international airport at Argyle and the phased development of geothermal energy will have positive multiplier effects within the economy over the longer term and should result in growth and competitiveness benefits. They may, however, also present substantial fiscal costs and contingent liabilities resulting from airline subsidies and airport subventions. The growth outlook, however, faces risks from rising public debt. Also, SVG exposure to external shocks and natural disasters could also slow growth. Addressing fiscal vulnerabilities and boosting long-run growth by addressing related bottlenecks, improving the ease of doing business, strengthening education and skills training would help support and sustain growth and increase resilience to shocks.

15. GOSVG has been implementing fiscal reforms to raise the primary surplus in line with about 2% of GDP by 2019. To adequately cover rising fiscal costs, assure debt sustainability and meet regional debt targets, central government's primary surplus will need to be further raised to 3% of GDP. For 2017, while the budget surplus is expected to improve, financing needs are also expected to remain high. Government's cash flow situation is expected to remain tight with large debt repayments coming due and its short-term debt (overdraft and payables - 6% of GDP when combined) outstanding requiring clearance.

16. Additional reform in public expenditure policy in warranted in the areas of public remuneration and pensions. The public wage bill is relatively high at 12.9% of GDP when compared to other countries in the ECCU including Saint Lucia (9.7%), Dominica (11.7%), and Grenada (8.1%). In addition, the Government's generous non-contributory pension plans are placing a strain on public resources and is unsustainable. The combined public pensions provides for an excessively high replacement rate of 127% of final pre-retirement income[3] that is contributing to a high implicit government pension debt (actuarial liability) that was estimated at 37% of GDP in 2011. Expenditure on pensions has doubled in the past 8 years growing at more than twice the rate of the wage bill.

MACRO SOCIAL CONTEXT

Population and Demographic Characteristics

17. SVG constitutes the most archipelagic of the countries of the Eastern Caribbean. The largest island, St. Vincent, is the most northerly of the chain, and extends south to Palm Island. Seven smaller islands and 28 islets form the archipelago. The islands together are comprised of a land mass of 389 square kilometres (km2), with St. Vincent, accounting for 344 km2 and the other islands, the Grenadines, accounting for 45km2. The most recent population estimate was 109,188 (55,551 males and 53,637 females) with the 2015 mid-year estimate showing a marginal increase to 109,557 (55,739 males and 53,818 females). The capital Kingstown, and its suburbs accounted for 24.3 % of the population, while the Grenadines accounted for 9.3%. According to World Bank (2016), annual population growth has averaged 0.1 percent over the last 10 years. SVG is at the stage of the demographic transition where the population is youthful with 17.0% of persons between the ages of 15 and 24 years and 26.0% under the age of 15 years.

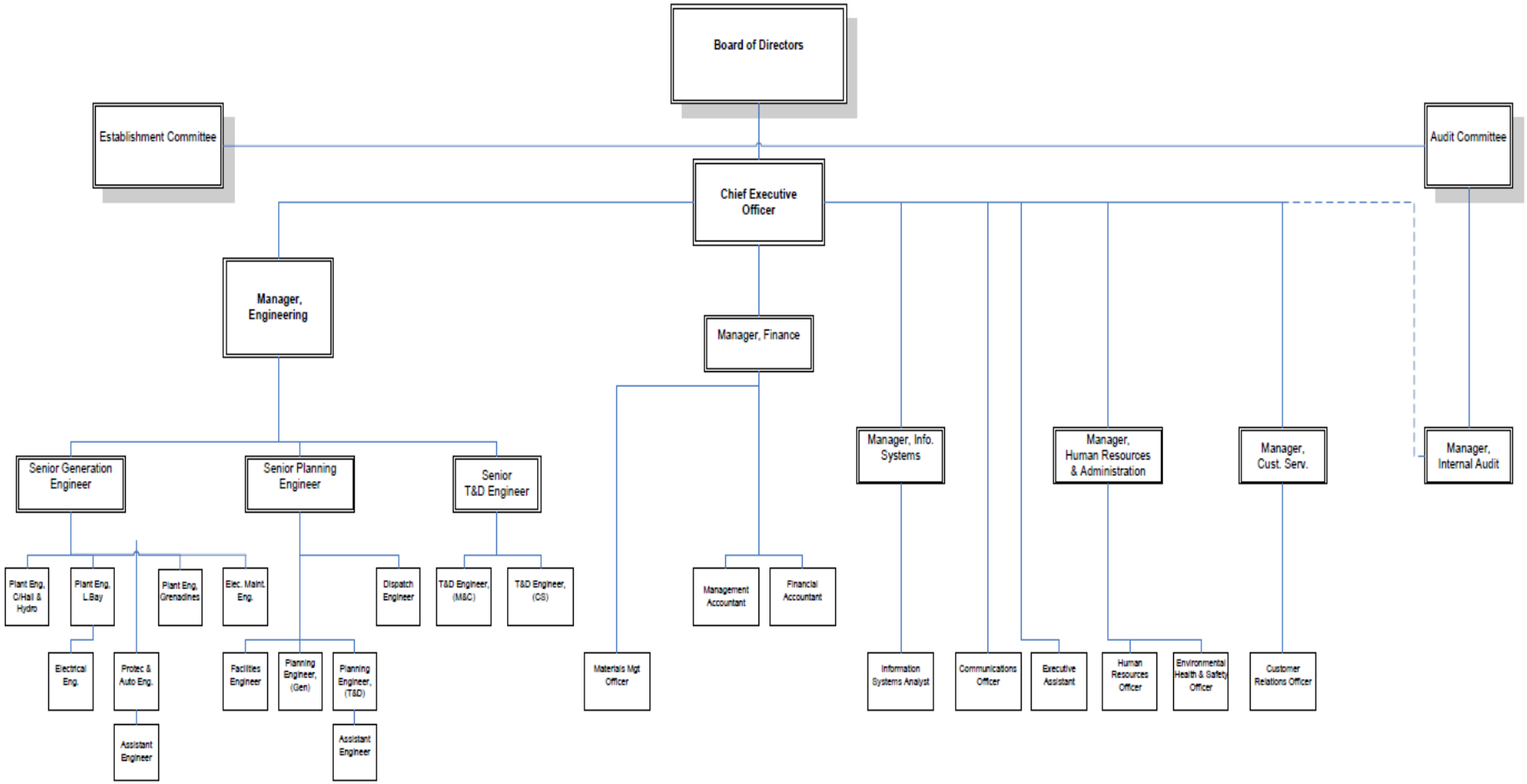
[3] Actuarial Analysis of the Public Service Pension Systems and Reform Options, 2013.

Poverty and Gender

18. The most recent Country Poverty Assessment (2007/08) data indicates that 30.2% of the population was poor in 2006. Since the assessment, SVG has experienced an increase in labour market informality in some sectors. This is significant, particularly since the majority of those in the lowest quintile are in elementary occupations or are working intermittently in the informal sector. In addition, the Labour Force Survey (2015) found high levels of unemployment, particularly among women and youth cohorts. This was compounded by labour market segmentation by sex. Such segmentation portends particular implications for single-parent female-headed households, given their historical over-representation in the poverty statistics. Efforts to break this historical reality will create opportunities for SVG to derive economic dividends from unencumbered labour market participation.

19. The CDB-supported Country Gender Assessment (2016) highlighted labour market segmentation in traditionally male-dominated occupational areas - agriculture, fisheries and agriculture. These are also the dominant economic sectors in SVG. In addition, women are overly-represented in lower-waged positions in the services sector in hotels and restaurants. Limited access by women to credit and land ownership, coupled with a significant level of female household headship, high household dependency ratios and unpaid domestic labour, conspire to increase women's vulnerability to poverty.

St.Vincent Electricity Services Ltd
Overall Organizational Chart
4/4/2017



APPENDIX 1.2

APPENDIX 2.1

DETAILS OF THE PROJECT

LED STREET LAMP SUPPLY AND INSTALLATION

1. Elements of this component are:

   (a) The purchase of 7,220 LED street lamps to replace existing lamps plus 5% spare LED lamps to ensure quick replacement in case of failure.

   (b) Consumption monitoring equipment will also be procured for 100 LED lamps. This will enable VINLEC to capture energy consumption data of the lamps in field conditions, allowing the validation of expected reduction in energy consumption and monitor operation.

   (c) The proposed installation will be executed by VINLEC's work force. The work includes the installation cost for the replacement of the 7,220 existing street lamps with the LED fixtures. LED lamps will be mounted at the exact same location as the current HPS lamps utilising existing infrastructure (poles and wiring).

   (d) The disposal of the scrap lamps and dismounted fixtures includes the collection and storage until the final disposal in St. Vincent. The Project includes the cost to dispose of the hazardous waste at certified waste disposal facilities. VINLEC, with the assistance of the EC, will establish performance specifications and contract documents for safe disposal of the waste.

Estimated Base Costs –

EE BUILDING UPGRADE

2. This component include the design, supply and installation of EE equipment including air conditioning and lighting according to the selected measures from the EAs. The implementation of the recommendations will reduce building energy consumption and associated energy costs. The individual list of quantities provided by the EA report for each facility will be consolidated and verified with support of the EC.

Estimated Base Costs –

SOLAR PV PLANT

3. This component includes the design, supply and installation of a 400kW solar PV plant as a ground-mounted system and the associated land to partially offset electricity consumption of targeted buildings.

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.

LAND

4. The land on which the PV plant will be constructed

Estimated Base Costs -

ENGINEERING SERVICES

5. An EC will be engaged to support the Energy Unit and VINLEC during implementation. The services will include assistance to: prepare tender documents and performance specifications; support the bid evaluation process; and prepare an ESMP. The Consultant will prepare an installation plan and report on planned versus actual progress. The Consultant will certify payment requests and will be responsible for ensuring supplier and contractor compliance with contract documents. The component also includes consulting services to assess the environmental and social issues related to the proposed site for the PV plant.

Estimated Base Costs –

SITE SPECIFIC INVESTIGATIONS FOR THE PV PLANT

6. The conduct of site specific investigations and climate risk assessment of the proposed PV plant site. Also includes preparation of design specifications for the plant.

Estimated Base Costs -

PROJECT MANAGEMENT

7. Project management will be undertaken by the Energy Unit with an externally sourced PC and additional required resources required to ensure the successful completion of the Project. The PC will be responsible for the overall management of the Project and, in particular, for the procurement and supervision of the EE Building Upgrade Component. VINLEC shall be responsible for the procurement of the PV plant. A PE will be appointed by VINLEC and will be responsible for planning, scheduling and coordinating installation activities for the PV plant and street lighting component. The project management also includes public awareness activities in cooperation with the Agency for Public Information to inform the public about the Project, its benefits and ensure stakeholder participation.

Estimated Base Costs –

APPENDIX 3.1(a)

PROJECT COST, PHASING AND FINANCING PLAN
($'000)

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
($'000)

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

APPENDIX 3.1(b)

PROJECT COST IN CURRENCY OF ORIGIN
($'000)

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

SUMMARY OF THE ENERGY AUDITS

No.	Location	Baseline Energy Consumption [kWh]	Air Conditioning Measures		Lighting Measures		Other EE Measures		Total Investment [$]	Total Savings [kWh]	Energy Savings [%]	Total Cost Savings [$]
			Investment [$]	Energy Savings [kWh]	Investment [$]	Energy Savings [kWh]	Investment [$]	Energy Savings [kWh]				
1	Canouan Airport	220,197	61,100	49,824	37,300	18,599	22,953	13,772	121,353	82,195	37%	69,574
2	Financial Complex	541,283	44,600	26,809	198,580	114,102	109,650	87,129	352,830	228,040	42%	193,024
3	Fisheries Lab	33,931	46,250	8,717	9,600	5,080	15,350	1,865	71,200	15,662	46%	13,257
4	Fisheries Market	275,178	46,537	8,869	28,350	15,134	33,700	37,971	108,587	61,974	23%	52,458
5	Fisheries Office	31,015	30,750	6,601	6,480	2,758	15,350	1,628	52,580	10,987	35%	9,300
6	Girls High School	83,191	50,750	12,837	36,180	10,097	19,350	6,480	106,280	29,414	35%	24,897
7	Government Printery	116,433	67,600	25,671	21,080	10,799	15,350	5,962	104,030	42,432	36%	35,916
8	Min. of Transport & Works	121,447	67,000	25,673	27,540	15,995	20,250	8,745	114,790	50,413	42%	42,672
9	Ministry of Agriculture	95,575	100,000	27,313	12,280	5,265	16,350	5,135	128,630	37,713	39%	31,922
10	Ministry Of Education	78,882	124,250	24,487	12,170	6,209	14,850	3,944	151,270	34,640	44%	29,321
11	Ministry of Health	129,058	188,000	32,738	25,400	13,553	15,600	6,631	229,000	52,922	41%	44,796
12	National Public Library	226,289	41,500	7,811	145,620	38,381	16,450	11,730	203,570	57,922	26%	49,028
13	Prime Minister's Residence	79,843	38,000	18,260	36,150	12,978	16,850	5,106	91,000	36,344	46%	30,763
14	Service Commissions Department	96,669	44,000	12,060	33,440	11,153	15,350	5,011	92,790	28,224	29%	23,890
15	St. Vincent Community College	319,890	49,700	20,832	67,970	36,013	15,850	16,732	133,520	73,577	23%	62,279
16	St. Vincent Grammar School	87,635	51,500	14,490	54,600	14,274	15,852	7,882	121,952	36,646	42%	31,019
17	SVG Bureau of Standards	38,815	60,300	10,929	7,220	2,687	16,350	2,496	83,870	16,112	42%	13,638
18	SVG Coast Guard	112,571	89,600	33,597	9,720	11,707	15,290	6,158	114,609	51,462	46%	43,559
19	SVG Postal Corporation	102,705	35,050	14,229	29,790	15,639	17,850	9,001	82,690	38,869	38%	32,901
20	Technical College	59,284	57,000	18,245	38,960	8,377	15,950	3,361	111,910	29,983	51%	25,379
	Total	**2,849,891**	**1,293,487**	**399,992**	**838,430**	**368,800**	**444,545**	**246,738**	**2,576,461**	**1,015,530**	**36%**	**859,592**

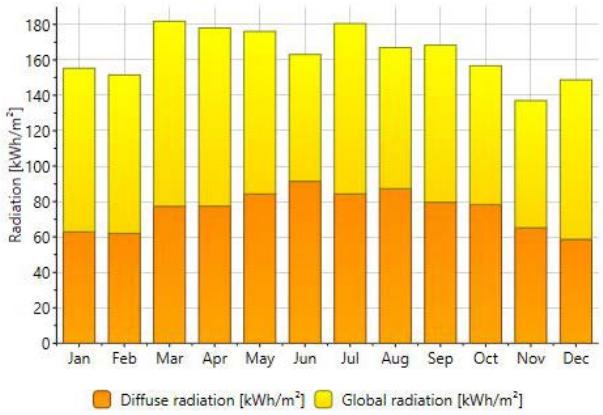
APPENDIX 4.1

APPENDIX 4.2

SUMMARY OF THE PV ASSESSMENT

IRRADIATION DATA

1. Based on site specific satellite data verified with nearby metrological data the global radiation at the module was determined with 1,892.0kWh/m². This value has been used for the preliminary assessment of the PV plant.

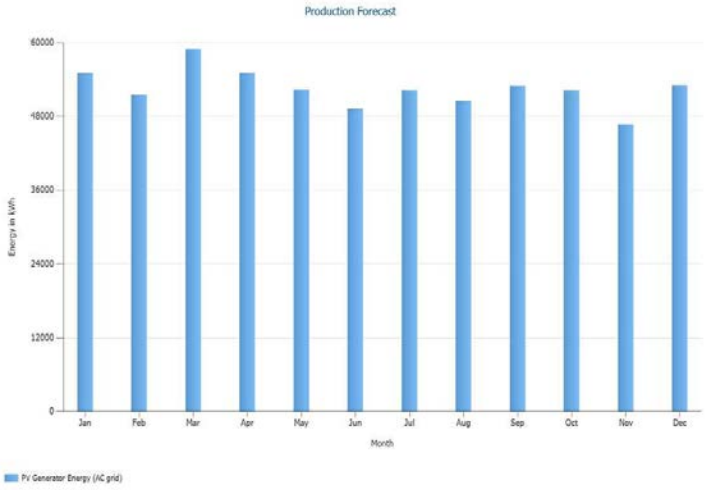


DETAILS GRID CONNECTED PV PLANT

2. For the assessment a PV plant with a generator output of 400kW peak was selected. The system will require 1270 modules and 19 inverters.

SIMULATION RESULTS GRID CONNECTED PV PLANT

3. The simulation results indicated an annual yield of 567MW for the proposed design. A specific yield of 1,417.5kWh/kW peak and a performance ratio of 72% respectively was calculated. The monthly production forecast is indicated below. Degradation of the solar modules to 84% of year 1 capacity in year 20 was taken into account in the analysis.



APPENDIX 4.3

ASSUMPTIONS TO GOVERNMENT TARIFF BENEFITS

REPLACEMENT OF EXISTING STREETLAMPS

1. There are currently 7,220 HPS and MV street lamps installed on the islands of SVG. Each one is assumed to consume a weighted average of 0.379 MWh/year of electricity. Billing is calculated based on the rated consumption of the installed street lamps.

2. The HPS lamps will be replaced by LED streetlamps between Q1, 2018 and Q3, 2019. The LED lamps each consume a weighted average of 0.181 MWh/year of electricity.

IMPROVEMENT TO BUILDING ENERGY CONSUMPTION

3. There are 20 government buildings which have been selected to undergo energy efficiency improvements. These improvements mainly consist of Air Conditioning improvements/changes and Lighting changes. These actions will collectively result in a total reduction in energy consumption of 1,015 MWh/year.

4. These building modifications are expected to be completed by Q4, 2018.

SAVINGS

5. Reduction of consumption is calculated as the difference between the consumption of electricity if these actions are not done *vs* consumption of electricity with the replacement of the HPS street lamps with LED lamps and the improvement to the selected buildings' energy consumption.

6. The base street lighting and government building (commercial rate applies) tariffs in SVG are currently $0.565/kWh and an average of $0.538/kWh respectively. A fuel surcharge (average of 0.26/kWh over the past 12 months) is added to each of these base tariffs. For the purpose of this analysis, these rates have been fixed at this level. If the actual tariffs are higher, the savings shown in Appendix 4.4 would be even higher.

DECREASE IN GOVERNMENT OF STREET LIGHTING BILL

7. GOSVG's "base" electricity billing will be on the assumption that the HPS lamps are not replaced and that the improvements to building energy efficiency are not implemented.

8. The reduction to the "base" street lighting bill will be the electricity savings resulting from the number of HPS/MV lamps replaced with LED, and the reduced consumption of the new lamps versus the existing. The reduction to the "base" building electricity billing will be the reduction in consumption in the selected Government building after the building efficiency measures are implemented.

GOVERNMENT TARIFF BENEFITS

Street Lighting					Building Efficiency Improvements			Total
Year	LED lamps - proportion of total (year-end) (%)	# of LED lamps at year end	Electricity Savings (MWh) (1)	Electricity Savings ($) (2)	Proportion of measures completed (%)	Electricity Savings (MWh)	Electricity Savings ($) (3)	Total electricity tariff benefits ($)
2017	0%	0	0	0	0%	0	0	0
2018 (4)	50%	3,611	357	294,733	100%	1,085	865,264	1,159,997
2019 (4)	100%	7,221	1,072	884,198	100%	1,085	865,264	1,749,462
2020	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2021	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2022	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2023	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2024	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2025	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2026	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2027	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2028	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2029	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2030	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2031	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2032	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2033	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2034	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2035	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195
2036	100%	7,221	1,430	1,178,931	100%	1,085	865,264	2,044,195

Notes:

(1)Street Lighting Electricity savings (MWh) = average # of lamps x 0.198 MWh/lamp/year

(2) Street Lighting Electricity savings ($) = Electricity savings (MWh) x street lighting tariff ($0.82/kWh)

(3) Building Efficiency Electricity Savings ($) = Electricity savings (MWh) x average commercial building tariff ($0.80/kWh)

(4) In 2018 and 2019, installation of LED street lamps is in progress, so there are partial savings in these years

APPENDIX 4.4

APPENDIX 4.5

ASSUMPTIONS TO THE ECONOMIC ANALYSIS

1. For the purpose of this analysis, benefits and costs are stated in constant 2017 prices.

2. The analysis was performed for a 20-year period of operation, aligned with the expected life of the Project assets.

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 0.92 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. Communications	0.90	198	179
2. LED Street Lamps	0.92	6,869	6,320
3. Consumption Monitoring Equipment	0.92	47	43
4. Installation Costs	0.78	477	373
5. PV Energy Generation	0.89	1,933	1,721
6. Building Energy Efficiency	0.89	3,110	2,770
7. Waste Disposal	0.75	340	257
8. Engineering Certification	0.92	653	601
9. Project Management and Administration	0.92	1,056	972
Total Base Cost and Physical Contingency		**14,685**	**13,236**
Overall Conversion Factor			**0.90**

TABLE 2: CONVERSION FACTORS FOR COST ADJUSTMENT

Items	Shadow Rate	Standard Conversion Factor	Base Factor
Skilled Labour	1.00	0.92	0.92
Unskilled Labour	0.80	0.92	0.74
Materials Tradeable	0.80	0.92	0.74
Materials Non-Tradeable	1.00	0.92	0.92
Equipment	1.00	0.92	0.92

Replacement of Existing Streetlamps

5. There are currently 7,220 HPS/MV street lamps installed in SVG. Based on the wattage of the existing HPS lamps and reference consumption data a weighted average electricity consumption of 0.379 MWh/year/lamp (including power unit consumption) was determined. The weighted average electricity consumption of new LED street lamps is estimated at 0.181 MWh/year/lamp.

6. The HPS/MV lamps will be replaced by LED lamps between Q1, 2018 and Q3, 2019.

Building Energy Efficiency Improvements

7. Energy audits were conducted on 20 government buildings in 2016 and this study estimated the baseline electricity consumption of these buildings at 2,850 MWh/year.

8. By implementing a set of energy efficiency initiatives at these facilities (mainly upgrading to Air Conditioning and Lighting Improvements), electricity consumption can be reduced by 1,015 MWh/year (36%).

9. These initiatives will be implements by Q4, 2018.

Photovoltaic Energy Generation System

10. A 400 kW Solar Photovoltaic plant will be constructed by Q2, 2019. This PV plant is estimated to produce 611,000 kWh/year of electricity in its first year of production

11. There will be a reduction in generation due to efficiency deterioration of the solar panels of 0.8% p.a.

12. The inverter has a useful life of 10 years. Provision is made in 2029 for its replacement

13. O&M cost is estimated at 0.5% p.a. of investment costs.

Identification and Valuation of Economic Benefits

14. The main benefits of the project are:

(a) The reduction in consumption of electricity of the LED street lamps compared to the HPS or MV street lamps.

(b) The reduction in energy consumption at 20 Government buildings through the implementation of energy efficiency initiatives.

(c) The production of electricity from a Photovoltaic energy generation system.

15. The valuation of these benefit are 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 CO_2 emissions has been included in this analysis.

16. The following information was used in the calculation of the economic benefits of this Project:

(a) Fuel costs per kWh generated - $0.56/kWh as per data supplied by the utility.

(b) O&M costs per kWh generated - $0.05/kWh. Based on available data for similar operations.

17. In addition, the project will result in reduced street light maintenance costs. While the upfront cost of an LED lamp is higher than an HPS/MV, the components of an LED lamp have a longer useful life than

the components of an HPS/MV lamp. Therefore, the annualised material costs for maintenance will be reduced, and the frequency of maintenance visits will also be lower, reducing labour costs.

18. The following information was used in the calculation of the economic benefits related to maintenance costs:

(a) Maintenance cost – conservatively estimated at $88/visit. This is based on salary rates for a linesman, a crew of 3 (1 supervisor + 2 crewmen) assigned to the task plus the estimated monthly cost of a bucket truck.

(b) Warranty period: LED lamp – 10 years; HPS lamp – 0 years.

(c) Landed cost and expected life of streetlight components is shown in Table 3 below.

TABLE 3: MAINTENANCE COST

	HPS/MV			**LED**		
Description	**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	297	9.1	2.2	213	20	1.0
Fixture	-	15	1.3	531	20	1.0
Weighted average material cost per lamp over 20 years ($)	**922**			**1,063**		
Combination of maintenance trips	**30%**					
Number of maintenance trips in 20 years	**46,591**			**20,219**		
Maintenance costs (first 10 years) ($)	**6,903,929**			**889,663**		
Maintenance costs (11 – 20 years) ($)	**5,380,506**			**4,726,902**		
Maintenance cost per lamp per year	**74.5**			**38.9**		
Maintenance cost savings ($)	**35.6**					

19. 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 30% of those visits would involve replacement of more than one 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 lamps have a 10-year warranty, they do not incur material costs over the first 10 years of their useful life.

20. Valuation of the CO_2 emissions avoided by the project was carried out using data from the SCC model. SCC is an estimate of the economic damage associated with a small increase in CO_2 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 weighted average of USD46/tonne for time period of this project.

(b) The efficiency measures and PV generation will reduce carbon emissions by an average of 2,226 tonnes of CO_2 p.a. between 2018 and 2037.

CALCULATION OF ECONOMIC RATE OF RETURN

Project Year		**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**
	Unit	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**
Energy Savings from RE substitution	MWh	-	306	606	602	597	592	587	583	578	573
Energy savings as a result of EE measures	MWh	-	653	2,230	2,612	2,612	2,612	2,612	2,612	2,612	2,612
TOTAL	**MWh**	**-**	**959**	**2,837**	**3,214**	**3,209**	**3,204**	**3,200**	**3,195**	**3,190**	**3,186**
Fuel savings	$'000	-	389	1,151	1,304	1,302	1,300	1,298	1,296	1,294	1,292
Generation (O&M) savings	$'000	-	17	49	55	55	55	55	55	55	55
Street light maintenance savings	$'000	-	129	257	257	257	257	257	257	257	257
Social cost of carbon avoided	$'000	-	82	242	274	274	273	273	272	272	272
Incremental O&M costs	$'000	-	-	-	8	8	8	8	8	8	8
Total Economic Benefits	**$'000**	**0**	**616**	**1,699**	**1,882**	**1,880**	**1,877**	**1,875**	**1,872**	**1,870**	**1,868**
Capital Expenditure	**$'000**	1,112	7,297	4,827	-	-	-	-	-	-	-
Net Benefits		**-1,112**	**-6,681**	**-3,129**	**1,882**	**1,880**	**1,877**	**1,875**	**1,872**	**1,870**	**1,868**

ERR= 14%

NPV= $895

APPENDIX 4.6

CALCULATION OF ECONOMIC RATE OF RETURN

Project Year		**10**	**11**	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**
	Unit	**2027**	**2028**	**2029**	**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Energy Savings from RE substitution	MWh	569	564	560	555	551	546	542	538	533	529
Energy savings as a result of EE measures	MWh	2,612	2,612	2,612	2,612	2,612	2,612	2,612	2,612	2,612	2,612
TOTAL	**MWh**	**3,181**	**3,176**	**3,172**	**3,167**	**3,163**	**3,159**	**3,154**	**3,150**	**3,146**	**3,141**
Fuel savings	$'000	1,290	1,288	1,287	1,285	1,283	,281	1,279	1,278	1,276	1,274
Generation (O&M) savings	$'000	55	55	55	55	55	54	54	54	54	54
Street light maintenance savings	$'000	257	257	257	257	257	257	257	257	257	257
Social cost of carbon avoided	$'000	271	271	270	270	270	269	269	268	268	268
Incremental O&M costs	$'000	8	8	8	8	8	8	8	8	8	8
Total Economic Benefits	**$'000**	**1,865**	**1,863**	**1,861**	**1,858**	**1,856**	**1,854**	**1,852**	**1,849**	**1,847**	**1,845**
Capital Expenditure	**$'000**	-	-	135	-	-	-	-	-	-	-
Net Benefits		**1,865**	**1,863**	**1,726**	**1,858**	**1,856**	**1,854**	**1,852**	**1,849**	**1,847**	**1,845**

ERR= 14%

NPV= $895

APPENDIX 4.7

DRAFT TERMS OF REFERENCE

CONSULTANCY FOR SITE-SPECIFIC INVESTIGATIONS FOR THE PHOTOVOLTAIC PLANT IN ST. VINCENT AND THE GRENADINES

1. BACKGROUND/INTRODUCTION

1.01 The state-owned St. Vincent Electricity Services Limited (VINLEC) is the sole provider of utility-scale electricity on St. Vincent and four of the Grenadine islands and is governed by its Board of Directors. The utility is responsible for the generation, transmission, distribution and sale of electricity for a period of 60 years, expiring in 2033. VINLEC is subject to the Electricity Supply Act (1973), which is the guiding instrument for its operations in the energy sector. Additionally, in the absence of a regulator, the Act provides for VINLEC, with the Minister's approval, the right to grant sub-licenses to generate, transmit, distribute, and sell electricity under certain terms and conditions and within a specified area.

1.02 VINLEC has an installed generation capacity of 58.3MW, of which 5.6MW comes from three hydropower plants, with the remainder provided by diesel generators and a very small share by solar photovoltaic (PV). However, the hydropower capacity is reduced by approximately 50% during the dry season. In 2016, VINLEC's net generation of electricity was 148,245MWh with around 22% coming from renewable sources. The annual generation growth is forecasted at 6.9% per year.

1.03 VINLEC is seeking to expand its RE generation. GOSVG conducted Energy Audits (EA) that assessed the option of installing roof-top solar PV plants. The assessment indicated that 11 buildings were suitable for solar PV installation with a capacity between 10 and 30kW. Generated electricity would reduce total energy costs and directly offset grid electricity generated by fossil fuels. However, based on a 2015 assessment of their capacity, it was decided that a small-scale, ground-mounted PV plant at a single location with a capacity of 400kW was a more cost-effective solution, easier to maintain and be more resilient to climate hazards. In the proposed arrangement, generated electricity will be fed into the electricity grid substituting electricity generated by fossil fuel, reducing VINLECs operational expenses. Based on a simulation, the PV plant will generate 567MWh per year, representing 0.4% of the total electricity demand in SVG.

1.04 In a preliminary assessment, the now decommissioned landfill location adjacent to the now closed Arnos Vale airport was proposed as the site for the PV plant. The proposed system will occupy approximate 2,500m^2 of land. The generated electricity will reduce fossil fuel consumption by 31,920 gallons per year, resulting in CO_2 emission reductions of 391 tonnes per year. The Government of St. Vincent and the Grenadines (GOSVG) requested financing from the Caribbean Development Bank (CDB) to construct the PV plant.

1.05 The proposed site is in close proximity to the former airport, and to residential communities. The site underwent an engineered closure and is currently being used by SWMU to store pipes and other material. Due to the nature of the site, and former use, as a part of the approval process, appropriate geotechnical, social and environmental investigation of the site is required to guide the preparation of design specification for the proposed PV plant.

2. OBJECTIVE

2.01 The primary objective of this consultancy is to prepare design specification for a proposed 400KW PV plant on the decommissioned Arnos Vale landfill site. The consultants will be required to conduct site

specific investigations and climate risk assessment of the project site, inclusive of an assessment of social and environmental impacts and to propose measures that will guide design and construction requirements.

3. SCOPE OF WORK

3.01 The scope of services is understood to cover all activities necessary to accomplish the objectives of the consultancy, whether or not a specific activity is cited in these terms of reference (TOR). The draft TOR will be finalised based on discussions between VINLEC and the Consultant. A participatory and consultative approach is required in the conduct of the services.

3.02 Specific duties and responsibilities of the Consultants include but are not limited to the undertaking the following:

(a) Appropriate geotechnical surveys;

(b) Environmental and Social risk screening;

(c) Climate Vulnerability Assessment (CVA); and

(d) Preparation of civil and electrical design specification.

3.03 In undertaking the surveys and assessments, the consultants will be required to undertake the following tasks:

(a) **Geotechnical Survey**

3.04 The purpose of the geotechnical survey is to inform the design specifications for the foundation requirements for the PV plant. The consultants will be required to establish the design bearing capacity and the potential for differential settlement on the proposed site. To such end, before conducting the proposed survey, the consultant will prepare and share with VINLEC a detailed schedule and procedures to be undertaken including environmental and safety standards to be followed.

(b) **Social and Environment Risk Screening**

(i) conducting a gender-sensitive SIA of potential significant social impacts and the associated mitigation measures required for successful implementation of the proposed project. It should include an assessment of baseline social conditions as they relate to the proposed location of major works, as well as relevant policies, legislation and regulation which have implications for successful implementation of the proposed works;

(ii) preparing a demographic profile and detailing the socio-cultural characteristics of the resident population in the project area, disaggregated by sex;

(iii) conducting consultative and participatory meetings with stakeholders and in particular, community representatives and residents who will be directly impacted by the project;

(iv) assessing the impact of the works on stakeholders, recommend risk mitigation measures, and monitoring indicators, disaggregated by sex;

(v) developing an Environmental and Social Management Plan to monitor and mitigate risks identified;

(vi) exploring how the economic opportunities generated by the civil works can benefit socially-excluded groups including youth and women;

(vii) Convening a stakeholders' workshop to discuss the findings of the consultancy and to seek clarification on issues from participants for incorporation in the draft final report; and

(viii) Identifying and describing all potential major environmental impacts from the dumpsite that will be significant over the proposed life of the PV project. Describe the residual impact to neighbourhoods that might require mitigation measures and estimate residual impacts to surrounding neighbourhoods near the dumpsite.

(c) **Climate Risk Assessment**

3.05 A climate risk assessment shall be undertaken to evaluate potential impacts from climate change (CC) on the proposed PV plant and to identify options to increase its resilience, which should be incorporated in the design following cost-benefit analysis. Some of the key questions to be answered by the risk assessment are: Is the site suitable for housing a PV installation? Does the PV plant increase fire hazard? What wind condition should be used for design purposes? What are the drainage considerations to avoid potential flooding? Will some electric components be exposed to flooding? What are the minimum measures to make the PV plant resilient to CC?

3.06 The consultant will undertake the following steps:

(i) Analysis of Climate Hazards and Exposure: - For the purposes of this analysis, the main climate variables of interest are wind, rainfall and to a lesser extent, heat and humidity. Rainfall has the potential to flood the solar farm site, and erosion that may deteriorate the facility, while extreme wind gusts will be an important measure in designing the structures and panel orientation.

(ii) Sensitivity and Impacts: - Based on the analysis of exposure, the consultant shall assess the sensitivity and impact on the proposed PV plant. How sensitive is the proposed PV plant to wind? High wind speeds can damage the structures and cause abrasion to the panels. Is there a risk of flooding as a result of extreme rainfall, given the location and any natural drainage? Sensitivity to heat might be significant, in which case the recommended panel would already need to be heat tolerant.

(iii) Recommended Resilience Options: - Based on the above assessment of impacts, the consultant should recommend appropriate design measures to ensure resilience of the system. It would be useful to provide a summary matrix showing: the climate variable, system component affected, main impacts and the resilience option.

(d) **Electrical Engineering Specifications**

3.07 In consultation with VINLEC, the consultant will prepare electrical performance specifications for the proposed PV plant. The proposed equipment shall comply with applicable international and national

standards and should be designed to supply >80% of warranted power output after 25 years. Total performance ratio of the system should be higher than 70%.

4. IMPLEMENTATION ARRANGEMENTS

4.01 The Consultant will report to the Project Engineer (PE) or his/her designate within VINLEC, who will have overall responsibility for the management and implementation of the consultancy and facilitate the work of the consultant. PC will make available all studies, reports and data relevant to the completion of the exercise and will act as liaison between the consultants and VINLEC officials and stakeholders. PE will make arrangements for the introduction of the Consultant to the key stakeholders.

5. QUALIFICATIONS AND EXPERIENCE OF CONSULTING TEAM/ KEY SPECIALISTS

5.01 It is the consultant's responsibility to ensure that their team has an appropriate mix of key and non-key experts required to satisfy the full requirements of the TOR.

5.02 As a guide only it is considered that the consulting team is likely to need to include the following key experts, from which a Team Leader shall be selected and proposed. The consulting team should be multidisciplinary and comprise following:

(a) Electrical Engineer (Team Leader) with a Bachelors' Degree and at least 10 years' experience in design and installation of electrical systems, including PV plants;

(b) Environmental Specialist with a Master's Degree in Environmental Studies and a Social Specialist with a Master's Degree in Sociology, Social Sciences and/or Development Studies and at least 10 years' experience in conducting Environmental and Social Impact Assessments.

(a) Civil Engineer with Bachelors' Degree in Civil Engineering and a Masters' Degree in Geotechnical Engineering. 10 years' experience in conducting geotechnical field investigation will be required.

(b) Climate Specialist: - With no less than 10 years of professional experience and a graduate degree of MSc. or equivalent. Experience should include working with data provided by Global Circulation Models and Regional Circulation Models, undertaking Vulnerability Assessments and familiarity with the Fifth Assessment Report by the IPCC.

5.03 The consultant will present detailed CVs for each member of the Core Consulting Team, and their corresponding level of effort. The consultant shall also indicate if they require additional specialists, their expected role and the aggregated level of effort.

6. REPORTING REQUIREMENTS AND DELIVERABLES

6.01 The consultants will deliver the following:

(a) An Inception Report: The report will be submitted to the PC within one week after the signing of the contract, and will include: consultant's work schedule and methodology, including proposed resources. One hard copy of the report and one in the electronic format should be submitted to the PC for review and comments.

(b) The Design Report: Will be concise and limited to significant climate risk, environmental and social issues. The main text must focus on findings, conclusions and recommendations. The Report will have the following outline:

(i) Executive Summary.

(ii) Description of current conditions in the dumpsite.

(iii) Significant Social and Environmental Impact Screening.

(iv) CVA.

(v) Environmental and Social Mitigation Management Plan.

(vi) Electrical and Structural Design Specifications and Criteria.

(vii) Bidding Documents.

7. DURATION

7.01 The consultancy is expected to be undertaken within a period of six months.

8. SCHEDULES

(a) The Inception Report will be submitted five weeks after commencement.

(b) A draft Design Report within four months of the notice to proceed shall be submitted to VINLEC for review. VINLEC will provide written comments within four weeks.

(c) The final Design Report shall be completed and delivered to CDB within 10 business days of receipt of comments from VINLEC.

(d) All background reports (i.e., Preliminary environmental report, community and stakeholder assessment report, Geological report, and Geotechnical report) shall be submitted to VINLEC as soon as completed.

BUDGET
(USD)

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

APPENDIX 4.8

GENDER MARKER ANALYSIS

Project Cycle Stage	Criteria	Score
Analysis: Introduction/ Background/ Preparation	Consultations with relevant categories of males and females and relevant gender-related public/private sector organisations and Non-Governmental/Community-Based Organisations will take/have taken place. Socioeconomic, Sector and/or Institutional analysis considers gender risks and/or gender disparities that impact the achievement of project outcomes.	0.5 0
Design: Project Proposal/ Definition/ Objective/ Description	Project interventions/policies address existing gender disparities. Project objective/outcome includes the enhancement of gender equality or the design of gender-responsive policies or guidelines.	0 0
Implementation: Execution	Implementation arrangements include either: • Capacity building initiatives to enhance gender mainstreaming of the executing and/or implementing agency, OR • Active participation of representatives of gender-relevant stakeholders in project execution. Terms of Reference of consultancy/project coordinating unit/project management unit includes responsibilities and resources, including budgets for gender mainstreaming.	0 0 0
Monitoring and Evaluation: Results-Monitoring-Framework (RMF)	Sex-disaggregated data included in the baselines, indicators and targets of the RMF.	0
Score:		0.5

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

THE BORROWER AND THE EXECUTING AGENCY

THE BORROWER

1. GOSVG may, pursuant to Section 3 (1) of the Loans Caribbean Development Bank Act, 1973 of SVG [the SVG Loans (CDB) Act] in such manner and on such terms and subject to such conditions as may be agreed between GOSVG and CDB, borrow from CDB from time to time such sums as may be required by GOSVG.

2. Any agreement between GOSVG and CDB in respect of such sums borrowed under this power must be made in the name of GOSVG and may be signed on behalf of GOSVG by the Minister responsible for Finance or any person authorised thereto in writing by that Minister. A copy of such agreement must be laid before the House of Assembly of SVG as soon as possible after it is concluded.

3. Under the SVG Loans (CDB) Act, all amounts required for repayment of any sum borrowed by GOSVG from CDB, all interest and other charges on such sums payable by GOSVG in respect of any guarantee given by GOSVG are charged upon and payable out of the Consolidated Fund and assets of GOSVG.

THE EXECUTING AGENCY

Legal Status

4. VINLEC is a limited liability company incorporated in SVG on November 27, 1961. VINLEC is authorised under its Articles of Continuance (the Articles) to carry on the business of manufacturing, producing, accumulating, distributing and dealing in electricity and electromotive force and in nuclear energy and in all similar agencies and substitutes, and to supply the same for lighting, heating, power and all other purposes. It 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 the laws of SVG. It follows therefore that VINLEC can execute the Project.

Management and Shareholding

5. The powers of VINLEC are exercised by BOD, which is responsible for the management of its business and affairs. According to the Articles, VINLEC must have a minimum of four (4) and a maximum of seven (7) directors. It currently has seven (7) directors that make up its BOD, all of whom are nationals of SVG. The directors come from different occupational or professional backgrounds, however, they have all been appointed by GOSVG. VINLEC is headed by a Chief Executive Officer. GOSVG owns all shares that have been issued to date by VINLEC.

Powers under the Electricity Supply Act 1973

6. Under the Electricity Supply Act (No. 14 of 1973) (the Act), VINLEC has a sole and exclusive licence to generate, transmit, distribute and sell electricity in SVG until 2033, that is for a period of 60 years next following the 30th day of May 1973. VINLEC is entitled to charge for electricity supplied at its tariff rates for the time being in force. Provision is made for variation of the tariff rates by agreement between VINLEC and the Minister (i.e. the Minister to whom responsibility for electricity has for the time being been assigned) or in default of agreement by arbitration as provided for in sub-section (1) of Section 30 of the Act. Under the Act GOSVG can revoke VINLEC's licence to generate, transmit and sell electricity.

Government Control

7. Although the members of BOD are appointed by GOSVG, GOSVG does not have day-to-day control over VINLEC and there is no particular Ministry or Minister that oversees VINLEC's day-to-day management, however, once GOSVG has set its national agenda, strategy, and policy on the electricity sector BOD will endeavour to align VINLEC's policy and strategy with that of GOSVG.

APPENDIX 6.2

DRAFT TERMS OF REFERENCE

PROJECT COORDINATOR
ENERGY EFFICIENCY AND SOLAR PHOTOVOLTAIC PLANT
ST. VINCENT AND THE GRENADINES

1. BACKGROUND

1.01 The Government of St. Vincent and the Grenadines (GOSVG) has received financing from the Caribbean Development Bank (CDB) for (1) replacement of existing High Pressure Sodium (HPS) and Mercury Vapour (MV) Street lamps; (2) implementation of energy efficiency measures in 20 Government Buildings; and (3) Construction of a 400kV solar photovoltaic (PV) system. The Project Coordinator (PC) will lead the implementation team and will be responsible for coordinating and monitoring all aspects of the implementation of the Project. PC will be supported by an Engineering Consultant (EC), who will oversee the government buildings upgrades and installation of the solar photovoltaic (PV) system. A Project Engineer (PE) – St. Vincent Electricity Services Limited (VINLEC) will oversee the street lighting installation work by VINLEC crews and disposal of disused materials. For the purposes of project implementation, PE will liaise with PC on matters related to procurement, the support of EC, and for the submission of progress reports. Additional administrative, technical and clerical support will be provided to PC and EC by GOSVG and to PE by VINLEC. PC's duties will include, but will not be limited to:

(a) preparing and submitting to GOSVG and CDB, work plans for the Project;

(b) leading the project implementation team, including coordinating activities with VINLEC for implementation of the street lighting component of the project, and EC assigned to the implementation of the building efficiency works and the installation ;

(c) Monitoring and evaluation (M&E) of the Project, in a manner consistent with the Project's M&E Framework;

(d) managing all procurement related to the Building Energy Efficiency improvements and to the PV plant installation, including preparation of procurement documents, ensuring that activities and procurement schedules are carefully planned and executed and that there is adherence to CDB's procurement procedures, and leading the team for evaluation of all bids and proposals received;

(e) supervising the EC on behalf of GOSVG;

(f) submitting Consultant's Reports and progress reports to GOSVG and CDB;

(g) submitting to CDB, within six weeks after the end of each quarter, quarterly reports on the investment cost of the Project;

(h) developing close working relationships with all project participants and stakeholders to achieve a shared vision of the Project and its objectives;

(i) representing GOSVG in all dealings with the consultant, suppliers and contractors;

(j) expediting the submission to CDB of claims for disbursement/reimbursement with regard to all components financed from the Loan;

(k) controlling the budget and introducing safeguards acceptable to CDB to prevent funds and assets misuse;

(l) ensuring that all contractual obligation are adhered to and make all necessary arrangements to ensure implementation meets projected targets;

(m) liaising with CDB on all relevant technical, financial and administrative aspects of the Project; and

(n) preparing and submitting to CDB of a Project Completion Report by the deadline specified in the Reporting Requirements contained in CDB's Appraisal Report.

(o) Updating the procurement plan as necessarily and at least annually.

BUDGET
(USD)

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

APPENDIX 6.3

DRAFT TERMS OF REFERENCE

CONSULTANCY SERVICES FOR THE SUPERVISION OF ENERGY EFFICIENCY MEASURES AND SOLAR PHOTOVOLTAIC PLANT ST. VINCENT AND THE GRENADINES

1. BACKGROUND

1.01 The Government of St. Vincent and the Grenadines (GOSVG) has received financing from the Caribbean Development Bank (CDB) to (a) replace all of its high pressure sodium (HPS) and mercury vapour (MV) street lamps (approximately 7,220) with high efficiency light-emitting diode (LED) street lights (b) implement energy efficiency measures in 20 Government buildings (c) construct a 400 kW solar photovoltaic (PV) plant.

2. OBJECTIVES

2.01 The objective of this Consultancy is to support GOSVG and St. Vincent Electricity Company (VINLEC) during procurement and implementation. The services will include assistance to prepare tender documents including performance specifications. The Consultant will support the bid evaluation process and prepare an Environmental and Social Management Plan (ESMP) for the project. A draft ESMP will be included in the contract for street lights for pricing by bidders, and finalisation by the disposal contractor. The Consultant will prepare an implementation plan and report on planned versus actual progress. The Consultant will certify payment to the supplier of goods for the project, in accordance with the terms of the supply contract(s), be responsible for ensuring supplier compliance with contract documents, and for monitoring the installation by VINLEC for adherence to manufacturer's recommendations.

3. SCOPE OF WORK

3.01 The Supervision Consultants will undertake the following tasks:

(a) preparing bidding documents for the contracts to allow GOSVG and VINLEC to solicit bids for:

(i) supply and installation of building energy efficiency equipment;

(ii) supply and installation of PV plant; and

(iii) disposal of disused street lamps.

In this regard, the consultant will be required to conform to CDB's Standard Bidding Documents or other suitable alternative documents;

(b) support the GOSVG and VINLEC in preparing contracts for goods and services;

(c) certify payments in respects of the contracts for goods and services;

(d) support the bidding process and bid evaluation to purchase goods including but not limited to the verification of technical, electrical parameters, robustness, durability, installation and maintenance requirements and potential energy savings. Support should also be provided for the evaluation of the waste disposal contract;

(e) liaise with the Department of Environment and other key stakeholders and prepare the ESMP. The ESMP shall include, among other aspects, arrangements for proper vehicular traffic control, pedestrian safety, use of appropriate personal protection equipment and instructions for safe handling and storage of the street lights, AC Units and bulbs. Integrate appropriate hazardous waste handling and disposal protocols into the waste disposal contract document for street lamps;

(f) support VINLEC in establishing installation plan for street lights including personnel, equipment and material resource requirements;

(g) preparation of an implementation plan using agreed installation schedule for street lamps, supply and installation contracts for the PV plant, building EE building upgrade and disposal contracts. This should include the review of resources adequacy to achieve the proposed timelines;

(h) to assist the utilities to: (i) establish procedures for the safe handling and storage of disused lamps, including those being installed under the Project; and (ii) train workers about safe practices for handling and storing existing lamps prior to disposal;

(i) inspection for compliance with the manufacturers' requirements;

(j) track actual installation productivity with the originally developed installation plan and identify where necessary requirements for incorporation of additional resources to ensure adherence to the Project Schedule;

(k) environmental monitoring during installation and removal;

(l) consultation and advice to GOSVG/VINLEC during installation.

(m) preparation of monthly reports on the progress of the installation works, indicating any difficulties affecting their efficient and timely execution, commencing one month after the start date;

(n) verification of installation completion and final completion of the waste disposal contract; and

(o) preparation of a Completion Report on the Project within three months after the date of issue of a certificate of practical completion of the waste disposal contract.

4. IMPLEMENTATION ARRANGEMENTS

4.01 The Energy Unit within the Ministry of National Security, Air and Seaport Development (MNSA) will be responsible for the overall project implementation and particularly the implementation of building energy efficiency measures. VINLEC shall be responsible for the installation of LED street lights and the solar PV plant. The supervision Consultants will report to the Project Coordinator (PC) within the Energy Unit. The PC will facilitate the work of the consultants and make available all relevant studies, reports and data, relevant to completion of the exercise and will act as liaison between the Consultant(s) and GOSVG officials and stakeholders. The Consultants will also liaise with the Project Engineer within VINLEC, who will oversee the installation activities.

5. QUALIFICATIONS AND EXPERIENCE

5.01 The Consulting Team should consist of persons having the appropriate professional and academic qualifications and a minimum of eight years relevant experience in electrical engineering, project management, construction or installation supervision and management, and preparation and supervision of the ESMP.

6. DURATION

6.01 The Consultancy is to be implemented intermittently over a period of 18 months.

BUDGET
(USD)

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

APPENDIX 6.4

DUTIES OF THE PROJECT ENGINEER - VINLEC

1. The PE - VINLEC will report to the PC as related to the street lighting installation works and will be responsible for managing the implementation of the street lamp replacement, including oversight of installation crews retrofitting the lamps. PE will also liaise with the EC on matters related to the PV plant. His/her duties will include, but will not be limited to:

(a) keeping accounts on project-related expenditure and disbursement activities;

(b) planning, scheduling and coordinating installation activities;

(c) directing and supervising the day-to-day operations of the Project, guided by the project documents and the Installation Work Plans;

(d) advising PC on technical aspects and costs variations;

(e) Administration of the LED supply and waste disposal contracts;

(f) ensuring adherence to the ESMP;

(g) Liaise with the EC on matters related to the PV plant, including, preparation of specifications, bidding process, installation and commissioning.

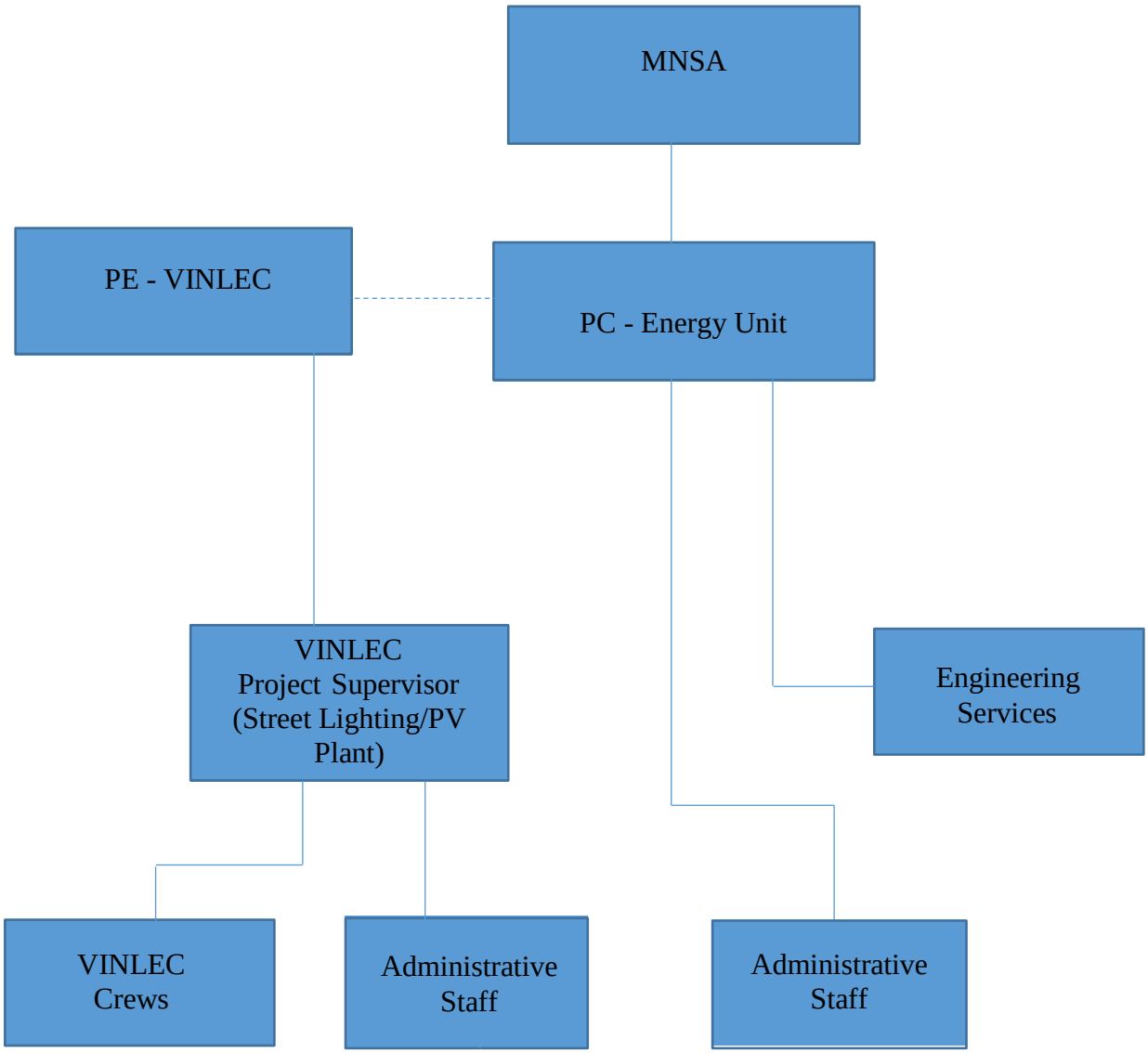
(h) submitting to PC (within two weeks after the end of each month), the monthly reports on the progress of the street lighting works;

(i) submitting to PC, within two weeks after the end of each quarter, Quarterly Reports on the investment cost of the street lighting retrofitting works in the format shown in the Reporting Requirements presented in CDB's Appraisal Report or in such form or forms as may be specified by CDB, commencing with the quarter in which the first disbursement is made; and

(j) preparing and submitting to PC, a Project Completion Report by the deadline specified in the Reporting Requirements contained in CDB's Appraisal Report.

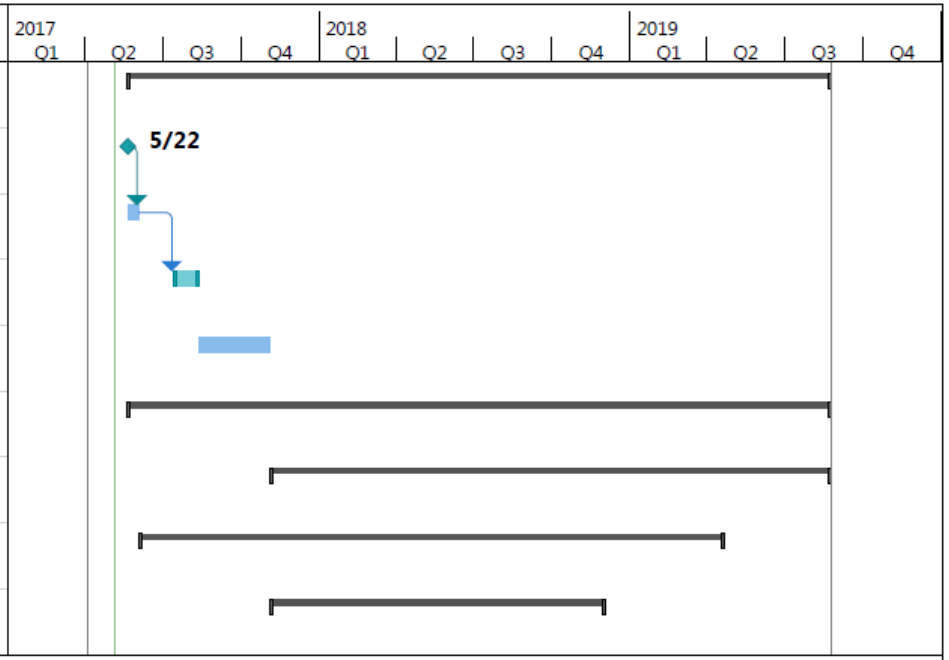
APPENDIX 6.5

PROJECT MANAGEMENT ORGANISATIONAL CHART



PROJECT IMPLEMENTATION SCHEDULE

ID	Task Name	Duration
1	**St. Vincent Energy Efficiency Project**	**590 days**
2	CDB Board Approval	0 days
3	Loan agreement	2 wks
4	Project launch workshop	1 mon
5	Conditions precedent satisfied	3 mons
6	**Engineering Services**	**590 days**
14	**LED street lamp Supply and Installation**	**470 days**
21	**Photovoltaic system**	**490 days**
29	**Building retrofitting**	**280 days**



APPENDIX 6.6

APPENDIX 6.7

PROJECT IMPLEMENTATION SUPPORT PLAN

1. CDB has had considerable experience in the energy sector of BMCs within the Organisation of Eastern Caribbean States. This experience provides the basis for providing implementation support to GOSVG and VINLEC. The implementation support will be provided as part of CDB's project supervision functions, and will include, among other things:

(a) reviewing implementation progress and achievement of project outcomes;

(b) addressing implementation issues;

(c) monitoring systems to ensure their continued adequacy through monitoring reports, audit reports, and field visits; and

(d) monitoring changes in risks and compliance with legal agreements, as needed.

2. The Implementation Support Plan (ISP) will be reviewed annually to ensure that it continues to meet the implementation support needs of the Project. In addition to reviewing implementation progress, ISP aims at providing technical support to St. Vincent and the Grenadines in the achievement of the results.

3. The strategy for implementation support has been developed based on the design of the Project, its risk profile, and an assessment of the Borrower and implementation agency (GOSVG) and the Executing Agency - VINLEC. The strategy remains a flexible tool that may be amended during project implementation in response to the changing needs of the Project and the Borrower/Executing Agency.

Strategy and Approach for Implementation Support

4. Supervision of the Project will be undertaken by a team comprising the Lead Project Supervisor, supported by legal counsel and specialists in the areas of environment; procurement; financial analysis; and social analysis. Formal supervision and field visits will be undertaken at least semi-annually during the implementation phase of the Project.

5. The Lead Project Supervisor will coordinate CDB's team to ensure that project implementation is consistent with the requirements as specified in the Procurement Plan, Terms and Conditions and other legal documents. The supervision team will prepare annual Project Supervision Reports identifying the status of project implementation and any issue requiring the resolution of management. On the completion of the Project, or after 90% of the funds have been disbursed, Staff will conduct an Exit Workshop to assess project results, discuss implementation issues, and identify lessons. A Draft PCR will be prepared and discussed with the client during the Exit Workshop. The Final PCR will be validated by the Office of Independent Evaluation (OIE). Staff will prepare a management response to OIE's Validation Report. The Validation Report and management's response will be presented to the Oversight and Assurance Committee.

TABLE 1: STAFF SKILLS REQUIRED

Period	Focus	Skills and Resources Estimate	
June – December 2017	Specific 1. Support in satisfying Conditions Precedent. 2. Provide procurement support relating to draft procurement notices, resolving procurement bottlenecks. General 1. Monitor Project Budgeting and Allocations. 2. Monitor Project Physical Works progress and quality, including field trips. 3. Monitor Project Results Framework. 4. Provide technical support to PC and Executing Agency. 5. Preparation of annual Project Supervision Report. 6. Review and certification of requests for disbursement. 7. Review of Monthly and Quarterly Reports.	Lead Project Supervisor Legal Counsel Financial Analyst Environmental Specialist Social Specialist Gender Specialist Procurement Specialist Administrative Assistant Divisional Secretary	6 weeks 1 week 1 week 1 week 1 week 0.5 weeks 1 week 2 weeks 1 week
January 2018 – December 2019	General 1. Monitor Project Budgeting and allocations. 2. Monitor progress of procurement and installation, including field trips. 3. Monitor Project Results Framework 4. Provide technical support to PC and Executing Agency. 5. Preparation of annual Project Supervision Report. 6. Review and certification of requests for disbursement. 7. Review of Monthly and Quarterly Reports.	Lead Project Supervisor Legal Counsel Financial Analyst Environmental Specialist Social Specialist Gender Specialist Procurement Specialist Administrative Assistant Divisional Secretary	8 weeks 0.5 weeks 0.5 weeks 2 weeks 2 weeks 0.5 weeks 1 week 2 weeks 1 week

APPENDIX 6.8

PROCUREMENT PLAN

I. General

1. Project Information:

Country: SVG

Borrower : GOSVG

Project Name: Energy Efficiency Measures and Solar Photovoltaic Plant

Project Executing Agency: VINLEC

2. **Bank's Approval Date of the Procurement Plan:** May 2017

3. **Period Covered By This Procurement Plan:** May 2017 to December 2018

II. 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.	ICB (Goods)		Tender Documents for works will be subject to prior review.
2.	NCB (Works)		Procurement procedures of GOSVG apply.
3.	Direct Contracting		

2. **Prequalification:** Yes

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

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

(a) To permit VINLEC to use unrestricted competitive procurement methods that reflect industry commercial practices for the procurement and installation of LED street lamps and consumption monitoring equipment. ;

(b) To extend eligibility for procurement to:

(i) countries eligible for procurement under EIB and EU-funded projects, which are not CDB Member Countries, where EIB CALC and EU-CIF SEEC resources are being used together with CDB's Equity and Market resources for the supply and installation of LED street lamps;

(ii) countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, where EU-CIF SEEC resources are being used together with CDB's Equity and Market resources for the supply and installation of the PV plant and for the Building Energy Efficiency Works. [redacted]

(c) In respect of the procurement of air conditioning units and associated parts for the Energy Efficiency Building Upgrade Component, to extend eligibility of the source and origin of equipment to all countries. [redacted] ; and

(d) Where EIB CALC funds are used procurement notices, over prevailing EU thresholds, shall be published in the Official Journal of the EU and bidders must submit the "Covenant of Integrity[1]" shall be attached to bids and contracts in the form attached hereto at the Annex.

5. Procurement Packages with Methods and Time Schedule:

1	2	3	4	5	6	7	8
Ref No.	**Contract (Description)**	**Estimated Cost (USD '000)** [redacted]	**Procurement Method**	**Prequalification (Yes/No)**	**Bank Review (Prior/ Post)**	**Expected Bid-Opening Date**	**Comments**
1	**Building Energy Efficiency**						
	AC Units	470	ICB	No	Prior		
	EE Retrofitting	420	NCB	No	Prior		
2	**PV Energy Generation**						
	PV plant	597	ICB	No	Prior		
3	**LED Street lighting**						
	Supply of LED Street Lamp and Consumption Monitoring Equipment	2,383	Direct Contracting	No	Prior	January 2018	Review of price proposal
	LED Street Lamps Installation	154	NBF	No	N/A	N/A	Provision of equipment, installation crews, miscellaneous materials and spares
	Disposal of Street Lamps & Fixtures	110	ICB	No	Prior	March 2018	-

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

III. Consulting Services

1. **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.	Firms: FBS		

2. **Short list comprising entirely of national consultants**: N/A

3. **Reference to (if any) Project Operational/Procurement Manual**: CDB Guidelines for Selection and Engagement of Consultants (2011).

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

   (a) Countries eligible for procurement under EU-funded projects, which are not CDB Member Countries, where EU-CIF SEEC resources are being used together with CDB's Equity and Market resources for inspection and certification engineering services.

5. **Procurement Packages with Selection Methods and Time Schedule**:

1	2	3	4	5	6	7
Ref No.	**Assignment (Description)**	**Estimated Cost (USD '000)**	**Selection Method**	**Review by Bank**	**Expected Proposal Submission Date**	**Comments**
1.	Engineering Services (PV site specific Investigation)		ICS	Prior	November 2017	SEEC grant funding
2.	Engineering Services (Inspection and certification)		QCBS	Prior	December 2017	OCR loan + SEEC grant funding
3.	Project Coordinator		ICS	Prior	September 2017	SEEC grant funding

IV. Implementing Agency Capacity Building Activities with Time Schedule

PLW: Schedule to be coordinated with GOSVG in the third quarter of 2017.

V. Summary of Proposed Procurement Arrangement

Project Component	CDB (USD'000)									NBF (USD'000)	Total Cost (USD'000)
	Primary	Secondary			Other						
	ICB	LIB	RCB	DC	Shopping	FBS	FA	QCBS	ICS	GOSVG	
1. LED Street Lighting, Equipment and Installation											
(a) Disposal of Street Lamps and Fixtures											
2. PV Energy Generation											
3. Land for PV Plant											
4. Building Energy Efficiency											
5. Engineering Services											
(a) Engineering Services (Inspection and certification)											
(b) Engineering Services (PV Site Specific Investigation)											
6. Project Management and Communications											
Physical Contingencies											
Price Contingencies											
IDC											
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 St. Vincent and the Grenadines from a Tenderer, Contractor, Supplier or Consultant to be attached to its Tender (or to the Contract in the case of a negotiated procedure)

1. "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.

2. 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.

3. 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*].

4. In the event that we are awarded the Contract, we grant the Government of St. Vincent and the Grenadines (GOSVG), 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.

5. For the purpose of this Covenant, Prohibited Conduct includes[1]:

(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;

[1] 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 GOSVG.

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 APUA 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 6.9

ESTIMATED QUARTERLY DISBURSEMENT SCHEDULE

Year	Quarter	EIB - CALC Loan	OCR Loan	EU-CIF Grant	DFID Grant	Finance Charges	Total	Cumulative Disbursement
2017	**Q3**	0	5	14	10	0	29	42
	Q4	0	59	171	126	27	383	379
Sub-Total		**0**	**64**	**185**	**136**	**27**	**412**	**379**
2018	**Q1**	1,219	1,447	486	319	37	3,507	4,514
	Q2	376	446	150	98	43	1,112	5,669
	Q3	351	417	140	92	46	1,047	6,668
	Q4	817	969	325	213	54	2,378	8,996
Sub-Total		**2,763**	**3,279**	**1,100**	**722**	**180**	**8,044**	**8,996**
2019	**Q1**	1,540	1,387	185	124	66	3,301	11,953
	Q2	317	285	38	26	71	736	12,612
	Q3	317	285	38	26	74	739	13,274
	Q4	317	285	38	26	77	742	13,939
Sub-Total		**2,489**	**2,242**	**299**	**201**	**287**	**5,518**	**13,939**
Total		**5,252**	**5,58**	**1,584**	**1,059**	**494**	**13,974**	**13,939**

APPENDIX 6.10

TERMS AND CONDITIONS FOR THE OPERATION OF THE SPECIAL ACCOUNT

1. After CDB has received evidence satisfactory to it that the SA has been duly opened by GOSVG at a commercial bank acceptable to CDB, GOSVG shall make a request to CDB for an amount not exceeding three months eligible expenditure to be withdrawn from the Loan Accounts and/or Grant and deposited in the SA ("the Authorised Allocation"). On the basis of such request or requests, CDB shall, on behalf of GOSVG, pay from the proceeds of the Grant and/or Loan and deposit in the SA such amount or amounts as GOSVG shall have requested.

2. Payments out of the SA shall be made exclusively for expenditures in respect of the reasonable cost of goods, works and services (including consultancy and non-consultancy services) required for the components of the Project allocated for financing by CDB as shown in the Project Cost, Phasing and Financing Plan up to the respective limits specified therein ("Eligible Expenditures").

3. GOSVG shall furnish to CDB, at regular intervals, requests for subsequent payments from the Loan and Grant to be deposited into the SA to replenish that account. Prior to or at the time of each such request, GOSVG shall furnish to CDB the documents and other evidence required by CDB for the payment or payments in respect of which replenishment is requested. On the basis of each such request, CDB shall, on behalf of GOSVG, pay from the Loan or/and the Grant and deposit into the SA such amount as GOSVG shall have requested and as shall have been shown by the said documents and other evidence to have been paid out of the SA for Eligible Expenditures.

4. For each payment made by GOSVG out of the SA, GOSVG shall, at such time as CDB shall reasonably request, furnish to CDB such documents and other evidence showing that such payment was made to meet expenditures in connection with the Project as they were actually incurred.

5. Notwithstanding the provisions of paragraph 2 hereof, CDB shall not be required to make further deposits into the SA:

(a) if, at any time, CDB shall have determined that all further payments should be made to GOSVG directly from the Loan Account or the Grant in accordance with the provisions of the Loan Agreement and/or the Grant Agreement;

(b) if GOSVG shall have failed to furnish to CDB, within the period of time to be specified in the Loan Agreement and/or the Grant Agreement any of the audit or other reports required to be furnished to CDB pursuant to the said agreements in respect of the monitoring and audit of the records and accounts for the SA; or

(c) if, at any time, CDB shall have notified GOSVG of its intention to suspend in whole or in part the right of GOSVG to receive payments from the Loan and /or the Grant pursuant to the provisions of the Loan and/or the Grant Agreements; and

(d) once the total unpaid amount of the Loan and the Grant allocated to the Eligible Expenditures, less the amount of any outstanding special commitment entered into by CDB pursuant to the Grant Agreement and the Loan Agreement with respect to the Project, shall equal ten per cent (10%) of the amount of the Grant.

6. Within the period of six months prior to the terminal disbursement date of each of the Grant and the Loan, payments from the Loan and the Grant of the remaining unpaid amount of the Grant and proceeds of the Loan allocated to the Eligible Expenditures shall follow such procedures as CDB shall specify by

notice to GOSVG. Such further payments shall be made only after and to the extent that CDB shall have been satisfied that all such amounts remaining on deposit in the SA, as of the date of such notice, will be utilised in making payments for Eligible Expenditures.

(a) If CDB shall have determined at any time that any payment out of the SA:

(i) was made for an expenditure or in an amount not eligible pursuant to paragraph 3 hereof; or

(ii) was not justified by the evidence furnished to CDB, GOSVG shall, promptly upon notice from CDB:

(aa) provide such additional evidence as CDB may request; or

(bb) deposit into the SA (or, if CDB shall so request, refund to CDB) an amount equal to the amount of such payment or the portion thereof not so eligible or justified.

Unless CDB shall otherwise agree, no further deposit by CDB into the SA shall be made until GOSVG has provided such evidence or made such deposit or refund as the case may be.

(b) If CDB shall have determined at any time that any amount outstanding in the SA will not be required to cover further payments for Eligible Expenditures, GOSVG shall, promptly upon notice from CDB, refund to CDB such outstanding amount.

(c) If the SA is inactive for a period of six (6) months, CDB shall notify GOSVG that it will request a refund of the outstanding balance unless, within ninety (90) days GOSVG submits evidence satisfactory to CDB of Eligible Expenditure financed through the SA.

(d) GOSVG may, upon notice to CDB, refund to CDB all or any portion of the funds on deposit in the SA.

(e) Refunds to CDB made pursuant to sub-paragraphs 6 (b), (c) or (d) hereof shall be credited to the Grant or the Loan for subsequent payment or for cancellation in accordance with the relevant provisions of the Grant Agreement or the Loan Agreement.

7. Once CDB has received satisfactory documentation from GOSVG for all amounts advanced to the SA, GOSVG shall furnish a bank statement to CDB showing that the account balance has been reduced to zero and the SA shall be closed.

APPENDIX 6.11

REPORTING REQUIREMENTS

Report Implementation		Frequency	Deadline for Submission	Responsibility
1.	Monthly progress reports on LED Lamps Installation by the PE - VINLEC.	Monthly	Within two weeks of the end of each calendar month commencing one month after engagement.	PC
2.	Monthly progress reports on implementation of energy efficiency measures at Government buildings and PV plant construction by the EC	Monthly	Within two week of the end of each calendar month commencing one month after engagement	PC
3.	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 installation is completed.	PC
3.	Completion Report for street lighting installation works prepared by the PE - VINLEC	-	Within three weeks of the completion of installation by VINLEC.	PC
4.	Completion report for implementation of energy efficiency measures at Government buildings by EC	-	Within three weeks of the completion of installation by VINLEC.	PC
	Completion report for implementation of PV plant by EC	-	Within three weeks of the completion of installation by VINLEC.	PC
5.	Procurement Plan Updates	Annually	In accordance with the applicable Procurement Guidelines	PC

REPORT ON INVESTMENT COST OF PROJECT

($'000)

Elements of Project	Expenditure for this Quarter	Cumulative Expenditure to Date	Projected Expenditure for the Quarter Ending	Ending	Ending	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
(1)	(2)	(3)	(4	(4)	(4)	(5)	(6)	(7)	(8)	(9)
LED street lamps supply and installation										
PV energy generation										
Engineering services										
Project Management and Administration										
Base Cost										
Physical Contingencies										
Price Contingencies										
Sub-Total										
Interest During Construction										
Commitment Charge										
Total Project Costs										

ANNEX 1 TO APPENDIX 6.11

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.

ANNEX 2 TO APPENDIX 6.11

FORM OF PROJECT COMPLETION REPORT

1. Dispatch of information: designation of the person responsible:

   (a) The information below has to be sent to CDB under the responsibility of:

Company	
Contact person	
Title	
Function/Department	
Address	
Phone	
Fax	
Email	

   The above-mentioned contact person(s) is (are) the responsible contact(s) for the time being. GOSVG shall inform CDB immediately in case of any change.

2. Information on the end of works and first 12 months of operation:

   (a) GOSVG shall deliver to CDB a completion report with the following information on project completion and initial operation after a year of the commissioning of the Project:

      (i) a brief description of the technical characteristics of the Project as completed, explaining the reasons for any significant change;

      (ii) the date of completion of each of the main Project's components, explaining the reasons for any possible delay;

      (iii) the final cost of the Project explaining the reasons for any possible cost increases vs. initial budgeted cost;

      (iv) the number of new jobs created by the Project: both jobs during implementation and permanent new jobs created;

      (v) a description of any major issue with impact on the environment;

      (vi) description of the Climate Action and/or CC resilience (adaptation) aspects of the Project and their implementation and level of success in operation to date.

      (vii) update on the Project's usage and comments;

      (viii) any significant issue that has occurred and any significant risk that may affect the Project's operation; and

      (ix) any legal action concerning the Project that may be ongoing.

APPENDIX 6.12

INDICATIVE LIST OF MATTERS TO BE COVERED UNDER THE GOVERNMENT OF ST. VINCENT AND THE GRENADINES / ST. VINCENT ELECTRICITY SERVICES LIMITED - MEMORANDUM OF UNDERSTANDING

1. Coordination of the implementation of the project will be undertaken by GOSVG through the Energy Unit in the Ministry of National Security, Air and Sea Port Development, which will be responsible for implementation of the Building Efficiency measures component of the project, and oversight of the overall project. VINLEC will oversee implementation of the Street lighting component and will liaise with the EC on matters related to the PV plant including specifications, bidding, installation and commissioning. Coordination of the project between these two entities will be facilitated through a MOU between GOSVG and VINLEC. Matters to be covered by the MOU shall include, but shall not be limited to, the following:

(a) the objective of the MOU;

(b) commitment to implement the project in accordance with the MOU, guided by the financing agreement between CDB and GOSVG;

(c) the respective roles and responsibilities of GOSVG and VINLEC;

(d) allocation of resources for the purposes of project implementation;

(e) assignment of PC by GOSVG;

(f) assignment of PE by VINLEC;

(g) responsibilities in respect of the procurement activities;

(h) PE reporting to PC for the purposes of the project;

(i) monitoring of the street lighting and PV plant activities by GOSVG;

(j) commitment to assign technical and administrative personnel to support PE as required;

(k) commitment to the environmental aspects of project implementation, and terms of the financing agreement;

(l) commitment to dispose of the existing HPS/MV lamps as proposed in the financing agreement;

(m) commitment to cooperate with the PC;

(n) commitment to comply with the Loan conditions in respect of fraud and corruption; and

(o) reporting obligations.

APPENDIX 7.1

EXCLUDED ACTIVITIES

1. GOSVG 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.

APPENDIX 7.2

EUROPEAN UNION ELIGIBILITY RULES (EU-SEEC PROGRAMME)

PARTICIPATION IN PROCEDURES FOR THE AWARDING OF PROCUREMENT CONTRACTS OR GRANT CONTRACTS

1. Participation in procedures for the award of procurement contracts financed from the contribution by the European Union (EU) to the Caribbean Development Bank (the Bank) for the implementation of the activity entitled: "Sustainable Energy for the Eastern Caribbean (SEEC) Programme", is open to international organisations and all natural persons who are nationals of, or legal persons who are established in, an eligible country.

2. Eligible countries[1] are deemed to be:

(a) Caribbean Development Bank member countries:

Anguilla, Antigua and Barbuda, Barbados, Belize, British Virgin Islands, Canada, Cayman Islands, China, Columbia, Dominica, Germany, Grenada, Guyana, Haiti, Jamaica, Italy, Mexico, Montserrat, St Kitts and Nevis, Saint Lucia, St Vincent and the Grenadines, Suriname, The Bahamas, Trinidad and Tobago, Turks and Caicos Islands, the United Kingdom and Venezuela.

(b) Members of the "African, Caribbean and Pacific (ACP) Group of States"[2]:

Africa:

South Africa[3], Angola, Benin, Botswana, Burkina Faso, Burundi, Central African Republic, Cameroon, Cape Verde, Chad, Comoros Islands, Congo, Côte d'Ivoire, Democratic Republic of the Congo, Djibouti, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Equatorial Guinea, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritius, Mauritania, Mozambique, Namibia, Niger, Nigeria, Uganda, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, Sudan, Swaziland, Tanzania, Togo, Zambia and Zimbabwe.

Caribbean:

Antigua and Barbuda, Bahamas, Barbados, Belize, Dominica, Dominican Republic, Grenada, Guyana, Haiti, Jamaica, Saint Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago.

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1 Note some countries may be eligible by virtue of more than one category

2 Cotonou Partnership Agreement of 23 June 2000 (as amended by the provisional application of Decision No 1/2000 of the ACP-EC Council of Ministers of 27 July 2000, Decision No 1/2000 of the ACP-EC customs cooperation committee of 18 October 2000, Decision No 1/2001 of the ACP-EC customs cooperation committee of 20 April 2001, Decision No 2/2001 of the ACP-EC customs cooperation committee of 20 April 2001, Decision No 3/2001 of the ACP-EC customs cooperation committee of 10 May 2001, Decision No 4/2001 of the ACP-EC customs cooperation committee of 27 June 2001, Decision No 5/2001 of the ACP-EC customs cooperation committee of 7 December 2001, Decision No 2/2002 of the ACP-EC customs cooperation committee of 28 October 2002, Decision No 1/2003 of the ACP-EC Council of Ministers of 16 may 2003, Council Decision (EC) of 19 December 2002, Decision No 1/2004 of the ACP-EC Council of Ministers of 6 may 2004, Decision No 2/2004 of the ACP-EC customs cooperation committee of 30 June 2004 and Decision No 4/2005 of the ACP-EC customs cooperation committee of 13 April 2005).

3 Natural and legal South African persons are eligible to participate in contracts financed by the 10th/11th EDF. However, the 10th/11th EDF does not finance contracts in South Africa.

Pacific:

Cook Islands, East Timor, Fiji, Kiribati, Marshall Islands, Micronesia, Nauru, Niue, Palau, Papua New Guinea, the Solomon Islands, Western Samoa, Tonga, Tuvalu, Vanuatu.

Overseas Countries and Territories:

Anguilla, Antarctic, Netherlands Antilles, Aruba, British Indian Ocean Territory, British Virgin Islands, Cayman Islands, Falkland Islands (Malvinas), French Polynesia, French Southern Territories, Greenland, Mayotte, Montserrat, New Caledonia, Pitcairn, Saint Helena, Saint Pierre and Miquelon, South Georgia and South Sandwich Islands, Turks and Caicos, Wallis and Futuna Islands.

(c) A Member State of the European Union:

Austria, Belgium, Bulgaria, Croatia, Czech republic, Cyprus, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

An official candidate country of the European Union:

The Former Yugoslav Republic of Macedonia, Turkey, Iceland, Montenegro.

A Member State of the European Economic Area: Iceland, Lichtenstein, Norway.

(d) All natural persons who are nationals of, or legal persons who are established in, a Least Developed Country as defined by the United Nations:

Afghanistan, Angola, Bangladesh, Benin, Bhutan, Burkina Faso, Burundi, Cambodia, Central African Republic, Chad, Comoros, Dem. Rep. Congo, Equatorial Guinea, Eritrea, Ethiopia, Guinea, Guinea-Bissau, Haiti, Kiribati, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique, Myanmar, Nepal, Niger, Rwanda, Sao Tome and Principe, Senegal, Sierra Leone, Djibouti, Solomon Islands, Somalia, South Sudan, Sudan, Tanzania, The Gambia, Timor-Leste, Togo, Tuvalu, Uganda, Vanuatu, Yemen, Rep. and Zambia.

(e) Participation in procedures for the award of procurement contracts or grants financed from the Facility shall be open to all natural persons who are nationals of, or legal persons established in, *any country other than those referred to in paragraph 1, where reciprocal access to external assistance has been established.* Reciprocal access in the Least Developed Countries as defined by the United Nations (UN) shall be automatically granted to the OECD/DAC members: Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Korea, Luxembourg, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, United States.

3. Services under a contract financed from the Facility may be provided by experts of any nationality, without prejudice to the qualitative and financial requirements set out in the Bank's procurement rules.

4**.** Supplies and materials purchased under a contract financed from the Facility must originate in a State that is eligible under paragraph 1. In this context, the definition of the concept of 'originating products' shall be assessed by reference to the Bank's prevailing procurement guidelines/procedures, and supplies originating in the EU shall include supplies originating in the Overseas Countries and Territories.

5**.** Whenever the Facility finances an operation implemented through an international organisation, participation in procedures for the award of procurement contracts or grants shall be open to all natural and legal persons who are eligible under paragraphs 1, care being taken to ensure equal treatment of all donors. The same rules apply for supplies and materials.

6. Whenever the Facility finances an operation implemented as part of a regional initiative, participation in procedures for the award of procurement contracts or grants shall be open to all natural and legal persons who are eligible under paragraph 1, and to all natural and legal persons from a country participating in the relevant initiative. The same rules apply for supplies and materials.

7. Whenever the Facility finances an operation co-financed with a third entity, participation in procedures for the award of procurement contracts or grants shall be open to all natural and legal persons eligible under paragraph 1, and to all persons eligible under the rules of the third entity. The same rules shall apply to supplies and materials.

Caveat: The Bank and EU eligibility requirements are subject to change by the Bank and the EU. The applicant is responsible for checking whether there have been any updates on the eligibility requirements, as well as the UN's list of Least Developed Countries.