CARIBBEAN DEVELOPMENT BANK

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

TO BE HELD IN BARBADOS

DECEMBER 8, 2016

PAPER BD 150/16

STREET AND FLOOD LIGHT RETROFITTING PROJECT – ST. KITTS AND NEVIS
(President's Recommendation No. 933)

The attached Report appraises a proposal for a loan to the Government of St. Kitts and Nevis (GOSKN) to replace all of its high pressure sodium and mercury vapour street lights and flood lights at public facilities (approximately 10,650) with high efficiency light-emitting diode lights. The expected outcome of the project is a reduction of St. Kitts and Nevis' street and flood lighting energy consumption and associated greenhouse gas emissions. The project will be executed by the St. Kitts Electricity Company Limited (SKELEC), with Nevis Electricity Company (NEVLEC) Limited (NEVLEC) as the implementing agency for Nevis. The project is estimated to cost approximately USD6.409 mn, with counterpart contribution from GOSKN, SKELEC and NEVLEC of the equivalent of USD0.040 mn USD0.304 mn and USD0.274 mn, respectively.

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

a loan to GOSKN of an amount not exceeding the equivalent of five million, seven hundred and ninety-two thousand United States dollars (USD5.792 mn) (the Loan) from the Ordinary Capital Resources (OCR) of the Caribbean Development Bank (CDB) consisting of:

(i) an amount not exceeding the equivalent of two million, two hundred and twenty- two thousand United States dollars (USD2.222 mn) allocated from CDB's Equity and Market Resources (E&M resources); and

(ii) an amount not exceeding the equivalent of three million, five hundred and seventy thousand United States dollars (USD3.570 mn) allocated from resources provided by the European Investment Bank (EIB) to CDB under the Climate Action Line of Credit (EIB CALC),

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

3. I also recommend:

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

(b) where EIB CALC resources are being used together with CDB's E&M resources, a waiver of CDB's Guidelines for Procurement (January 2006) in respect of the procurement of light emitting diode lamps and disposal of the removed fixtures, to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.

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

STREET AND FLOOD LIGHT RETROFITTING PROJECT – ST. KITTS AND NEVIS

Considered at the Two Hundred and Seventy-Fourth Meeting of the Board of Directors on December 8, 2016

BD 150/16
AR 16/12

Director *Projects Department*	*Mr. Daniel M. Best*
Division Chief (Ag.) *Economic Infrastructure Division*	*Ms. Merlyn P. Combie*

DECEMBER 2016

This Report was prepared by an Appraisal Team comprising:

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CURRENCY EQUIVALENT

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

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

ABBREVIATIONS

BMC	-	Borrowing Member Countries
CBI	-	Citizenship-by-investment
CDB	-	Caribbean Development Bank
CO_2	-	Carbon Dioxide
CRI	-	Colour Rendering Index
CRS	-	Climate Risk Screening
C-SERMS	-	Caribbean Sustainable Energy Roadmap
E&M	-	Equity and Market
ECCB	-	Eastern Caribbean Central Bank
EE	-	Energy Efficiency
EIB CALC	-	European Investment Bank Climate Action Line of Credit
ERR	-	Economic Rate of Return
ESMP	-	Environmental and Social Management Plan
ESPS	-	Energy Sector Policy and Strategy (2015)
ESRP	-	Environmental and Social Review Procedures (CDB)
EU	-	Energy Unit
GDP	-	Gross Domestic Product
GHG	-	Greenhouse Gas
GM	-	Gender Marker
GOSKN	-	Government of St. Kitts and Nevis
GWh	-	Gigawatt Hours
HDI	-	Human Development Index
HPS	-	High Pressure Sodium
IAM	-	Integrated Assessment Models
IMF	-	International Monetary Fund
ISP	-	Implementation Support Plan
IWG	-	Interagency Working Group
kWh	-	Kilowatt Hour
LED	-	Light-Emitting Diode
M&E	-	Monitoring and Evaluation
MCW	-	Ministry of Communications, Works and Public Utilities, Posts, Physical Planning and Natural Resources
MOU	-	Memorandum of Understanding
MPIPUT	-	Ministry of Public Infrastructure, Posts, Urban Development and Transport
MSD	-	Ministry of Sustainable Development
MV	-	Mercury Vapour
MWh	-	Megawatt hours
NEAP	-	National Energy Action Plan
NEP	-	National Energy Policy
NEVLEC	-	Nevis Electricity Company (NEVLEC) Limited
NIA	-	Nevis Island Administration
NPLs	-	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
PEP	-	People Employment Programme
PMN	-	Project Manager (Nevis)
PPES	-	Project Performance Evaluation System
PV	-	Photovoltaic
RE	-	Renewable Energy
RMF	-	Results Monitoring Framework
SCC	-	Social Cost of Carbon
SDG	-	Sustainable Development Goals
SDR	-	Special Drawing Rights
SIDF	-	Sugar Industry Diversification Foundation
SKELEC	-	St. Kitts Electricity Company Limited
SKN	-	St. Kitts and Nevis
TOR	-	Terms of Reference
UK	-	United Kingdom
USD	-	United States dollar
VAT	-	Value Added Tax

MEASURES AND EQUIVALENTS

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

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APPENDICES

COUNTRY DATA: ST. KITTS AND NEVIS

	2010	2011	2012	2013	2014	2015
PER CAPITA GDP (current market prices; $)	...	43,087	36,997	39,190	41,694	42,584
GROSS DOMESTIC PRODUCT (GDP)						
GDP at Current Market Prices ($mn)	1,904	2,034	1,983	2,128	2,289	2,366
Demand Components:						
Consumption Expenditure	1,650	1,708	1,622	1,448	1,473	1,791
Gross Domestic Investment	673	630	559	829	954	983
Exports of goods and non-factor services	573	706	752	877	1,007	1,027
Imports of goods and non-factor services	992	1,011	950	1,026	1,146	1,434
Gross domestic savings ratio (%)	13	16	18	32	36	24
Sectoral Distribution of Current GDP (%)						
Agriculture	1.59	1.74	1.68	1.53	1.35	1.21
Mining & Quarrying	0.13	0.12	0.12	0.19	0.19	0.17
Manufacturing	10.39	10.10	9.88	9.30	8.27	7.70
Utilities	1.63	1.57	1.66	1.40	1.43	1.50
Construction	16.19	15.56	13.07	14.81	17.70	18.98
Transport & Communication	12.21	13.02	13.26	12.73	13.03	12.33
Hotels & Restaurants	6.34	7.49	7.93	7.66	7.47	7.34
Wholesale & Retail Trade	8.82	8.63	8.02	7.97	7.54	7.65
Financial & Business Services	23.53	22.75	24.60	25.51	23.42	22.70
Government Services	17.18	17.25	18.02	17.72	18.03	18.43
Other Services	2.92	2.78	2.95	2.73	2.80	2.78
Less Imputed Service Charge	0.93	1.00	1.18	1.55	1.23	0.79
GDP at Current Factor Cost ($mn)	1,672	1,730	1,684	1,813	1,934	2,021
GDP at constant 2006 Prices ($mn)	1,518	1,505	1,493	1,591	1,673	1,754
Annual rate of growth in GDP (%)	-2.9	-0.8	-0.8	6.6	5.1	4.9
MONEY AND PRICES ($ mn)						
Consumer prices (av. annual % change)	0.8	5.8	0.8	1.1	0.2	(2.3)
Money supply (M1; annual % change)	38.6	34.5	11.5	(3.7)	11.7	7.2
Total domestic credit (net)	1,833	1,712	1,490	568	217	160
Private sector (net)	1,357	1,406	1,409	1,396	1,405	1,449
Public sector (net)	476	306	81	(828)	(1,188)	(1,289)
Non-bank financial institutions (net)	…	…	…	…	…	…
Estimated Tourism Expenditure (USD mn)	89.5	107.9	109.3	116.6	125.6	133.9
CENTRAL GOVERNMENT FINANCES ($ mn)						
Current Revenues	507.8	650.0	644.6	812.7	889.2	881.6
Current Grants	45.3	61.3	53.8	44.7	32.3	16.5
Current Expenditures	530.1	594.9	546.5	560.6	621.9	662.9
Current Account Surplus/ (Deficit)	(22.3)	55.1	98.1	252.2	267.3	218.7
Capital Revenue and Grants	12.9	9.3	10.1	24.1	34.3	7.6
Capital Expenditure and Net Lending	124.2	83.6	72.3	141.9	129.8	168.5
Overall Surplus/ (Deficit)	(133.6)	(19.3)	36.0	134.3	171.8	57.8
BALANCE OF PAYMENTS (USD mn)						
Merchandise Exports (f.o.b)	51.8	60.5	61.5	55.7	56.8	55.4
Merchandise Imports (c.i.f)	268.0	248.0	225.6	248.9	268.4	296.8
Trade balance	(216.3)	(187.5)	(164.1)	(193.2)	(211.6)	(241.5)
Net Balance on services account	41.2	56.6	73.3	118.7	129.7	118.5
Income (net)	(30.0)	(29.7)	(18.0)	(20.3)	(20.8)	(27.6)
Transfers (net)	46.5	46.6	45.4	45.1	43.4	38.0
Current Account Balance	(158.5)	(114.1)	(63.3)	(49.7)	(59.4)	(112.6)
TOTAL PUBLIC DEBT (USD mn)						
Total public debt	1103.3	1104.1	1013.0	796.3	689.6	620.0
Domestic debt outstanding	764.4	728.9	694.8	474.8	387.0	392.9
Long term	...	...	...	...	...	...
Short term	...	...	...	...	...	...
External debt outstanding	338.9	375.2	318.2	321.5	302.7	227.1
Debt Service	50.5	57.6	31.6	23.5	20.9	35.1
Amortisation	32.8	43.5	24.7	15.8	13.8	28.2
Interest Payments	17.7	14.1	6.9	7.7	7.1	6.8
External debt service as % of exports of goods and services	23.4	22.5	11.9	7.6	6.5	11.3

	2010	2011	2012	2013	2014	2015
Total debt service as % of current revenue	29.1	22.0	57.3	16.0	26.0	12.5
AVERAGE EXCHANGE RATE						
EC dollars per US dollar	2.7	2.7	2.7	2.7	2.7	2.7

COUNTRY DATA: ST. KITTS AND NEVIS

	2010	2011	2012	2013	2014	2015
POPULATION						
Mid-Year Population ('000)		47.2	53.6	54.3	54.9	55.6
Population Growth Rate (%)	(100.0)	...	13.6	1.3	1.1	1.2
Crude Birth Rate	12.5	...	...	...	...	...
Crude Death Rate	6.6	...	...	...	...	...
Infant Mortality Rate	18.3	...	...	7.8	...	...
EDUCATION						
Net School Enrollment Ratio (%)						
Primary	83.2	84.6	81.0	79.5	79.0	...
Secondary	88.3	85.9	70.1	85.0	82.9	...
Pupil-Teacher Ratio						
Primary	14.1	13.1	15.1	14.5	13.8	...
Secondary	9.3	9.2	8.2	12.4	8.5	...

	2000	2010	2014	2015
INDICATORS OF HUMAN DEVELOPMENT				
HEALTH AND EDUCATION				
Life Expectancy at Birth (years)	70.2	72.9	73.8	…
Human Development Index	…	0.739	0.752	…
HOUSING AND ENVIRONMENT				
Households with electricity (5%)				98%

Source(s): IMF, ECCB, UN, World Bank, GOSKN

… not available

Data as at November 7, 2016

NB: 2011 Mid-year population is based on census data. Other population data reflect IMF estimates.

LOAN AND PROJECT SUMMARY

Financial Terms and Conditions			
Borrower:	Government of St. Kitts and Nevis (GOSKN)	**Amortisation Period:**	Ordinary Capital Resources (OCR): 8 years
Executing Agency:	St. Kitts Electricity Company Limited (SKELEC)	**Grace Period:**	OCR: 3 years
		Disbursement Period:	First Disbursement Date: September 30, 2017
Implementing Agency: (in Nevis)	Nevis Electricity Company (NEVLEC)Limited (NEVLEC)		Terminal Disbursement Date: December 31, 2018

Source	**Amount (USD'000)**		
OCR - Loan: Equity and Market (E&M) Tranche	2,222	**Interest Rate: E&M Tranche**	2.97 % per annum (p.a.) variable
OCR Loan: European Investment Bank-Climate Action Line of Credit (EIB CALC) Tranche	3,570	**Interest Rate: EIB CALC Tranche (indicative)**	1.89 % p.a. variable
Sub-Total Loan	**5,792**	**Commitment Fee:**	1% p.a. on the undisbursed balance of the Loan, commencing from the 60th day after the date of the Loan Agreement.
Counterpart	617		
Total:	**6,409**		
Sector Code:	23183	**Sector:**	Energy conservation and demand-side efficiency.

Risk Management	
Country Rating:	[redacted]
Outlook:	

Lending	**(USD '000)**
Undisbursed:	1.8
Outstanding Loans:	35.1
Exposure (Outstanding + 50% Undisbursed):	[redacted]

Commentary: [redacted]

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

Project Summary

Project Outcome and Description:

The expected outcomes of the Project are: (a) reduced street and flood lighting energy consumption and associated greenhouse gas (GHG) emissions in SKN; and (b) enhanced capacity of SKELEC and NEVLEC in climate change adaptation planning. The proposed project consists of the following components:

(a) Light-Emitting Diode (LED) Lamps Supply and Installation.

(b) Supervision Consulting Services.

(c) Climate Risk Screening.

(d) Project Management and Administration.

Exceptions to CDB's Policies:

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

(b) A waiver of CDB's Guidelines for Procurement (January 2006), where EIB CALC resources are being used together with CDB's E&M resources for the supply of LED lamps and disposal of the removed fixtures, to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.

CDB Country Outcomes – Key Outputs:

CDB's Results Framework:

No	Indicator	2018	2019
1.	Energy savings as a result of Energy Efficiency /Renewable Energy interventions (MWh/year)	2,624	5,248

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

Gender Marker Summary:

Gender Marker	Analysis	Design	Implementation	Monitoring and Evaluation	Score	Code
	0.25	0	0	0	0.25	**NO**[1]

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

1. STRATEGIC CONTEXT AND RATIONALE

LOAN REQUEST

1.1 By letter dated September 20, 2016, GOSKN requested financing from CDB to replace all of its High Pressure Sodium (HPS) and Mercury Vapour (MV) street lights with high efficiency LED systems. GOSKN subsequently requested that the assistance also cover the retrofitting, with LEDs, of other existing luminaires providing area lighting at public facilities, GOSKN proposes to replace a total of 10,650 existing lamps.

MACROECONOMIC CONTEXT

1.2 Over the past five years, the SKN economy has seen a remarkable turnaround. The economy contracted in the years following the Great Recession, but growth has averaged 5.5% since 2012, mainly reflecting construction activity related to the CBI programme, as well as increased tourism arrivals. The Government's fiscal surplus remained high as a result of strong tax revenue, which more than offset higher spending, and the public debt-to-GDP ratio fell precipitously. Buoyant economic growth continued in 2015, although at a slightly lower rate of 4.9% as CBI activity slowed. The deceleration of the pace of economic growth is expected to continue into the medium term, when growth is expected to average about 2.5% per year, although the International Monetary Fund (IMF) still expects higher growth of 3.5% this year and in 2017[2]. In the baseline scenario, this should permit further fiscal consolidation and a continuation in the reduction of the debt burden.

1.3 Fiscal policy has been expansionary and pro-cyclical in recent years. In 2015, the underlying general government budget deficit stood at a high 8.6% of GDP, when calculated as the total government balance net of CBI fees, the Sugar Industry Diversification Foundation (SIDF) grants, and investment proceeds; and including the cost of the People Employment Programme (PEP). Notwithstanding the fiscal challenges ahead, SKN is expected to reach the Eastern Caribbean Currency Union's 2030 debt-to-GDP target (60%) in 2017, well ahead of other member countries. Downside risks to reaching the debt target mainly stem from uncertainty regarding future CBI revenue.

SOCIAL CONTEXT

Population and Demographic Characteristics

1.4 At the most recent population census in 2011, the population of the twin island country was recorded at some 47,196, with 34,918 of the population resident in St. Kitts and 12,278 in Nevis. Overall, improvements in population wellbeing are evident in health and education indicators. In 2014, life expectancy from birth was 73.8 years, an increase of 8.8 years from 1980. At the end of 2015, SKN reported advancements on some of the Millennium Development Goals and gender equality targets, including reduced levels of maternal and infant mortality, achievements in universal access primary education, and reductions in fertility rates. Wellbeing is however not evenly distributed across the population and, therefore, poverty and social vulnerability still persist in pockets across the two islands.

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[2] IMF Country Report No. 16/250 (July 2016), St. Kitts and Nevis 2016 Article IV Consultation – Press Release: and Staff Report, www.imf.org

Poverty and Human Development

1.5 The latest poverty assessment was conducted in 2007[3]. Poverty was estimated at a national average of 21.8% (23.7% in St. Kitts and 15.9% in Nevis), a reduction from 30.5% estimated in 2000, but levels which were still unacceptably high, and gains in poverty reduction continue to be threatened by the unique socio-economic dynamics of the country. The country's Human Development Index (HDI) for 2013 was 0.750, in the high human development category. This positioned SKN at 73 out of 187 countries and territories. Data on crime and violence in SKN indicates that the country has a moderate crime rate. Crime, however, began to rise from 2008 with the global economic downturn. With the increased levels of crime, the disproportionately higher involvement of young men in crime and violence, in gangs and the drug trade, as well their engagement in violence against women and each other, became a great concern. Appendix 1.1 provides additional details on SKN's Macroeconomic and Macro-Social conditions.

ENERGY SECTOR ANALYSIS

Organisation, Structure and Regulation

1.6 In SKN, both islands are served by state-owned electric utility companies, namely SKELEC and NEVLEC. Both utilities are responsible for the generation, transmission, distribution and sale of electricity in their respective jurisdictions, subject to the Electricity Supply Act 2011 and Nevis Electricity Ordinance 1998 (revised 2009). In 2015 an amendment to the Electricity Supply Act for St. Kitts was passed to establish a legislative framework for feed-in and net metering schemes for Renewable Energy (RE).

1.7 In St. Kitts, the Ministry of Public Infrastructure, Posts, Urban Development and Transport (MPIPUT) has overall responsibility for the energy sector, including strategic decisions and planning. The Ministry of Sustainable Development (MSD), with responsibility for the environmental management and for supporting sustainable development policies, is a key partner. The Ministry of International Trade, Industry, Commerce and Consumer Affairs is responsible for the taxation and regulation of imported petroleum products as fuel for the utilities. The Public Utilities Act of 2011 provided for the establishment of a Public Utilities Commission which would serve as the regulator for the electricity sector. However, the commission is not yet operational and, as a result, the utility is largely self-regulating, establishing tariffs in consultation with GOSKN.

1.8 Within the Nevis Island Administration (NIA), the Ministry of Communications, Works and Public Utilities, Posts, Physical Planning and Natural Resources (MCW) provides overall directions and strategy in the energy sector for Nevis. In the absence of a regulator, NEVLEC is also largely self-regulated. Organisation charts for the SKELEC and NEVLEC are shown at Appendix 1.2.

Energy and Electricity Supply

1.9 SKN, like many of CDB's Borrowing Member Countries (BMCs), exhibits a high dependence on imported petroleum products to power its economy. It also has a high electricity consumption per capita, about 20 percent higher than the Latin American and Caribbean average[4]. In 2013, around 87% percent of the total energy supply of 1,949.5 barrels of oil equivalent per day[5] was imported. About 10% was supplied through combustible renewables and waste, and 3% from solar and wind. In 2011, the national

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3 KAIRI (2009): Country Poverty Assessment St. Kitts and Nevis 2007/08 - Living Conditions in a Caribbean Small Island Developing State. The study was funded, in part, by CDB.

4 IDB Challenges and Opportunities for the Energy Sector in the Eastern Caribbean, 2015

5 IDB Challenges and Opportunities for the Energy Sector in the Eastern Caribbean, 2015

fuel bill in SKN represented as much as 10% of GDP[6], whereas electricity-related fuel imports were equivalent to about 8% of GDP[7].

1.10 SKELEC and NEVLEC operate their own diesel generation plant. Generation details of both utilities are described in Table 1.1. The electricity networks are not interconnected. The average annual increase of electricity demand is about 5% across both islands. Despite the current downward pressure on oil prices, electricity costs to the consumer, remain relatively high, adversely influencing economic development.

TABLE 1.1: GENERATION DETAILS OF ST. KITTS AND NEVIS ELECTRIC UTILITIES

Item	St. Kitts	Nevis
Installed generation capacity	43 MW	13.4 MW
Total electricity generation	150 GWh	56 GWh
Peak demand	24 MW	10.4 MW
Renewable energy generation capacity	1.3 MW	2.2 MW
Street lighting electricity consumption	5,080 MWh	5,860 MWh
Street lighting electricity consumption as share of island wide consumption	3.2%	2.2%

Renewable Energy and Energy Efficiency Deployment

1.11 To date approximately 3.5 MW RE capacity has been installed in SKN. Some small-scale distributed PV systems are installed across the islands, but the current absence of a licensing framework does not facilitate recording of installed capacity. In addition, GOSKN has embarked on programmes to enhance Energy Efficiency (EE) in public buildings and to retrofit street lamps with high efficiency LED systems. In the medium term, additional wind, solar, and geothermal development is planned[8].

Street Lighting Service

1.12 SKN's street lighting system consists of approximately 10,523 lamps nation- wide, of which 6,023 lamps are installed in St. Kitts. To date around 1,150 lamps have been already replaced with LEDs through a bi-lateral aid project. Approximately 50 additional lamps are installed per year on each island. In respect of new residential developments or ad-hoc requests, SKELEC and NEVLEC conduct verification visits and plans and installs requested lamps accordingly. Damaged street lamps are identified by both utilities during routine inspections or through reports by citizens, and the required maintenance is then effected. In addition to the street lamps, approximately 1,021 conventional flood lights are installed to provide lighting at sporting facilities, parking areas or for lighting of government facilities. The majority of these lamps are metered and billed separately. About 14% of the combined street lighting bill to GOSKN and NIA is in respect of security lighting and area lighting for recreational facilities.

1.13 For its service, SKELEC bills GOSKN, and NEVLEC the NIA, according to the street lighting tariff. Current tariffs are set $0.65/kWh and $0.68/kWh for St. Kitts and for Nevis, respectively. This covers the cost for electricity, including the fuel variation charge as well as the maintenance costs. Being controlled by photocells, street lamps work autonomously from dusk till dawn. Based on the average operation time of 4,015 hours per year per lamp and the technical specification of the lamps, the energy

6 Energy Snapshot: St. Kitts and Nevis; Energy Transition Initiative 2015

7 Revised National Energy Policy, 2014

8 Energy Snapshot: St. Kitts and Nevis; Energy Transition Initiative 2015

consumption of the entire network is calculated and used to determine the operating costs of the network for billing purposes. The majority of the flood lights are metered and billed according to the consumption and have an average operation time of 1,387 hours per year.

COUNTRY SECTOR STRATEGY

1.14 SKN's energy sector transition is guided by the National Energy Policy (NEP), which was approved in 2011[9]. In 2014, the NEP was revised and expanded with a National Energy Action Plan (NEAP). The guiding principle in NEP and NEAP is to establish sustainable, affordable and secure energy supplies through diversification of energy sources, energy efficiency and conservation, and the accelerated deployment of RE. Besides the Caribbean Sustainable Energy Roadmap (C-SERMS) target[10], GOSKN has established an ambitious RE agenda, with plans to rapidly move to producing 100% of SKN's electricity from RE sources, including geothermal, solar and wind sources. The document calls for policy actions in areas like diversification of the energy matrix, EE and conservation. NEAP proposes energy saving programmes in the government sector and highlights EE as an important instrument to opportunities to reduce financial pressure and costs[11]. To better coordinate activities in the sector, GOSKN intends to establish an Energy Unit (EU) within MPIPUT during 2017.

1.15 In relation to climate change mitigation, the GOSKN Nationally Determined Contribution[12] under the United Nations Framework Convention for Climate Change, set a target to reduce GHG emissions by 22% and 35% in the business as usual scenario for 2025 and 2030, respectively. This shall be achieved by, among other measures, deploying 45 MW of RE and reducing national energy consumption by 5%.

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

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

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

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9 IDB Challenges and Opportunities for the Energy Sector in the Eastern Caribbean, 2015

10 http://www.worldwatch.org/system/files/nPhase%201%20C-SERMS%20Summary%20for%20Policymakers%20(1).pdf [Accessed November 16, 2016]

11 Energy Action Plan for St. Kitts and Nevis 2010

12 The Intended National Determined Contributions for the Federation of St. Kitts And Nevis, UNFCC

(c) CDB's ESPS which has as one of its areas of focus "promoting EE for more affordable and stable energy costs, and for establishment of a green economy".

(d) CDB's Country Strategy Paper - St. Kitts and Nevis 2013-2016 in which Strengthening Resilience by Improving Environmental Sustainability is a Strategic Objective, and Strengthened Environmental Management is a key outcome. Improving environmental sustainability includes the promotion of greater EE and making better use of RE sources.

RATIONALE FOR PROJECT

1.18 Most of the energy demand in St. Kitts and Nevis (approximately 87%) is satisfied through imported oil products[13], including 95% of the electricity generated by the country's two electric utilities[14]. Maintaining and expanding the provision of street lighting has been a national priority because of its vital role in enhancing road safety, the sense of personal safety of road users, and the security of adjacent private and public properties. These factors are of particular significance in areas that host many visitors during the tourist season. The tourism sector is a major revenue and foreign exchange earner for SKN. However, the lighting service is provided at high cost to GOSKN. The retrofitting of existing lamps will increase the energy efficiency of street lighting, thereby reducing the street lighting and flood lighting electricity bill to GOSKN and NIA's by approximately 44%, facilitating the reallocation of resources to other development needs.

1.19 In addition, the project will help to strengthen the fledgling environmental management arrangements within both utilities, through enhancing their climate change planning capacity, facilitating the disposal of existing lamps and the hazardous materials they contain in accordance with recommended practices for the disposal of hazardous wastes, and by reducing the contribution of street lighting to the greenhouse gas emissions by 3,606 tonnes per year (53%).

2. PROJECT DESCRIPTION

PROJECT OUTCOME

2.1 The expected outcomes of the Project are (a) reduced street and flood lighting energy consumption and associated GHG emissions in SKN; and (b) enhanced capacity of SKELEC and NEVLEC in climate change adaptation planning. A Design and Monitoring Framework is presented at Table 2.1. Details of the Project are provided at Appendix 2.1.

2.2 The proposed project consists of the following components:

(a) LED Lamps Supply and Installation: the supply of LED street lamps, flood lighting lamps and consumption monitoring equipment, installation by SKELEC/NEVLEC crews, and the appropriate disposal of the old street lamp fixtures.

(b) Supervision Consulting Services: consulting services to supervise project implementation, including procurement support, certification of payments and monitoring of installation and disposal.

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[13] Challenges and Opportunities for the Energy Sector in the Eastern Caribbean. IDB October 2015.

[14] 2015 Article IV Consultation and First Post-Program Monitoring Discussions - Press Release and Staff Report. IMF. September 2015

(c) Climate Risk Screening (CRS): consulting services to assess the vulnerability of SKELEC and NEVLEC operations to climate risks and to recommend adaptation strategies.

(d) Project Management and Administration.

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 St. Kitts and Nevis.	1. Annual Savings of 151,000 imperial gallons of imported oil by SKELEC from 2019. 2. Annual Savings of 154,000 imperial gallons of imported oil by NEVLEC from 2019.	SKELEC's and NEVLEC's records.	**Assumptions for Achieving Impact** Transformation and production efficiency of the fossil fuel plant remains as projected.
2. OUTCOME: 1. Reduced GOSKN street and flood lighting energy consumption and associated greenhouse gas emissions. 2. Enhanced capacity of SKELEC and NEVLEC in climate change adaptation planning.	1a. Annual savings in street lighting energy consumption in St. Kitts of 2,735 MWh/year from 2019. 1b. Annual savings in street lighting energy consumption in Nevis of 2,513 MWh/year from 2019. 1c Annual Saving in CO^2 by SKELEC of 1,879 tonnes from 2019. 1d. Annual Saving in CO2 by NEVLEC of 1,727 tonnes from 2019. 2a. Climate Change Action Plan approved by SKELEC by December 31, 2018. 2b. Climate Change Action Plan approved by NEVLEC by December 31, 2018.	1. SKELEC's and NEVLEC's production records. 2. SKELEC's and NEVLEC's management reports. 3. GOSKN electricity bills.	**Assumptions for Achieving Outcome** Carbon content per unit of fuel utilised remains constant.
3. OUTPUTS: Fully installed and commissioned LED lamps.	10,650 LED lamps installed and operational by December 31, 2018.	1. Project Completion Report (PCR). 2. SKELEC's and NEVLEC's records. 3. Consultant's progress reports.	**Assumptions for Achieving Project Outputs** Installation activities are not adversely affected by natural hazard events.
4. INPUTS	**($000)**		**Assumptions for Provision of Inputs**

	CDB	GOSKN	SKELEC	NEVLEC	TOTAL
1. LED Lamps Supply & Installation					
2. Supervision Consulting Services	13,936		448	448	14,832
3. Climate Risk Screening					
4. Project Management & Administration					
5. Contingencies	1,702	107	373	293	2,475
6. IDC and Commitment Fees					
Total Financing	15,638	107	820	740	17,305
USD Equivalent	5,792	40	304	274	6,409

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.

Inflation does not exceed 2.5% p.a. in 2017 in 2018.

TABLE 2.1: RESULTS MONITORING FRAMEWORK

	(Baseline) 2016	Targets					Report and Frequency	Responsibility for Data Collection
		2017	2018	2019	2020	2025		
Project Impact Indicators:								
Annual Savings of imported oil by SKELEC (imperial gallons/year)	0	0	75,460	151,000	151,000	151,000	Annually	MSD
Annual Savings of imported oil by NEVLEC (imperial gallons/year)	0	0	77,000	154,000	154,000	154,000	Annually	MSD
Outcome Indicators:								
Annual savings in street lighting energy consumption in St. Kitts (MWh/year)	0	0	1,368	2,735	2,735	2,735	Annually	MSD
Annual savings in street lighting energy consumption in Nevis (MWh/year)	0	0	1,257	2,513	2,513	2,513	Annually	MSD
Annual savings in CO2 by SKELEC (tonnes)	0	0	939	1,879	1,879	1,879	Annually	MSD
Annual savings in CO2 by NEVLEC (tonnes)	0	0	863	1,727	1,727	1,727	Annually	MSD
Output Indicators:								
Additional LED lamps installed in St. Kitts(number)	0	0	5,550	5,550	5,550	5,550	Quarterly, during installation	PC
Additional LED lamps installed in Nevis (number)	0	0	5,100	5,100	5,100	5,100	Quarterly, during installation	PC

LESSONS LEARNED

2.3 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 procurement arrangements must ensure that lamps are appropriate for the specified client requirements.	The technical specifications for the LED lamps will be informed by the experience of SKELEC and NEVLEC with their existing street light installations, especially LEDs, and particularly with regard to durability under coastal conditions. The bidding process will provide for field testing of the equipment proposed by bidders to verify illumination and consumption levels. The criteria for consideration of the field tests in the evaluation will be developed by SKELEC/NEVLEC with the support of the Supervision Consultants and included in the bidding documents. In addition, SKELEC/NEVLEC will liaise with counterparts in St. Lucia and Antigua and Barbuda to share lessons of experience as the related projects are implemented.
2.	Effective measurement and monitoring is necessary to assess impact of efficiency improvements and verify savings.	Consumption Monitoring Equipment has been included in the project to measure the actual energy consumption of a sample of the lamps in field conditions.
3.	Collaboration and coordination are needed at the federal level to foster ownership and efficient implementation.	The project management arrangements have been designed to leverage the collaborative relationship the utilities share to optimise procurement and reporting functions, while maintaining independent responsibility for installation activities.
4.	Disposal of disused HPS and MVP lamps must consider their hazardous waste content.	The project makes provision for the export and adequate disposal of the disused lamps containing hazardous waste materials.

3. FINANCING STRUCTURE AND COSTS

PROJECT COSTS

3.1 The Project is estimated to cost $17.3 mn, which will be financed with resources from CDB, GOSKN, SKELEC and NEVLEC. Cost estimates for the supply of LED lamps and consumption monitoring equipment are based on unit rates from recent contracts in SKN and neighbouring countries and market research by CDB staff, as are the estimates for the disposal services. Estimates of the cost of consulting services are based on prevailing rates, and the estimates of installation costs are based on current operational costs provided by SKELEC and NEVLEC. CDB staff are satisfied that these cost estimates and the applied contingencies are adequate. A summary of the Project Cost and Phasing Plan is shown in Table 3.1, and a detailed Project Cost, and Phasing Plan is presented at Appendix 3.1.

3.2 The proposed supply and installation of LED lamps and disposal of the removed fixtures conforms to the relevant eligibility criteria set out by EIB under the EIB Climate Action Line of Credit (EIB CALC). It is proposed that an amount of USD3.570 mn be allocated to the Project from the EIB CALC resources provided by EIB to CDB under the EIB CALC Finance Contract.

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

Items	CDB E&M and EIB CALC Loan	GOSKN	SKELEC	NEVLEC	Total
1. LED Lamps Supply and Installation	13,504	-	299	299	14,102
2. Supervision Consulting Services	432	-	-	-	432
3. Climate Risk Screening	-	-	149	149	297
4. Project Management and Administration	-	100	297	223	619
Base Cost	**13,936**	**100**	**744**	**670**	**15,450**
5. Physical Contingencies[1]	762	5	60	56	833
6. Price Contingencies[2]	367	2	16	14	400
Total Project Cost	**15,065**	**107**	**820**	**740**	**16,732**
7. IDC and Commitment Fees	573	-	-	-	573
Total Financing	**15,638**	**107**	**820**	**740**	**17,305**
USD	**5,792**	**40**	**304**	**274**	**6,409**
Percentage Financing	**90**	**1**	**5**	**4**	**100**

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

[2] ibid

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

3.3 The Project will be financed by:

(a) a loan to GOSKN from CDB's OCR of an amount not exceeding the equivalent of USD5.792 mn (the Loan) comprising:

(i) an amount not exceeding the equivalent of USD2.222 mn allocated from CDB's Equity and Market resources (the E&M tranche) and

(ii) an amount not exceeding the equivalent of USD3.570 mn allocated from resources provided to CDB by EIB under the Climate Action Line of Credit (EIB CALC).

(b) counterpart funding of $1.667 mn from GOSKN, SKELEC and NEVLEC, comprising:

(i) $0.107 mn from GOSKN towards project management and administration.

(ii) $0.820 mn from SKELEC, towards installation costs, CRS and project management and administration;

(iii) $0.740 mn from NEVLEC towards installation costs, CRS and project management and administration; and

3.4 Incentivising investment in both EE and RE has been occupying the attention of the Bank since its strategic plan 2010-2014, as these are important means of reducing the carbon footprint of BMCs and enhancing energy security. In light of this, CDB has sought to package its available resources with concessionary terms for the purpose of providing this incentive, including a larger portion of loan financing, thereby reducing the cash counterpart contribution of the BMC.

3.5 SKN will be the third BMC intending to accelerate the replacement of its entire network of street lamps, thereby realising early reductions in energy consumption and associated GHG emissions and accruing substantial savings in expenditure by GOSKN for street lighting. The replacement of an entire network of street lights in less than two years is a significant undertaking for any electric utility and one that largely benefits the government and its climate change agenda. In the context of relatively small domestic markets, special incentives are required.

3.6 Both the E&M Tranche and EIB CALC Tranche will be repayable over a period of 11 years, inclusive of a 3-year grace period. The interest rate on the E&M Tranche is currently 2.97% (variable). However, the EIB CALC Tranche attracts an interest rate subsidy which is currently estimated at 1.08% p.a., yielding an indicative interest rate of 1.89% 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 date of the Loan agreement.

4. PROJECT VIABILITY

TECHNICAL ANALYSIS

General

4.1 In keeping with GOSKN's strategy to decrease energy consumption in all sectors and reduce GHG emissions through avoided electricity generation, the Project was identified as a priority for EE improvements, as significant savings can be achieved with reasonable investments. In an earlier phase, SKN replaced around 1,150 existing street lamps with LED lamps to showcase advantages of EE technologies. Therefore, both utilities were able to collect first-hand experience on the technical quality of LED street lamps, their installation requirements and operation.

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

Lighting Retrofitting Options

4.2 For lighting retrofit projects, there are two options, namely Induction and LED lamps. Induction lamps represent a more efficient alternative than existing HPS/MV lamps, reducing energy consumption by approximately 30%. However, LED technology is a more efficient technology, achieving reduction in energy consumption of more than 50% in comparison with HPS and MV lamps. Because of the lower efficiency and the mercury content of induction lamps, this solution was not considered. Within the past few years LED street lighting has become a mature technology and various countries in the region have embarked on replacement projects using LEDs. LED is recognised as the new standard for street lighting due to its high efficiency, flexible lighting design and robustness. Similar to street lighting, LED flood lights have become a best practice with various available models for different purposes. Solar PV powered LED lamps were not considered as a viable solution because of the significant higher life-cycle costs and stringent maintenance requirements for batteries and panels. Studies have demonstrated that grid-tied LED streetlights are the more cost-effective option.

LED Street Lamps

4.3 In addition to lower energy consumption, the other main benefits of the LED street lamps are:

(a) Higher lighting quality and improved visibility of objects by higher Colour Rendering Index (CRI) (70 vs. 22 for HPS) and colour temperature of 5,000K, more uniform light distribution and adjustable distribution patterns;

(b) Long nominal lifetime, typically greater than 100,000 hours, and tool-less and modular design, leading to decreased frequency of repair and maintenance costs; and

(c) Redundant design, ensuring lighting in the event of a single LED failure.

Design Considerations

4.4 Dispersion patterns are typically part of the light engine module and will be selected according to the specific needs of the location to allow optimal illuminance without compromising safety. Available dispersion patterns are described in Appendix 4.1. The new street lamps will be installed at the same location as the old ones, reusing existing street lighting poles. The replacement of the existing lamps also gives SKELEC/NEVLEC the opportunity to inspect the structural condition of poles and address potential issues. The first phase of the LED street lamps, has demonstrated compatibility with local power parameters and ensured that there are no power quality issues which could affect the operation negatively. As in the current networks, LED street lamps will be individually controlled by photocells.

4.5 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 250W, 175W, 150W and 70W HPS/MV lamps with LED lamps having wattages lower than 145W, 100W, 90W and 50W, 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.

LED Flood Lighting

4.6 In terms of energy saving and lighting quality, LED flood lighting achieves similar benefits to LED street lights making them a viable alternative. Despite the lower average operation time, the high wattage of conventional flood lights (1,000 W and 1,500 W) lead to significant energy consumption which

can be reduced by approximately 64% through an LED retrofit. Flood light fixtures can be replaced by LED fixtures for security applications and parking areas on a one to one basis. However, lighting retrofit projects for sports grounds would require more detailed design in order to avoid issues of insufficient lighting or glare. Where appropriate, flood light installations will be equipped with timers to enable automatic switch-off after use.

STREET LIGHTING TARIFF SAVING TO GOSKN

4.7 The billings to GOSKN and NIA by SKELEC and NEVLEC, respectively, for street/flood lighting are expected to be reduced as a result of the proposed Project. The reduction in street lighting electricity costs will be based on the reduction in consumption of the new LED lamps as they are installed over the implementation period from Q1 to Q4, 2018. Between 2019 and 2037, estimates of savings to GOSKN's electricity billings average approximately $1.12 mn p.a., and NIA's savings average approximately $1.08 mn p.a. In Nevis, the number of lamps used to calculate the bill to NIA is less than the actual number installed and NEVLEC has agreed that the billing is to be updated. The savings calculated are based on the assumption that by 2018, the billing will reflect the actual number of lamps in use. Key assumptions are found in Appendix 4.2, with details of the savings in Appendix 4.3.

ECONOMIC ANALYSIS

4.8 The economic benefits of the project are assessed based on a comparison of the "with project" and "without project" scenarios. Without the project, street/flood lighting will be provided by less energy efficient HPS/MV lamps. With the project, the HPS/MV lamps will be replaced with more efficient LED lamps over a period of approximately nine months, reducing the electricity required to provide this service.

4.9 The economic benefits of the project include a reduction in fuel consumption, and operations and maintenance (O&M) costs, as well as a decline in CO_2 emissions, as a result of the use of the more energy efficient lamps. It is estimated that diesel consumption for electricity generation will be reduced by 305,000 imperial gallons from 2019, due to reductions in electricity consumed of 5,248 MWh per year. In addition, GHG emissions of 3,606 tonnes would be avoided annually.

4.10 Further, the Project would 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/MV 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 lamp. The analysis determined that the annualised maintenance cost for HPS/MV lamps is $64.8, compared to $34.7 for LED lamps.

4.11 In valuing the avoided GHG 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 GHG emissions 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

4.12 The Economic Rate of Return (ERR) is based on the assumptions listed in Appendix 4.4, with details of those calculations shown in Appendix 4.5. The Project provides an estimated ERR of 20%. This ERR is a conservative estimate of the benefits to the society, given that there are other qualitative

benefits such as improved security to citizens and tourists. This project will also help to reduce SKN reliance on imported fuel, decreasing its exposure to fluctuations in fuel prices.

Sensitivity Analysis

4.13 A sensitivity analysis was carried out to test the robustness of the ERR when key variables are changed. The results of this analysis are shown in Table 4.1. This analysis shows that the ERR is more sensitive to changes in capital costs than it is to changes in any of the other variables tested. For all of the variables under review, the ERR was above the threshold of 12% when they were varied by 10% indicative of the Project's economic resilience.

TABLE 4.1: SENSITIVITY ANALYSIS

Scenario	ERR %		Switching value
	+10%	-10%	
1. Base Case	20	20	
2. Capital costs	18	22	53
3. Reduction in energy consumption with LEDs	22	18	-39
4. Fuel costs	21	18	-50

4.14 For the ERR to fall below 12%, capital costs would have to increase by 53%, or the estimated electricity savings would have to fall by 39%. However, as capital costs are based on known rates, the risk of the ERR falling below 12% due to an increase in this this variable is relatively low. The empirical evidence provided by the pilot projects in Antigua and Barbuda, St. Lucia and St. Vincent and the Grenadines have confirmed the level of energy savings which may be achieved by retrofitting, reducing the risk. The cost of fuel is an important factor in determining the ERR. As fuel costs increase, so too do the economic benefits realised by the Project. The unit fuel cost is assumed to be $0.41/kWh in St. Kitts and $0.47/kWh in Nevis based on the average fuel price over the past 3 years and the average 2015 efficiency [MWh/Ig] of both plants. Only an unlikely reduction in crude oil prices to less than USD 30/barrel would cause the Project to fail the 12% hurdle rate.

ENVIRONMENTAL ASSESSMENT

4.15 The project is categorised "B" based on CDB's Environmental and Social Review Procedures (ESRP), as it will result in a limited number of specific environmental impacts which are site specific and readily mitigated.

Impacts

4.16 The primary environmental issues are: the need to employ appropriate health and safety procedures to protect the workers installing the lamps and the general public; and to ensure the appropriate disposal of the existing lamps which contain mercury, a hazardous material which could migrate to groundwater or become airborne. The St. Kitts Solid Waste Management Act, 2009 requires that any waste generated does not present risk to human health, safety, or the environment. However neither the St. Kitts Solid Waste Management Corporation nor the Nevis Solid Waste Management Authority has the capacity for managing hazardous waste. The project components will include services for appropriate disposal of the existing lamps and fixtures, and their shipment to a certified hazardous waste management facility outside of SKN. The Supervision Consultants will be required to assist the utilities to: (a) establish

procedures for the safe handling and storage of disused lamps; and (b) train workers about safe practices for handling and storing existing lamps prior to disposal.

4.17 There is the potential for occupational injury through falls and electric shocks; injuries to the public from traffic accidents during installation; and short term disruption of vehicular and pedestrian traffic during the Project. These impacts will be mitigated through proper planning and the application of appropriate health and safety and emergency response procedures by SKELEC and NEVLEC.

4.18 Environmental benefits of the project include reduced air pollution through the reduction of CO_2 emissions. This will contribute to the planned reduction of SKN's GHG emissions, which, as part of the country's Nationally Determined Contribution, has been targeted to reach 22% by 2025 and 35% by 2030 with policy measures such as replacement/retrofitting of inefficient equipment.

Environmental and Social Management Plan

4.19 An Environmental and Social Management Plan (ESMP) will be prepared by the Supervision Consultants, in consultation with other key stakeholders, to address issues relating to, among others: proper vehicular traffic control, pedestrian safety, use of appropriate personal protection equipment; and the safe storage and disposal of existing lamps and fixtures. The contract for the disposal of the existing lamps and fixtures will specify requirements for the safe dismantling, packaging, shipment and final disposal of the disused equipment. It will be a condition of the loan that prior to installation works, that SKELEC submits to CDB, evidence in form and substance, acceptable to CDB, that all environmental and/or waste management licenses and permits necessary for the project have been obtained, including those required for implementation in Nevis.

4.20 It will be a further condition that SKELEC submit to CDB, by December 31, 2017, evidence in form and substance, acceptable to CDB, that both utilities have formulated policies and procedures for hazardous waste materials management. SKELEC and NEVLEC will consult with the relevant stakeholder agencies of GOSKN and NIA in the formulation of the policies. During implementation, monitoring of the installation operations conformance with the mitigation measures stipulated in the ESMP will be undertaken by the Supervision Consultant and CDB staff.

SOCIAL AND GENDER IMPACT ASSESSMENT

4.21 With a category "B" classification under the ESRP, the project is expected to impact the entire population of SKN and will have limited to no adverse social impacts on people, communities, social arrangements or private sector operators in the country. Further, no major opposition or conflicts are foreseen that would adversely affect implementation of the proposed intervention. However, the utilities and GOSKN will utilise their Public Relations programmes to keep the public informed about the project and its implementation.

4.22 Contributions to poverty reduction are possible but these will be indirect and will not be measured under this project. The project will not directly contribute to achievements gender equality. Further given the inequalities in labour force participation in the construction and utility sectors, it is expected that men will disproportionately benefit from the direct income earning opportunities created during implementation. The Gender Marker Analysis is at Appendix 4.6. Project stakeholders will however have an opportunity to participate in Technical Assistance facilitated by the Bank in Gender Analysis Training at the national level under other initiatives being financed by CDB. Training is designed to promote the advancement of gender mainstreaming in support of national development that is inclusive and sustainable. All project partners will be encouraged to participate including utility companies, and their operations and decision making are expected to benefit from this in the long term.

MACROECONOMIC IMPACT ASSESSMENT

4.23 The project will lead to import cost savings for GOSKN due to higher energy efficiency and, thus, lower energy consumption of the new LED lights. Between 2019 and 2037, estimates of savings to GOSKN's electricity billings average approximately $2.2 mn p.a. At current IMF forecasts for the year 2019, the savings in that year would amount to 0.26% of general government expenditure, and to 0.08% of GDP. The loan, which has a three-year grace period, will help GOSKN to continue with its effort of fiscal consolidation. Further, the foreign exchange impact of the project is expected to be positive as subsequent debt service payments are likely to be outweighed by the lower quantity of fuel imports that can be attributed to street/flood lighting, although the net effect will depend on future fuel prices.

5. RISK ASSESSMENT AND MITIGATION

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

TABLE 5.1: SUMMARY OF RISK ASSESSMENT AND MITIGATION

Risk Type	Description	Mitigation Measures
Implementation	Environmental: Occupational health and safety risks during installation including working at height, on roads, and with electricity, among others.	SKELEC and NEVLEC have health and safety procedures which guide their operations. The Supervision Consultants will monitor compliance with the ESMP.
Implementation	Environmental: Pollution of the environment from inadequate disposal of disused HPS/MV lamps.	The project design makes provision for the engagement of a qualified contractor to handle hazardous waste which will be packaged for exporting for final disposal at certified hazardous waste disposal facilities abroad.
Implementation	Delays in implementation due to inadequate coordination between the two electric utilities.	The project management arrangements have been designed to facilitate ownership by both utilities, and collaboration throughout the implementation period.
Operational	Climate change impacts on SKELEC's and NEVLEC's infrastructure performance	SKELEC and NEVLEC are among five utilities benefitting from the IDB-funded project being implemented by CARILEC "Support for CARILEC's Climate Change Adaptation and Sustainable Energy Programming". The study includes recommended adaptation strategies to be implemented over the medium to long term to address identified vulnerabilities to infrastructure.

6. IMPLEMENTATION AND PROJECT MANAGEMENT

THE BORROWER AND THE EXECUTING AGENCY

6.1 The Borrower is GOSKN. SKELEC is the Executing Agency and NEVLEC will be the Implementing Agency for implementation in Nevis. Details of the Borrower, the Executing Agency and the Implementing Agency are set out at Appendix 6.1.

PROJECT MANAGEMENT AND IMPLEMENTATION

Project Management

6.2 Coordination of the implementation of the project will be undertaken by SKELEC, which will be responsible for project implementation in St. Kitts. It will be a condition precedent to first disbursement of the Loan that SKELEC assign from its staff a PC, to manage the project. As a condition precedent in relation to the LED Lamps Supply and Installation component, SKELEC shall assign from its staff, a Project Engineer (PE), to support PC in implementation of the project in St. Kitts. As a further condition precedent in relation to this component, NEVLEC will be required to assign, from its staff, a Project Manager, Nevis (PMN), to oversee implementation of the Project in Nevis. The qualifications and experience of PC, PE and PMN must be acceptable to CDB. The responsibilities of the PC, PE and PMN and are set out at Appendix 6.2.

6.3 Coordination of the project between the two islands of the federation will be facilitated through a Memorandum of Understanding (MOU) between SKELEC, NEVLEC and MSD, acceptable to CDB in form and substance, which will formalise their agreement on how the project will be implemented and the roles and responsibilities of the stakeholders. It will be a condition precedent to first disbursement of the Loan that GOSKN submit to CDB, an original, signed copy of the MOU. CDB staff are satisfied that SKELEC and NEVLEC have the project management and administrative capacity to, respectively, execute and implement the Project on behalf of GOSKN. An indicative list of some of the topics to be covered by the MOU is included at Appendix 6.3.

6.4 It will be a condition precedent to first disbursement of the Loan that SKELEC select and engage consultants, in accordance with the procurement procedures applicable to the Loan, to undertake the Supervision Consulting Services required during the implementation of the Project. The draft Terms of Reference (TOR) for the Supervision Consultants are set out at Appendix 6.4. A Project Management Organisational Chart is set out in Appendix 6.5.

Implementation Schedule

6.5 The Project is projected to be implemented over a period of 23 months commencing from Board approval. Installation works are estimated to take six months in St. Kitts and nine months in Nevis, commencing by January 2018. These periods consider the existing personnel and equipment capacity of SKELEC and NEVLEC and the time typically taken to undertake activities such as those in the installation phase of the Project. In particular, the positive experience gained by SKELEC in the project to install 1,150 LEDs in the street lighting system has been considered. NEVLEC has installed a smaller number of LEDs (about 50), but routinely undertakes street light installation. 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

6.6 The preparation and appraisal of this project was coordinated through MSD. It will be a condition of the Loan that MSD will continue to be the focal point for communication between GOSKN and CDB during implementation of the Project. Several other Ministries of GOSKN and NIA participated in consultations to inform the Project's design. MPIPUT will be kept informed about implementation of the project in St. Kitts through its role on the Board of Directors of SKELEC, as the project managers will be required to submit monthly progress reports to management of the utilities. Accordingly, on Nevis, MCW will be kept informed through its role on the Board of Directors of NEVLEC. GOSKN and the utilities have public information programmes which will be utilised to inform the public about the Project and its

expected benefits, and to keep the public informed about traffic management arrangements, implementation progress and any related matters during the installation period. These communications activities will be part of the Project Management component of the Project. The implementation period will coincide with the period within which GOSKN proposes to establish the Department of Energy. Dissemination of information about the project's benefits will accord with EU's activities to promote RE and EE.

PROCUREMENT

6.7 The procurement of goods, works and non-consulting services will be undertaken in accordance with CDB's Guidelines for Procurement (January 2006), except that, where EIB CALC resources are being used together with CDB's E&M resources for the supply of LED lamps and disposal of the removed fixtures, to comply with the requirements of the EIB-Financing Agreement, a waiver is sought to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries. The estimated value of the waiver being requested is approximately USD1.97 mn.

6.8 The procurement of consulting services will be undertaken in accordance with CDB's Guidelines for the Selection and Engagement of Consultants by Recipients of CDB Financing (October 2011), except that where EIB CALC resource are being utilised to finance the Supervision Consultancy services, in accordance with the above-mentioned EIB-Financing Agreement, eligibility shall be extended to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.

6.9 Where contracts utilise EIB CALC resources, above the required European Union thresholds for advertising, procurement notices shall be published in the Official Journal of the European Union and bidders must submit the "Covenant of Integrity" in the form attached at the Annex to the Procurement Plan, provided at Appendix 6.8.

DISBURSEMENTS

6.10 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, 2018. An Estimated Quarterly Loan Disbursement Schedule is presented in Appendix 6.9.

MONITORING AND REPORTING

6.11 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 SKELEC shall furnish or cause to be furnished to CDB, the reports listed in Appendix 6.10 in such form or forms as CDB may require, not later than the times specified therein for so doing.

PERFORMANCE EVALUATION RATING

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

TABLE 6.1: PROJECT PERFORMANCE EVALUATION SYSTEM RATING

CRITERIA	SCORES	JUSTIFICATION
Strategic Relevance	7.0	The Project supports the policy objective of GOSKN's revised NEP to ensure efficient use of energy and energy conservation in all sectors. Policy actions in the National Energy Action Plan include implementing programmes of energy efficiency, such as is being done under the proposed Project. 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	7.5	The Project's design, including the use of appropriate technology, is expected to significantly reduce GOSKN's energy consumption and contribute to lower GHG emissions.
Cost Efficiency	7.5	ERR of 20% is based on conservative quantifiable benefits of fuel substitution and avoided maintenance cost.
Institutional Development Impact	5.0	CRS will enhance the climate change planning capacity of SKELEC and NEVLEC. They will produce adaptation plans. Their waste management capacity will also be enhanced.
Sustainability	6.0	The Project will reduce street and flood lighting related maintenance costs for SKELEC and NEVLEC and electricity costs to GOSKN.
Composite Score	**6.1**	**Highly Satisfactory**

7. TERMS AND CONDITIONS

7.01 It is recommended that CDB lend to GOSKN from CDB's OCR an amount not exceeding the equivalent of five million, seven hundred and ninety-two thousand United States dollars (USD5,792,000) (the Loan) consisting of:

(a) an amount not exceeding the equivalent of two million, two hundred and twenty-two thousand United States dollars (USD2,222,000) allocated from CDB's E&M resources (the E&M Tranche); and

(b) an amount not exceeding the equivalent of three million, five hundred and seventy United States dollars (USD3,570,000) allocated from resources provided by EIB to CDB pursuant to the Finance Contract between CDB and EIB providing for CALC (the EIB CALC Tranche),

to assist GOSKN in financing the replacement of all of its high pressure sodium and mercury vapour street lamps and flood lamps with high efficiency LED street and flood lamps (the Project), on CDB's standard terms and conditions, and on the following terms and conditions:

(1) **Repayment**: Repayment of the Loan shall be made in thirty-two (32) equal or approximately equal and consecutive quarterly instalments commencing three (3) years after the date of the Loan Agreement.

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

(a) at the rate of two decimal nine seven percent (2.97%) p.a. (variable) on the E&M Tranche withdrawn and outstanding from time to time; and

(b) at the rate of one decimal eight nine percent (1.89%) p.a. (indicative and variable) on the EIB-CALC Tranche withdrawn and outstanding from time to time.

(3) **Commitment Charge:** A commitment charge at the rate of one percent (1%) p.a. shall be payable on the amount of the Loan unwithdrawn from time to time. Such charge shall accrue from the sixtieth (60th) day after the date of the Loan Agreement and shall be payable quarterly.

(4) **Disbursement:**

(a) The first disbursement of the Loan shall be made by September 30, 2017, and the Loan shall be fully disbursed by December 31, 2018, or such later dates as CDB may specify in writing.

(b) Except as CDB may otherwise agree:

(i) the Loan shall be used exclusively to finance the components of the Project allocated for financing by CDB as shown in the Project Cost, Phasing and Financing Plan for the Project (the Financing Plan) at Appendix 3.1 up to the respective limits specified therein; and

(ii) total disbursements shall not exceed in the aggregate of ninety percent (90%) of the Project cost.

(c) The Loan shall not be used to meet any part of the cost of the Project which consists of identifiable taxes and duties.

(d) The Loan shall not be used to finance any activity set out in Appendix 7.1.

(5) **Procurement:**

(a) Except as provided in sub-paragraphs (b) and (c) below, procurement shall be in accordance with the procedures set out and/or referred to in the Loan Agreement between CDB, GOSKN and SKELEC, 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) In respect of procurement related to the LED Lamps Supply and Installation Component, where EIB CALC resources are being used together with CDB's E&M resources, eligibility for procurement shall be extended to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.

(c) Bidders for the LED Lamps Supply and Installation Component must submit the "Covenant of Integrity" in the form attached at the Annex to the Procurement Plan provided at Appendix 6.8. Procurement notices shall be published in the Official Journal of the European Union.

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

(a) PC referred to in sub-paragraph 8(b)(ii) below shall have been assigned;

(b) GOSKN, SKELEC and NEVLEC shall have entered into a Memorandum of Understanding (MOU) in relation to the coordination of the Project, in form and substance acceptable to CDB. Except as CDB may otherwise agree, the matters to be covered by the MOU shall include the matters set out at Appendix 6.3; and

(c) the Supervision Consultants referred to in sub-paragraph 8(b)(iv) below, shall have been engaged.

(7) **Conditions Precedent to Disbursement in relation to LED Lamps Supply and Installation Component:**

CDB shall not be obliged to disburse any amount of the Loan in respect of the LED Lamps Supply and Installation Component until either GOSKN or SKELEC shall have provided evidence satisfactory to CDB, that:

(a) the PE referred to in sub-paragraph 8(b)(ii) below shall have been assigned;

(b) the PMN referred to in sub-paragraph 8(c)(ii) below, shall have been assigned by NEVLEC; and

(c) all environmental and/or waste management licenses and permits necessary for the Project have been obtained.

(8) **Other Conditions:**

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

(i) execute the Project through SKELEC in St. Kitts, and implement the Project through NEVLEC in Nevis;

(ii) make the proceeds of the Loan available to SKELEC for the purpose of executing the Project; and

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

(b) SKELEC shall:

(i) as a condition of GOSKN making the proceeds of the Loan available to it, undertake to perform the obligations on its part to be observed and performed as set out and referred to herein;

(ii) assign from among its staff a person with qualifications and experience acceptable to CDB as PC to carry out the duties set out at Appendix 6.2. The qualifications and experience of any person subsequently assigned to the position of PC shall be acceptable to CDB;

(iii) assign from among its staff a person with qualifications and experience acceptable to CDB as PE to support the PC in implementing the Project in St. Kitts in accordance with the TOR at Appendix 6.2. The qualifications and experience of any person subsequently assigned to the position of PE shall be acceptable to CDB;

(iv) in accordance with the procurement procedures applicable to the Loan, select and engage the Supervision Consultants to carry out the services set out in the TOR at Appendix 6.4;

(v) by December 31, 2017, or such later date as CDB may agree, submit to CDB evidence, in form and substance acceptable to CDB, that SKELEC and NEVLEC have formulated policies and procedures for hazardous waste materials management;

(vi) 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;

(vii) institute and maintain organisational, administrative, accounting, and auditing arrangements for the Project acceptable to CDB;

(viii) 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;

(ix) except as CDB may otherwise agree, furnish CDB with the reports listed in Appendix 6.10 in such form and substance as CDB may require, not later than the time periods specified therein for doing so; and

(x) except as CDB may otherwise agree, contribute towards the Project eight hundred and twenty thousand dollars ($820,000), which shall be expended on the components of the Project allocated for financing by SKELEC as shown in the Financing Plan.

(c) GOSKN shall:

(i) coordinate Project implementation through MSD, which will be the focal point for communication between GOSKN and CDB;

(ii) ensure that NEVLEC assigns from among its staff a person with qualifications and experience acceptable to CDB as PMN to support the PC in implementing the Project in Nevis in accordance with TOR at Appendix 6.2. The qualifications and experience of any person subsequently assigned to the position of PMN shall be acceptable to CDB;

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

(iv) except as CDB may otherwise agree, contribute towards the Project one hundred and seven thousand dollars ($107,000), which shall be expended on the components of the Project allocated for financing by GOSKN as shown in the Financing Plan;

(v) except as CDB may otherwise agree, procure that NEVLEC contributes towards the Project seven hundred and forty thousand dollars ($740,000), which shall be expended on the components of the Project allocated for financing by NEVLEC as shown in the Financing Plan;

(vi) except as CDB may otherwise agree, procure that NEVLEC meets or causes to be met the costs of the items designated for financing by NEVLEC in the Financing Plan;

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

(e) GOSKN and SKELEC shall jointly and severally:

(i) warrant and undertake that it has not 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 GOSKN or SKELEC, including collusion between tenderers.

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

(ii) acknowledge that CDB or EIB may be obliged to divulge such documents relating to GOSKN or SKELEC 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;

(iii) 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 SKELEC, NEVLEC and/or GOSKN 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;

(iv) 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; and

(v) unless CDB has given its prior consent in writing, retain title to and possession of all or substantially all of the assets comprising the Project or, as appropriate, replace and renew such assets and maintain the Project in substantially continuous operation in accordance with its original purpose, provided that CDB may withhold its consent only where the proposed action would prejudice CDB's interests as a lender to GOSKN or would render the Project ineligible for financing by CDB pursuant to the EIB CALC Financing Agreement.

(f) GOSKN shall procure that NEVLEC complies with the conditions of the Loan set out at sub-paragraph 8(e) above.

(g) CDB shall be entitled to suspend, cancel or call in the Loan, or any part thereof, if the EIB-CALC resources, or any part thereof, is suspended, cancelled or called in.

APPENDIX 1.1

MACROECONOMIC AND MACRO-SOCIAL CONTEXT

MACROECONOMIC CONTEXT

Overview

1. The economic situation remains buoyant with robust growth and a high, albeit declining, budget surplus. Economic growth decelerated a bit in 2015, but still came in strong at 4.9%. Growth was largely driven by very robust construction activity related to the CBI programme and by the positive performance of the tourism sector, reflecting the performance of both long-stay and cruise ship arrivals. The fiscal surplus remained high because of strong tax revenue, while the public debt-to-GDP ratio fell faster than anticipated. However, when accounting for revenues from the CBI programme, investment proceeds from the SIDF, and considering also the outlay for the PEP, St. Kitts and Nevis runs a large underlying fiscal deficit. Inflation continued to be low, and while no official unemployment data has been published in recent years, indications are that unemployment is very low[1], mainly due to construction activity and due to the Government's flagship PEP. Commercial banking activity displayed a slight pick-up in private sector credit growth, following years of restraint amid still high levels of non-performing loans (NPLs). Bank profitability remained under pressure, amid limited lending, growing deposits and high funding costs, due to the Eastern Caribbean Central Bank's (ECCB) 2% interest rate floor on savings accounts.

2. Recent developments suggest increased risks to CBI, which is the main driver of the economy's strong performance. Following Canada's imposition of visa requirements on citizens of SKN in November 2014, the government addressed important security concerns surrounding CBI by improving due diligence and background checks of applicants to the programme. Heightened international scrutiny of such programmes, combined with substantial competition from other CBI programmes, raises concerns about the sustainability of these inflows. Recently, SKN started to revamp its programme, targeting especially the Arab market, and planning to offer fast-track citizenship with reduced 60-day waiting periods in order to fight off competition from other regional CBI programmes.

Real Sector

3. Total tourism arrivals increased by a very strong 26% in 2015, up from a 15% growth rate in 2014. However, growth in the more lucrative stopover market decelerated from 5.4% in 2014, to just 3.3% last year. The important US market, where 60% of tourists originate – still expanded by 2.7% and the United Kingdom and Caribbean recorded double-digit growth rates, but arrivals from Canada declined by 17%. Cruises ship arrivals were up a strong 30%, significantly higher than the rate of growth of 19% in 2014. The first six months of the year 2016 point to a decline in tourism numbers. Total visitor arrivals between January and June 2016 are down 1% on arrivals in the same period last year and stay-over visitors are down by 3.2%. The rates of decline for the US, Canada and Caribbean markets are very uniform, but the decline from the UK, at 1.9%, has been less pronounced. Following the British Exit (BREXIT) vote and the subsequent 15% decline in the value of the Pound Sterling, the United Kingdom market may be at risk of underperforming in the important winter season. Total visitor expenditure, after growing by 7% annualised during the 2013 to 2015 period, it was down by 2.7% in the first half of 2016.

4. Inflows from the CPI programme were still at an estimated $295 mn (12.5% of GDP) down from $325 mn in 2014 (which was a historical high of 14.2% of GDP). The IMF expects the inflows from the

[1] The last official unemployment rate published in 2009 stood at 6.5%. Even when assuming a relatively high labour participation rate of 70%, this would have implied that the number of unemployed in 2009 had stood at 2,353 persons. If the number of unemployed had grown in line with population growth since then, it would actually have stood at 2,529 in 2015. It was estimated that 2,570 people were employed in the PEP as of September 2015. The PM actually reported an even higher figure of 4,000 in his New Year address on January 1, 2016. This implies that when considering as well the PEP, the country probably has no unemployment at all.

programme to further decline to $150 mn, or 6% of GDP, this year. The past inflows from the CBI programme have triggered a construction boom. Construction activity contributed 17.7% of the value added of the economy and ECCB estimates that this share has increased to close to 19% in 2015, and projects that the share will reach nearly 20% by 2020. However, whether construction activity will remain buoyant depends largely on future CBI inflows, which cannot be easily predicted. CBI also supported a large increase in government and SIDF investments. Employment in the construction sector rose by 15%, and government expenditure on PEP also helped to keep unemployment down.

Commercial Banking

5. The banking system remained stable, notwithstanding restructuring of government debt held by the banks and ongoing discussion about restructuring a Nevis Island Administration (NIA) loan. CBI inflows and Government savings have helped bank liquidity to grow. Additionally, regulatory capital levels remain high, with the capital-adequacy ratio standing at 22% at the end of 2015. Private sector credit began to grow again in 2015, at 3.2%, after close to zero credit growth in both 2013 and 2014, reflecting the banks low-risk appetite and an increase in the indigenous banks' ratio of NPLs. The debt-land swap in 2013 and 2014 removed public sector loans from the indigenous banks' portfolio, resulting in an increase in the ratio of NPLs to 16.8% in 2014. However, even when allowing for fewer public sector loans, a small increase in NPLs has been recorded. The reclassification of a NIA loan as non-performing has led to a rise in the NPL ratio to a high 22.5% in 2015. Overall, the banks' credit performance was weak, which combined with weak lending growth and expensive funding, due to ECCB's 2% interest rate floor on savings accounts, put pressure on their profitability.

Public Finances

6. GOSKN recorded a high fiscal surplus of 6.1% of GDP in 2015, although much lower than the 2014 surplus of 9.4%, and clearly down from 12% in 2013 (figures refer to general government). General government revenue decreased by 6.8% in 2015, due to lower CBI revenue, which declined by 9%. Expenditure grew by 0.3%, which meant that expenditure outpaced revenue for a second consecutive year, as expenditure in 2014 had grown by 6.3% and revenue by only 0.5%. Expenditure growth is projected to continue to outpace revenue growth, pushing the fiscal balance towards a deficit in the short term. The IMF is projecting a small budget surplus of 0.2% of GDP at the general government level in 2016 and expects a budget deficit of 1.2% of GDP in 2017. While this would constitute the first fiscal deficit since 2010, the projection hinges on a strong decrease in CBI receipts from $295 mn to $100 mn in 2017. If CBI receipts as a share of GDP were to stay constant at 11.9% of GDP (as in 2015), fiscal surpluses of between 6 and 7% of GDP can be achieved in 2016 and in 2017.

7. High headline fiscal surpluses including CBI receipts, investment proceeds from SIDF and abstracting from the cost of the PEP, have led to strong declines in the gross debt-to-GDP ratio of general government from 79.8% of GDP in 2014 to 67.8% in 2015. The strong decline in the public debt ratio, reflects strong real and nominal GDP growth, a high primary balance and advance debt repayments. Even when considering a return to budget deficits, the IMF still projects the debt to fall below ECCU's 2030 60% debt target in 2017 and to 50% in 2020. In the first eight months of 2016, the overall fiscal position remained strong in the island of St. Kitts. The overall fiscal surplus stood at $115.8 mn, significantly higher than the $56.6 mn in the first eight months of 2015, and much higher than the budgeted $30.4 mn. The main reason for the improved budgetary position, however, lies in the strongly declining capital expenditure, as revenues were lower due to strongly declining CBI revenues.

8. In 2016, GOSKN successfully completed early repayment of its Stand-by Agreement (SBA) with the IMF. Under the programme GOSKN implemented substantial fiscal consolidation measures, restructured its debt including a debt-land swap, and made progress with key structural reforms, including strengthening tax administration and improving public financial management. However, other reforms remain to be implemented. Out of a total of Special Drawing Rights (SDR) $47.4 mn drawn from the Fund in the 2011-2013 period, as of July 31, 2015, GOSKN had still SDR $22.4 mn (nearly XCD83 mn) outstanding, which would have been due largely in 2016, with smaller repayments due in 2017 and 2018. As of May 31, 2016, all of these funds had already been repaid.

9. SIDF is funded by CBI income. It in turn funds PEP, as well as a number of social programmes, providing budget support and public and private investments. SIDF income peaked at 12.6% of GDP in 2012, but has fallen since, due to falling CBI income. CBI contributions to SIDF have declined by around 30% in 2015, as applicants for citizenship increasingly chose the real estate option, which allows disinvestment after five years. Nearly half of SIDF expenditure is on PEP, which only started in 2012. GOSKN is conscious of the need to control the costs of PEP.

10. High fiscal surplus allowed the widening of VAT and custom exemptions in December 2014 and April 2015, but could undermine fiscal and debt sustainability over the medium term, and potentially increase the debt burden, unless offsetting measures are introduced, such as reducing tax exemptions for construction projects; enhancing taxes such as property tax; and slowing the pace of capital spending. Much of the rapid reduction in the debt-to-GDP ratio is the result of the debt-land swap. Successful land sales, while maintaining the soundness of domestic banks balance sheets, would reduce calls for the debt-land swap to be reversed. A reversal would erode much of the gains in debt sustainability and increase fiscal spending on debt service, to the detriment of other government expenditure.

External Sector

11. The current account deficit remained stable at 12.2% of GDP in 2015, unchanged from 2014, as a lower fuel import bill was accompanied by lower CBI revenues and higher external debt repayments of the public sector. International reserve assets imputed to GOSKN decreased by USD38 mn to USD280.4 mn during 2015, equivalent to twelve months of imports, as the public sector's external debt payments increased from USD14 mn to above USD29 mn in 2015, CBI revenues declined by USD11 mn and net capital transfers declined by USD14 mn.

Prospects

12. Economic growth is set to continue, but it is projected to slow to around 3.5% per annum in 2016 and 2017, according to IMF estimates, after 4.9% growth in 2015 and over 6% growth in the years before, reflecting some moderation of construction activity and CBI inflows. Also, lower tourism revenues in the first six months of the year and a strong slowdown in CBI revenues over the first eight months of the year point to a sensible slowdown in economic growth.

13. Over the medium-term, growth should normalise at about 2.5% per year, based on the assumption of lower CBI inflows, a tapering off in CBI-related construction and moderate growth prospects for key tourism source markets. Risks to the outlook are broadly balanced. These include the potential fallout of the regional financial resolution process, vulnerability to natural disasters, and slower growth in advanced economies. On the upside, CBI and foreign direct inflows could be more buoyant than anticipated.

14. Over the past five years, SKN's economy has seen a remarkable turnaround. The economy contracted in the years following the Great Recession, but growth has averaged 5.5% since 2012, mainly due to construction activity related to CBI programme, and due to increased tourism arrivals. The Government's fiscal surplus remained high as a result of strong tax revenue, which more than offset higher spending, and the public debt-to-GDP ratio fell fast.

15. Economic growth has continued in 2015, although at a slightly lower rate of probably just below 5% as CBI activity slowed down. This reflects uncertainty over the effects of the decision by Canada to impose visa requirements on SKN citizens at the end 2014, which makes CBI less attractive to potential investors. In addition there is now increased CBI competition from other countries in the region. SKN is trying to react to the increased competition by revamping its own CBI programme. It now plans to offer a fast-track citizenship solution targeted especially at Arab costumers, and recently presented in a roadshow in Dubai, which eventually should allow to obtain the citizenship within a 60 day-period. The deceleration of the pace of growth is expected to continue into the medium term, when growth is expected to average about 2.5% per year, although the IMF still expects higher growth of 3.5% this year and next[2]. Growth prospects will continue to be dependent on CBI and on continued growth in major trading partners. In the baseline scenario, this should permit further fiscal consolidation and a continuation in the reduction of the debt burden.

16. The continued improvement in the fiscal position could be undermined by failure to offset the recent increase in tax concessions and by a possible reversal of the recent debt-land swap. GOSKN introduced a number of value added tax (VAT) and customs duties exemptions in late 2014 and early 2015, the lost revenue from which will need to be replaced by alternative measures[3]. Regarding the debt-land swap, GOSKN is contemplating changes that would best serve the national interest while preserving gains in debt sustainability.

17. Despite efforts to maintain a reasonably prudent budget framework, fiscal policy has been expansionary and pro-cyclical in recent years. In 2015, the general government budget deficit stood at a high 8.6% of GDP, when calculated net of CBI fees, net of the SIDF grants, net of investment proceeds, and including the cost of the PEP.

18 The IMF suggests to put public finances on a sounder footing by achieving a zero primary balance (net of CBI and net of SIDF) over the medium-term, by 2018. This would require significant fiscal consolidation measures, as the primary balance excluding CBI receipts, SIDF grants, and investment proceeds, recorded a 4.7% deficit in 2015.

19. Notwithstanding the fiscal challenges ahead, SKN can be expected to reach the ECCU's 2030 debt-to-GDP target in 2017, well ahead of its peers. Downside risks to reaching the debt target do mainly stem from uncertainty regarding future CBI revenue, as the flow of new CBI applications has declined significantly since mid-2015. Following the loss of visa-free access to Canada, and given the US advisory relating to financial activities of some individuals applying to the SKN CBI programme, a step up in the due diligence process in 2015 led to a drop in CBI-related revenues from XCD325 mn in 2014 to XCD295 mn in 2015. The scenario of a stronger fall in CBI revenue due to increasing competition of similar programs in other CARICOM Member States could easily lead to a situation in which the debt-to-GDP ratio would not fall anymore, but increase instead.

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2 IMF Country Report No. 16/250 (July 2016), St. Kitts and Nevis 2016 Article IV Consultation – Press Release: and Staff Report, www.imf.org

3 The IMF estimates that revenues foregone from import tax concessions stand at 6% of GDP, stemming mainly from concessions on food, construction materials and vehicles.

20. Further risks to fiscal consolidation are constituted by potential natural disasters. The IMF estimates that the seven major disasters, which hit SKN between 1980 and 2015, came at an average cost of 23.7% of GDP per event. Thus, the annual average cost stood at 4.6% of GDP over the period, of which 2% would have been the cost in terms of GDP to the public sector, the remainder would have been the cost to the private sector.

21. The SIDF, which funds the PEP, is reliant on funding from CBI. SIDF's significance has grown quickly since its establishment in 2007, with income climbing to 12.6% of GDP in 2012, before slipping back during the last years. The IMF expects the income of the SIDF to fall to around 4% of GDP in 2016 due to competition from CBI programs in other countries. Also, the fact that an increasing share of CBI applicants chose the real-estate option has concurred to the decline in SIDF revenues. Expenditures of SIDF are expected to come in at 3.5% in 2016. One percent of GDP is expected to flow as a grant to government, and the remainder will be dedicated to extra-budgetary social programs, mainly PEP. PEP employs around 2,570 persons (as of September 2015) in both the public and private sectors. The Hon. Prime Minister Timothy Harris has addressed the problem that private sector companies continue to rely on the programme for cheap labour in his New Year's Address.

22. When PEP was introduced in late 2012, there was a lot of excess capacity in the labour market (the last available unemployment data is 6.5% in 2009), but since then the labour market has tightened, as result of CBI-driven inward investment. About two thirds of PEP employees work in the public sector. Two general and interrelated concerns about PEP relate to: (a) the extent to which PEP employees are getting the skills they need to meet private and public sector demands; and (b) its sustainability in terms of costs.

23. Originally the intention was that GOSKN and the private sector would each share half of the cost burden, but this arrangement did not work. While private businesses are accused of getting free labour, they either are not willing to pay their share (because the productivity of the employees does not justify it), or because the systems are not in place to recover cost. Therefore, costs of PEP to government increased from $43 mn in 2013 to $70 mn in 2014 (3% of GDP), before falling back to $52 mn (2.1% of GDP) in 2015. In the absence of reform, PEP risks becoming prohibitively expensive at a time when GOSKN needs to broaden its tax base and control expenditure, while continuing to reduce its debt burden.

MACRO-SOCIAL CONTEXT

24. At the most recent population census in 2011, the population of the twin island country was recorded at some 46,398, with 34, 983 of the population resident in St. Kitts and 11,415 in Nevis. By January 2016, the population was estimated at 55,712 people, comprising 27,713 males (49.7%) and 27,999 females (50.3%), and representing a 20% increase over the 2011 census figures. Population growth resulted from natural increase and migration dynamics. The number of births exceeded the number of deaths by 385, and the rate of immigration (inward migration) exceeded the rate of migration (natural residents leaving the country for permanent residence elsewhere). The latter is attributed to the Country's CBI programme and increases in immigrant workers who come to the islands to meet labour market demands for skilled workers and professionals, not available in the local labour force.

25. Overall, improvements in population wellbeing are evident in health and education indicators. Improvements in health, contributing to the overall quality of life and increased life expectancy at birth - life expectancy from birth in 2014 was 73.8 years, an increase of 8.8 years from 1980. Mean years of schooling increased by 0.6 years between 2010 and 2014, and expected years of schooling by 1.2 years between 1985 and 2014. At the end of 2015, SKN reported advancements on some of the Millennium Development Goals and gender equality targets. These resulted in reduced levels of maternal and infant mortality, achievements in universal access primary education, and reductions in fertility rates. Wellbeing

is however not evenly distributed across the population so that poverty and social vulnerability still persist in pockets across the two islands.

26. The last poverty assessment was conducted in 2007[4]. Poverty was estimated at a national average of 21.8%, 23.7% in St. Kitts and 15.9% in Nevis, a reduction from 30.5% estimated in 2000. Poverty levels were still unacceptably high in 2007, and gains in poverty reduction continue to be threatened by the unique socio-economic dynamics of the country. The country's productive base is very small and reliant on a narrow range of activities in the services sector that are dependent on international markets. This renders the economy vulnerable to external shocks from the global economy, in addition to the high susceptibility of the country to natural hazards and disasters. Although there has been economic growth, local labour force participants were not positioned to fully participate in the opportunities created by growth. This would have had negative impacts on the recovery of the indigenous population from: (a) Hurricane Omar in 2008 - the hurricane destroyed the Four Seasons Hotel in Nevis, the largest employer on the island; and (b) closure of the sugar industry, in 2005 - closure of the industry affected the employment of approximately 12% of the local labour force, especially women.

27. Data on crime and violence in St. Kitts and Nevis is lacking, but what little has been recorded indicate that the country has a moderate crime rate. Crime however began to rise from 2008 with the global economic downturn. With the increased levels of crime the disproportionately higher involvement of young men in crime and violence, in gangs and the drug trade, as well their engagement in violence against women and each other became a great concern. Some roads are not properly lit and this increases risk to especially pedestrians at night. Inadequate street lighting is also blamed for a number of accidents at night where drivers complain that road signs and road alignment was not easily visible. Enhancements to street lighting with more effective and efficient LED street lights of higher illumination will improve visibility and light distribution on the roads that will contribute to citizen security and road safety of the local population and visitors to the islands.

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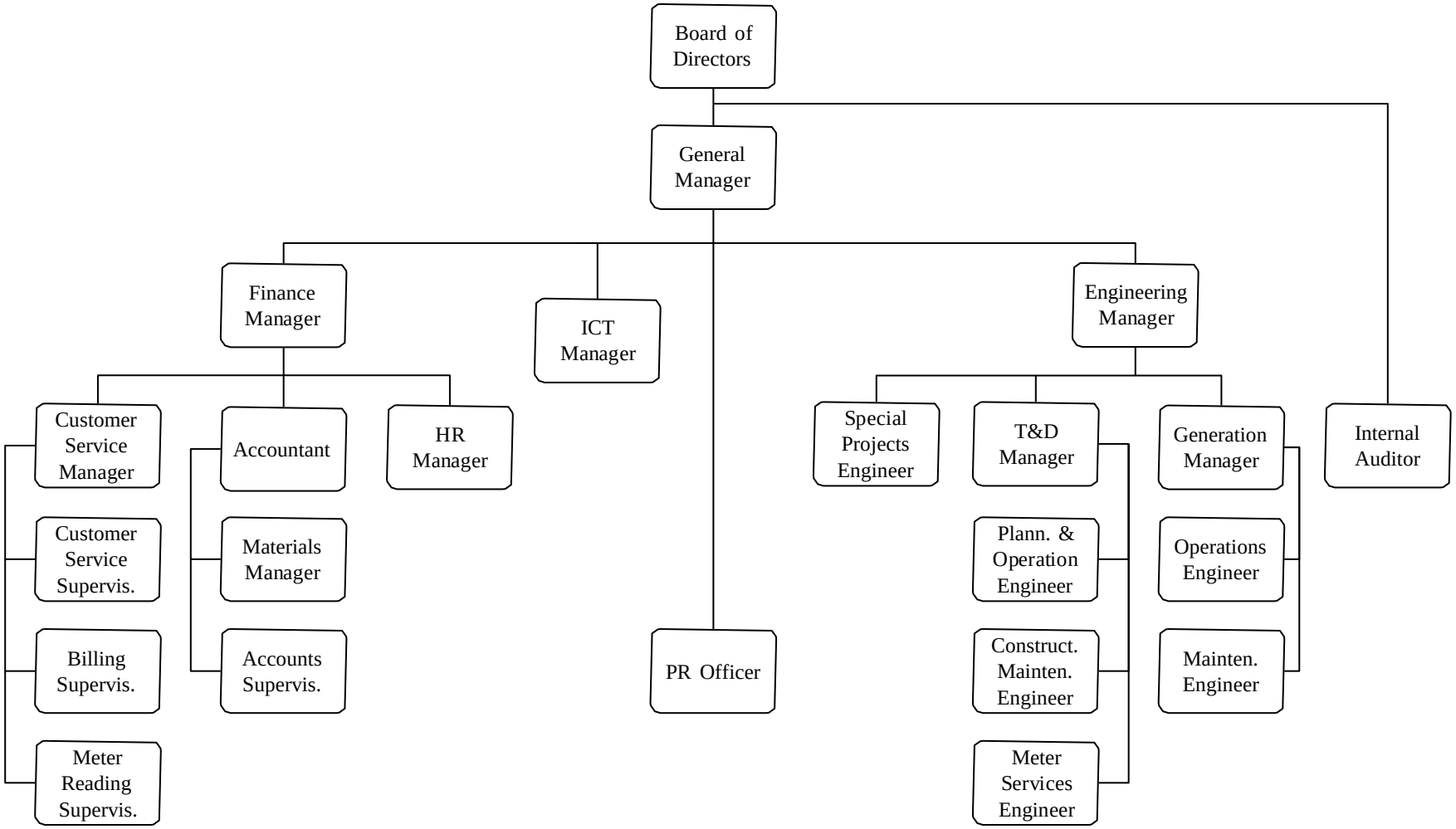
4 KAIRI (2009): Country Poverty Assessment St. Kitts and Nevis 2007/08- Living Conditions in a Caribbean Small Island Developing State.

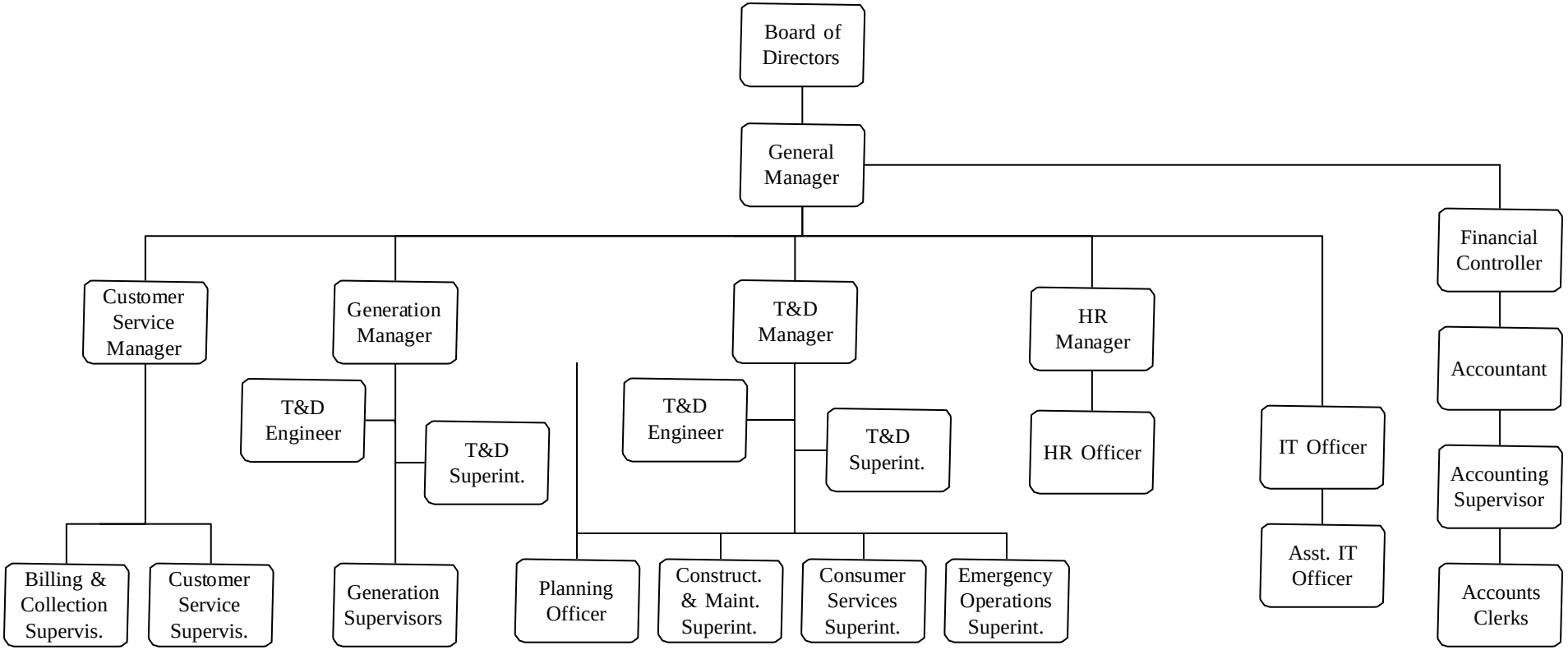
ORGANISATIONAL CHARTS

ST. KITTS ELECTRICITY COMPANY LIMITED



APPENDIX 1.2

NEVIS ELECTRICITY COMPANY (NEVLEC) LIMITED



APPENDIX 2.1

DETAILS OF THE PROJECT

LIGHT EMITTING DIODE LAMPS SUPPLY AND INSTALLATION

1. Elements of this component are:

(a) The purchase of 9,629 LED street lamps to replace existing street lamps plus 5% spare LED fixtures to ensure quick replacement in case of failure. Recommended characteristics of the LED street lighting luminaries are described in the table below:

Characteristic	70 Watt	150 Watt HPS	175 Watt MV	250 Watt
Power consumption	<50W	<90W	<100W	<145W
Color Temperature	4000K	4000K	4000K	4000K
Color Rendering Index	~70	~70	~70	~70
Fixture Efficacy (Lm/W)	>85	>85	>85	>85
Fixture Output (Lm)	5,000	6,500	6,500	11,000
LED L70 (Hours)	>100,000 h	>100,000 h	>100,000 h	>100,000 ours

(b) The purchase of 1,021 LED lamps to replace existing flood lighting used for security lighting and illumination of sport grounds plus 5% spare LED fixtures to ensure quick replacement in case of failure. Wattage of LED lamps equivalent to the currently used 1000W and 1500W HPS lamps shall be at least 60% lower. Exact lighting layout will be specified during the preparation of procurement documents.

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

(d) The proposed installation will be executed by SKELEC/NEVLEC's work force. The work include the installation cost for the replacement of the 10,650 existing HPS lamps with the LED fixtures. LED luminaires will be mounted at the exact same location as the current HPS and MV lamps utilising existing infrastructure (poles and wiring).

(e) The disposal of the scrap lamps and dismounted fixtures includes the collection and storage until the final disposal. The Project includes the cost to dispose the hazardous waste at certified waste disposal facilities located overseas. SKELEC/NEVLEC with the assistance of the Supervising Consultant will establish performance specifications and contract documents for safe disposal of the waste.

SUPERVISION CONSULTING SERVICES

2. Consultants will be engaged to support SKELEC/NEVLEC 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 be responsible for ensuring supplier and contractor compliance with contract documents.

CLIMATE RISK SCREENING

3. Consulting services to assess the vulnerability of SKELEC and NEVLEC operations to climate risks and recommend adaptation strategies. The activities under this component are at an advanced stage. With support from IDB, consultants are identifying the impacts of climate change, climate risks to which SKELEC and NEVLEC are exposed, and recommending prioritised adaptation measures to increase the resilience of the utilities.

PROJECT MANAGEMENT

4. Project management services by SKELEC and NEVLEC for implementation of the project components. In addition, the cost to GOSKN for project administration and the cost of communication activities to keep stakeholders informed are included here.

PROJECT COST, PHASING AND FINANCING PLAN

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

APPENDIX 3.1

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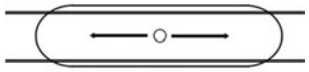
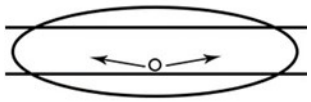
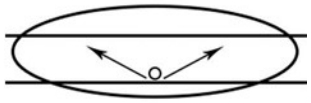
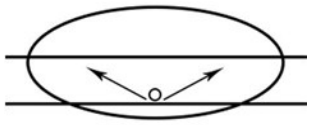
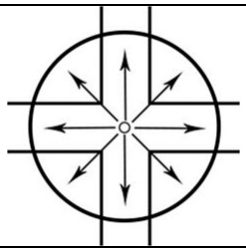
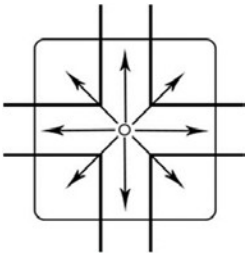
PROJECT COST, PHASING AND FINANCING PLAN

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

APPENDIX 4.1

AVAILABLE DISPERSION PATTERNS

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

APPENDIX 4.2

ASSUMPTIONS TO GOVERNMENT COST SAVINGS CALCULATIONS

GENERAL

(a) Reduction of consumption is calculated as the difference between the consumption of electricity if the lighting replacement was not done *vs* consumption of electricity with the replacement of the HPS lights with LED lights.

(b) The reduction to GOSKN and NIA "base" street/flood lighting bills is derived from the number of existing HPS lights replaced with LED, the lighting tariff levels charged by the two utilities and the reduced consumption of the new lights versus the existing noted above. If the actual tariffs are higher, the savings shown in Appendix 4.3 would be even higher.

(c) GOSKN and NIA "base" street lighting bill will be on the assumption that the HPS lights were not replaced.

(d) The existing HPS street lights and flood lights in SKN will be replaced by LED lights between Q1, 2018 and Q4, 2018.

(e) Based on the current billing calculations by the utilities (i.e. does not include power unit consumption in the HPS lights) each HPS street/flood light consumes a weighted average of 0.702 MWh/year of electricity. These consumptions figures exclude power unit consumption, consistent with the current form of billing.

(f) Each LED light consumes a weighted average of 0.391 MWh/year of electricity.

ST. KITTS

(a) Number of lights: 5,550

(b) Street light tariff: $0.65/kWh

NEVIS

(a) Number of lights: 5,100. The current calculation of the street lighting bill to NIA is based on a lower number of lights than what is actually installed, and NEVLEC has stated that the billing calculation is to be updated. It is assumed that the number of lights used for billing is corrected by 2018.

(b) Street light tariff: $0.68/kWh

APPENDIX 4.3

TOTAL STREET LIGHTING COST - GOVERNMENT SAVINGS

ST. KITTS

Year	LED Lights - Proprtion of Total (Year End) (%)	# of LED Lights at Year End	Electricity Savings (MWh)[1]	Electricity Savings ($)[2]
2018	100%	5,550	863	560,966
2019	100%	5,550	1,726	1,121,933
2020	100%	5,550	1,726	1,121,933
2021	100%	5,550	1,726	1,121,933
2022	100%	5,550	1,726	1,121,933
2023	100%	5,550	1,726	1,121,933
2024	100%	5,550	1,726	1,121,933
2025	100%	5,550	1,726	1,121,933
2026	100%	5,550	1,726	1,121,933
2027	100%	5,550	1,726	1,121,933
2028	100%	5,550	1,726	1,121,933
2029	100%	5,550	1,726	1,121,933
2030	100%	5,550	1,726	1,121,933
2031	100%	5,550	1,726	1,121,933
2032	100%	5,550	1,726	1,121,933
2033	100%	5,550	1,726	1,121,933
2034	100%	5,550	1,726	1,121,933
2035	100%	5,550	1,726	1,121,933
2036	100%	5,550	1,726	1,121,933
2037	100%	5,550	1,726	1,121,933

NEVIS

Year	LED Lights - Proprtion of Total (Year End) (%)	# of LED Lights at Year End	Electricity Savings (MWh)[1]	Electricity Savings ($)[2]
2018	100%	5,100	793	539,274
2019	100%	5,100	1,586	1,078,548
2020	100%	5,100	1,586	1,078,548
2021	100%	5,100	1,586	1,078,548
2022	100%	5,100	1,586	1,078,548
2023	100%	5,100	1,586	1,078,548
2024	100%	5,100	1,586	1,078,548
2025	100%	5,100	1,586	1,078,548
2026	100%	5,100	1,586	1,078,548
2027	100%	5,100	1,586	1,078,548
2028	100%	5,100	1,586	1,078,548
2029	100%	5,100	1,586	1,078,548
2030	100%	5,100	1,586	1,078,548
2031	100%	5,100	1,586	1,078,548
2032	100%	5,100	1,586	1,078,548
2033	100%	5,100	1,586	1,078,548
2034	100%	5,100	1,586	1,078,548
2035	100%	5,100	1,586	1,078,548
2036	100%	5,100	1,586	1,078,548
2037	100%	5,100	1,586	1,078,548

Notes:

[1] Electricity savings (MWh) = Average # of Lights x 0.3110 MWh/light/year

[2] Electricity savings ($) = Electricity Savings (MWh) x Tariff ($0.65/kWh for St. Kitts and $0.68/kWh for Nevis)

APPENDIX 4.4

ASSUMPTIONS TO THE ECONOMIC ANALYSIS

1. For the purpose of this analysis, benefits and costs are stated in constant 2016 prices.

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

3. The financial costs of the capital works have been converted to their economic costs after excluding price contingencies and applying an overall conversion factor of 0.91 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. LED street lights & flood lights	0.92	13,679	12,585
2. Consumption monitoring equipment	0.92	43	40
3. Installation costs	0.80	687	552
4. Waste disposal	0.80	501	402
5. Supervision Consultant	0.92	475	437
6. Climate Risk Screening	0.90	297	269
7. Project Management & administration	0.92	650	598
Total Base Cost and Physical Contingency		**16,333**	**14,882**
Overall Conversion Factor			**0.91**

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	0.83	0.92	0.76
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 Streetlights

5. There are currently 10,650 HPS/MV street lights and flood lights installed in SKN (5,550 in St. Kitts and 5,100 in Nevis). Based on the wattage of the existing HPS/MV lights and reference consumption data a weighted average electricity consumption of 0.831 MWh/year/lamp (including power unit consumption) was determined. The weighted average electricity consumption of new LED street / flood lights is estimated at 0.391 MWh/year/lamp.

6. The HPS/MV street lights will be replaced by LED lights between Q1, 2018 and Q4, 2018.

7. It is assumed, that existing the HPS/MV street lights will be replaced by LED lights that provide at least a similar level of illumination but with lower levels of electricity consumption.

Identification and Valuation of Economic Benefits

8. The main benefit of the project is the reduction in consumption of electricity of the LED street and flood lights compared to the HPS/MV street lights. The valuation of this benefit is calculated based on the avoided cost of generation through fuel costs and O&M costs. In addition, economic benefits from reduction in carbon dioxide (CO_2) emissions has been included in this analysis.

9. The following information was used in the calculation of the economic benefits related to energy production:

(a) Fuel costs per kWh generated - $0.41/kWh and $0.47.kWh for SKELEC and NEVLEC respectively, based on the fuel prices the past 3 years and production efficiency as at 2015 based on data supplied by the respective utilities.

(b) O&M costs per kWh generated - $0.02/kWh and $0.05/kWh for SKELEC and NEVLEC respectively based on historical data provided by the utilities.

10. In addition, the project will result in reduced street light maintenance costs. While the upfront cost of an LED light is higher than an HPS/MV, the components of an LED light have a longer useful life than the components of an HPS. Therefore the annualised material costs for maintenance will be reduced, and the frequency of maintenance visits will also be lower, reducing labour costs.

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

(a) Maintenance cost – conservatively estimated at $58/visit. This is based on salary rates for a linesman, a crew of 3 (1 supervisor + 2 crewmen) assigned to the task plus the monthly cost of a bucket truck.

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

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

TABLE 3: MAINTENANCE COST

Description	HPS/MV			LED		
	Cost of component	**Life (years)**	**# of replacements in 20-year cycle**	**Cost of component**	**Life (years)**	**# of replacements in 20-year cycle**
Lamp	27	5.7	3.5	213	20	1.0
Photocell	81	9.1	2.2	106	20	1.0
Power Supply	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 ($)	**922**			**1,063**		
Combination of maintenance trips	**30%**					
Number of maintenance trips in 20 years	**68,715**			**29,820**		
Maintenance costs (first 10 years) ($)	**6,903,929**			**864,458**		
Maintenance costs (11 – 20 years) ($)	**6,903,929**			**6,523,868**		
Maintenance cost per lamp per year	**64.8**			**34.7**		
Maintenance cost savings ($)	**30.1**					

12. The weighted average material cost is based on the cost of each component and the frequency of their replacement. The projections assume a linear failure rate of components. The number of maintenance visits is based on number of replacements for the components and assumes that 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 lights have a 10-year warranty, they do not incur material costs over the first 10 years of their useful life.

13. Valuation of the CO_2 emissions avoided by the project was carried out using data from the Social Cost of Carbon (SCC) model. SCC is an estimate of the economic damage associated with a small increase in 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 replacement of the HPS/MV lights will reduce carbon emissions by an average of 3,606 tonnes of CO_2 p.a. from 2019.

CALCULATION OF ECONOMIC RATE OF RETURN

		0	1	2	3	4	5	6	7	8	9 - 20
Project Year	**Unit**	**2017**	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026 - 2037**
Reduction in energy consumption	MWh	-	2,624	5,248	5,248	5,248	5,248	5,248	5,248	5,248	5,248
Fuel savings	$'000	0	1,150	2,300	2,300	2,300	2,300	2,300	2,300	2,300	2,300
Generation (O&M) savings	$'000	0	100	200	200	200	200	200	200	200	200
Street light maintenance savings	$'000	0	160	321	321	321	321	321	321	321	321
Social cost of carbon avoided	$'000	0	223	446	446	446	446	446	446	446	446
Total Ecomimic Benefits	**$'000**	**0**	**1634**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**
Capital Expenditure	**$'000**	**13,293**	**1,589**	**0**							
Net Benefits		**-13,293**	**44**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**	**3,267**

ERR= 20%

NPV= $7,049

APPENDIX 4.5

APPENDIX 4.6

GENDER MARKER ANALYSIS

Project Cycle Stage	Criteria	Score
Analysis: Introduction/ Background/ Preparation	Consultations with women/girls/men/boys and relevant gender-related or sector-related public or private organisations have taken place. Social analysis identifies gender issues and priorities. Macroeconomic analysis identifies gender issues and priorities.	0 0.25 0
Design: Project Proposal/ Definition/ Objective/ Description	To address the needs of women/girls and men/boys concrete interventions to reduce existing gender disparities have been designed. Effect on project outcome is direct. Project objective / outcome includes gender equality.	0 0
Implementation: Execution	Implementation arrangements (gender mainstreaming capacity building or gender expertise in implementing agency) to enhance the gender capacity of the implementing agency. Effect on project outcome is indirect. Terms of reference of project coordinating unit / project management unit include responsibilities of gender mainstreaming, especially at the levels of the project coordinator/director and the Monitoring and Evaluation (M&E) Officer.	0 0
M&E: Results-Monitoring-Framework (RMF)	Sex-disaggregated data included in the baselines, indicators and targets of the RMF. *Or* Collection of sex-disaggregated data required for M&E (stated and budgeted in Project) At least one gender-specific indicator at the outcome and/or output level in the RMF.	0 0
Maximum Score:		0.25
Scoring Code		
Gender Specific (GS) and Gender Mainstreamed (GM):: if 3 to 4 points **Marginally Mainstreamed (MM):** if 1.5 to 2.5 points. **NO:** if projects score zero or 1; if NO please give a justification why		

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

APPENDIX 6.1

BORROWER, EXECUTING AGENCY AND IMPLEMENTING AGENCY

GENERAL

1. The Borrower is GOSKN and the Project will be executed by SKELEC.

THE BORROWER

2. Section 3 of the Loans (Caribbean Development Bank) Act, Cap. 20.28 of the laws of St. Christopher and Nevis, as amended (the Act), authorises GOSKN, through the Minister of Finance, to borrow from CDB such sums as the GOSKN may require, or guarantee borrowings from CDB, in accordance with the provisions of the Loan Agreement or guarantee agreements made between GOSKN and CDB.

3. The Minister of Finance is authorised to execute loan agreements on behalf of GOSKN provided that the aggregate amount outstanding by way of principal on any amount borrowed or guaranteed by GOSKN under the Act does not exceed three hundred and fifty million dollars ($350,000,000), or such greater sum as the National Assembly may by resolution specify. A copy of any agreement entered into between GOSKN and CDB under the authority of Section 3 of the Act must, as soon as practicable after the same has been concluded, be laid before the National Assembly.

4. The amounts borrowed by GOSKN from CDB under the Act, together with all interest and other charges thereon, as well as amounts payable by GOSKN under any guarantee given by GOSKN under the Act and the Finance Act, are charged upon and payable out of the Consolidated Fund of SKN.

THE EXECUTING AGENCY

Legal Status

5. SKELEC is a private company limited by shares (a limited liability company) incorporated in St. Kitts under the Companies Act, Cap. 21.03 of the laws of St. Kitts on May 25, 2011. SKELEC took over the whole of the undertakings of the Electricity Department of St. Kitts on August 1, 2011, pursuant to the St. Christopher Electricity Supply Vesting Order, 2011. SKELEC operates under an exclusive statutory license[1], which grants it the exclusive right to generate and supply electricity for public purposes in St. Kitts for a period of 25 years, subject to the provisions of the Act and the Asset Operations and Management Agreement dates June 21, 2011 between SKELEC and GOSKN.

6. The Company has a separate and distinct personality from those of its directors and shareholder. As an incorporated company, it has the capacity, rights, powers, and privileges of an individual and is empowered to carry on business and conduct its affairs as such, except for those commercial activities which are restricted by the Companies Act. Pursuant to its Memorandum and Articles of Association, the company is authorised to engage in any lawful business activity, specifically but not limited to the supply, generation, transmission or distribution of electricity and all activities ancillary and necessary to the conduct of its business.

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[1] The St. Kitts Electricity Company Limited (Public Supply of Electricity) License 2011.

Shareholding

7. SKELEC's sole shareholder is the Government of St. Kitts and Nevis, which holds 1,000 ordinary shares in the company's capital. The company's Memorandum of Association authorise the issuance of a maximum of 1,000,000 shares at a value of XCD1.00 each

Management and Control

8. Subject to the provisions of the Companies Act, SKELEC's Memorandum and Articles of Association, and the any special resolutions of the Company, the directors of SKELEC are authorised to manage the company's business and exercise all business of the company. SKELEC's Memorandum and Articles of Association, do not specify a minimum or maximum number of directors is specified. The Board presently comprises eight Directors.

THE IMPLEMENTING AGENCY

Legal Status

9. NEVLEC is a limited liability company incorporated in Nevis under the Companies Ordinance of Nevis (the Companies Ordinance) on January 14, 2000. It has the capacity and, subject to the Companies Ordinance, the rights, powers and privileges of an individual and is empowered to implement the project.

Shareholding

10. NEVLEC is authorised by its Articles of Incorporation to issue an unlimited number of ordinary shares. All shares issued to date are beneficially owned by NIA.

Management and Control

11. Under the Companies Ordinance and NEVLEC's By Laws, the directors of NEVLEC are authorised to exercise the company's powers directly or indirectly through its employees and to manage the business and affairs of NEVLEC. Under its Articles of Incorporation, NEVLEC shall have a minimum of five directors. No maximum number of directors is specified. The Board presently comprises ten directors. NEVLEC is currently controlled by NIA.

APPENDIX 6.2

DUTIES OF THE PROJECT COORDINATOR

1. The PC will lead the implementation team and will be responsible for coordinating and monitoring all aspects of the implementation of the Project on St. Kitts and Nevis. On St. Kitts, PC will be supported by a PE, who will oversee the installation activities undertaken by SKELEC crews. On Nevis, a PMN will manage the project. PMN will oversee the installation work by NEVLEC crews and disposal of disused materials. For the purposes of project implementation, PMN will liaise with PC on matters related to procurement, the support of the Engineering Consultant, and for the submission of progress reports. Additional administrative, technical and clerical support will be provided to PC and PMN by SKELEC and NEVLEC, respectively. PC's duties will include, but will not be limited to:

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

(b) leading the project implementation team, including PE assigned by SKELEC for implementation of the project in St. Kitts, and PMN assigned by NEVLEC for implementation of the project in Nevis;

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

(d) administering the LED supply and waste disposal contracts;

(e) managing all project-related procurement, 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;

(f) supervising the Engineering Consultant on behalf of SKELEC/NEVLEC;

(g) submitting Consultant's Reports and progress reports to GOSKN and CDB;

(h) submitting to CDB, within four weeks after the end of each quarter, Quarterly Reports on the investment cost of the Project;

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

(j) representing SKELEC/NEVLEC in all dealings with the consultant, suppliers and contractors;

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

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

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

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

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

DUTIES OF THE PROJECT ENGINEER

1. The PE will report to the PC and will mainly be responsible for oversight of the installation crews retrofitting lights in St. Kitts. 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) assisting PC in the preparation of procurement documents;

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

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

(f) liaising with the engineering consultant for technical support during installation;

(g) ensuring adherence to the ESMP;

(h) submitting to PC, monthly reports on the progress of installation and disposal activities in St. Kitts;

(i) assisting PC with the preparation and submission of a Project Completion Report by the deadline specified in the Reporting Requirements contained in CDB's Appraisal Report; and

(j) any other duties assigned by PC.

DUTIES OF THE PROJECT MANAGER, NEVIS

1. The PMN will report to the PC and will be responsible for managing the implementation of the project on Nevis, coordinating all NEVLEC activities, including oversight of installation crews retrofitting the lights. 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) assisting PC with management and administration of the implementation of the Supervision Consultancy.

(f) assisting PC with administration of the LED supply and waste disposal contracts;

(g) liaising with the engineering consultant for technical support during installation;

(h) ensuring adherence to the ESMP;

(i) submitting to PC (within two weeks after the end of each month), the monthly reports prepared by the engineering consultants on the progress of the works;

(j) submitting to PC, within two weeks after the end of each quarter, Quarterly Reports on the investment cost of the Project 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;

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

(l) any other duties assigned by PC.

APPENDIX 6.3

INDICATIVE LIST OF MATTERS TO BE COVERED UNDER ST. KITTS ELECTRICITY COMPANY LIMITED / NEVIS ELECTRICITY COMPANY (NEVLEC) LIMITED MEMORANDUM OF UNDERSTANDING

1. Coordination of the implementation of the project will be undertaken by SKELEC, which will be responsible for project implementation in St. Kitts, and oversight of the overall project. NEVLEC will oversee implementation of the Project in Nevis. Coordination of the project between the two islands of the federation will be facilitated through a MOU between SKELEC and NEVLEC. 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 GOSKN;

(c) the respective roles and responsibilities of MSD, SKELEC and NEVLEC;

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

(e) assignment of PC by SKELEC;

(f) assignment of PMN by NEVLEC;

(g) responsibilities in respect of the procurement activities;

(h) the quantity of goods to be distributed for installation in St. Kitts and in Nevis, respectively;

(i) PMN reporting to PC for the purposes of the project;

(j) monitoring of the project activities in Nevis by NEVLEC management;

(k) commitment to assign technical and administrative personnel to support PMN as required;

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

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

(n) commitment to cooperate with the Supervision Consultant;

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

(p) reporting obligations.

APPENDIX 6.4

DRAFT TERMS OF REFERENCE

CONSULTANCY SERVICES FOR THE SUPERVISION OF STREET LIGHT RETROFITTING PROJECT

1. BACKGROUND

1.1 The Government of St. Kitts and Nevis (GOSKN) has received financing from the Caribbean Development Bank (CDB) for retrofitting of street lights in the country. The Project aims to replace approximately 10,650 street lamps and flood lamps across both islands of St. Kitts and Nevis with high efficient Light-emitting Diodes (LED) models. The installations on St. Kitts and Nevis will be undertaken by the staff of the St. Kitts Electricity Company Limited (SKELEC) and Nevis Electricity Company (NEVLEC) Limited (NEVLEC), respectively.

2. OBJECTIVES

2.1 The objective of this Consultancy is to support SKELEC/NEVLEC during 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 disposal contract for pricing by bidders, and finalisation by the disposal contractor. The Consultant will prepare an installation 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 SKELEC and NEVLEC for adherence to manufacturer's recommendations.

3. SCOPE OF WORK

3.1 The Supervision Consultants will undertake the following tasks:

(a) preparing bidding documents for the LED supply and waste disposal contracts to allow GOSKN to solicit bids. In this regard, the consultant will be required to conform to CDB's Standard Bidding Documents or other suitable alternative documents;

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

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

(d) develop objective criteria for field testing of samples of lamps provided as part of tender, such that the criteria can be included in the evaluation process to be described in the bidding documents;

(e) liaise with the Department of Environment and other key stakeholders and prepare the ESMP for the proper handling and storage of the light fixtures being disposed. Integrate appropriate hazardous waste handling and disposal protocols into the waste disposal contract document;

(f) preparation of a LED fixture installation plan. This should include: identifying personnel, equipment and material resource requirements to support the timely installation; make recommendations for the phased geographical role out of the installation with proposed timelines for each section or area and logistics required for installation on Nevis;

(g) 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;

(h) assist SKELEC and NEVLEC to develop waste management policies;

(i) inspection of LED installation 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) verification of force account activities and the waste disposal contract;

(m) consultation and advice to SKELEC/NEVLEC during installation.

(n) 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;

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

(p) 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

4.1 The Supervision Consultants will report to the Project Coordinator (PC) within SKELEC. 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 GOSKN officials and stakeholders. The Consultants will also liaise with the Project Engineer within SKELEC, who will oversee the installation activities.

5. QUALIFICATIONS AND EXPERIENCE

5.1 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.

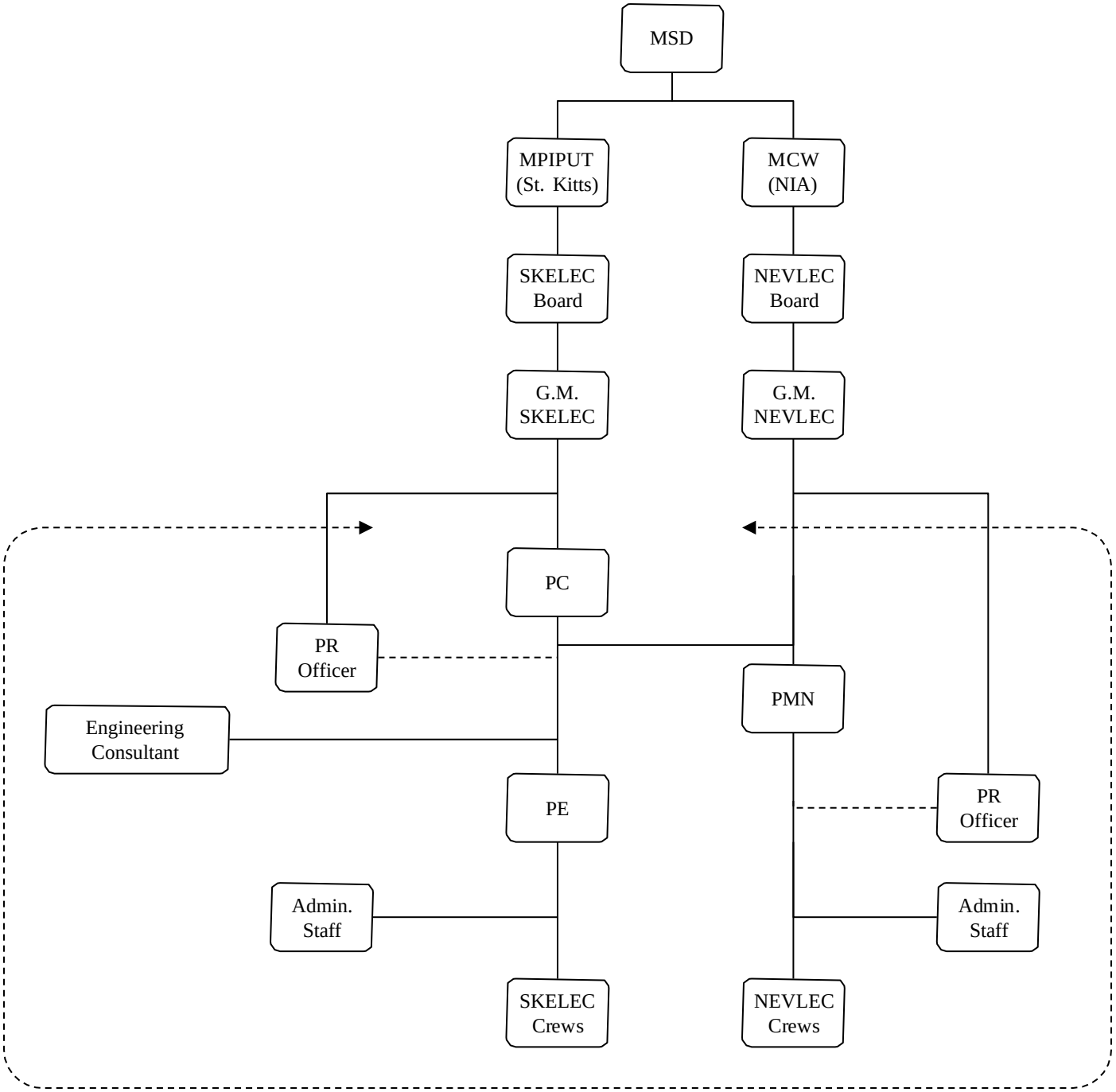
6. DURATION

6.1 The Consultancy is to be implemented intermittently over a period of 17 months.

BUDGET
(USD)

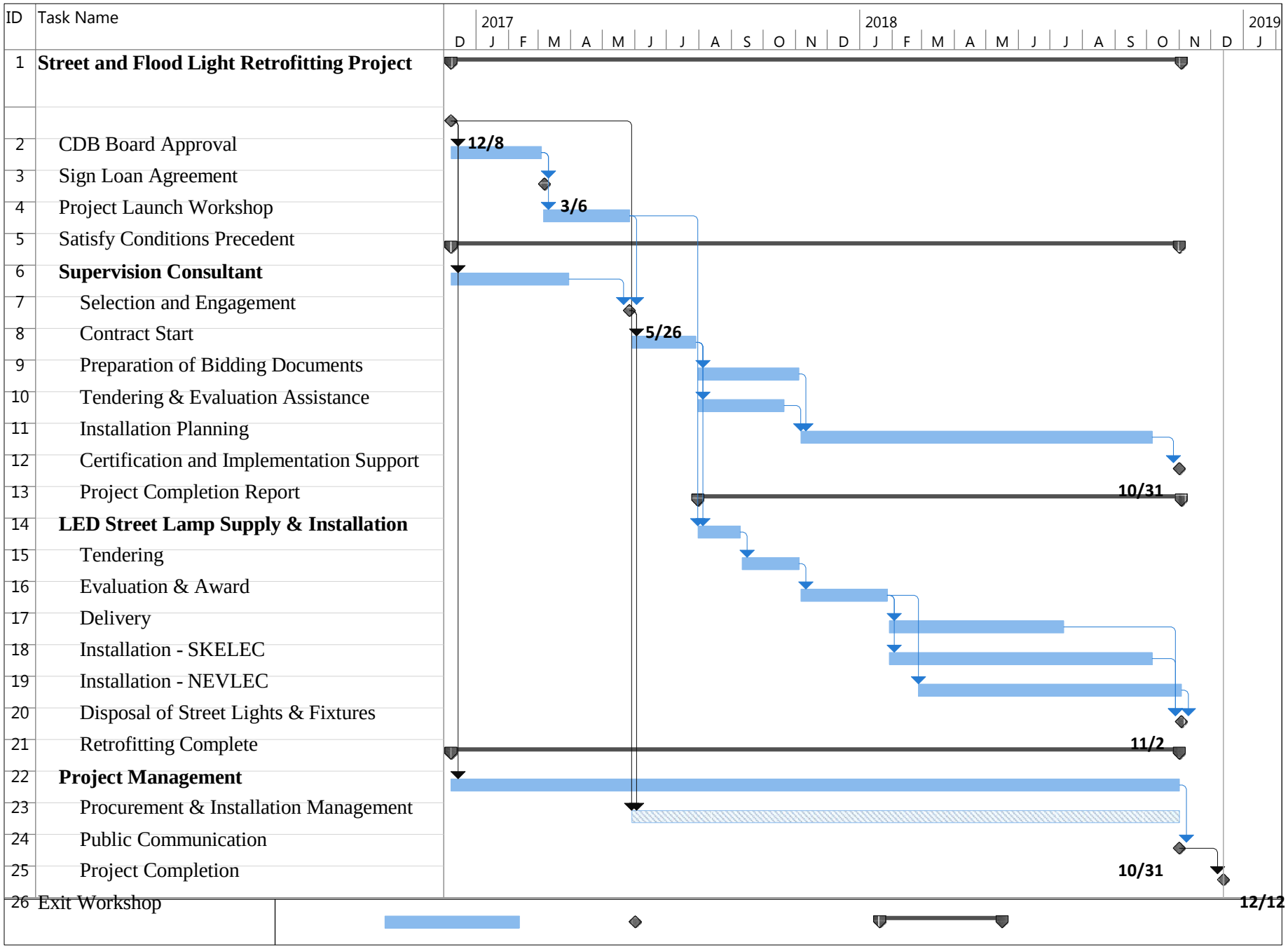
This information is withheld in accordance with one or more of the exceptions to disclosure under the Bank's Information Disclosure Policy.

PROJECT MANAGEMENT ORGANISATIONAL CHART



APPENDIX 6.5

PROJECT IMPLEMENTATION SCHEDULE



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 GOSKN, SKELEC and NEVLEC. 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 Antigua and Barbuda 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, Executing Agency (SKELEC) and Implementing Agency in Nevis (NEVLEC). 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 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. PC 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 Project Completion Report (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 Audit and Post-Evaluation Committee.

TABLE 1: STAFF SKILLS REQUIRED

Period	Focus	Skills and Resources Estimate	
January – 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 TA reports. 8. 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 2 weeks 1 week 0.5 weeks 1 week 2 weeks 1 week

TABLE 1: STAFF SKILLS REQUIRED (Cont'd)

Period	Focus	Skills and Resources Estimate	
January – December 2018	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 TA reports. 8. Review of Monthly and Quarterly Reports.	Lead Project Supervisor Legal Counsel Financial Analyst Environmental Specialist Social Specialist Gender Specialist Administrative Assistant Divisional Secretary	4 weeks 0.5 weeks 0.5 weeks 2 weeks 1 week 0.5 weeks 2 weeks 1 week

APPENDIX 6.8

PROCUREMENT PLAN

A. General

1. **Project Information:**

Country: St. Kitts and Nevis

Borrower: Government of St. Kitts and Nevis

Project Name: Street and Flood Light Retrofitting Project

Project Executing Agency: SKELEC

2. **Bank's Approval Date of the Procurement Plan:** December 8, 2016

3. **Period Covered By This Procurement Plan:** December 2016 to June 2018

B. Goods and Works and Non-Consulting Services

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

	Procurement Method	Prior Review Threshold (USD)	Comments
1.	ICB (Goods)		Tender Documents for works will be subject to prior review.

2. **Prequalification.** Yes

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

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

(a) A waiver of CDB's Guidelines for Procurement (January 2006), where EIB CALC resources are being used together with CDB's E&M resources for the supply of LED lamps and disposal of the removed fixtures, to extend eligibility to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.

(b) Bidders under the LED Lamps Supply and Installation component must submit the "Covenant of Integrity" in the form attached hereto at the Annex.

(c) Procurement notices in respect of CALC-financed contracts shall be published in the Official Journal of the European Union where above the threshold for EU advertising.

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

1	2	3	4	5	6	7	8
Ref No.	**Contract (Description)**	**Estimated Cost (USD '000)**	**Procurement Method**	**Prequalification (Yes/No)**	**Bank Review (Prior/Post)**	**Expected Bid-Opening Date**	**Comments**
1.	Supply of LED Lamp and Consumption Monitoring Equipment		ICB	No	Prior	September 2017	-
2.	LED Street Lamps Installation – SKELEC		FA	No	N/A	N/A	NBF
3.	LED Street Lamps Installation - NEVLEC		FA	No	N/A	N/A	NBF
4.	Disposal of Street Lamps & Fixtures		ICB	No	Prior	January 2018	-

C. 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) Where EIB CALC resource are being utilised to finance the Supervision Consultancy services, eligibility shall be extended to countries eligible for procurement under EIB-funded projects which are not CDB Member Countries.

   (b) Bidders must submit the "Covenant of Integrity" in the form attached hereto at the Annex.

   (c) Procurement notices in respect of CALC-financed contracts shall be published in the Official Journal of the European Union where above the threshold for European Union advertising.

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.	Supervision Consulting Services		FBS	Prior	March 2017	-

D. Implementing Agency Capacity Building Activities with Time Schedule

PLW: Schedule to be coordinated with GOSKN in the first quarter of 2017.

E. Summary of Proposed Procurement Arrangement

	CDB (USD'000)								NBF (USD'000)			Total Cost (USD'000)
	Primary	Secondary			Other							
Project Component	**ICB**	**LIB**	**RCB**	**NCB**	**Shopping**	**FBS**	**FA**	**QCBS**	**GOSKN**	**SKE**	**NEV**	
LED Lamp Supply & Installation												
Supervision Consulting Services												
Climate Risk Screening												
Project Management												
Physical Contingencies												
Price Contingencies												
IDC and Commitment Fees												
Total												

DC	Direct Contracting	NCB	National Competitive Bidding
FA	Force Account	QBS	Quality Based Selection
ICB	International Competitive Bidding	QCB	Quality and Cost-Based
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. Kitts and Nevis
from a Tenderer, Contractor, Supplier or Consultant to be attached to its Tender (or to the Contract in the case of a negotiated procedure)

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

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

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

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

For the purpose of this Covenant, Prohibited Conduct 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;

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[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 GOSKN.

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 LOAN DISBURSEMENT SCHEDULE

YEAR	QUARTER	E&M LOAN	CALC LOAN	FINANCE CHARGES	TOTAL	CUMULATIVE DISBURSEMENT
2017	**Q1**	51	76	0	128	128
	Q2	51	76	38	166	294
	Q3	601	895	43	1,539	1,833
	Q4	5,027	7,487	78	12,592	14,425
SUB-TOTAL		**5,731**	**8,535**	**159**	**14,425**	**14,425**
2018	**Q1**	0	242	111	353	14,778
	Q2	0	242	100	342	15,120
	Q3	0	242	101	343	15,463
	Q4	0	73	102	175	15,638
SUB-TOTAL		**0**	**800**	**413**	**1,213**	**15,638**
TOTAL		**5,731**	**9,334**	**572**	**15,638**	**0**

APPENDIX 6.10

REPORTING REQUIREMENTS

	Report Implementation	Frequency	Deadline for Submission	Responsibility
1.	Monthly progress reports on LED Lamps Installation by the Engineering Consultants.	Monthly	Within two weeks of the end of each calendar month commencing one month after engagement.	PC
2.	Report on Investment Cost (Sample Guidelines in Annex 1).	Quarterly	Within six weeks of the end of each quarter commencing with the quarter following the assignment of PC, until installation is completed.	PC
3.	Completion Reports for Installation Works prepared by the Engineering Consultants.	-	Within three weeks of the completion of installation by each of SKELEC and NEVLEC.	PC
4.	Project Implementation Completion Report.	-	Within six weeks of completion of all installation and disposal.	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			Estimated Expenditure to Complete Project	Latest Estimate of Expenditure	Project Estimate as per Appraisal Report	Variance Favourable/ (Adverse)	Comments/Reasons for adverse Variance and Financing Proposals to Meet Cost Overrun
			Ending	Ending	Ending					
(1)	(2)	(3)	(4	(4)	(4)	(5)	(6)	(7)	(8)	(9)
LED Lamps Supply										
Consumption Monitoring Equipment										
Installation costs										
Waste Disposal										
Supervision Consultant										
Project Management and Administration										
Base Cost										
Physical Contingencies										
Price Contingencies										
Sub-Total										
Interest During Construction										
Commitment Charge										
Total Project Costs										

ANNEX TO APPENDIX 6.10

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.

APPENDIX 7.1

EXCLUDED ACTIVITIES

1. GOSKN 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.