CARIBBEAN DEVELOPMENT BANK

TECHNICAL ASSISTANCE
BUILDING RESILIENCE OF THE ELECTRICITY SECTOR INFRASTRUCTURE TO GEOPHYSICAL AND CLIMATE RELATED HAZARDS - ST. VINCENT AND THE GRENADINES

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

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MAY 22, 2017

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CARIBBEAN DEVELOPMENT BANK

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

TO BE HELD IN THE TURKS AND CAICOS ISLANDS

MAY 22, 2017

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TECHNICAL ASSISTANCE

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1. APPLICATION

1.01 By letter dated April 12, 2017, the Government of St. Vincent and the Grenadines (GOSVG), through the Ministry of Economic Planning, Sustainable Development, Industry Information and Local Government, submitted a request for funding from the Caribbean Development Bank (CDB) to assist in financing a climate risk vulnerability assessment (CRVA) and a multi-hazard risk profile for the electricity sector of St. Vincent and the Grenadines (SVG), together with detailed designs for improving resilience of the hydro power facilities against geophysical and climate related hazards.

1.02 The beneficiary of this technical assistance (TA) project will be GOSVG and the executing agency will be St. Vincent Electricity Services Limited (VINLEC). VINLEC, a state-owned entity, is SVG's sole supplier of electricity, serves 42,000 customers and provides electricity to 98 percent (%) of the population of SVG.

1.03 The total cost of this project is estimated at seven hundred and sixty-one thousand, two hundred and thirty-four Euros (EUR761,234), of which CDB's contribution will be a Grant to GOSVG from CDB's Special Funds Resources (SFR) of an amount not exceeding the equivalent of six hundred and forty-eight thousand, seven hundred and twenty-five Euros (EUR648,725), allocated from resources provided under the African Caribbean Pacific - European Union - Caribbean Development Bank Natural Disaster Risk Management (ACP-EU-CDB-NDRM) in CARIFORUM Countries contribution agreement. The balance of the TA project costs, equivalent to one hundred and twelve thousand, five hundred and nine Euros (EUR112,509), will be met by GOSVG.

2. BACKGROUND

2.01 SVG[1] is an archipelagic state, located in the Windward Islands. The islands cover a total land area of 389 square kilometres (km^2). SVG is located in a seismically active zone along the eastern margin of

[1] The islands of St. Vincent and the Grenadines, with a population of approximately 105,000 persons (300 inhabitants/km^2), includes the mainland of St. Vincent (344 km^2) and the northern two-thirds of the Grenadines (45 km^2), a chain of smaller islands. The island of St. Vincent is volcanic and includes little level ground with much of the population being concentrated in coastal communities. The island has very rocky and steep slopes, with numerous streams and rivers.

the Caribbean tectonic plate, and is in the Atlantic Ocean hurricane belt. This makes the islands vulnerable to a variety of meteorological and geophysical hazards, due to its location and geological make up. These include rapid onset hazards such as hurricanes, storm surge, riverine and flash flooding, volcanic eruption, earthquake, landslide, rock-fall, tsunami and slow onset hazards such as drought and sea level rise. Tropical storms and hurricanes have been the most frequently occurring hazards and responsible for the greatest losses and devastation. Climate variability is likely to exacerbate the meteorological hazards, resulting in an intensification of storms and rainfall events. These hazards can potentially negatively impact the country's economic and fiscal position.

2.02 In December 2013, a major storm event further exposed the vulnerability of the country's infrastructure by extensively damaging roads, bridges, river defences, drainage, water intake structures, power generation, transmission and distribution infrastructure, agriculture, forestry, and several communities[2] throughout the mainland of St. Vincent. For the electricity sector, the hydropower facilities received the most significant damage with a 50% loss to its production capacity. This represented 17%[3] of the total generating system. Overall damage to the electricity sector was 8.5 million (mn) United States dollars.

2.03 A stated GOSVG policy[4] objective for the energy sector is reduced dependence on imported energy through continued expanded exploitation of indigenous resources. One such indigenous resource is hydropower, which is currently dependent on a significantly large catchment area (forest and river ecosystems). VINLEC has an installed generation capacity of 58.3 megawatts (MW), of which 5.6 MW comes from three hydropower plants, with the remainder provided by diesel generators and a very small share by solar photovoltaic. Hydroelectric plants on St. Vincent consist of three hydro development schemes at Cumberland, Richmond and South Rivers.

2.04 VINLEC's facilities vary in age from 5 years to 40 years and the oldest facilities are the hydropower stations. These facilities are constantly undergoing repairs and maintenance due to their aging physical infrastructure. Changing climate may further expose existing vulnerability and make finding of efficient long-term solutions increasingly costly for the electricity sector, which represents approximately 2.5% of gross domestic product (GDP) [2016][5].

3. PROPOSAL

3.01 It is proposed that CDB approve a grant to GOSVG from the SFR of CDB in an amount not exceeding the equivalent of six hundred and forty-eight thousand seven hundred and twenty-five Euros (EUR648,725), allocated from resources provided under the ACP-EU-CDB-NDRM in CARIFORUM Countries Contribution Agreement to fund consulting services to carry out the following:

(a) CRVA;

(b) development of a risk profile of the electricity sector for SVG;

(c) identification of investment needs for climate resilience and natural hazards mitigation; and

(d) preparation of detailed designs for hydropower infrastructure resilience upgrade.

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2 Rapid Damage and Loss Assessment (DaLA), January 16, 2014, page 6 – executive summary
3 Rapid Damage and Loss Assessment (DaLA) January 16, 2014
4 GOSVG Development Economic and Social Development Plan
5 Eastern Caribbean Central Bank Statistics website: http://eccb-centralbank.org/Statistics/index.asp#GDP

3.02 The Draft Terms of Reference (TOR) for the consultancy services assignment are presented at Appendix 1.

3.03 The proposed project is consistent with:

(a) The purpose and objectives of African Caribbean Pacific – European Union – Natural Disaster Risk Management (ACP-EU-NDRM);

(b) ACP-EU-CDB Result Area 2: Improved local, national and regional resilience through strengthened early warning, national risk profiling and community-based Disaster Risk Reduction (DRR) and Climate Vulnerability Climate Adaptation (CVCA); and Area 3: Sector resilience strengthened in key public policy sectors, through DRR and CVCA mainstreaming;

(c) CDB's Climate Resilient Strategy 2012-2017 of mainstreaming climate change adaptation into sectoral policies, strategies and plans;

(d) CDB's Strategic Objective of supporting inclusive growth and sustainable development within its Borrowing Member Countries (BMCs);

(e) CDB's Corporate Priority of strengthening and modernising social and economic infrastructure;

(f) Special Development Fund 9 (SDF 9) themes of: (i) Environmental Sustainability and Climate Change; and (ii) Inclusive and Sustainable Growth;

(g) CDB's TA Policy and Operational Strategy of commitment to strengthening the synergies between TA operations and the Bank's investment lending; and

(h) Sustainable Development Goals (SDG) 9, 13[6].

4. OUTCOME

4.01 The outcome of the study is (a) strengthened capacity of SVG to provide electricity infrastructure resilient to natural hazards and climate change (CC) impacts; and (b) a technically and economically feasible project that will result in improved reliability of the hydropower electricity infrastructure that is resilient to geophysical and climate related hazards. A Design Monitoring Framework for this activity is presented at Appendix 2.

5. JUSTIFICATION

5.01 Assessing vulnerability to natural hazards and to climate variability and change is important for defining the risks posed to the electricity sector and providing information for identifying measures to reduce the sector's vulnerability. It enables key stakeholders and decision-makers to identify the most

[6] SDG 9 – Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.
SDG 13 – Take urgent action to combat climate change and its impacts

vulnerable areas, assets, and demographical groups. Based on this information, CC adaptation options and natural hazards mitigation measures can be developed and implemented.

5.02 VINLEC lost 17% of its production after the trough event in 2013 caused damage to the electricity infrastructure. Climate projections for SVG suggest an increase in average atmospheric temperature; reduced average annual rainfall; increased sea surface temperatures; and the potential for an increase in the intensity of tropical storms by the end of the century[7]. This can potentially significantly impact electricity infrastructure in SVG. Prolonged loss of electricity service after natural disaster exacerbates recovery for poor households. Currently, electricity infrastructure design, construction and maintenance in SVG are undertaken with guidelines that do not explicitly account for natural hazards and future changes in climate parameters. Climate resilience of electricity infrastructure is not only essential for the economic development of BMCs, but has important gender-sensitive and citizen security implications for the social well-being of the population. The improvement of the electricity infrastructure resilience to geophysical and climate related hazards will enhance the reliability of VINLEC's assets providing economically and environmentally acceptable electricity services.

5.03 The assets associated with hydropower suffered the most extensive damage during recent trough and hurricane events between May 2010 and November 2016. Despite some rehabilitation work and frequent maintenance, VINLEC has been unable to provide reliable and efficient electricity from its hydropower plants, which contribute to cost savings from a renewable energy source. Currently, the potential hydropower savings[8] is 1.5 mn Eastern Caribbean dollars monthly. The TA will provide an investment programme for the electricity sector, and detailed designs for upgrading its aging hydropower infrastructure in order to facilitate the appraisal and financing of a capital project.

5.04 Based on CDB's Performance Rating System, the Project has been assessed as highly satisfactory with a score of 3.5. This suggests that it is likely to contribute to development effectiveness. Appendix 3 shows the rating system.

5.05 The study is assessed as gender mainstreamed, and has the potential to contribute to gender equality. The Project includes TOR for a detailed gender analysis (Annex to Appendix 1) which is expected to inform the design of a capital project proposal with explicit gender interventions and which would impact economic and social outcomes for men and women. The gender marker is summarised in Table 1 below and the Gender Marker Analysis is shown at Appendix 4.

TABLE 1: GENDER MARKER SUMMARY

Gender Marker	**Analysis**	**Design**	**Score**	**Code**
	1	2	**3.0**	**GM[9]**

6. EXECUTION

6.01 Project management will be performed by VINLEC. VINLEC will assign a Project Coordinator (PC) and support staff as required, to ensure the successful execution of the Project. VINLEC, with its own resources, has successfully implemented projects financed by CDB over the period 1981-2006. It will be a condition precedent to first disbursement of the grant that a person, whose qualifications and

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7 CARIBSAVE Climate Change Risk Atlas (CCCRA) - St. Vincent and the Grenadines. DFID, AusAID and the CARIBSAVE Partnership, Barbados, West Indies.

8 VINLEC's Manager – Engineering, Dr. Vaughn Lewis

9 Gender Mainstreamed*:* The Project has significant potential to contribute to gender equality.

experience are acceptable to CDB, is assigned as PC. The duties and responsibilities of the PC are set out at Appendix 5.

6.02 A consulting firm with expertise in civil, structural and geotechnical engineering, hydrology, CRVA, disaster risk management, environmental and social impact assessments, will be contracted to carry out a climate vulnerability and multi-hazard risk assessment study, prepare investment plans and detailed designs for improving resilience of the hydropower facilities against geophysical and climate related hazards.

6.03 The TOR for the consultancy is attached at Appendix 1. The consultancy has an estimated duration of eight calendar months.

6.04 It is expected that the first disbursement of the grant will be made by November 1, 2017. The grant is expected to be fully disbursed by July 31, 2018.

6.05 GOSVG and VINLEC will be required to collect and store, in a location accessible to the consultants, all existing maps, reports, drawings, studies and any other relevant documentation required for the consultancy, including data created as a result of the Project.

7. RISK ASSESSMENT AND MITIGATION

7.01 There are no material risks identified.

8. COST AND FINANCING

8.01 The total cost of the study is estimated at EUR761,234. The detailed budget is shown at Appendix 6. The financing plan is summarised in Table 2 below.

TABLE 2: SUMMARY FINANCING PLAN
(€)

Item	CDB	GOSVG	Total
Professional Fees	375,200	-	375,200
Airfare, Travel, Accommodation and Per Diem	72,000	12,300	84,300
Project Management and Technical Support	142,550	90,000	232,550
Sub-total	**589,750**	**102,300**	**692,050**
Contingency	58,975	10,209	69,841
Total	**648,725**	**112,509**	**761,234**
%	**85**	**15**	**100**

8.02 CDB will fund the professional fees and technical support, which include surveys and investigations, per diem, travel, and contingency which account for 85% of the costs or EUR648,725. The cost of the assignment is reflective of current rates for similar services. GOSVG will meet the remaining 15% of the costs or the equivalent of EUR112,509, in kind, which will consist of local project management, office accommodation, and miscellaneous expenses.

8.03 CDB's contribution in the amount of EUR648,725, is eligible for financing from CDB's SFR.

9. PROCUREMENT

9.01 The procurement of consulting services financed from the proceeds of the grant will be in accordance with CDB's "Guidelines for the Selection and Engagement of Consultants by Recipients of CDB Financing" (October 2011). Financing shall be provided under the ACP-EU-CDB-NDRM in CARIFORUM Countries contribution agreement and thus, in accordance with that agreement, eligibility shall be extended to countries which are eligible for procurement under EU-funded projects, which are not CDB Member Countries. The EU Eligibility Rules are set out in the Annex to Appendix 7. Further Details of the procurement arrangements are provided in the Procurement Plan presented at Appendix 7. Any revisions of the Procurement Plan shall require CDB's prior approval in writing.

10. REPORTING REQUIREMENTS

10.01 The PC will be required to submit to CDB a report on the progress of the Project every two months and the Consultant's Reports required by the TOR.

11. RECOMMENDATION

11.01 It is recommended that CDB make a grant to GOSVG of an amount not exceeding the equivalent of six hundred and forty-eight thousand seven hundred and twenty-five Euros (EUR648,725) (the Grant), from CDB's SFR, allocated from resources provided under the ACP-EU-CDB-NDRM in CARIFORUM Countries contribution agreement, to assist GOSVG in financing consultancy services for the preparation of a CRVA and a multi-hazard risk profile for the electricity sector of SVG, together with detailed designs for improving the hydropower facilities (the Project), on CDB's standard terms and conditions, and on the following terms and conditions:

(1) **Disbursement**:

(a) Except as CDB may otherwise agree, and subject to paragraph (b) below, payment of the Grant shall be made as follows:

(i) an amount not exceeding the equivalent of fifty thousand Euros (EUR50,000) shall be paid by CDB to GOSVG as an advance (the Advance) on account of expenditures in respect of the Project, following receipt by CDB of:

(aa) a request in writing from GOSVG for such funds;

(bb) a copy of the signed contract between GOSVG and the Building Resilience of the Electricity Sector Infrastructure to Geographical and Climate related Hazards Consultant (the Consultant); and

(cc) evidence acceptable to CDB, that the condition precedent to first disbursement of the Grant set out in sub-paragraph (3) below shall have been satisfied; and

(ii) the balance of the Grant shall be paid to GOSVG periodically following receipt by CDB of an account and documentation satisfactory to CDB in support of expenditures incurred by GOSVG in respect of the Project.

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

(i) the first such payment pursuant to sub-paragraph (a) (ii) above until CDB shall have received an account and documentation satisfactory to CDB, in support of expenditures incurred by GOSVG with respect to the Advance;

(ii) any payment pursuant to sub-paragraph (a)(ii) above until CDB shall have received the requisite number of copies of the reports and other deliverables, in form and substance acceptable to CDB, to be furnished for the time being by the Consultant and the PC to GOSVG, VINLEC and CDB in accordance with the TOR set out at Appendix 1 (the TOR) and the Duties and Responsibility List (the List) set out at Appendix 5; and

(iii) payments exceeding the equivalent of five hundred and eighty-three thousand, eight hundred and seventy-three Euros (EUR583,873) representing ninety percent (90%) of the Grant, until CDB shall have:

(aa) received the requisite number of copies of the final report in form and substance acceptable to CDB, required to be furnished by the Consultant and the PC, respectively, to GOSVG, VINLEC and CDB in accordance with the TOR and the List; and

(bb) a certified statement of the expenditures incurred in respect of, and in connection with, the Project.

(2) **Period of Disbursement**:

The first payment of the Grant shall be made by November 1, 2017, and the Grant shall be fully disbursed by July 31, 2018 or such later dates as CDB may specify in writing.

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

The PC referred to in sub-paragraph (5)(b) (i) below shall have been assigned.

(4) **Procurement**:

(a) Procurement shall be in accordance with the procedures set out and/or referred to in the Grant Agreement between CDB, GOSVG and VINLEC or such other procedures as CDB may from time to time specify in writing. The Procurement Plan approved by CDB is set out at Appendix 7. Any revisions to the Procurement Plan shall require CDB's prior approval in writing.

(b) In order to comply with the requirements of the ACP-EU-CDB-NDRM in CARIFORUM Countries contribution agreement (the Contribution Agreement), country eligibility shall be extended to countries which are eligible for procurement under EU-funded projects, which are not CDB Member Countries, in accordance with the European Union Eligibility rules set out in the Annex to Appendix 7.

(5) **Other Conditions**:

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

(i) execute the Project through VINLEC; and

(ii) make the proceeds of the Grant available to VINLEC for the purposes of the Project, and shall take all necessary steps to facilitate and ensure the performance by VINLEC of its obligations set out herein.

(b) Except as CDB may otherwise agree, VINLEC shall:

(i) for the duration of the Project, assign from within its staff a person, with qualifications and experience acceptable to CDB, as PC to carry out the duties and responsibilities set out in Appendix 5 of this report. The qualifications and experience of any person subsequently assigned to the position of PC shall be acceptable to CDB;

(ii) in accordance with the procurement procedures applicable to the Grant select and engage the Consultant to carry out the services set out in the TOR;

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

(iv) undertake to observe and perform the obligations on its part to be observed and performed as set out and required herein and ensure that the proceeds of the Grant are used exclusively for financing the consultancy;

(v) 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;

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

(vii) execute, implement and operate the Project in compliance with all applicable laws and regulations.

(c) GOSVG and VINLEC shall each ensure that all relevant workshops, publications, correspondence, advertisements and promotions associated with the Grant, openly acknowledge the financial support from the EU in the framework of the ACP-EU-CDB-NDRM in CARIFORUM countries and CDB's contribution to the Project, and display the EU, ACP and CDB logos.

(d) GOSVG and VINLEC shall collect and store, in a location accessible to the Consultant, all existing maps, reports, drawings, studies and any other relevant

documentation required for the consultancy, including data created as a result of the Project.

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

(i) meet, or cause to be met:

(aa) the cost of the items designated for financing by GOSVG in the Budget at Appendix 6 (the Budget);

(bb) any amount by which the cost of the Grant exceeds the estimated costs set out in the Budget; and

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

(ii) provide or cause to be provided all other inputs required for the punctual and efficient carrying out of the Project not being financed by CDB.

(f) CDB shall be entitled to suspend, cancel or require a refund of the Grant, or any part thereof, if there shall have been a failure by the donors, to provide the whole or any part of their contribution, under the Contribution Agreement except that GOSVG shall not be required to refund any amount of the Grant already expended by GOSVG in connection with the Project and not recoverable by it.

SUPPORTING DOCUMENTATION

Appendix 1	-	Draft Terms of Reference - Consultancy Services – Risk Assessment and Resilience Planning for the Electricity Sector in St. Vincent and the Grenadines
Appendix 2	-	Design and Monitoring Framework
Appendix 3	-	Performance Rating System
Appendix 4	-	Gender Marker Analysis
Appendix 5	-	Duties and Responsibilities of the Project Coordinator
Appendix 6	-	Budget
Appendix 7	-	Procurement Plan

APPENDIX 1

DRAFT TERMS OF REFERENCE

CONSULTANCY SERVICES – RISK ASSESSMENT AND RESILIENCE PLANNING FOR THE ELECTRICITY SECTOR IN ST. VINCENT AND THE GRENADINES

1. INTRODUCTION

1.01 St. Vincent and the Grenadines[1] (SVG) is an archipelagic state, located in the Windward Islands. The islands cover a total land area of 389 square kilometres (km^2). SVG is located in a seismically active zone along the eastern margin of the Caribbean tectonic plate, and is in the Atlantic Ocean hurricane belt. Thus, this makes the islands vulnerable to a variety of meteorological and geophysical hazards, due to its location and geological make up. These include rapid onset hazards such as hurricanes, storm surge, riverine and flash flooding, volcanic eruption, earthquake, landslide, rock-fall, tsunami and slow onset hazards such as drought and sea level rise. Tropical storms and hurricanes have been the most frequent occurring hazards and responsible for the greatest losses and devastation. Climate variability is likely to exacerbate the meteorological hazards, resulting in an intensification of storms and rainfall events. These hazards can potentially negatively impact the country's economic and fiscal position.

1.02 In December 2013, a major storm event further exposed the vulnerability of the country's infrastructure by extensively damaging roads, bridges, river defences, drainage, water intake, generation, transmission and distribution infrastructure, agriculture, forestry, and settlements. For the electricity sector, the most significant damage was to the hydropower facilities, which lost 50 percent (%) of its production capacity. This represented 17% of the generating system. Overall damage to the electricity sector was 8.5 million United States dollars.

1.03 Consequently, increasing the resilience of the electricity sector to climate events has been accorded high priority by the Government of St. Vincent and the Grenadines (GOSVG). By letter dated April 12, 2017, GOSVG submitted a request for funding from the Caribbean Development Bank (CDB) to assist in financing the services of consultants to prepare a climate vulnerability assessment and a multi-hazard risk profile for the electricity sector of SVG, together with engineering designs for improving the hydropower facilities.

2. OBJECTIVES

2.01 The overall objective of this assessment is to support St. Vincent Electricity Services Limited (VINLEC) in strengthening the resilience of St. Vincent's electricity network to climate and geophysical hazards. More specifically, the aims of the study are to:

(a) undertake a climate risk vulnerability assessment (CRVA) and a multi-hazard risk profile of the electricity sector in St. Vincent; and

(b) prepare a technically and economically feasible project that will result in improved reliable hydropower electricity infrastructure that is resilient to geophysical and climate related hazards.

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[1] The islands of St. Vincent and the Grenadines, with a population of approximately 105,000 persons (300 inhabitants/km^2), includes the mainland of St. Vincent (344 km^2) and the northern two-thirds of the Grenadines (45 km^2), a chain of smaller islands. The island of St. Vincent is volcanic and includes little level ground with much of the population being concentrated in coastal communities. The island has very rocky and steep slopes, with numerous streams and rivers.

2.02 The main output of the study should provide a clear assessment of the existing and projected natural hazard risks affecting the electricity infrastructure in St. Vincent as well as the operations of VINLEC. Specifically, the study will provide a clear ranking of vulnerabilities associated with generation and transmission assets, as well as technical designs for strengthening the hydropower facilities. Outputs from the study will include:

(a) a climate risk and vulnerability assessment (CRVA) of the electricity sector;

(b) a risk profile of SVG's electricity sector;

(c) an investment plan describing the needs for climate resilience and natural hazards mitigation; and

(d) engineering designs to upgrade and strengthen the resilience of the hydropower infrastructure.

3. SCOPE OF WORK

3.01 The Consultant shall conduct all the studies, analyses and field surveys required to achieve the stated objectives of the study. This will include identifying critical assets, characterising main geophysical and climate variability and change related threats, recommending risk reduction measures and preparing engineering designs and costs estimates for the identified high priority adaptation measures. The scope of services of the consultant will include, *inter-alia:*

Phase 1: Climate and Geophysical Risk and Vulnerability Assessment and Climate Resilient Investment Plan

System, Project Components, Description

3.02 The subject of the CRVA is the existing generation and transmission system in the island of St. Vincent, and the generation and transmission system expected 15-20 years into the future. The Consultant will define the system of interest in close coordination with VINLEC as a list as well as in maps, utilising a Geographic Information System (GIS) compatible with VINLEC's usage and should include the characterisation of the assets.

3.03 The determination of all the elements that are part of the "system" is the responsibility of the Consultant who should provide a detailed description of each asset as a unit of analysis in the execution of the CRVA. Each element should be field surveyed, noting its condition and indicating the existing level of performance.

3.04 The Consultant should focus on the selected assets assessing data availability for those assets and understanding the timeframe and other essential characteristics of managing those assets. When compiling this inventory, the Consultant should also gather any information that may help later to evaluate how resilient the asset is to climate stressors, and how costly damage to the asset or reductions in service could be.

3.05 The Consultant should prepare a format for the characterisation of the assets and review with VINLEC and CDB, before proceeding with the data gathering campaign.

Identification of Climate Variables of Interest

3.06 Based on the Consultant's knowledge of the energy sector in St. Vincent, together with initial consultations with key stakeholders to obtain the historical record of hazard occurrence, they should identify the climate variables of interest and provide a detailed characterisation of such variables based on existing observations and previous studies. They will also conduct a trend analysis based on the best available information.

3.07 The Consultant should prepare climate change (CC) scenarios for mid-century and for the end of the century based on the best available information. National communications to the United Nations Framework Convention on Climate Change should guide the selection of future climate scenarios. The scenarios should support the characterisation of the climate variables of interest for mid-century and end of the century.

3.08 Among the climate variables of interest, the following should be included; daily precipitation including maximum (annual) daily precipitation; monthly and seasonal precipitation; daily temperatures (maximum, minimum, median); evapotranspiration estimates (as produced by Global Climate Models and Regional Climate Models); wind speeds at the highest resolution available; and storm surge analysis for appropriate sites. If possible, the climate characterisation should include the geographical distribution of the climate variables of interest in St. Vincent. The Consultant should obtain the future climate data from known networks such as the Caribbean Community Climate Change Centre, and World Bank Climate Change Knowledge Portal, etc.

Climate Susceptibility

3.09 Exposure: The Consultant should assess the level of exposure that each asset has for each natural hazard under study. For example, the preparation of flood maps, for different return periods, is a methodology to identify which assets are exposed to each level of flood risk. For each asset, the Consultant should prepare a matrix indicating the degree of exposure to the natural threats under consideration.

3.10 Susceptibility to damage or service interruptions: For planning and for the identification of sites that should receive immediate attention the susceptibility (or sensitivity) analysis should be followed by a criticality analysis. Performing a criticality assessment is one way to prioritise assets for further study. It provides a structured way to identify the most valuable property that an agency might wish to examine for vulnerability to CC. The Consultant will use the results of the review of assets conducted in paras 3.02 to 3.05 above, to inform and structure feedback from stakeholders and local experts. The Consultant should begin with a consultation with the principal stakeholders (VINLEC and other relevant staff from the transport sector, as well as communities adjoining hotspots along the assets) to obtain the historical record of impacts from previous extreme events and the institutional response.

Climate Impact Analysis

3.11 Climate Vulnerability Assessment (CVA): The combined analysis of exposure, susceptibility, and criticality, will produce a vulnerability assessment. The vulnerability of VINLEC's operations would also be a part of this assessment. The Consultant should conduct workshops with the main stakeholders and VINLEC personnel for verification or endorsement of the results particularly for the critical sites that will be the subject of further study. In reporting on the vulnerability assessment, the Consultant will prepare for the consideration of VINLEC a document describing the methodology followed, the information gathered and the preliminary results obtained, summarising them in the form of a matrix.

3.12 Climate Risk Assessment: A more detailed quantitative vulnerability assessment, which includes economic costs and benefits, will inform the risk assessment. The consequences of the hazards on the assets are weighted, in economic and social impact terms, by the likelihood of occurrence of the hazard. This more detailed analysis is expected only for those sites identified as critical (or priority) by the vulnerability analysis and endorsed by VINLEC. For selected priority sites (including all power plants and areas with highly vulnerable critical assets) identified by the Consultant and agreed with VINLEC, flood maps will be prepared with contour lines indicating flood areas for events with frequencies of one in 20 years, 50 years and 100 years for climate conditions expected by mid-century.

3.13 The Consultant shall indicate in the proposal the additional studies that should be conducted on each site to gain a more quantitative perspective of the risk, incorporating economic and social variables. These studies should serve as the basis for the formulation of risk mitigation measures.

Assessment and Selection of Resilience and Adaptation Measures

3.14 Identification of resilience and adaptation measures (with emphasis on the identification, prioritisation and preliminary analysis of alternatives): Once agreement with VINLEC on the critical sites has been reached, the Consultant will initiate the formulation of risk reduction measures. Actions to address those risks associated with or enhanced due to CC will be the adaptation measures. In summarising the risk assessment and identification of resilience measures, the consultant will prepare a risk matrix showing for each asset, the key hazards/risks, associated impacts and the proposed response measures.

3.15 The Consultant should prepare a brief feasibility analysis for each critical site, indicating and characterising the current threats and those associated with climate conditions at mid-century, as initially identified above. The feasibility study should describe and quantify the potential consequences of the threat (see 3.12 above); make a preliminary identification and description of the resilience measures applicable to the specific conditions identified; and recommend and justify a particular course of action. This should include brief financial and economic justification. For sites ranked as highly vulnerable and of critical importance for the provision of reliable electricity, the assessment will provide "conceptual designs" of recommended measures to mitigate the risks identified. The Consultant will finalise the site-specific feasibility report following feedback from VINLEC.

Assessment of Adaptive Capacity

3.16 The assessment of adaptive capacity would examine the institutional capacity of VINLEC to implement adaptation measures. It would also consider the suitability of the legal, planning and policy framework in the electricity sector to support the mainstreaming of climate and disaster resilience and recommend any capacity building needs to ensure that the network is geared towards achieving resilience.

Resilience/Adaptation Plan of Action (scheduling, budgeting)

3.17 Based on the information from the feasibility reports for each critical site the Consultant will prepare a Climate and Disaster Resilient Investment Plan for the execution of the recommended measures. The Plan will include scheduling and budgeting. It will also include proposals for strengthening VINLEC's institutional capacity to address CC and preparation of emergency management plans. Specifically for the hydropower subsector, the Consultant will prepare the Terms of Reference (TOR) and the bidding documents for the design and implementation of the recommended resilient building measures (see below).

Monitoring and Evaluation System

3.18 The implementation of a Monitoring and Evaluation (M&E) System will be important in minimising future losses due to extreme events and natural hazards in general. The Consultant shall prepare, in close coordination with VINLEC personnel managing the critical sites, a detailed M&E plan for each key site and the generation and transmission infrastructure in general. Such plan should include:

(a) the resilience and performance of the critical assets;

(b) the evolution of the natural hazard threats;

(c) documenting extreme events (intense precipitations and floods, earthquakes, and extreme wind speeds) and their impact on the critical assets; and

(d) documenting the implementation of contingency plans (before, during and after the occurrence of extreme events) including the compilation of Lessons Learned.

3.19 Selection of key performance indicators: To streamline the M&E system, the Consultant shall select a series of well defined, measurable, and easy to interpret indicators. The analysis of the selected indicators should provide information on the evolution of the resilience of the assets as well as the progression of the natural hazards threatening the infrastructure and the communities around the critical sites. The Consultant shall prepare, for each threat, a series of practical measures and indicators to assess the evolution of the hazards.

3.20 Adaptive management/planning: It is understood that the generation and transmission systems in St. Vincent will continue to expand and change in the future and the natural hazards will evolve with time and with CC. Therefore, an adaptive management and planning strategy is required. The Consultant shall propose the basis of such adaptive process, based on the M&E system and the perceived needs of the communities around the critical sites. Surveys and contingency plans updates shall be scheduled to provide VINLEC with clear guides and methodologies to update them. The Consultant shall provide the training needed to build the necessary in-house capacity.

Geophysical Hazard Risk and Vulnerability Assessment and Adaptation Plan of Action

3.21 In conjunction with the CRVA, the Consultant will prepare a geo-hazard risk and vulnerability assessment, which in tandem with the CRVA lead to the development of a Natural Hazard Risk Profile for the electricity sector. The Assessment process includes hazard identification and analysis and provides the factual basis for activities and strategies in any hazard mitigation plan. It is expected that hazard identification will be enriched with a historical review and probabilistic analysis and preparation of an inventory (and categorisation) of key elements that are exposed as well as vulnerability analysis. The Consultant will:

(a) Establish a Baseline and Identify Relevant Hazards: The Consultant should characterise relevant hazards and establish an appropriate baseline. Undertake an initial review of existing datasets on natural hazards impacts on the utility, damage assessment reports and other relevant studies undertaken. These will include earthquakes, landslides and volcanic eruptions.

(b) Undertake a hazard analysis including hazard identification/ screening/ profiling of hazard events: This should include discussions with stakeholders such as the National Emergency Management Organisation to obtain their historical knowledge of past events and

responses. In cataloguing historic hazard events, the Consultant would delineate and characterise hazard prone areas including zoning according to an agreed conceptual model. The Consultant would then develop comprehensive hazard/event intensity maps, which would geo-reference the events identified above.

(c) Carry out a field-based mapping of the hazard risks in particular detailing exposure to landslides, earthquakes, volcanoes and other hazards; and determine an estimation of potential human and economic losses based on the exposure and vulnerability of people, buildings, and infrastructure.

(d) Identify the high-risk geographic sub-regions and the nature of risks that are involved; analyse the hazards and risks, drawing key implications and recommending actions.

(e) Conduct a risk assessment and prepare reports: The risk assessment involves an estimate of the expected loss to the sector exposed to a given hazardous event. It is a function of the probability of the hazard and the vulnerability of the components that can be affected by the hazard. The Consultant should make an estimate of the probability of experiencing the selected event and an understanding of the effects of such an event on the assets/resources at risk in the sector. A risk assessment matrix should be developed and include the following components:

(i) mapping of risks: where they occur, how and why;

(ii) characterisation of the risks;

(iii) time-space value: where and when the risk represents the highest threat;

(iv) economic evaluation of the risk: expected damages to the sector; and

(v) decision matrix: determine risk management actions and priorities.

(f) Prepare a Draft Hazard Risk Profile encompassing the CRVA data.

(g) Conduct Stakeholder Consultation on the draft Hazard Risk Profile.

(h) Facilitate the Stakeholder Consultation and prepare a Stakeholder Consultation Report.

(i) Prepare Final Draft of the Risk Profile.

Phase 2: Hydro Power Plants Upgrade

3.22 The scope of services includes, but is not limited to:

(a) **Preliminary Design**

(i) Based on outputs from Phase 1 and in consultation with VINLEC, recommend optimal options for upgrading the hydro plants, which includes reservoirs, transmission and generation facility infrastructure. The Consultant must also demonstrate how CC risk and associated capital costs considerations have altered the proposed design (i.e. the specific changes in design in order to take account of CC).

(ii) Preparing cost and quantity estimates for VINLEC agreed preferred design. The Consultant should also perform a least-cost analysis and consult with VINLEC to determine the event horizon to be utilised in the design criteria.

(iii) Update financial and economic analysis.

(b) **Environmental and Social Impact Assessment (ESIA)**

(i) Conducting an ESIA of the proposed works. The ESIA should involve broad stakeholder consultation as per item (b) above. It should include:

(aa) producing a sex-disaggregated demographic profile of communities within the respective catchment area including socio-economic, individual and community characteristics including disability status, crime, gender-based violence, and health issues;

(bb) identification of key employers and livelihood activities in the communities;

(cc) identification of risks and vulnerabilities during implementation and operation, including those linked to projected CC, in the following areas including inter alia: housing; economic activities; electricity consumptions, employment opportunities; livelihoods; labour force participation; shelter management; natural hazards; security and violence (including gender-based); education; health; transportation; cultural and archaeological heritage; wildlife habitat; and water, sanitation, and drainage;

(dd) conduct robust social impact assessment (SIA) and gender analysis to include analysis of both qualitative and quantitative socio-economic benefits (see the Annex to this Appendix for detailed content for the SIA);

(ee) investigate gender-specific risks and vulnerabilities and gender-specific coping mechanisms, including those linked to projected CC;

(ff) analysis of both qualitative and quantitative socio-economic benefits; and

(gg) prioritise community risks and vulnerabilities and community priorities for potential investments. Include within public consultations women and men equally as well as stakeholders representing the groups.

(ii) Preparation of an Environmental and Social Management Plan including recommended mitigation measures, stakeholder engagement plan and grievance mechanisms.

(c) **Preparation of Detailed Designs**

(i) Based on the VINLEC agreed preferred option, prepare detailed designs for the works. The scope of work shall include, but not be limited to, the following main activities:

(aa) developing design criteria details for the various elements (reservoir, transmission and generation facility);

(bb) obtaining subsurface soils and topographical information;

(cc) preparing designs of works to be incorporated into the Project;

(dd) environmental, social and natural hazard management parameters, which are to be defined during the engineering studies, shall be highlighted, identified and incorporated into the final designs;

(ee) preparing construction specifications for all the works shown on the drawings for which the Consultant is responsible. The specifications shall be clear and concise with a statement setting forth the general scope of work, followed by a description of the various classes of work, under appropriate sections and headings. The quality control requirements required of the contractor, will be described in detail, including identifying standards or codes that are to apply;

(ff) pre-qualification and bidding documents will be prepared in accordance with CDB's standard bidding documents. These documents should be adapted to reflect the requirement to select a qualified and experienced contractor with regards to Environmental, Social, Health and Safety (ESHS) worksite management, provide for comprehensive ESHS Specifications for worksites, provide specifications for HIV/AIDS and gender based violence awareness training for the contractor's and sub-contractors' personnel, and associated cost schedules;

(gg) providing the client with an engineer's cost estimate based on the final design. This should indicate the anticipated division between local and foreign costs, and identify the incremental costs associated with climate adaption; and

(hh) submitting the plans and specifications, for approval to the client and the appropriate authorities, as required. Attend meetings at the offices of the GOSVG and authorities to discuss the designs and provide explanations for the purpose of furthering approvals.

4. REPORTING REQUIREMENTS AND DELIVERABLES

4.01 The Consultant will make regular presentations to VINLEC on methodological proposals, data gathering, coordination issues, and relations with key stakeholders, resource use and progress in accomplishing the tasks. The presentations will serve to enhance coordination, facilitate the Consultant work and receive technical feedback on methods and approaches. The Consultant will be required to submit

the following number of reports to GOSVG, VINLEC and CDB, respectively, within the time periods indicated:

4.02 Inception Report: The report should describe the approaches proposed to be taken to prepare and deliver the scope of works outlined, within one month of the start of the consultancy.

4.03 CVRA: The draft report should be submitted within four months of the start of the consultancy. It should include: (a) a climate risk and vulnerability assessment together with the corresponding adaptation/risk management plan of actions; (b) the determination of the main design parameters to guide the design process of the selected adaptation/risk management measures; and (c) a hazard risk maps and risk matrix; hazard and risk profile for the utility.

4.04 Design Reports: The draft Preliminary Design Report should consist of a preliminary design, cost and quantity estimates for the preferred option and should be submitted within six months of the start of the consultancy. The draft Final Design Report should be submitted within 8 months of the start of the consultancy and consist of agreed detailed designs, revised cost and quantity estimates and bidding documents.

4.05 ESIA Report: The draft report should be submitted within six months of the start of the consultancy.

4.06 Comments on the Reports should be anticipated within four weeks of receipt and the Consultant(s) will adjust the ongoing work according to the comments received. The Consultants will revise the draft reports within one month of receipt and in accordance with the comments received. Reports should be submitted in three hard copies and electronically.

5. QUALIFICATIONS AND EXPERIENCE

5.01 The consulting team should consist of the following key experts:

(a) **Key Expert 1: Climate Specialist: -** with no less than 10 years of professional experience and a graduate degree of MSc. or equivalent. Experience should include working with data provided by Global Circulation Models and Regional Circulation Models, undertaking vulnerability assessments and familiarity with the Fifth Assessment Report by the IPCC. Experience in conducting at least one CVA in the water resources sector would be highly desirable.

(b) **Key Expert 2: Geo-hazard Risk Assessment Specialist:** - with no less than 10 years of professional experience and a graduate degree of MSc or equivalent. Experience should include disaster risk management, hazard analysis, impact assessments and development of risk profiles. Experience in electricity sector and climate change adaptation (CCA) is strongly recommended.

(c) **Key Expert 3: Structural/Civil Engineer: -** with preferably 10 years' experience of carrying out the structural design of structural elements in the electricity sector, drainage structures, and river defence infrastructure. The Engineer should preferably have a Master's degree with professional qualifications.

(d) **Key Expert 4: Water Resources Specialist, Hydrologist:** with preferably seven years' experience of carrying out hydrological modelling of drainage basins, hydrological assessment under various CC scenarios, producing flood and drought maps and hots spots

for current and future scenarios. The Specialist should preferably have a Master's degree with professional qualifications;

5.02 Other experts required are:

(e) **Geotechnical Specialist:** with preferably 10 years' experience of carrying out geotechnical studies, impact assessments, and engineering design. The Specialist should preferably have a Master's degree with professional qualifications.

(f) **Economist:** with preferably 10 years' experience of carrying out the financial and economic analysis and evaluation electricity development project proposals. The Economist should preferably have a Master's Degree in Economics, Civil Engineering or related discipline. Experience with CCA is strongly recommended.

(g) **Environmental Specialist:** with preferably seven years' experience of carrying out environmental impact assessments, CC impact assessments, and the development of Environmental Management Plans for electricity projects. The Specialist should preferably have a Master's Degree in Environmental Sciences, Environmental Engineering, Environmental Management or related discipline, experience in disaster risk mitigation and in carrying out environmental impact assessments in accordance with the policy, guidelines and requirements of International Financing Institutions (IFIs);

(h) **Social and Gender Impact Specialist:** with preferably seven years' experience of carrying out social and gender impact assessments of transport infrastructure projects. The Specialist should preferably have a Master's Degree in Social Sciences, Gender Studies or related discipline, experience in gender analysis, experience utilising participatory approaches to perform social and gender analysis, and experience in preparing associated social impact assessments in accordance with the policy, guidelines and requirements of major IFIs (see Annex to this Appendix).

5.03 It is the Consultant's responsibility to ensure that the team has an appropriate mix of key and non-key experts required to satisfy the requirements of the TOR. Non-key experts should include other experienced personnel (i.e. GIS, Social, Environmental, Community and Institutions Specialists).

6. DURATION

6.01 The consultancy is to be implemented over a period of eight months.

ANNEX TO APPENDIX 1

SOCIAL IMPACT ASSESSMENT AND GENDER ANALYSIS

1. The SIA will investigate socio-economic developmental opportunities and risks related to the execution of the Project; and inform possible mitigation measures to safeguard against any risks identified, as well as other measures to support positive social impacts. It will be conducted in a highly participatory, gender-inclusive manner engaging the communities, particularly with representatives of women and men and vulnerable groups such as children, youth, elderly, indigenous peoples, and persons with disabilities.

2. The methodology shall include, but is not be limited to the following:

   (a) Review of secondary data including reports, studies, gender assessments, poverty assessments, census reports, labour force surveys, and relevant policy documents such as legislation, regulations, standards and policies in the areas of gender and social development including vulnerable groups of women, youth, persons with disabilities, and indigenous peoples.

   (b) Collection of primary data through participatory consultations with all categories of stakeholders in order to introduce the Project, facilitate feedback, and gauge perception of the Project in order to gain and/or strengthen buy-in. Interviews, focus groups and other appropriate differential participatory methodologies may be employed for state and non-state stakeholders directly impacted by the works such as Community-Based Organisations, Non-Governmental Organisations, vulnerable groups (to include elderly, children, youth, men, women, persons with disabilities, and indigenous peoples), private sector entities and relevant public agencies. Where applicable, focus groups may be convened for youth, persons with disabilities, indigenous peoples, males and females, respectively. Facilitation of participation through the provision of transportation and child care as well as appropriate timing should be ensured. Data should be disaggregated by sex, age, disability status, indigenous groups, and race/ethnicity where feasible/appropriate.

   (c) Execution of site visit exercises to verify, update and fill gaps using community maps, transect walks, snowballing, as well as photographic documentation, and other appropriate participatory approaches.

3. The scope of work shall examine and report on the following and related developmental issues:

   (a) Describe the project areas including demographic, economic, topographical and socio-cultural data, disaggregated by sex including (i) total population of the project areas (communities/villages); (ii) population density of the project areas (communities/villages); (iii) number of households by sex of household head; (iv) labour force participation, employment and occupation; (v) crime and violence; and (vi) prevalence of poverty. The data should be disaggregated by sex, age, minority or special needs groups (such as youth, indigenous peoples, immigrants, persons with disabilities, informal settlers).

   (b) Assess the different social as well as household activities of men and women, and vulnerable youth, persons with disabilities, and indigenous peoples in project areas.

   (c) Analyse the local labour force and the potential of engaging communities, especially abovementioned vulnerable groups, in the construction and maintenance and resilience building phases of the Project. Give recommendations on training needs and legal requirements from a procurement perspective. Identify the number of men, women and

other vulnerable groups identified, who will benefit from employment during project implementation and subsequent operation.

(d) Propose project components (initiatives) necessary to facilitate the access and participation of youth, women, indigenous people and persons with disabilities in the economic and social benefits of the proposed project. The institutional partners necessary for the success of the project components (initiatives) and the budget to implement them must be clearly identified.

(e) Assess accessibility of the project areas in keeping with universal design standards required for use by persons with disabilities, and seek direct feedback from persons with disabilities on the requirements, to inform the design of the proposed infrastructure.

(f) Identify the effects of the Project on time use in the household disaggregated by sex; and how men and women would use the time-savings differently. Differentiate the time use benefits for public and private sectors, as well as for householders.

(g) Identify any activities related to transactional and commercial sex in the project areas and analyse both the potential effects of the construction and operational phases of the Project.

(h) Mainstream the CVA to collect sex-disaggregated data on assets, coping strategies to deal with CC, extreme weather events/disasters and the different roles and responsibilities that women and men have in times of disasters.

(i) Assess whether the community/men and women could be integrated into the maintenance of any infrastructure provided by the proposed project.

(j) Determine potential social and economic dislocation in the project areas and whether resettlement/replacement is necessary. Identify any possible effects of this on the livelihoods and culture of people in the project areas. Identify possible social and gender concerns taking into account the distribution of male and female-headed households, distribution of land titles by sex, and specific issues for indigenous peoples and any other vulnerable group. Identify any possible options to avoid resettlement as well as appropriate gender-responsive resettlement (possible distribution of land titles to women) and mitigation measures.

(k) Describe the potential impacts of the Project at its various stages (preparation, construction, and operation) on the social and economic contexts in the immediate surrounding communities. Identify any issues pertaining to the design of the Project, which may have social impacts including gender, livelihood or other dimensions.

(l) Make specific recommendations regarding project design options and identify measures required to not only mitigate any significant negative impacts but and enhance the potential social and gender benefits in the project areas. This process shall:

    (i) discuss the adequacy of proposed mitigation measures overall, and specific measures to enhance gender equality and equitable inclusion of vulnerable groups and any other relevant social benefits; as well as the adequacy of project design to meet the needs of the relevant stakeholders;

(ii) consider measures such as public education and, training opportunities for vulnerable groups to take part in project activities, workers code of conduct and grievance mechanisms; and reform of workplace, human resources and customer service policies in VINLEC;

(iii) identify the public education needs of both women and men in the project area to enhance resilience to Climate Change, extreme weather events and disasters;

(iv) define Community Participatory Mechanisms (CPM) by identifying appropriate mechanisms to engage women, men and vulnerable groups in the decision-making of the Project in a gender-balanced way; and appropriate gender-sensitive public education communication strategies for providing information on project activities to stakeholders and for receiving timely feedback (pre-project, during implementation and post-implementation). The CPM design must ensure conducive meeting times and facilitate participation through the provision of transportation, child care, and other supportive measures;

(v) estimate the cost of the measures and justify their suitability;

(vi) prepare a detailed monitoring and evaluation plan for tracking the key relevant project results and the implementation of the mitigating and benefit-supporting measures. Identify gender-responsive outputs and outcomes of the project activities to facilitate gender-responsive results monitoring and evaluation; and

(vii) develop a Gender Action Plan containing relevant gender and social inclusion actions, indicators, timelines and budget.

(m) Analyse and outline the key SIA findings regarding (i) social and gender benefits arising from the Project and measures to maximise the benefits; and (ii) social and gender risks and measures to mitigate the risks for beneficiaries including the sub-groups requiring focussed attention. The key SIA findings including measures such as universal design standards required for use by persons with disabilities, sanitation facilities, parking, public illumination, and other basic facilities must be discussed with the engineers on the team for consideration in the design of the proposed project infrastructure.

(n) Convene a stakeholders' validation workshop, including community groups, representatives of vulnerable population groups (women, elderly, youth, indigenous people and persons with disabilities), VINLEC and government agencies, to discuss the findings of the consultancy and to seek consensus and clarification on issues from participants for incorporation in the Draft Final and Final Reports. As part of the stakeholders' validation workshop conduct gender sensitisation training to report on the findings of the gender analysis.

DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets / Indicators	Data Sources / Reporting Mechanisms	Assumptions / Accountabilities
1. IMPACT: Capital project which will contribute to reduction of vulnerability to long-term impacts of natural hazards and CC by rehabilitating the electricity infrastructure. Indicator: Project design is utilised by GOSVG/VINLEC to inform the implementation of capital project approved by October 2018.			
2. OUTCOME: Strengthen the capacity of GOSVG to: (a) provide electricity infrastructure resilient to natural hazards and CC impacts; and (b) a technically and economically feasible project that will result in improved reliability of the hydropower electricity infrastructure that is resilient to geophysical and climate related hazards.	Acceptance by GOSVG/VINLEC of project proposal, including gender and social interventions by August 31, 2018.	Review of GOSVG/VINLEC financing request and supporting documentation.	
3. OUTPUTS: 1. Sector-wide climate risk and vulnerability assessment (CRVA) including a risk profile for VINLEC. 2. Sector investment needs for climate resilience and natural hazards mitigation. 3. A capital project prepared.	1. Feasibility study completed by April 30, 2018. 2. Investment Plan completed by May 1, 2018. 3. Detailed design report accepted by GOSVG/VINLEC and CDB by May 31, 2018.	1. Consultant's Reports. 2. CDB Supervision Reports	GOSVG/VINLEC provide the necessary source of funding to meet investment requirements.

4. Activities/Inputs	**€**				
	CDB (SFR)	**GOSVG**	**Total**	1. Consultants selected and engaged. 2. CDB disbursement records.	Counterpart contribution available in a timely manner.
Consultancy Services:					
Professional Fees	375,200	-	375,200		
Air Travel, Accommodation and Per Diem	72,000	12,300	84,300		
Project Management and Technical Support	142,550	90,000	232,550		
Contingencies	58,975	10,209	69,184		
Total	**648,725**	**112,509**	**761,234**		

APPENDIX 2

APPENDIX 3

PERFORMANCE RATING SYSTEM

Criteria	Score	Justification
Relevance	4	GOSVG has demonstrated a high level of commitment to increasing the resiliency of the electricity sector to natural hazards and climate vulnerability. The proposed project is consistent with CDB's strategic objective of supporting inclusive growth and sustainable development within its BMCs; CDB's Corporate Priority of strengthening and modernising social and economic infrastructure; SFR (9) Themes of: (a) Environmental Sustainability and CC; and (b) Inclusive and Sustainable Growth; CDB's TA Policy and Operational Strategy of commitment to strengthening the synergies between TA operations and the Bank's investment lending.
Efficacy	4	The proposed consultancy will address engineering, economic, social, environmental and disaster risk reduction, and climate resilience considerations.
Efficiency	4	The expected cost of the consultancy has been based on current professional rates, and given the potential level of capital investment, is considered reasonable. The planned activities are expected to be achieved within time and budget.
Sustainability	3	The proposed approach provides for a high degree of stakeholder consultation to ensure ownership of the outputs. Designs will incorporate CC variability considerations.
Overall Score	**3.75**	**Satisfactory**

APPENDIX 4

GENDER MARKER ANALYSIS

Project Cycle Stage	Criteria	Score
Analysis: Background	Sex-disaggregated data included in the background analysis, and/or baselines and indicators, or collection of sex-disaggregated data required in TOR.	**1**
Design: Project Proposal/ Definition/ Objective	TA interventions are designed or will be identified as part of the Project, that address gender disparities or enhance gender capacities. Project objective/outcome includes the enhancement of gender capacities, gender data collection, gender equality or the design of gender-responsive policies or guidelines.	1 1
Score:		3

Gender Mainstreamed (GM): The Project has the potential to contribute significantly to gender equality.

APPENDIX 5

DUTIES AND RESPONSIBILITIES OF THE PROJECT COORDINATOR

1. PC will have day-to-day responsibility for project coordination and implementation, arranging contacts with all government and other personnel, project-related discussions, and supervision of the consultants.

2. PC will be responsible for coordinating and monitoring all aspects of the implementation of the Project, including the following:

(a) reviewing and finalising of TOR for consultancy services to be undertaken in the Project;

(b) ensuring that gender analysis resulting in proposed interventions to enhance gender equality is undertaken as part of the TOR;

(c) coordinating the selection and engagement of consultants;

(d) collecting all relevant background studies and information;

(e) supervising the implementation of the consultancy;

(f) organising stakeholder consultations;

(g) preparing and submitting claims to CDB for disbursement/reimbursement;

(h) submitting to CDB reports prepared by the consultants;

(i) updating the procurement plan as necessary and at least annually;

(j) submitting to CDB a report after every two months summarising progress, disbursement activities and forecasted expenditures to Project Completion; and

(k) preparing a Project Completion Report.

APPENDIX 6

BUDGET
(€)

Items	**CDB (SFR)**	**GOSVG**	**Total**
Professional Fees	517,750	90,000	607,750
Accommodation and Per Diem	27,000	12,300	39,300
Travel (airfares and airport transfer)	45,000	-	45,000
Sub-Total	**589,750**	**102,300**	**692,050**
Contingencies	58,975	10,209	69,184
Total	**648,725**	**112,509**	**761,234**

APPENDIX 7

PROCUREMENT PLAN

I. General

1. **Project Information:**

Country: SVG

Beneficiary: GOSVG

Project Name: Technical Assistance – Strengthening Coastal Road Infrastructure Resilience to Geophysical and Climate Related Hazards for Electricity Sector

Project Executing Agency: VINLEC

2. **Bank's Approval Date of the Procurement Plan**: May 22, 2017

3. **Period Covered by this Procurement Plan:** August 2017 - May 2018

II. Consulting Services

1. **Reference to (if any) Project Operational/Procurement Manual**: For consulting services, CDB's Guidelines for the Selection and Engagement of Consultants (October 2011).

2. **Any Other Special Procurement Arrangements**: To comply with the requirements of the ACP-EU Finance Agreement, the following is required:

(a) Financing shall be provided under ACP-EU-CDB Natural Disaster Risk Management in CARIFORUM Countries and thus eligibility shall include CDB member countries and be extended to reflect the applicable regulatory provisions of the EU (refer to the Annex to Appendix 7).

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

1	2	3	4	5	6	7
Ref No.	**Assignment (Description)**	**Estimated Cost (€)**	**Selection Method**	**Review by Bank (Prior/Post)**	**Expected Proposal Submission Date**	**Comments**
1.	Consultancy	[redacted]	QCBS	Prior	September 2017	Expected start: November 2017

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

III. Summary of Proposed Procurement Arrangements

Project Component	CDB ACP-EU (€)									NBF (€'000)	Total Cost (€)
	Primary	Secondary			Other						
	ICB	NCB	RCB	LIB	Shopping	DC	FA	QCBS	CQS	Country	
1. Consultancy	-	-	-	-	-	-	-	[redacted]	-	-	[redacted]
2. Accommodation and Per Diem	-	-	-	-	-	-		[redacted]	-	[redacted]	[redacted]
3. Air Travel	-	-	-	-	-	-		[redacted]		-	[redacted]
4. Contingencies	-	-	-	-	-	-		[redacted]	-	[redacted]	[redacted]
5. Project Management and Technical support	-	-	-	-	-	-	-	-	-	[redacted]	[redacted]
Total	-	-	-	-	-	-		[redacted]	-	[redacted]	[redacted]

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

IV. Implementing Agency Capacity Building Activities with Timescale:

Ref No.	Expected Outcome/Activity Description	Estimated Cost (€)	Estimated Duration	Start Date	Comments
1.	E-procurement				To be scheduled with GOSVG
2.	Project Launch Workshop	[redacted]	2 days	September 2017	To be scheduled with GOSVG

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

ANNEX TO APPENDIX 7

EUROPEAN UNION ELIGIBILITY RULES
AFRICAN CARIBBEAN PACIFIC – EUROPEAN UNION
NATURAL DISASTER RISK MANAGEMENT

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

1. Participation in procedures for the award of procurement contracts financed under the EU Contribution Agreement for the Implementation for the Action entitled: "Africa Caribbean Pacific – European Union – Caribbean Development Bank (ACP-EU-CDB) Natural Disaster Risk Management in CARIFORUM Countries" (ACP-EU-NDRM Resources)", is open to international organisations and all natural persons who are nationals of, or legal persons who are established in, an eligible country.

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

(a) Caribbean Development Bank member countries:

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

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

Africa:

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

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

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

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

Caribbean:

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

Pacific:

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

Overseas Countries and Territories:

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

(c) A Member State of the European Union:

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

An official candidate country of the European Union:

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

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

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

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

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

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

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

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

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

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

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