

CARIBBEAN DEVELOPMENT BANK



NOTIFICATION OF APPROVAL BY THE PRESIDENT OF THE USE OF FUNDS
REGIONAL GEOTHERMAL ROUNDTABLE AND CAPACITY STRENGTHENING
WORKSHOP – REGIONAL

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Notified at the Two Hundred and Eighty-Fifth Meeting of the Board of Directors
held on March 28, 2019

*Director
Projects Department*

Mr. Daniel M. Best

*Division Chief
Economic Infrastructure Division*

Mr. L. O'Reilly Lewis

APRIL 2018

<i>Head (Acting), Renewable Energy and Energy Efficiency Unit Office of Vice-President (Operations)</i>	<i>Joseph Williams</i>
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CARIBBEAN DEVELOPMENT BANK

TWO HUNDRED AND EIGHTY-FIFTH MEETING OF THE BOARD OF DIRECTORS

TO BE HELD IN BARBADOS

MARCH 28, 2019

PAPER BD12/19

NOTIFICATION OF APPROVAL BY THE PRESIDENT OF THE USE OF FUNDS
REGIONAL GEOTHERMAL ROUNDTABLE AND CAPACITY STRENGTHENING
WORKSHOP – REGIONAL

In accordance with the authority delegated by the Board of Directors of the Caribbean Development Bank (CDB) at its Two Hundred and Eighty-Third Meeting (Minute 283.27), the President approved the use of funds in an amount not exceeding the equivalent of forty-eight thousand, five hundred and ten United States dollars (USD48,510) from CDB's Special Funds Resources: European Union Caribbean Investment Facility to finance the participation of regional practitioners in a Regional Geothermal Roundtable and Capacity Strengthening Workshop held in Saint Lucia from December 5-7, 2018.

2. It is a condition of the aforementioned delegated authority that each technical assistance project approved by the President be reported to the Board at its first convenient scheduled meeting after approval of the project.

3. The Board is therefore asked to note the approval by the President of the above-mentioned project.

CARIBBEAN DEVELOPMENT BANK

RECOMMENDATION AND APPROVAL OF TECHNICAL ASSISTANCE
(Up to USD50,000)

1. Country: Regional	2. Project Title: Regional Geothermal Roundtable and Capacity Strengthening Workshop	3. PRN: 4134
4. Grantee: Not Applicable (N/A)	5. Beneficiary: Dominica, Grenada, St. Kitts and Nevis, Saint Lucia, St. Vincent and the Grenadines and Caribbean Development Bank (CDB)	6. Implementing Agency: CDB
7. Sector: Energy	8. Date of Application: N/A	9. Type of Financing: Use of Funds (UOF)
10. Source of Funds: Special Funds Resources (SFR)/Other Special Funds (OSF): European Union Caribbean Investment Facility (EU-CIF).		
11. Legal Status: N/A		
12. Objectives and Priorities:		
CDB's Strategic Objective/s:	CDB's Strategic Objective of supporting inclusive sustainable growth and development within its BMCs.	
CDB's Corporate Priority/ies:	CDB's Corporate Priority of strengthening and modernising economic and social infrastructure and promoting environmental sustainability.	
Regional Objective/s:	CDB's Energy Sector Policy and Strategy for which an overarching focus is the promotion of energy efficiency (EE) and renewable energy (RE) for more affordable and stable energy costs. Caribbean Community (CARICOM) Energy Policy.	
CDB's Technical Assistance (TA) Policy and Operational Strategy:	The technical assistance (TA) is consistent with TA Policy and Operational Strategy The technical assistance (TA) is consistent with TA Policy and Operational Strategy as the project is aligned one of the Bank's Strategic Objective: i.e. the Objective of supporting inclusive sustainable growth and development within its BMCs.	

The Project is consistent with the United Nation's Sustainable Development Goals (SDGs), 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^{1/}.

Gender Marker Summary

Gender	Analysis	Design	Score	Code
Marker	0	1	1	NO ^{2/}

The TA considers social risks which cover gender-specific issues that might impact the success of Geothermal Projects. These might include, inter alia resettlement, risks of sexual exploitation and abuse and insufficient stakeholder consultation. The Roundtable will also examine the direct use of geothermal energy prospects and in so doing consider an equitable approach to identifying opportunities for both men and women. Further details on the Gender Marker Analysis are outlined in Appendix 1.

13. Budget: The budget is summarised below. Further details are provided at Appendix 2.

Contributors	Amount (USD)	%
CDB	48,510	49
OECS Commission	16,000	16
IRENA ^{3/} /World Bank	34,500	35
Total	99,010	100

14. Project Background:

The over-reliance on imported fossil fuel is the main cause of a lack of energy security exhibited by most⁴ of the BMCs of CDB. In 2017, imported fuel, mainly in the form of petroleum products, accounted for over 90 per cent of their commercial energy supply. This overdependence presents several challenges for these countries including the fact that price volatility in the international oil market, undermines economic stability and national efforts for long-term planning. A significant portion of the foreign exchange earnings of these countries is used to pay for imported fuel, which negatively affects foreign exchange reserves and the balance of payments. Also, the cost of imported diesel has been a key factor contributing to high electricity prices over the years and the resultant high electricity costs, have over time, negatively affected the countries' economic competitiveness and the livelihood of citizens, especially the poorer segments of the population.

In view of these challenges, BMCs are seeking to harness their RE resources, which are mainly: solar energy, wind power, hydropower and geothermal energy (GE). This is a major step in the process of breaking fuel-import dependence, diversifying energy matrices and improving energy security. RE substitution will also contribute to electricity price stabilisation and reduction, improved economic competitiveness, and achievement of national carbon emission reduction targets.

Of the RE options available, GE represents a significant potential resource for the five⁵ Eastern Caribbean countries of Grenada, Dominica, St. Kitts and Nevis, Saint Lucia, and St. Vincent and the Grenadines, given their volcanic origins. For these countries, GE could provide baseload generation⁶, which potentially could displace more than

^{1/} <http://www.un.org/sustainabledevelopment/energy/>.

^{2/} NO: No contribution to gender equality, it is not reflected in the project, or appears as a formal reference only.

^{3/} IRENA is an intergovernmental organisation that supports countries in their transition to a sustainable energy future, and serves as the principal platform for international cooperation, a centre of excellence, and a repository of policy, technology, resource and financial knowledge on RE.

^{4/} Trinidad and Tobago which is a net exporter of energy, is the notable exception. Suriname's production of petroleum approximately meets national demand.

^{5/} Montserrat also has GE resource potential, however, the development of a very small plant (2MW) is being pursued with support from UK-DFID.

^{6/} Available 24 hours per day and seven days per week.

half of the diesel fuel used for conventional power generation. Therefore, GE represents the single most potentially impactful RE intervention, which could transform their energy matrices. These BMCs have therefore prioritised the development of their GE potential, placing same as a critical component of their strategy to achieve energy sector transformation. There are however, key barriers that constrain this development prospect.

The most critical of these barriers is the limited availability of appropriate forms of financing or risk mitigation mechanisms required for the various stages of the GE project cycle⁷ and the lack of capacity, including the experience and specialised technical skills necessary for successfully developing GE projects and maximising the benefits for citizenry. In order to assist in addressing these barriers and to allow GE to be delivered at the lowest cost to the end user, CDB is pursuing an initiative, the CDB GeoSmart Initiative⁸ (CDB-GSI), to support these countries. Under the CDB-GSI, the mobilisation of suitable resources is being pursued to address the various levels of risk at each stage of the GE project cycle, and to enhance the viability of these small-scale GE developments. CDB will seek to provide support to all the countries on a demand basis, however, CDB is the lead financial institution for the GE development being pursued in Grenada, St. Kitts and Nevis and St. Vincent and the Grenadines. The World Bank is the lead financial institution in Dominica and Saint Lucia. Therefore, it is recognised that most of CDB's funding support, will focus on the three countries where the Bank is leading, while the support to Dominica and Saint Lucia will be pursued in a more complementary manner addressing identified gaps.

To date, the Bank has mobilised the equivalent of approximately USD56 million in grants, contingently recoverable grants (CRG) and loan resources, through the Sustainable Energy Facility (SEF) for the Eastern Caribbean Programme with the Inter-American Development Bank (IDB), and from the European Union Caribbean Investment Fund (EU-CIF) under a Geothermal Risk Mitigation Programme. These resources target TA and investment funding of GE development.

Where feasible, a cost effective approach to addressing the aforementioned lack of capacity is through regional training initiatives involving multiple partners which are involved in funding GE development. This allows for greater coordination of capacity strengthening objectives among the institutions providing support and greater benefits for the beneficiary countries. Against this background, CDB intends to collaborate with OECS Commission, World Bank, the International Renewable Energy Agency (IRENA), and the International Geothermal Association (IGA)⁹ in the staging of a capacity strengthening roundtable and training workshops. Given the wide range of areas to be addressed in the capacity building effort, this intervention is expected to represent the first in a series of workshops. CDB will also use the opportunity provided by the Roundtable to collaborate with other partners and also to secure input from BMC representatives on specific interventions for capacity support.

15. Proposal/Description:

It is proposed that CDB approves UOF in an amount not exceeding the equivalent of forty-eight thousand five hundred and ten United States dollars (USD48,510) from CDB's SFR/OSF to assist in the financing of a GE capacity strengthening roundtable and workshop in December 5-7, 2018 to be held in Saint Lucia.

The Roundtable will be held on the first day, and will provide a platform to discuss the status of projects, and risks and mitigation options being pursued by the various partners, while also seeking to establish a framework for closer collaboration, between CDB, IRENA, IGA, and World Bank. The United Nations Framework Classification for

^{7/} Compared to other RE options, the GE project development cycle tends to be characterised to a greater extent by distinct stages with prominent risk levels and costs. This starts with the high risk exploratory stage, through to lower risk plant construction phase. Social risks need to be mitigated from a Safeguards Perspective. CDB's Environmental and Social Safeguard Procedures (ESRP) are a guiding document in that regard.

^{8/} The CDB GeoSmart Initiative is the Bank's response to the need for risk-mitigation mechanisms for GE development in the Eastern Caribbean. It represents all the Bank's efforts to mobilise adequate and suitable resources to address various risks and funding needs at various stages of the GE project cycle.

^{9/} IGA is a global geothermal organisation uniting the geothermal sector around the globe, and is the leading world authority in matters concerning the research and development of geothermal energy by setting educational standards and offering worldwide energy solutions and in-house technical support, with special support for countries in early stages of geothermal development.

Resources (UNFC), principles and classification methodology will be introduced. The roundtable will also focus on the prospects for direct use of GE.

On the second and third days, the focus of the workshop will be on the classification of geothermal resource estimates according to UNFC Geothermal Specifications. The practical sessions will allow participants to identify key supporting data, explore the socio-economic and technical context for GE projects and practice and develop confidence in UNFC resource estimation method.

The draft programmes are shown at Appendix 3.

16. Project Outcome:

The expected outcomes of the roundtable and workshop are: (i) enhanced awareness among partners on the technical and social risk mitigation options being pursued, (ii) increased collaborations among key partners in supporting the countries; (iii) enhanced capacity for the application of the UNFC methodology for estimating GE resources.

17. Project Justification and Benefits:

In order to address the energy security and sustainability challenges, CDB's Energy Sector Policy and Strategy promotes the transition to greater use of RE in all the Bank's BMCs, while recognising the need to address capacity constraints in the process. GE is an RE option which represents a huge potential resource to support the energy transition in selected countries of the Eastern Caribbean, given its baseload characteristic. The development of the GE resource is however, hampered by, inter alia, a lack of individual and institutional capacities in countries.

Effectively addressing the capacity deficit in a timely manner requires multiple pronged approaches, through multiple interventions, using various tools, with strong collaboration among the Partners supporting GE development in the countries. This TA project represents one such intervention involving collaboration among the Partners and the use of a specialised tool. It is therefore a step to increase the capacity thereby moving the countries incrementally towards the goal of effectively developing their GE resources and improving the security and sustainability of the energy sector.

18. Risks and Mitigation Measures:

Risk Category	Risk Type	Description of Risk	Mitigation Measures
Operational	Implementation	Appropriate staff/participants not nominated for the forum.	CDB will scrutinise nominees to ensure that persons with appropriate job functions or roles and responsibility levels are sponsored.

19. Environmental Impact	Major	Minor	N/A	✓
Social Impact	Major	Minor	N/A	✓
Technical Impact	Major	✓ Minor	N/A	

20. Project Implementation:

CDB will execute the component of the project it is financing and collaborate with OECS Commission, World Bank, and IRENA which are financing other aspects such as cost of venue, travel and accommodation of participants and expert instructors/presenters, and lunch and coffee breaks.

It is proposed, that CDB covers the cost of items indicated in the Budget in Appendix 2. CDB's SFR (EU-CIF resources) will be used to finance the costs associated with the attendance of selected participants, some conference expenses including banners. For this event, CDB is seeking to facilitate a robust approach to capacity strengthening through the funding of the participation of representatives of countries which are potential off-takers for geothermal energy, regional actors who will directly support capacity building (such as University of the West Indies), as well as those charged with the regional strategy for energy sector capacity development (CARICOM Secretariat/CARICOM Centre of RE and EE).

21. Cost and Financing:

The total cost of the project is estimated at USD99,010. CDB will fund 49% (USD48,510) of the project costs with OECS Commission providing co-financing of 16% (USD16,000) and IRENA/World Bank providing 35% (USD34,500). CDB will finance costs of travel and accommodation for selected participants and some workshop expenses including banners for the event. Funds are available from within existing resources and/or programmes.

The OECS Commission will fund the cost of travel and accommodation of participants and some expert speakers as well as in-kind contribution for organising the event. The IRENA/World Bank/IGA will fund the cost of expert presenters and tools utilised in the workshop, lunch and coffee breaks.

22. Procurement:

Procurement will be in accordance with CDB's Procedures for UOF.

23. Recommendation:

It is recommended that the President approve the UOF of an amount not exceeding the equivalent of thirty thousand five hundred United States dollars (USD48,510) from CDB's SFR to assist in the financing of a GE capacity strengthening roundtable and workshop in December 5-7, 2018 to be held in Saint Lucia as stated in paragraph 15 above.

Daniel M. Best
Director, Projects Department

Nov 29, 2018
Date

24. Recommended by:

Monica La Bennett
Vice President (Operations)

Dec 3, 2018
Date

25. Approved by:

W^m. Warren Smith, PhD., CD
President

Dec 4, 2018
Date

SUPPORTING DOCUMENTATION:

Appendix 1 – Gender Marker

Appendix 2 – Budget

Appendix 3 – Draft Programme

GENDER MARKER

Project Cycle Stage	Criteria	Score
Analysis:	Sex-disaggregated data included in the background analysis, and/or baselines and indicators, or collection of sex-disaggregated data required in TOR.	0
Background	Socioeconomic/Sector/Institutional analysis considers gender disparities, or TOR require the identification of socioeconomic, sectoral and institutional gender issues.	0
Design:	TA interventions are designed, or will be identified as part of the project, that address gender disparities or enhance gender capacities.	1
Project Proposal/Definition /Objective	Project objective/outcome includes the enhancement of gender capacities, gender data collection, gender equality or the design of gender-responsive policies or guidelines.	0
Maximum Score		1
NO: no contribution to gender equality, it is not reflected in the project, or appears as a formal reference only.		

Scoring Code
Gender Specific (GS) or Gender Mainstreamed (GM): 3- 4 points
Marginally Mainstreamed (MM): if 2 points.
NO: if projects score 0-1, if NO give justification why or indicate Not Applicable

REGIONAL ROUNDTABLE AND CAPACITY STRENGTHENING WORKSHOP**BUDGET**
(USD)

ITEM	CDB (EU-CIF)	OECS COMMISSION	IRENA/WORLD BANK	TOTAL
Workshop Facilities	-			
Workshop expenses including lunches and coffee breaks				
Travel/Airfares				
Accommodation and per diem (Participants)	48,510	16,000	34,500	99,010
Accommodation and per diem (Presenters)				
Workshop Materials				
Workshop Banners and Communication Materials				
Contingencies				
Total	48,510	16,000	34,500	99,010
Percentage	49	16	35	100

AGENDA

**OECS Geothermal Energy Roundtable
Saint Lucia, 5 December 2018**

and

**Regional Geothermal Resource Data Gathering,
UNFC Classification and Training
Saint Lucia, 6-7 December, 2018**

Brief:

Currently, seven OECS Member States in the Caribbean Islands are pursuing geothermal energy which is a significant undertaking. For this reason, efforts to reduce the perception of risk on geothermal projects in the sub region and to attract capital from diverse sources is of utmost importance.

Also, as the sub region continues with exploratory efforts to better understand its geothermal potential, there is need for holistic multi-stakeholder coordination and planning amongst the island states. Critical areas requiring such coordination as regulatory and licensing practices, pricing, regional power trade – are determinants of success for geothermal projects in the sub region. This has warranted the calls for more dialogue and collaboration on geothermal energy given the similar characteristics and interests of Member States.

To this end, the OECS Geothermal Energy Roundtable will seek to catalyse the move to closer collaboration on geothermal energy within a regional framework. The geothermal energy dialogue will bring together key experts and decision-makers in geothermal energy in the region to help advance geothermal development. The discussions will focus on the status of the OECS geothermal projects including opportunities, challenges and underlying risks with a view to highlighting the risk mitigation and financing options. The geothermal energy roundtable will be followed by an introduction to the United Nations Framework Classification for Resources (UNFC) and related specifications for renewable energies, and geothermal energy in particular. The introduction of the UNFC classification and training will be undertaken by the International Renewable Energy Agency (IRENA), the International Geothermal Association (IGA) and the World Bank's Energy Sector Mapping and Assessment Program (ESMAP) under the partnership umbrella of the Global Geothermal Alliance (GGA) coordinated by IRENA. The practical sessions on the second and third day intend to provide essential insights including exploring how UNFC relates to prior classifications of Caribbean geothermal resource estimates.

Day 1: OECS Geothermal Energy Roundtable

Title: Advancing Geothermal Energy in the OECS for Economic Development and Resilience

Date: 5th December, 2018

Speakers: IRENA, OECS, World Bank, and IGA

Participants: 30 participants expected that include representatives of geological agencies, local authorities, project developers, local research institutions and other relevant stakeholders.

Objectives:

- To provide a platform to discuss about underlying risks with a view to highlighting the risk mitigation options and financing options and catalyse the move to closer collaboration on geothermal energy within a regional framework;
- To introduce the collaboration of IRENA, IGA, World Bank and UNECE under the framework of the GGA to apply the Geothermal Specifications at national level;

- To present the UNFC, geothermal specifications, and application examples (i.e., case studies) and make audience more familiar with UNFC principles and classification methodology and their benefits to the future geothermal market; and
- To receive feedback, comments, and suggestions on the Geothermal Specifications, especially in the Caribbean context.

Time	Item	Description
8:30 - 9:00	Opening Ceremony	Welcome remarks: OECS Commission Remarks: IRENA (Abdulmalik Oricha Ali) Remarks: World Bank (Thrainn Fridriksson) Remarks: IGA (Marit Brommer) Remarks : CDB (Joseph Williams) Opening address: Government of Saint Lucia
9:00 – 9:30	Presentations	Geothermal Energy in the Eastern Caribbean Judith Ephraim, OECS Commission
9:30 – 10:00	Presentation	Financing Geothermal Energy in the Caribbean CDB
10:00 – 10:30	Presentation	Risk Management for Geothermal Projects in the Caribbean
Coffee break		
10:45 – 11:45	Breakout Sessions	Geothermal Energy Development: Challenges and Opportunities
11:45 – 13:00	Plenary Discussion	De-risking Geothermal Energy in the Caribbean
Lunch break		
14:00 – 14:20	Presentation	Direct use of Geothermal Energy Prospects
14:20 – 14:40	Presentation	Overview of the Global Atlas for Renewable Energy (geothermal component) Huiyi Chen, IRENA
14:40 – 15:00	Presentation	The United Nations Framework Classification for Resources and Reserves (UNFC), application to renewable energy

Coffee break		
15:15 – 15:45	Presentation	Application of UNFC to Geothermal Energy Resources Greg Usher, IGA
15:45 – 16:15	Presentation	Geothermal Energy Island Interconnection: A viable option for the Eastern Caribbean
16:15 – 16:45	Presentation	Recommendations for a Regional Collaborative Framework for Geothermal Energy in the Caribbean
16:45 – 17:00	Ending remarks	Conclusion

For more information please contact: judith.ephraim@oecs.int, AAli@irena.org; Hchen@irena.org.

Day 2 & 3: Classification of Geothermal Resource Estimates according to UNFC Geothermal Specifications

Full-day round table workshop

Date: 6 - 7 December, 2018

Expected Facilitators: Paolo Conti (IGA), Greg Ussher (IGA), Harmen Mijnlief (IGA), Rob Hogarth (IGA), and selected persons from the Geological Agencies, Local Utility Companies, Research Institutions, and Geothermal Developers on each island

Objectives:

- To present each 'Geothermal Project' consistent with UNFC definition of a 'Project'
- To present and explain key supporting data for each geothermal project
- To discuss the socio-economic and technical context of each geothermal project
- To present the resource estimation method and implications for the confidence in the geothermal resource estimate
- To classify each geothermal resource estimate according to UNFC Geothermal Specifications;

Brief:

This is a practical session where the IGA/UNECE experts will work through the process of UNFC classification with the local participants to classify the resource estimates for several geothermal projects, selected from the full list of projects. Trained local technical persons will report and classify the remaining projects subsequent to the workshop, under remote guidance and supervision of designated UNECE/IGA members.

Day 2		
Time	Item	Description
8:30 – 9:00	Introduction	Welcome remarks. OECS Commission Introduction to the IRENA/ESMAP/IGA program Abdulmalik Oricha Ali, IRENA/ Thrainn Fridriksson, WB
9:00 – 9:30	Presentation	Overview of Geothermal prospects in the Caribbean islands, OECS Commission
Coffee Break		
10:00 – 13:00	Roundtable working group	Review of the Geological information for prospects 1,2, and 3 in view of completing the UNFC Classification of the prospects on geological confidence (G-axis)
Lunch		
14:00 – 15:30	Roundtable working group	Part 1 Review of the technical details – expected or installed turbine capacity, number of wells – existing vs planned, permits e.tc, for prospects 1,2, and 3 in view of completing the UNFC Classification of the prospects on technical feasibility (F-axis)
Coffee Break		
16:00 – 17:30	Roundtable working group	Part 2 Review of the technical details – expected or installed turbine capacity, number of wells – existing vs planned, permits e.tc, for prospects 1,2, and 3 in view of completing the UNFC Classification of the prospects on technical feasibility (F-axis)

For more information please contact: AAli@irena.org; hchen@irena.org, beardegan@gmail.com.

Day 3		
Time	Item	Description
Lunch		
9:00 – 10:30	Roundtable working group	Part 1 Review of the economic details – proposed off taker (s), products (direct heat, electricity or both), tariffs, financing arrangements, etc., for prospects 1,2, and 3 in view of completing the UNFC Classification of the prospects on economic feasibility (E-axis)
Coffee Break		
11:00 – 13:00	Roundtable working group	Part 2 Review of the economic details – proposed off taker (s), products (direct heat, electricity or both), tariffs, financing arrangements, etc., for prospects 1,2, and 3 in view of completing the UNFC Classification of the prospects on economic feasibility (E-axis)
Lunch		
14:00 – 15:30	General Discussion	Collective review of group classifications for each geothermal prospect and assignment of new prospects for classification
Coffee break		
16:00 – 16:30	Closing remarks	IRENA, IGA

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