



TERMS OF REFERENCE

CONSULTANT GEOTHERMAL ENERGY TECHNICAL ADVISOR CARIBBEAN DEVELOPMENT BANK

1. BACKGROUND

1.01 The over-reliance on imported fuel presents several challenges for most of the Borrowing Member Countries (BMCs) of the Caribbean Development Bank (CDB), including the five Eastern Caribbean countries (5ECCs) of Grenada, Dominica, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. Price volatility in the international oil market undermines economic stability and national efforts for long-term planning. In addition, a significant portion of the foreign exchange earnings of these countries is used to pay for imported fuel, negatively affecting foreign exchange reserves and the balance of payments.

1.02 Further, the cost of imported diesel has been a key factor contributing to high electricity prices in the 5ECCs over the years. The relatively high electricity costs over time have negatively affected the countries' economic competitiveness and the livelihood of citizens, especially the poorer segments of the population.

1.03 In view of these challenges, the 5ECCs are seeking to harness their renewable energy (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 possibly reduction), improve economic competitiveness and contribute to carbon emission reduction targets. Of the RE options available, GE development has been prioritised because, GE provides baseload generation¹, which potentially could displace more than half of the diesel fuel used for conventional power generation. GE development is therefore a critical component of the 5ECCs' strategy to achieve energy sector transformation. There are however, key barriers, which constrain this development prospect.

1.04 It is considered that the most critical of these barriers are the very limited availability of appropriate forms of financing or risk mitigation mechanisms required for the various stages of the GE project cycle², and the lack of experience and specialised technical skills necessary for successfully developing GE projects. In order to address these barriers and to allow GE to be delivered at the lowest cost to the end user, CDB is pursuing the GeoSmart Initiative³ to support the 5ECCs countries⁴. Under CDB GeoSmart Initiative (CDB-GSI), the mobilisation of suitable resources (financial and technical assistance) 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. To date, CDB has mobilised some grants, contingently recoverable grants, 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 technical assistance and investment funding of GE development. CDB's Board of Directors has approved various interventions in the targeted countries over the past two years.

^{1/} Available 24 hours per day and seven days per week.

^{2/} Compared to other RE options, GE project development cycle tends to be characterized to a greater extent by distinct stages with prominent risks levels and costs. This starts with the high risk exploratory stage, through to lower risk plant construction phase.

^{3/} The CDB GeoSmart Initiative is CDB's response to the need for risk mitigation to facilitate GE development, and seeks to mobilise adequate and suitable resources (grants, contingent grants, loans, and technical assistance) to address risks characteristic of the various stages of the GE project cycle.

^{4/} Dominica, Grenada, St. Kitts and Nevis, St. Lucia, and St. Vincent and the Grenadines. Montserrat is also pursuing very small GE project and had been targeted for grant funding from UK-DFID to cover the full cost of the project, therefore the project was not targeted under CDB-GSI.



TERMS OF REFERENCE

1.05 Although CDB has begun to advance these resources and support to the countries, it is recognised that CDB's own capacity to support GE development needs strengthening, given that this is also a new area for the Bank as identified in the Bank's Energy Sector Policy and Strategy. It is urgent that CDB now secures the services of a consultant GE technical advisor (GETA) to strengthen its own capacity, and to support the countries for which CDB is the lead financier. This support has become particularly urgent in the case of the St. Vincent Drilling project, which is now advancing to actual test drilling stage.

1.06 CDB now wishes to procure the services of a GETA to provide technical expertise to support GE development in the targeted countries.

1.07 GETA will require thorough understanding of the different phases in geothermal development and should have proven command in the geological, geochemical and geophysical aspects of geothermal development. The consultant will also need strong experience in management or supervision of exploratory and production well-drilling operations including familiarity with industry standard procedures, regulations, reports and management of risks associated with a drilling programme. S/he should also have a good appreciation and understanding of the environmental and social impacts, as well as the financial and legal aspects of geothermal development. This includes development of a project through the various stages, the business case and the feasibility assessment.

1.08 GETA will work closely with the Renewable Energy/Energy Efficiency Unit (REEEU) of CDB, reporting to the Coordinator of REEEU. Working with professional services companies⁵, GETA will provide support to the REEEU Coordinator with evaluating applications. In addition, GETA will support the Legal Department of CDB to make inputs for the creation of grant/contingent grant/loan agreements, and with the Economic Infrastructure Division of CDB in providing technical input to appraisal and supervision of projects, providing oversight of achievement of funding milestones and completion of technical studies as required.

1.09 The consultant will be based at CDB headquarters and will be required to travel frequently to the relevant BMCs.

2. OBJECTIVE OF CONSULTANCY

2.01 The overall objective of this Consultancy is to strengthen the capacity of CDB to support BMCs that are pursuing GE development to ensure that the developments proceed in a manner, which allows for the lowest risks and maximum efficiency and cost effectiveness as possible.

3. SCOPE OF CONSULTANCY SERVICES

3.01 GETA will provide support to CDB BMCs pursuing GE development, but mainly the three countries in which CDB is the lead financier for GE development. In addition, GETA will support the work of CDB in the evaluation of applications, making input to development of grant/contingently recoverable grants/loan agreements, supporting appraisal and supervision of GE sub-projects, providing technical oversight of achievement of funding milestones and completion of technical studies as required.

3.02 Key Tasks: to provide geothermal technical advisory services to CDB, governments and GE project companies pursuing GE development projects in relevant CDB BMCs.

^{5/} In order to effectively fulfil duties, it will be necessary for GETA to work periodically with third party consultants specializing in various aspects of GE development, e.g. drilling engineering consultants, and geologists.



TERMS OF REFERENCE

- (a) Advise the CDB REEEU on the local conditions of the Eastern Caribbean Countries that may affect the technical and economic viability of projects.
- (b) Review geoscientific reports, drilling plans, request for proposal documents, drilling proposal, drilling reports and other technical reports to assess their robustness in achieving the set goals.
- (c) Evaluate applications to CDB and make recommendations of the awards of grant/loans to partners.
- (d) Make recommendations for further technical studies necessary to improve confidence with proposed drilling programmes and geothermal development.
- (e) Review the technical aspects of business plans to assess the viability of the technical approach and assist CDB with understanding the risks and opportunities.
- (f) Review submissions from sub-projects such as drilling contracts, power purchase agreements, concession agreements and shareholders agreements.
- (g) Prepare scope of works for further studies or project evaluations to be undertaken by the appointed technical consultant (civil works, power plant, electrical integration, specific geoscientific studies, environmental and social impact assessments, etc.). Monitor outputs of these studies.
- (h) Provide technical advisory to CDB teams on GE development.
- (i) Review Integrated Resource Plans for countries and ensure that GE development is accorded fair treatment.
- (j) Conduct relevant research and advise on issues related to complementary RE options being pursued by relevant BMCs.

3.03 Provide support to the Bank in the preparation and appraisal of sub-projects.

- (a) Support the implementation of the CDB-GSI.
- (b) Build relationships with BMCs and gain familiarity with geothermal developments in the region.
- (c) Work with applicants and BMCs to ensure high quality applications are received. Ensure donor-funding requirements are met and that due process is followed for applications.
- (d) Develop familiarity with relevant CDB policies and procedures and support through the Bank's operations, each stage of the sub-projects financed under the CDB-GSI.
- (e) Work with financial, procurement, environment, social and legal specialists to create grant/loan agreements.
- (f) Monitor implementation of grant/loan agreements and provide technical oversight of achievement of funding milestones.



TERMS OF REFERENCE

- (g) Implement appropriate processes to be followed for risk management and due diligence, in the context of the CDB's governance structure.
- 3.04 **Support Resource mobilisation effort of the Bank for GE development, in the context of the CDB GeoSmart Initiative.**
- (a) Assess specific financing resource needs in the targeted countries and identify relevant funding and instruments to address the needs.
 - (b) Develop concessionary funding proposals to Partners and international agencies such as GCF, and EU-CIF on behalf of countries and CDB.
- 3.05 **Provide capacity strengthening, technical training and education – GE in CDB and in BMCs.**
- (a) Identify capacity-building requirements in BMCs and work with the international community to allocate resources to meet the needs.
 - (b) Identify opportunities for capacity building project, as well as opportunities for synergies to improve cost efficiencies.
 - (c) Maintain updated database of geotechnical information for projects across countries.
- 3.06 **Support outreach and visibility efforts of the Bank in relation to GE and collaborative work with Partners.**
- (a) Prepare and make presentations on GE sub-projects in countries and development issues related to GE in the region.
 - (b) Attend and make presentations as requested by CDB at relevant fora.
 - (c) Make input and support the development of communication materials.
 - (d) Support educational initiatives in countries.
 - (e) Support collaboration and information sharing between BMCs.
 - (f) Prepare documentation and presentations to promote the CDB-GSI to BMCs, the international community, private sector developers and other interested parties.



TERMS OF REFERENCE

4. CONSULTANT'S REQUIREMENTS/DELIVERABLES

4.01 The Consultant will provide the following deliverables:

Deliverables	When
(a) Work programme for supporting the countries based on the plans and status of the project and funding needs.	Within one month of commencement.
(b) Report on the progress of projects and other specific areas of support provided.	Monthly.
(c) Advisory and other services to support GE investment and TA project preparation, appraisal and supervision. Preparation of TORs; review outputs for no-objection from CDB. Presentations and capacity-building initiatives.	As requested (weekly).
(d) Reports in relation to technical reviews, specific advisory requests and review of outputs from various sub-projects.	As requested (estimated at quarterly).
(e) Proposals for concessionary funding submitted to Partners and Funds.	As requested (estimated every six months).

5. REPORTING REQUIREMENTS/ SUPERVISION

5.01 The Consultant will report to the Coordinator, Renewable Energy and Energy Efficiency Unit.

6. QUALIFICATIONS AND COMPETENCIES

6.01 The Consultant should have the following minimum qualifications:

- (a) A Master's degree or post graduate qualification in Sustainable Energy, Geothermal Energy, Engineering or relevant discipline with 10 years' experience in geoscience, GE project development and project management or a Bachelor's Degree or equivalent in Applied Science, Engineering, Geology or relevant discipline, with 15 years' experience in the geothermal industry.
- (b) Demonstrated knowledge and experience in geothermal energy project development in areas with similar geological conditions to those found in the Caribbean. This may include activities such as project development, feasibility analysis, due diligence reports, geoscientific investigations, preparation and implementation of drilling activities, project management and construction management.



TERMS OF REFERENCE

- (c) Excellent interpersonal skills and ability to work across a wide range of stakeholders.
- (d) Proven capacity to work in multidisciplinary teams.
- (e) Knowledge and experience with environmental, social, financing and legal aspects of GE development.

6.02 The following are assets for this position:

- (a) Experience working in the Caribbean.
- (b) Demonstrated knowledge of and experience with procurement of engineering services, management of consultancy contracts and budgeting and reporting preferably in the context of a multi-faceted development programme.
- (c) Experience working with procedures and operations of multilateral development banks and/or bilateral agencies, in particular, classification of projects and their inherent environmental and social risks.
- (d) Experience in managing the implementation of successful international development projects with GE focus.

6.03 In the assessment of submissions, consideration will be given to qualifications and experience on similar assignments. All information must be submitted in English. The consultant must be a national of a CDB member country.

7. DURATION

7.01 The Consultancy will be implemented over a period of 24 months.