

TERMS OF REFERENCE

REGIONAL GEOTHERMAL ENERGY CAPACITY ADVISOR FOR THE EASTERN CARIBBEAN

REGIONAL – ORGANISATION OF EASTERN CARIBBEAN STATES COMMISSION GEOBUILD PROGRAMME

1. BACKGROUND

1.01 The common energy sector challenge in most of the countries of the Caribbean is their general inadequacy of energy security - rooted in their over reliance on imported petroleum-based fuels for powering their economies. In addition to being a key source of high energy costs in these countries over the years, the dependence on imported oil renders the economies hostage to price volatility and other vagaries of the international oil market. This undermines economic stability and national efforts for long-term planning. It is also a source of balance of payment challenges, and the associated foreign currency demand causes a drain on the countries' foreign exchange reserves. The challenges are more accentuated in the countries of the Organisation of the Eastern Caribbean States (OECS) which have the smallest markets, and highest preponderance of inefficient^{1/} diesel power generation in the Caribbean.

1.02 In view of this situation, the countries of the OECS have prioritized the development of their renewable energy (RE) potential as a key strategy for transitioning their economies away from the over-reliance on imported fossil fuel mainly in the form of diesel-fuel and other petroleum products. They are therefore seeking to develop all their RE resource options, including solar, wind, hydropower, and geothermal energy (GE). In this regard, many have taken important steps in recent years, including, *inter alia*, the approval of national energy policies and the setting of ambitious energy efficiency (EE), RE and carbon emission reduction targets as part of its Nationally Determined Contribution (NDC) commitment, under the Paris Climate Change Accord 2015.

1.03 For the six countries of the OECS^{2/}, which have volcanic origins, it is considered that GE holds the greatest prospect (of the RE options available) for transforming their energy matrices by directly displacing large proportions of the diesel fuel-based generation. Further, in addition to being renewable, GE as a source of energy for electricity production provides many advantages, by providing firm capacity (being not variable as wind and solar) for 24 hours per day and seven-days per week year-round. As a result, the respective governments have signaled this RE option as a priority and have commenced the development of GE projects^{3/}, beginning with exploration of their GE potential over the past several years. The main aim of the countries in developing their first GE project is to meet the domestic electricity demand. However, given that the GE potential in each country is multiple times that required to meet their domestic demand countries are increasingly considering fully developing their GE potential beyond that required for their domestic market, to allow them possibly to export energy either through sub-marine cables to neighboring countries or in the form of green hydrogen. In recent years, green hydrogen has been increasingly recognised globally as a potentially key energy carrier for the future to decarbonize the energy sector, to become a fuel for energy intensive industries, and transport. If properly developed

^{1/} Many OECS countries utilize high speed diesel generation technology, which characteristically is most inefficient of the diesel options.

^{2/} Viz: Dominica, Grenada, Montserrat, St. Kitts and Nevis, Saint Lucia, and St Vincent and the Grenadines.

^{3/} The GE Development Project consists of the following phases: (a) Surface Exploration and Conceptualisation; (b) Exploration Test- Drilling (slim-hole drilling), and Concession Tender and Award; (c) Appraisal Drilling and Bankable Feasibility, and Final Investment Decision; (d) Production Drilling and Construction; and (e) Operation.

GE projects can be implemented in a stepwise and scalable manner to meet the immediate and longer-term objectives of the countries.

1.04 GE as a technology, however, is new to the Region, and the projects are complex, capital intensive and exhibit high and unique technical risks especially in the exploratory stage. In addition, the small scale of the projects in the context of isolated island states poses special challenges for attracting credible private investors. These challenges coupled with the lack of technical experience in the countries, and the need for appropriate risk capital represent barriers to the timely advancement of GE projects. Against this background, the Caribbean Development Bank (CDB) has developed the **GeoSmart Initiative**, which seeks to mobilize appropriate resources (in the form of grants, contingent grant, and concessional financing) to address many of these challenges and risks at various stages of the GE project cycle.

1.05 Under its GeoSmart Initiative, CDB in collaboration with the Inter-American Development Bank (IDB) and the European Union Caribbean Investment Facility (EU-CIF) have established the Sustainable energy Facility (SEF) Programme for the Eastern Caribbean, and the Geothermal Risk Mitigation (GRM) Programme, respectively. Through the IDB/SEF Programme most of the resources for GE development have been mobilized - coming through the IDB (from IDB own resources, as well as from the Clean Technology Fund, the Global Environmental Facility, the Green Climate Fund [GCF], and the Government of Italy). The resources seek to provide technical assistance (TA) for: strengthening institutional capacity, the enabling environment, development of various studies, as well as for investment funding for drilling, and plant installation. Through the EU-CIF/GRM grant resources have been mobilized for TA for capacity strengthening, studies, and for investment grants for early-stage drilling.

1.06 In general, the approach promoted by CDB and partners (IDB, EU, etc) under the GeoSmart, is a public private partnership (PPP) approach for developing and delivering the Programme. Here, ideally government would take the lead in the early stage works for de-risking the GE resources supported by various bi-lateral partners and grant funding. Once the resource would have been de-risked to a certain level, the government would then go to the market to identify a suitably qualified and experienced private sector partner, which would enter into a PPP arrangement through a special purpose vehicle – joint venture project company to develop the Programme. In this context, the private partner would be required to have the relevant GE project development experience, and financial capacity to provide the required equity. Also, the private partner would be required to undertake the majority risk in the joint venture company reflected in the majority stake. The relevant upfront input by the government and grant contributions from partners and the development bank would be accounted as the Government's equity contribution to the project.

1.07 Although all countries have adopted slightly different approaches to the development of their GE project, in general the PPP approach is being pursued. Given that GE development is new to the countries and also given the known capacity constraint (human and institutional) of governments of the Region, it has been recognised that significant capacity support would need to be provided for the governments in order for them to effectively play their roles as partners in the PPP arrangement – ensuring that the projects are developed in a sustainable manner and where risks and costs for the country are minimized. For this reason, under CDB's GeoSmart Initiative through the CDB/IDB SEF and the EU-CIF GRM programmes, a significant portion of resources is targeted for TA support to governments, and various other key stakeholders, directly or through other key regional partners.

1.08 The OECS Commission (OECS) is one such key regional partner, which has been seeking to support the countries in advancing their energy transition to greater use of RE and in particular GE development, based on mandates from its Council of Ministers of Environment Sustainability (COMES) who also typically have responsibility for energy matters. Also, in the context of the implementation of Caribbean Sustainable Energy Roadmap and Strategy (C-SERMS) under the CARICOM Energy Policy, the OECS has been identified as the *geothermal energy development thematic hub* - which is one of five

thematic hubs^{4/} for promoting various RE options relevant to the Caribbean. The aim of these thematic hubs is to establish strong technical capabilities and experience over time around the RE options: solar, wind, hydropower, bioenergy, and geothermal energy, thereby addressing overtime, the perennial capacity gaps. It is intended that over time these hubs will emerge as centers of excellence based on implementation of best practices in the context of Caribbean SIDS.

1.09 In seeking to fulfill its role as the thematic hub for geothermal development, the OECSC developed a programme called GEOBUILD through which it intends to provide a range of regional level capacity building interventions to support effective implementation of GE projects. *Inter alia*, these include training of various persons in geoscience (and other technical areas) and GE project development, supporting critical studies, providing expert advice to government on environmental and social risks, legal and contractual matters, and other technical areas. Against this background, the OECSC has applied to CDB for TA funding available under GeoSmart, to provide the relevant capacity strengthening, and awareness building interventions in the countries through regional approaches. In this regard, the OECSC is pursuing five regional level consultancies in the areas of:

- (a) Public Information and Awareness.
- (b) Regional GE Capacity Advisory.
- (c) GE Legal and Transactional Advisor.
- (d) GE Environmental and Social Advisor.
- (e) GE Resource and Engineering Advisor.
- (f) Economic Advisor.

1.10 The OECSC is therefore desirous of addressing the needs of the government stakeholders to secure appropriate experts to develop and implement a structured approach to GE capacity strengthening. In this regard the OECSC intends to engage the services of a suitably qualified Regional GE Capacity Advisor (RCA) to fulfill afore-mentioned objectives of strengthening technical GE advisory capacity of government agencies and the OECSC.

1.11 As instructed by OECSC, RCA will collaborate and share information with other regional consultants advising the relevant government agencies and regulatory bodies.

2. OBJECTIVE OF THE ASSIGNMENT

2.01 The overall objective of this Consultancy is to strengthen the technical capacity of the countries of Dominica, Grenada, St. Kitts and Nevis, Saint Lucia, and St. Vincent and the Grenadines (the targeted countries), which are pursuing GE development by providing technical advisory services to ensure development risks are actively managed and that developments proceed as cost effectively as possible. In addition, the capacity of the OECSC will also be strengthened to support the aforementioned countries over the long-term.

^{4/} Barbados - Solar hub; Jamaica – wind power hub; Suriname/Guyana-hydropower hub; Belize- bio-energy hub; OECSC-geothermal energy hub.

2.02 Specifically, the RCA will enhance the capacity of the OECSC and the targeted countries to provide structured capacity interventions to allow the countries to develop and operate their GE projects in a safe and sustainable manner.

3. SCOPE OF SERVICES

3.01 The RCA will assess the current capacity situation in the targeted countries and develop appropriate interventions to ensure that governments and other key actors have the relevant skills, knowledge, and expertise to develop the GE projects in a sustainable manner. This approach will allow for identification of the gaps and capacity needs, which will emerge over time as the projects progress through the development stages. Interventions will also consider specific national needs while also identifying those regional level interventions, which will facilitate greater efficiency and enhance sustainability of capacity.

4. KEY TASKS

4.01 The Consultant will:

- (a) Conduct a baseline study to identify and map the technical capacity needs and “critical” skills’ necessary to advance geothermal development in the OECS. For the targeted countries (and among regional institutions), the Consultant will:
 - (i) *Assess the indigenous skills and expertise available at the national level to support GE project development at all stages of the project cycle. In this regard, the Consultant will be cognisant that many persons have been trained in various areas of GE development over the last decade through various initiatives donor-funded and government initiatives. Many of these persons are working in areas related or unrelated to GE. Others may have been exposed only to general and superficial knowledge and information through various workshops in which they may have participated.*
 - (ii) *Map past training interventions, and for same identify the scope, content, participants (individuals, institutions, countries represented, etc.) and further identify these participants are currently employed, while also assessing their availability to support project in countries. For example, those who are practicing as consultants may be considered available.*
 - (iii) *Identify the relevant agencies of government and other agencies, which are necessary for supporting GE development or which may be considered critical stakeholders (e.g., electric utilities, ministries, and agencies with responsibility for finance, energy, water, forestry, lands, environment, climate change, sustainable development, attorney general’s office, tertiary level training institutions, etc.).*
 - (iv) *Determine the level of knowledge and skills necessary for staff, or for the institutions, to be able to effectively support the GE development in countries, across the entire project cycle including during operation of the plant. Also, determine those knowledge and skills-set which may be feasibly/cost-effectively provided through training of the relevant staff in the individual ministries/agencies, and those which may be better provided by the training of persons at a regional level (through regional organisations such as OECSC, University, CCREEE) to support the relevant ministries and countries.*

- (b) Develop geothermal capacity building roadmaps and programmes on a local and regional level based on the needs assessment. The Consultant will:
- (i) *Develop a schedule for when the various skills-set will be required by the various actors in government and other stakeholders*, while recognising that the GE projects are at different stages of development, and that the level of urgency vary for the levels of knowledge and skills which are needed by diverse actors in government and among other stakeholders.
 - (ii) *Identify and develop as necessary the scopes and outlines of the various training interventions to fill the identified gaps*. This will also take into consideration the outcome of the afore-mentioned analysis, which will determine which skills/knowledge are best made available either at the national or regional level.
 - (iii) *Coordinate efforts with the GE Project Management Unit at OECSC to identify where training and information sharing can be provided in the short-term by the various GE expert advisors engaged as part of the GEOBUILD Programme*. To this end, the Consultant will become familiar with the expertise available under the various GEOBUILD expert advisory services and using the results of the earlier needs assessment and analysis, identify training interventions, which can be provided as the experts engage with countries, or which can be provided as regional training interventions by these experts. In general, as national, and regional training/knowledge interventions are developed and proposed it will be necessary for the Consultant to consider first utilising the expertise available from the experts under the GEOBUILD Programme.
 - (iv) *Develop a comprehensive and overarching GE capacity strengthening roadmap, capturing the categories of needs and gaps, and a schedule of when these need to be filled by for each country and at the regional levels*. This will consider the range of training and knowledge-building options which may be deployed. All this, while seeking to match these options with the schedule of the demand for these skills/knowledge and taking into consideration: (i) those needs which can be addressed from the pool of GEOBUILD experts, (ii) those which will be addressed through national and regional workshops and other training interventions; and (iii) those which require more intensive and longer-term training support such as specialised certification training programmes.
- (c) Develop gender sensitive curricula for various specialised GE training, identification of relevant programmes in international training institutions, and coordination of the hosting of facilitation of such training interventions. Curricula will be developed for the range of interventions deemed relevant and supported by internships, apprenticeships, on-the-job placements, etc., in line with the roadmap developed above.

- (d) It is intended that within the framework of the GEOBUILD Programme some resources will be allocated for:
- (i) training workshops;
 - (ii) Gender sensitive curricula for various specialized GE training;
 - (iii) facilitating attachments, visits to geothermal related institutions, organisations and sites;
 - (iv) development of short audio-visual materials;
 - (v) purchase of software;
 - (vi) sponsorship for short-term training to be done at internal institutions; and
- (e) attendance of conferences and study tours, and other capacity building interventions. Against this background and within the limits of budgetary allocations, the Consultant will:
- (i) *Develop curricula for the provision of specialised short-term training in the technical aspects of GE* including but not limited to surface exploration, geothermal drilling technology and well design. drilling simulation, cementing of geothermal wells, rig maintenance, geothermal procurements, as well as environmental and social management of geothermal projects; legal and regulatory considerations; GE ordinances; negotiation of PPA's and GE development agreements; commercial aspects; financial modelling; equipment operations and maintenance; operational planning and management, techno-economic risk assessment, reservoir modelling, exploration concepts, drilling methodology, power plant efficiency.
 - (ii) *Develop content outline, identify relevant experts, develop TORs, and support procurement of same, and support the coordination and hosting of workshops* in relevant areas in line with earlier assessments which determined that use of workshops represents the optimal modality.
 - (iii) *Develop programmes outlines, identify relevant experts, develop TORs, and support procurement of same who will develop bespoke study courses for local colleges and universities* – in a manner which allows for the continual tapping the knowledge and experience gained from projects being pursued in the Region.
 - (iv) *Identify or coordinate a series of online GE training and development programmes to address needs identified.*
- (f) Develop strategy for matching available skills with opportunities, and on-job training, while also supporting the implementation of same.
- (g) Develop a mechanism (based on consultation with key actors among the political directorate) for sharing of information among key decision-makers and a facility for the convening of same – this is to facilitate key decision makers (including the political directorate) collaborating among themselves on a continual basis:
- (i) Based on experience this approach needs to be appropriately structured with relevant guidelines and institutional arrangements which allows for the bringing together of relevant parties in a timely manner.
 - (ii) It is contemplated that this facility/mechanism would benefit from input of a coordinator who has technical and diplomatic skills, and political level experience in engaging ministers of government, permanent secretaries, and other senior members of governments He/she would also need to enjoy respect of the persons

occupying these offices.

- (iii) It is aimed that the facility would engender the sharing of information/lessons which could enhance positions of the governments in negotiation with private developers.
- (iv) This would be facilitated by the OECSC.
- (h) Establish database of regional geothermal expertise – properly characterized according to their specialisation.
- (i) Develop framework and platform for a virtual library for warehousing/storing/hosting geothermal energy resources and data in the Caribbean. This will include information on GE projects, key documentation, laws, regulations, experience, and case studies (lessons learnt), training courses conducted, training programmes, which can be pursued on a self-paced basis; facilitate virtual tours, demonstrations, and capturing of content for documentation of lessons, best practices, case studies and legacy related to geothermal energy in the OECS. Also, will catalogue various global best practices. This will enhance sustainability with these resources being maintained in the context of the CARICOM Energy Knowledge Hub and the OECSC as the thematic hub for GE development.
- (j) Identify key international fora and conferences and facilitate the attendance of key actors for government and utility.
- (k) Provide Specific Capacity Strengthening, Knowledge, and Awareness Building Support:

The RCA Team will support capacity strengthening of government ministries, agencies, and regulatory bodies. In this regards the RCA team will:

- (i) Provide training workshops/sessions to government staff or representatives from governments and OECSC on selected topics in relation to geothermal energy development and areas required for capacity building as schedules and durations deemed feasible.
- (ii) Prepare and make presentations on GE Capacity Building areas in collaboration with the government and OECSC.
- (iii) Make technical input, as deemed feasible, to support development of communication materials that would contribute to capacity building.
- (iv) Support the development of technical Briefs/Notes/GE publications, as deemed feasible.

Tasks are defined in general terms and will be presented in detail in project-specific terms of reference for call-offs.

5. QUALIFICATIONS AND EXPERIENCE:

The RCA must be a firm with experience and a strong track record in international project advisory works in the field of GE, with proven experience in identifying, assessing gaps and needs, and developing capacity building programmes, designing capacity strengthening interventions for government institutions and agencies, and executing requisite training activities and initiatives. Associations may be in the form of Joint Venture or Sub-Consultancy. For Joint Venture a letter of Intent signed by each Firm must be submitted. For Joint Venture the Lead Firm should be identified as well as the authorized representative. The RCA must present a team of experts with extensive experience [at least seven (7) years] in planning, designing, managing capacity building initiatives, programmes and projects in geothermal energy. The key experts also need to have at least seven (7) years professional experience in assignments of this nature and corresponding academic training. Practical experience in capacity building in geothermal energy is necessary. Working experience in the Caribbean, Small Island Developing States (SIDS), or developing countries is also an advantage. Specific qualifications and experience should include:

1. At least seven (7) years' experience in geothermal energy capacity development for the stages of the GE project cycle: pre-feasibility, exploration, field development, drilling and plant construction stages.
2. At least three successfully completed GE capacity development projects within the past ten (10) years with at least one in a developing country context, preferably in a SIDS.
3. Experience in developing a GE capacity building project, financed with the participation of a development bank – with requirements for gender equality, social inclusion, stakeholder-engagements, and social safeguard standards.
4. Fluency in English (oral and written).

The RCA should submit evidence of previous performance, detailing at least three similar projects completed in the past ten (10) years, including level of effort and their specific roles in the projects. Curriculum Vitae (CVs) for key experts shall highlight project experience relevant to this consultancy.

The Consulting team should include at least three (3) key experts. Key experts, however, will not be evaluated at the shortlisting stage.

Key Expert (Capacity Advisor/Lead/Project Manager):

- (a) Proven skills in designing, implementation, monitoring, and reporting of training initiatives.
- (b) Proven experience in designing capacity strengthening interventions for government institutions and agencies.
- (c) At least seven years of experience in conducting and implementing capacity assessments and development initiatives.
- (d) A demonstrable understanding of gender inequality and understanding of institutional and policy.
- (e) An understanding of the environment around energy security, climate resilience building and gender equality and sensitivity in the Caribbean region.
- (f) At least five years of working experience in the Caribbean and the field of sustainable energy and/or natural resources is an advantage.
- (g) Excellent analytical and writing skills and very good organisational and task management skills.

- (h) Fluency in English (oral and written).

5.02 REPORTING REQUIREMENTS AND KEY DELIVERABLES:

The RCA will be required to provide reports, memoranda, presentations, expert advice, and capacity building interventions during individual assignments. Concrete deliverables will be outlined in Calls (written request for reviews, advice, comments, general services in various areas within the scope of services) prepared for individual assignments.

The RCA will provide timely advice mainly on the GE capacity building programmes, initiatives, activities, gaps, needs, and risks of the respective GE Projects during the various stages in the project cycle and or full implementation, in the forms of formal written reports, informal reports such as through teleconferences and emails using various formats such as structured documentation, memoranda, comments on project reports, presentations, and others.

The RCA will produce the following deliverables:

	Deliverables/Description	By When
1	Inception report providing a detailed work plan for the coordination of the various activities, description of methodology and approach to meeting the country's requirements for timely capacity building advisory support (given the on-call approach to the services)	Three weeks after contract signing.
2	Draft report on the due diligence and review of the Project capacity building gaps and needs.	Within a reasonable timeframe to be agreed upon when an agreement is reached on the relevant call-off assignments.
3	Final Report on the due diligence and review of the Project capacity building needs and interventions.	Within a reasonable timeframe to be agreed upon after governments and OECSC have provided feedback on the draft report.
4	Brief advisory services in the form of reports on the capacity building due diligence and review of projects, capacity building needs, memoranda providing opinions and recommendations, presentations – via teleconference or presentation or Memorandum.	Upon request, within a reasonable and mutually agreed upon timeframe following the request.

6. ASSIGNMENT OF PERSONNEL:

The RCA will assign experts with required qualifications and experience for the requested tasks. RCA experts shall be available for short-term missions to the targeted Member States. All intended services, tasks and missions must be agreed on and authorised in writing. Prospective key experts should have minimum qualifications as shown in the Section: Qualifications and Experience.

8.03 In addition, the Consultant will have to provide operational support (secretary or junior staff member)

primarily for administering the timely and efficient roll-out of the consultant capacity building programme in various countries on a needs-basis.

9. DURATION

9.01 The duration of this Framework Contract is expected to be up to thirty (30) months. It is anticipated that the contract will commence in **December 2023**. The contract may be renewed, extended, or renegotiated beyond this period in accordance with the contract, based on performance and the need to continue the services of the RCA.

9.02 In general, the RCA will work remotely, however, periodic travel to the targeted countries and OECSC headquarters in Saint Lucia, and the project sites may be required to complete the tasks under this Terms of Reference (TOR).