

OECS Geothermal Energy Roundtable & Regional Geothermal Resource Data Gathering, UNFC Classification and Training

Saint Lucia, 5th – 7th December, 2018

1. Introduction

Geothermal energy has emerged as a priority for the OECS sub-region as the scientific evidence suggests a strong potential for this energy to transform the regional energy landscape. The dependence on imported fossil fuels and fluctuating global energy costs are seen as a major impediment to sustainable growth and competitiveness in the region. Hence a major driver for pursuing the development of geothermal energy is the need for lower energy costs and predictability in energy prices. Preliminary studies indicate significant geothermal resources and this coupled with the added benefit of a stable energy source that can provide baseload power makes geothermal energy an attractive option. In addition, renewable energy and more explicitly geothermal energy development, would contribute significantly to the sub-region's efforts at Climate Change Mitigation. Climate change has emerged as the single largest threat to development for Member States of OECS despite the fact that their contribution to the global problem is negligible. The possibility of export of geothermal energy between countries also paves the way for greater regional integration through sustainable energy interdependence.

Currently seven OECS Member States are pursuing geothermal energy which is a significant undertaking for the region. The high cost of financing for geothermal exploration and development is an area of major concern for the region given that the countries of the OECS are not in a financial position to pursue geothermal on their own or to take loans from multilateral development banks. In recent years additional studies using more reliable scientific methods have been undertaken to supplement the results from previous work conducted over the decades. As new data become available, there is need for a more in-depth and holistic appreciation of all phases of geothermal energy development in the context of the broader national circumstances of the countries. This type of development will require integrated development planning which takes into account a broad range of considerations and decision-making that involves a wide cross-section of stakeholders. A multidisciplinary approach will therefore be needed to ensure the success of a geothermal project. There is need for a critical analysis of the geothermal energy in the region to identify where gaps exist and what future interventions should be targeted. At the sub-regional level there have been 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 seeks 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 from the region to help advance geothermal development in the region. The discussions will focus on the status of the OECS geothermal projects and the

opportunities, challenges and underlying risks with a view to highlighting the risk mitigation and financing options. The dialogue will introduce the UNFC classification and training work currently being 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.

2. Background of UNFC Classification

The regional and nationwide geothermal resource data gathering, UNFC classification and training work is a pilot currently being 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). The initiative is being undertaken under the partnership umbrella of the Global Geothermal Alliance (GGA) coordinated by IRENA.

This effort is a response to the growing need for initial appraisal of the potential for geothermal power, heat and direct uses in emerging geothermal markets. It is also a response to the need to standardize the way in which geothermal resource estimates are assessed and reported. Promoting standardization in this context is critical for investors, regulators, governments and consumers as a foundation for informed prospecting and evaluation of development opportunities at project, company, and national level.

The Specifications¹ for the application of the United Nations Framework Classification (UNFC) to Geothermal Energy Resources and Reserves, developed with support from the IGA's expert working group on geothermal resources and reserves (a group of highly experienced geoscientists) published in 2016, provides the working framework for this effort. The UNFC Geothermal Specifications provide a harmonized framework to qualify estimates of geothermal energy extractable by a project based on key elements of economic viability, technical feasibility and confidence, in a globally consistent and informative manner for prospective users of the information.

In addition to providing a standard nomenclature and framework for classifying geothermal resource estimates, the UNFC Geothermal Specifications also specifies supporting information that should accompany any public report of geothermal resources. Compliance with UNFC therefore requires as a first step, comprehensive data gathering at the level of each single geothermal project.

Datasets that feature in this include the geographical location (latitude/longitude) and the description of each project at a level of detail appropriate for the development phase (e.g., number of production/injection wells; generation type and capacity; off-take plan etc.). They also include the

¹ Specifications for the application of the United Nations Framework Classification for Resources (UNFC) to Geothermal Energy Resources is available on the website: https://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/UNFC_GEOTH/UNFC_Geothermal_Specs.pdf

description of exploration data, current geothermal energy resource estimate, assessment methods, status and development plan.

The role of assembling these datasets is best filled by local project participants. Efficient completion of this exercise ahead of training and in-country workshops requires early identification, communication and engagement between all program partners. Ideal local partners usually include geological surveys or other geothermal authorities, but might also include private developers and research institutions depending on the local circumstances.

Subsequently, seasoned and experienced IGA experts in the type of geothermal project under investigation will advise and review the compilation of the datasets for completeness, and provide input on possible classification of resource estimates based on the available information. The responsibility for the classified geothermal resource estimates and compliance with the UNFC falls on the relevant local partner (this could be a government authority, private developer or other organization, depending on local circumstances.)

The UNFC Geothermal Specifications, since their official endorsement by the UNECE Committee on Sustainable Energy in 2016, have been applied to single project case studies² in a few countries by members of the expert group that prepared the Specifications. This IRENA-WB-IGA initiative, however, is part of a first attempt at involving relevant authorities at a country level to apply UNFC to classify and report on all geothermal projects in a country.

The initiative includes IRENA unilaterally developing baseline maps and tables for future exploration of enhanced geothermal systems with a view to providing a near holistic picture of the geothermal potential of the country through widely accessible platforms such as IRENA's Global Atlas for Renewable Energy, which is a geographic information platform accessible worldwide to developers, investors, regulators and academics.

The overall scope of this effort by IRENA, WB and IGA in 2018/19 will be to assemble relevant supporting data and classify identified geothermal projects and resource estimates in four prospective geothermal markets. A cluster of Caribbean islands have been chosen as one of the four markets to benefit from this demonstration.

3. Value proposition

Value to attract equity investment:

A geothermal prospect reported using the UNFC Standard guidelines would lend itself to easier valuation as an asset, better communication of its potential and challenges and as a direct consequence, be more attractive to developers and equity investors for risk management.

Value to policy making:

² Application of the United Nations Framework Classification for Resources (UNFC) to Geothermal Energy Resources for Selected case studies is available on the website: https://www.unece.org/fileadmin/DAM/energy/se/pdfs/UNFC/UNFC_GEOTH/1734615_E_FCE_ENERGY_110_WEB.pdf

Reporting geothermal prospects in a country using the UNFC standard guidelines can provide the nuance on utilization potential required for decision makers to design targeted policy interventions that maximize the use of the resource.

4. Programme scope and agenda

In line with the ongoing pilot to inventory and classify geothermal resources suitable for power generation in four countries which started successfully with Indonesia, IRENA, IGA and WB will train and collaborate with local partners to report geothermal resource estimates consistent with the UNFC Geothermal Specifications in the Caribbean – helping to apply the Specifications to a number of prospects across several islands in the region.

The group will co-organize a 3 day programme to be hosted in Saint Lucia, in collaboration with the Organization for Eastern Caribbean States (OECS) - an International Inter-governmental Organisation in the region dedicated to economic harmonisation and integration, protection of human and legal rights, and the encouragement of good governance among independent and non-independent countries in the Eastern Caribbean.

On the first day, the group will bring together key experts and decision makers in geothermal energy in the region to help advance geothermal development. The discussion will center on the nature of the OECS geothermal projects and the underlying – risks with a view to highlighting the risk mitigation and financing options. The dialogue will introduce the efforts of different international and local institutions supporting to address these challenges in the sub region, followed up by a short course to enlighten key stakeholders on the islands, especially the local Geological Agencies or persons in charge of the geothermal development, on UNFC Geothermal Specifications, their scope, technical requirements and value.

On the second and third days, experts from the UNECE and IGA Resources and Reserves Committee will assist and guide authorities and other stakeholders in the Caribbean island states in practically assessing and classifying **several** geothermal prospects. The exact number will depend on the success of the preliminary dataset compilation activity.

Participants will include local geologists and other relevant technical persons who will be tasked to understudy the effort and, post the workshop, classify and prepare public reports for the remaining identified geothermal prospects in the region under the supervision of designated the IGA/UNECE experts.