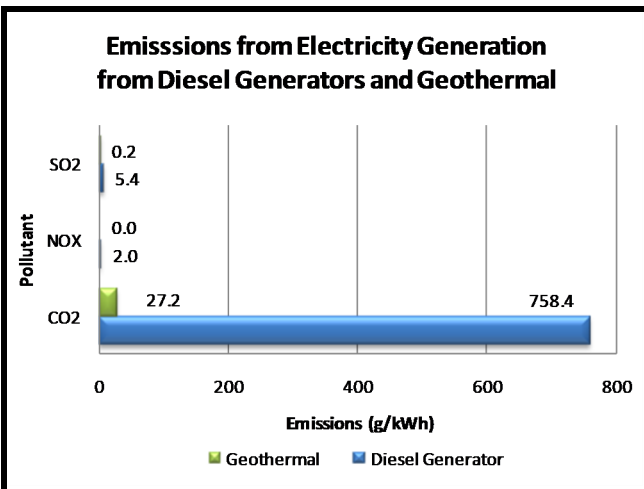


Introduction

The volcanic island arc stretching from the Virgin Islands in the north to Grenada in the south has great potential to generate clean geothermal energy. By harnessing the energy from heat that emanates from within the Earth's radioactive core, geothermal power plants use steam to generate electrical power. The Global Sustainable Energy Islands Initiative (GSEII) collaborates with regional governments to catalyze the development of geothermal energy.

In 2004, the Organization of American States (OAS) launched the Eastern Caribbean Geothermal Development Project (Geo-Caraïbes). Preliminary investigations revealed accessible geothermal resources in Saint Lucia, Dominica, and Saint Kitts and Nevis, and the project developed legal framework, strengthened financial and human resource capacity, and pursued involvement of stakeholders. Implementing this project benefits both the energy security and economic development throughout the Caribbean, as geothermal power has a zero-emission factor for CO₂.



Saint Kitts and Nevis

By attracting financing for geothermal feasibility studies and exploratory drilling, OAS was able to catalyze progress in all three countries. NEVLEC, Nevis' primary energy distributor, previously had little incentive to explore renewable energy alternatives because the utility company could pass on high diesel costs to consumers through a fuel surcharge. However, the Global Environment Fund and OAS conducted a feasibility study, which spurred exploratory drilling between the Nevis Island Administration and West Indies Power company. Drilling in 2008 confirmed the existence of significant and exploitable geothermal reserves.

GSEII also supported three legal and policy initiatives. First, OAS experts helped draft a Power Purchase Agreement in May 2008 between West Indies Power and NEVLEC for 10 MW of geothermal



Representatives of OAS and the West Indies Power Company examine a capped exploratory well on Nevis. (Photo: OAS)

power, more than Nevis currently consumes. Previously, Nevis lacked any laws addressing renewable energy. Second, OAS legal experts helped to draft the Nevis Geothermal Resources and Development Ordinance, which outlines guidelines and regulations for new geothermal development; the bill passed in July 2008. Third, OAS negotiated a contract between the government of Nevis and West Indies Power to provide tax and other incentives to developers in April 2009. The European Investment Bank has granted finance to this project; West Indies Power is identifying investors and will begin drilling in 2010. This major GSEII achievement allowed the launch of the first Eastern Caribbean Geothermal Conference held in Nevis.

Dominica

In Dominica, stakeholders were particularly interested in supplying the neighboring islands of Guadeloupe and Martinique with Dominica's potential geothermal energy. GSEII experts researched the legal and technical feasibility of submarine cables interconnecting the grids of these islands, and multiple private sector companies approached the government with proposals for development. As of 2009, a three year, 5 million euro geothermal resource development program is underway to generate 100 MW of electricity, 80% of which will supply Guadeloupe and Martinique.

Saint Lucia

GSEII efforts began in 2004 with the Organization of American States conducting feasibility studies of the geothermal resources, and the Massachusetts Institute of Technology (M.I.T.) followed up with geophysical surface studies. OAS drafted a Geothermal Resources Development Bill for the Saint Lucian government, which laid out a framework for all phases of geothermal

Table: Barriers to Geothermal Development in the Caribbean

Barrier	GSEII solution
Lack of local capacity to manage geothermal projects	Providing technical assistance and training to local energy sector experts
Inadequate policy and regulatory frameworks	Providing legal assistance for the drafting of legislation supporting geothermal and other renewable energy resources
High initial capital investment	Attracting international financing for feasibility studies and exploratory drilling
Lack of economies of scale	Encouraging coordination among GSEII partners and other Caribbean islands to investigate potential for linking grids

development: reconnaissance, exploration, drilling, production and energy use. The bill has not yet been adopted, and difficult negotiations with the national electrical utility prevented the United Network of the Eastern Caribbean (UNEC) from developing geothermal energy in 2007. Furthermore, Saint Lucia signed a treaty with UNESCO to establish a newly-protected World Heritage Site that includes Sulphur Springs and areas with high geothermal potential. Consequently, drilling has not yet commenced. GSEII will continue to monitor the situation and assist in policy development and negotiations.



Steam vents on the island of Saint Lucia demonstrate ongoing volcanic activity. (Photo: OAS)

Evaluation of Project Results

Despite abundant geothermal resources throughout the Caribbean and Pacific, development efforts have proceeded slowly. Barriers have included siting issues, resistance from national electrical utilities, inadequate or unclear national policies, and the high cost of capital investment. GSEII has worked with governments and to remove these barriers; the results of which are beginning to come to fruition. Saint Kitts and Nevis, Dominica, and Saint Lucia are on their way to begin producing large amounts of geothermal energy.

Lessons Learned

Geothermal energy can provide a substantial source of clean, renewable energy in the Caribbean at a fraction of

the emissions and cost associated with diesel generation. By conducting feasibility studies through the Geo-Caraïbes program, GSEII partners were able to eliminate an important cost barrier to entry into the geothermal market. Legal and policy expertise supplied by GSEII helped enable development. The varying success of geothermal initiatives in Saint Lucia, Nevis, and Dominica also demonstrates the importance of engaging policy makers and ensuring that agreements among government, utilities, and developers offer flexibility to protect citizens' interests and to take full advantage of geothermal opportunities.

Potential for Expansion

GSEII's experiences in the Caribbean have generated knowledge and know-how that can assist other small island states in overcoming barriers to geothermal energy. Geologic resources vary from island to island, so no two projects will be exactly alike, nor will every island have sufficient geologic resources. It is likely that Saint Kitts and Nevis will develop geothermal energy in the near future, renewing interest in the resource among islands' governments, investors, and developers. GSEII seeks to capitalize on this renewed interest and jumpstart progress on other islands.



West Indies Power Company drilling rig begins exploratory drilling on the island of Nevis. (Photo: OAS)

Contact

Nasir Khattak
Climate Institute
900 17th St, NW
Suite 700
Washington, DC 20006
Phone: (202) 552-4723
Fax: (202) 737-6410
nkhattak@climate.org
www.gseii.org