



Grenada Geothermal Resource Development

- Clean Sustainable Baseload Energy -
GENERAL BACKGROUND

No. 5 Vol. 1



Background - Historical Analyses

Over the years, several studies have been published on the island of Grenada, most of which have focused on its Petrological aspects. The authors who have contributed most though to the country's geological knowledge though include:



- **P.H.A Martin-Kaye** - produced several geological reports on the Lesser Antilles, and in particular on the island of Grenada, producing a geological map.
- **J.F. Tomblin** - published several geological articles of the island of Grenada and the Lesser Antilles.
- **R.J. Arculus** - produced a thesis and various articles containing a great deal of data on the petrology and geochemistry of the volcanic rocks of Grenada.
 - **MacLeold Graham** - completed a thesis on the petrology of Grenada from which many data have been drawn from the chemistry of the rocks and mineral phases.



Some of these included geological and geochemical investigations that can be used for geothermal purposes.

The word "**Geothermal**" comes from the Greek words - **geo**, meaning earth, and **therme**, heat. Geothermal energy is therefore energy which is provided by heat from within the earth.

The previous geological and geochemical studies are thus associated with surveys that were carried out by:

- **Geotermica Italiana** (1981) - produced a high-quality geological map of the island based on the findings reported by Martin-Kaye and Arculus along with original data. In addition, Geotermica Italiana undertook a description and sampling of the thermal features in Grenada.
- **Huttrer and Michels** (1993) - undertook a review of the work carried out by Geotermica Italiana and documented additional thermal features.

Other investigators, who undertook additional work, included:

- Van Soest et al. (1998).
- Pedroni et al. (1999).



Recent Investigations

In 2014, the Government of Grenada received technical assistance from the Governments of New Zealand and Japan to investigate its geothermal resources and assess their suitability for use in the generation of electricity.



2015 - 2016, Jacobs New Zealand Ltd and the Japanese International Cooperation Agency (JICA) undertook a comprehensive geothermal investigation programme on mainland Grenada including geological, geochemical and geophysical data collection and interpretation.

The results of these investigations have led to the conclusion of the presence of a geothermal resource enough for a conceptual model of a power plant with an installed capacity of 15MW.



A Geothermal Resource Development Roadmap (GRDR) has been developed. It articulates a five (5) phase development path, which is summarized as follows:

follows:

Phase 1 - Surface Exploration & Conceptualization - The presence of a geothermal resource is indicated by surface exploration studies.

Phase 2 - Exploration Slimhole Drilling - A slimhole exploration drilling program of wells to be undertaken to confirm the presence of a geothermal resource.

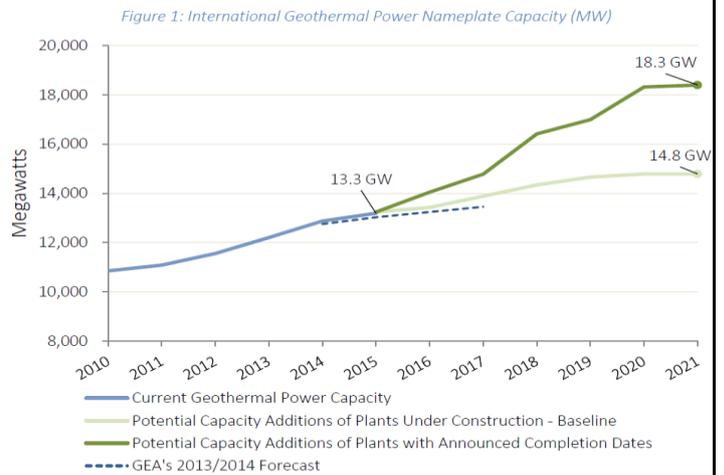
Phase 3 - Appraisal Drilling & Bankability - Developer arranges funding, successfully drills full size appraisal wells and develops the Project.

Phase 4 - Production Drilling & Construction - Developer executes the Project.

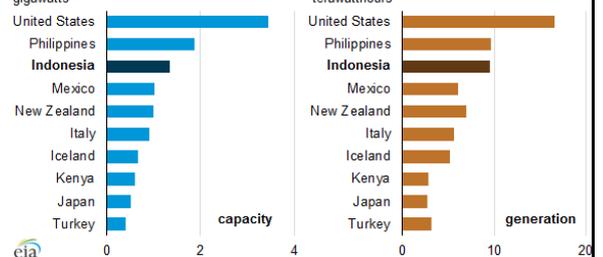
Phase 5 - Operation - Developer successfully manages, operates and maintains the geothermal reservoir and wells, steamfield, power plant and transmission line, and sells the electricity under a long-term power purchase agreement.

Worldwide, electricity is produced from geothermal energy in more than 20 countries, from an operating capacity of 13.3GW, serving more than 600 million persons.

According to the 2016 Global Geothermal Power Production Report, the global geothermal market was developing about 12.5GW of planned capacity across 82 countries.



Top geothermal electricity producers and capacity holders (2014)



Source: U.S. Energy Information Administration

Based on current data, the global geothermal industry is expected to reach about 18.4GW by 2021.

It is anticipated that if all countries follow through on their geothermal power development goals and targets, the global geothermal market could reach 32GW by the early 2030s.

