

DEVELOPMENT OF A GEOTHERMAL MASTER PLAN FOR NICARAGUA

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ABSTRACT

Nicaragua is endowed with a substantial geothermal potential that is connected with the active volcanic cordillera along the Pacific coast. Geothermal power generation began in 1983 with the startup of the Momotombo plant, which now has a capacity of 70 MW. A second geothermal field (San Jacinto-Tizate), discovered in 1993, has at least 25 MW of power potential confirmed by deep drilling. Two other areas have been investigated to the pre-feasibility level, and another 6 identified in a preliminary way. With the goal of orderly and efficient development of the geothermal resources of Nicaragua, a Master Plan is being prepared that will permit classification of the recognized geothermal areas in terms of development potential and planning of the successive stages of exploration and development. The Master Plan, in addition to being a planning instrument, will offer a basis on which to establish limits for exploration concessions and conditions for offering them to private companies; it will also serve as a presentation and promotional document for the country.

As the first step in this effort, all existing resource information is being evaluated and new exploration data are being gathered (geologic field investigations, remote imaging, hydrological and geochemical studies and geophysical surveys) to estimate the probable limits and develop a conceptual model of each prospect. Each model, in turn, will allow estimating the energy potential and will serve as a basis for planning the studies needed to reach the feasibility stage for each prospect.

Logistical and environmental impact aspects of each prospect are also being assessed. The logistical aspects, such as the area's accessibility, availability of water for future drilling, availability of land (given its present use), and other infrastructure data, are being defined and evaluated. The purpose of the environmental investigation is to identify the principal risks and their mitigation, and the social impact of geothermal development. The data obtained from these investigations are being reviewed and summarized for their inclusion in specific reports.

Based on the preliminary geothermal model, a technical-economic profile of each prospect is being prepared, taking into account logistical and environmental factors. The costs and time necessary to reach the feasibility stage are being estimated for each prospect, and an appropriate resource development strategy is being formulated. The Master Plan document will be a systematic presentation of all relevant aspects of each prospect (resource-related, logistical, infrastructure, environmental and economic), defining levels of priority and optimum development programs.

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