

GUATEMALA 2013 SNAPSHOT: DISTRIBUTED GENERATION (DG)

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DEVELOPMENTS SINCE PUBLICATION OF THE GUATEMALAN DG CASE STUDY IN 2010

Guatemala's legislation has effectively facilitated the promotion of the development of renewable resources through Distributed Generation (DG). It is clear that the development of DG projects accelerated after the enactment of the Technical Standard for the Interconnection, Operation and Marketing of Distributed Renewable Generation (NTGDR). Between the enactment of the NTGDR in 2008 and the publication of the Guatemalan DG Case Study (2010), CNEE authorized nine projects with an aggregate capacity of 11 MW.¹ As of March 15, 2013, CNEE has authorized 16 additional projects, for a total of 25 DG projects with an aggregate capacity of approximately 41 MW as shown in Table I (an increase of approximately 30 MW since 2010). With the exception of the Cogeneración Palo Gordo, a biomass project, all of the authorizations issued by CNEE at the time of this publication have been for hydroelectric projects (see table and figure below). This accelerated development is in alignment with the goals of the General Electricity Law and Acuerdo Gubernativo 69-2007², which amended the Rules of the Administrator of the Wholesale Market, thereby increasing competition, investment and coverage, and improving service and developing DG resources.

There are however, some remaining challenges to the development of renewable resources in Guatemala. Although Guatemala has significant geothermal, wind and solar potential compared to that of other Central American countries, it has lagged behind its neighbors in tapping the resources. The accelerated development in DG has not yet expanded to resources other than hydro. For instance, studies indicate that geothermal power plant development projects in Central America are not attractive for private investors when the project considers the cost of exploration and confirmation, drilling an unknown field, development of the power plant and transmission lines.³ Given the various costs associated with development of geothermal resources, plants less than 18 MW are generally not profitable. As for other types of renewables, Guatemala's interest rates on credits are generally quite high and deter many new investors. Accordingly, hydro has been profitable in the country for many years and is still overwhelmingly the most cost effective means of energy production in Guatemala due to its long and successful history within the country.

Guatemala can further progress in non-hydro renewable energy projects by focusing on identifying challenges to particular energy resources at hand. The current regulatory framework (i.e., the General Electricity Act, including its administrative rules) does not distinguish among different renewable resources, (e.g., differences between hydroelectric and geothermal resources), for authorizing the exploration and use of the resource, including the eventual construction of electric power generation plants. Creating incentives for the development of renewable DG resources, such as biomass, solar, and wind power can be a step towards

overcoming these barriers and greater investment. Some countries, for example, have found that a carve-out for each RE resource is a possible incentive to make various renewable generation (such as solar or geothermal) competitive. This handbook has identified other incentives to renewable energy promotion that promote a variety of energy resources based off of some fundamental principles such as: sound tariff setting⁴, wholesale market regulations⁵, and strengthening of the regulatory framework⁶. Further reevaluating RE legislation in Guatemala can only add to the success already encountered through incenting DG in Guatemala.

Policies previously identified (improving quality of service, tax credits, among others) in the Guatemala Case Study can be further considered as the country advances towards even greater renewable energy development. Cooperation on the national level with academics and other agencies, organizing seminars, forums, and workshops related to renewable energy development, and fostering collaboration with national and international entities will also further advance the country's regulatory goals.

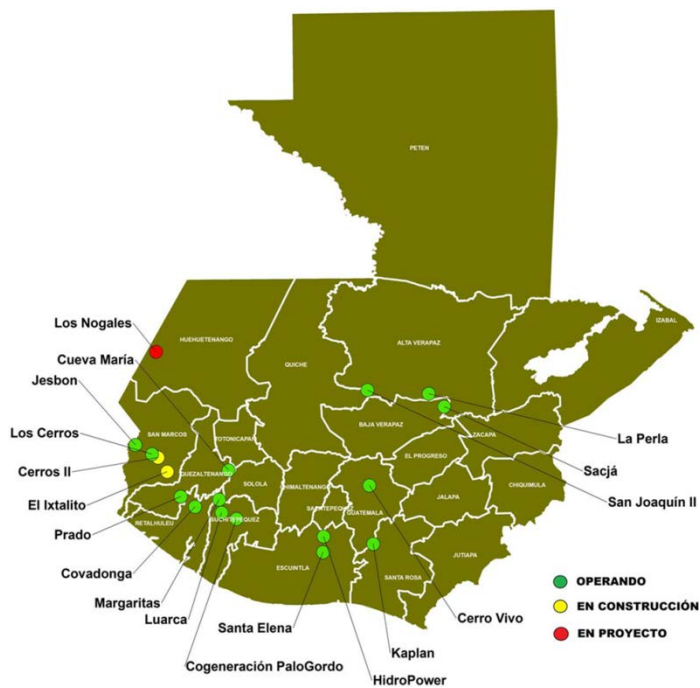
Note on Table and Figures. 16 projects were developed between 2010 and early 2013 (approximately four projects per year), versus just nine projects that were developed between 2006 and 2010 (approximately two projects per year).

DG Projects Authorized by CNEE prior to February 2013⁷
(Shaded cells represent projects authorized prior to publication of the Guatemalan DG Case Study in 2010, as a result of the NTGDR.)

	Name	Location	Technology	Capacity
1	Santa Elena	Carretera a Siquinalá, Escuintla	Hydro	0.70
2	Kaplan Chapina	Pueblo Nuevo Viñas, Santa Rosa	Hydro	2.00
3	Los Cerros	San José El Rodeo, San Marcos	Hydro	1.25
4	Cueva María	Cantel, Quetzaltenango	Hydro	1.50
5	Hidropower SDMM	Ingenio San Diego, Escuintla	Hydro	2.16
6	Central Generadora El Prado	Colomba, Quetzaltenango	Hydro	0.50
7	Covadonga	Nuevo San Carlos, Retalhuleu	Hydro	1.50
8	Jesbon Maravillas	Carretera a Malacatán, San Marcos	Hydro	0.75
9	Finca Las Margaritas	San Francisco Zapotitlán, Suchitepéquez	Hydro	0.43
10	La Perla	San Miguel Tukurú, Alta Verapaz	Hydro	3.70
11	Hidroeléctrica Sajaá	Purulhá, Baja Verapaz	Hydro	2.00
12	Cogeneración Palo Gordo	San Antonio Suchitepéquez,	Biomass	2.00
13	Mini Hidroeléctrica San	San Cristobal Verapaz, Alta Verapaz	Hydro	0.80
14	Los Cerros II	San José El Rodeo, San Marcos	Hydro	1.90

15	Hidroeléctrica Cerro Vivo	Carretera a Chinautla, Guatemala	Hydro	2.40
16	Hidroeléctrica Luarca	Mazatenango, Suchitepéquez	Hydro	0.51
17	Hidroeléctrica El Ixtalito	Nuevo Progreso, San Marcos	Hydro	1.64
18	Hidroeléctrica Los Nogales	La Libertad, Huehuetenango	Hydro	2.37
19	Cueva María CM2	Cantel, Quetzaltenango	Hydro	2.40
20	El Zambo	San Francisco Zapotitlán, Suchitepéquez	Hydro	0.99
21	El Libertador	Carretera los Esclavos-Chiquimulilla,	Hydro	1.88
22	Finca Las Margaritas II	San Francisco Zapotitlán, Suchitepéquez	Hydro	1.60
23	Las Victorias	Escuintla, Escuintla	Hydro	1.00
24	Maxanal	Finca Moca Grande, Suchitepéquez	Hydro	2.80
25	El Coralito	Santa Bárbara, Suchitepéquez	Hydro	1.75
Total				40.52

Location of the DG Project Authorized by CNEE (Green dots represent projects in operation, yellow dots represent projects in construction, and red dots represent projects in the pre-construction phase)



¹ See the RE Handbook, Guatemala Case Study

² Source: Ministry of Energy and Mines: Law of Incentives for the Development of Renewable Energy Projects (Including reforms following Acuerdos Gubernativos Nos. 68-2007y 69-2007)

³ Source: Geothermal Power Plant Projects in Central America: Technical and Financial Feasibility Assessment Model

⁴ See the RE Handbook, Armenia Case Study

⁵ See the RE Handbook, El Salvador Case Study

⁶ See the RE Handbook, Egypt Case Study

⁷ Source: CNEE interviews