Country Assessment Report

Country/Region Name- Guatemala:

Guatemala is situated in Central America; bordered by Mexico, Belize, Honduras and El Salvador. It has a population over 17 million and GDP over $78 billion. Annual growth rate has accelerated in recent years, from 2.8% in 2017 to 3.6% in 2019.

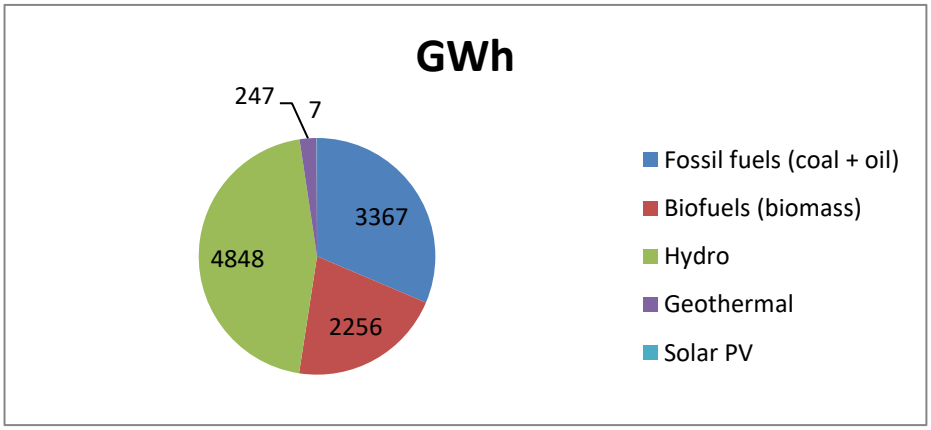
Economic structure and activity:

Guatemala has a mixed-economic system, involving a combination of market freedom, centralised economic planning and government planning. The service sector represents the largest share of the nation's GDP, accounting for 62.87%. Key sectors include tourism, finance, banking, communications and retail. Industry contributes 24.56% to overall GDP, specialising in coffee production, textiles, paper, pharmaceuticals and rubber processing. Guatemala also hosts a small mining industry, extracting copper, zinc, iron and nickel. The agricultural sector accounts for 9.98% of GDP, with its main exports bananas, sugar, cotton, rubber and cardamom.

(Statista 2018; Santander 2018)

Generation and demand: (type, MW, TWh)
Guatemala's energy sector includes three main areas and/or subsectors: electricity generation, transmission and distribution (demand). Electricity production relies on renewable sources (69%) and one third of production by non-renewable ones (31% coal and oil).

The generation sub-sector is a much diversified one. It includes hydroelectric (853 MW), geothermic (49.2 MW), biomass (381 MW), solar (85MW) and wind (73 MW) energy plants. Guatemala is looking to diversify its energy needs away from hydrocarbons towards clean energy. It not only aims to make significant savings as oil international prices keep increasing, but also to reduce prices on electricity and to minimize the impacts of carbon emissions while shifting the energy mix promoting renewable sources of energy. Continued power supply constraints forced the government to issue more power supply contracts with private companies.



Annual electricity production per source
Source: www.IAE.org, 2014 data

Electrical Interconnection and import/export:

Regionally, the Central American Electricity Market Treaty and its Protocols rule the sector across the region and all matters related to the regional electricity interconnection. This particular regional initiative sets Guatemala as a regional hub for power due to their domestic abundance in natural resources and the investment-friendly legal framework governing the power sector.

Regionally, Guatemala also has begun several projects with its neighbours to increase the reliability of its power supplies. A 400 kV connection with Mexico's electricity grid was inaugurated in Los Brillantes Retalhuleu, Guatemala, on October 26, 2009 and allow import/export of power[1]. In addition, Guatemala and five other Central American countries –El Salvador (in operation since 1983), Honduras, Nicaragua, Costa Rica and Panama- have agreed a regional project known as SIEPAC (Central American Interconnection System) that aims to interconnect transmission grids allowing power transfers between the different countries. In July 1997, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama signed the Framework Treaty for the creation of the Regional Electrical Market (MER). This is designed to be a seventh wholesale market, overlapping the existing six wholesale markets of each of Central American member states, with its own regional regulations.

Market Structure:

The General Electricty Act (Decree 93-96) reformed the market structure of Guatemala's power sector. The piece of legislation was designed to reduce government intervention and attract/permit private companies to participate in energy related tasks. It opened up energy commercialization, distribution, transmission and generation from the control of the then two major stakeholders in the 1990's (Empresa Electrica de Guatemala, Sociedad Anónima –EEGSA- and Instituto Nacional de Electirificación –INDE). This law set up a competitive market where only the prices of transmission and distribution are regulated.

The main outcome of the Electricity Act was the creation of a regulatory agency (La Comisión de Energía Eléctrica or CNEE: **http://www.cnee.gob.gt**) and a wholesale power market administrator entity (Administrador del Mercado Mayorista or AMM: **http://amm.org.gt**). The AMM is an independent, non-for-profit organisation which co-ordinates the operation of generators, international interconnections, and transmission lines that form the National Electric System. It is responsible for overseeing the safety and operation of the National Electric System and the efficient dispatch of energy and is tasked with minimising operating costs.

Responsible Government Department: (include key contacts)
The Ministry of Energy and Mines (MEM, **www.mem.gob.gt**) is responsible for making energy policy, transmission and generation plans. Legal framework also includes specific laws ruling each one of the subsectors and their ruling bodies/entities.

[1] See http://proyectomesoamerica.org/joomla/index.php?option=com_content&view=article&id=172&Itemid=101

Ministry of Environment and Natural Resources (MARN) regulates environmental management. It aims to protect natural ecosystems in conjunction with the safe and sustainable development of natural resources.

National Electric Energy Commission (CNEE) acts as the technical branch of MEM, focused on creating, regulating and enforcing energy legislation.

National Interconnection System deals with all electrical transactions is the *Wholesale Market Administrator (AMM).*

Key contact details:
-CNEE: [redacted] -
-AMM: [redacted] -
-MEM: [redacted] -

Existing/Planned Energy Legislation: (is there a CPO)
The regulations for the Electricity Law were issued in 1997, while the Wholesale Market regulations were issued in 1998.

National Electricity Law- passed in 1997 to provide guidance over the generation, distribution and transmission of electricity in Guatemala. It states that all utilities must procure their electricity supply contracts through auctions. They offer 15-year PPAs for capacity or energy, with specific modalities for renewable energy. The law also aims to promote the development of renewable energy generation.

General Electricity Law -

Environmental Legislation for RE:

Other important pieces of legislation include the Incentives Law for Renewable Energy Projects of 2003 (Decree 52-2003, **http://www.mem.gob.gt/wp-content/uploads/2012/05/2.3-Ley-y-Reglamento-de-Incentivos-de-Energia-Renovables.pdf**), its Regulations issued in 2005 (Decree 211-2005), and the Renewable Energy Generation Norms issued in 2008 (171-2008). Collectively, they aim aim to promote the development of renewable energy generation projects across the country, to reduce the high dependence of hydrocarbons in energy production. However incentives are limited to tax/duty exemption only.

Existing/Planned Certificate Systems: (purpose, extent)
Other than the participation to the CDM scheme, no concrete plan have been drafted for a certification of renewable energy production (Certificados de Energía Limpia or CEL).

RE market potential:

Hydroelectric power could be converted into an installed capacity of up to 5,000 MW. These can be developed at a range of different scales: household-scale turbines (100s of Watts), community-scale systems (10s of KWatts) and grid-connected-scale (MWs). Guatemala has an estimated potential of 1,000MW, with access to three active volcanoes and more than 12 geothermal reservoirs. There is lots of potential to develop wind energy, particularly in south-eastern Guatemala. If all resources were

developed, 7,800 MW of electricity could be generated. Average solar irradiation is 5.3kWh/m^2/day and could be exploited to generate up to 10,446 GW. The extensive sugarcane industry in Guatemala has begun taking advantage of the nation's potential for generating electricity from biomass. In total, biomass could be converted into an installed capacity of 700 MW.

Market risks and challenges:

The main challenge for future deployment of renewable power generators is social conflict. Between 1980 and 1982, the construction of Chixoy hydroelectric dam was part of an economic development programme which led to the Rio Negro massacres. This legacy, amongst more recent incidents have tarnished the reputation of energy companies interested in, or already investing in, the country. New projects can be met with scepticism and opposition, sometimes violent; regardless of the potential benefits to the communities. Fears about manipulation further exacerbates resistance to energy projects and have led to demonstrations, including the blocking of important transit routes in Guatemala.

Local communities are becoming more welcoming of energy projects, both electricity and oil and gas. This is partly due to legislation, which guarantees a fixed rate of 4% of net profits to the local municipality, but also due to direct aid programmes set up by companies for the communities, such as schools and medical clinics.

(https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/200567/GUATEMALA_-_Energy_Sector_Report_2013.pdf)

Extent of Engagement with Government: (brief summary of any contact already made with the national government regarding certification in general and I-REC)
No engagement with the government has been conducted yet regarding I-REC.

Expected response from Government:
As per the article 6 of Decree 52-2003, we can anticipate that as for Emission Reductions, the RECs will be the property of the project owners who will entirely benefit from the commercial value.

Current Environmental Reporting in Energy:
The *National Commission of Electricity* (CNEE) as well as the Wholesale Market Administrator (AMM), collects data relating to the power (GWh) produced from each type of sources and fossil fuels consumed by these.

The Guatemalan Environmental Protection Act also provides an Environmental Impact Assessment (EIA) for all projects, construction works, or any other industrial activity that may create an environmental hazard related to energy. The assessment must be approved by the Guatemalan Environment and Natural Resources Ministry prior to the start of construction work.

Any other Relevant Information:
None

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Contributors	
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