



INSTITUTE OF THE AMERICAS

Promoting public policies for development, trade and investment, good governance, and regional integration

Honduras Energy White Paper

Prepared in advance of the Institute of the Americas Roundtable set for September 22 in Tegucigalpa

1) Background

Much like other countries in Central America Honduras' electric generation is largely thermo-based. Moreover, Honduras is a net electricity importer; its grid does not have a wide reach in rural areas, and is in some parts of the country, in need of an upgrade.

The generation market is divided between state owned utilities (38%) and private investors (62%). While the majority of the state owned generation is hydroelectric, private generation is primarily thermo-based. The fact that the electric production depends primarily on thermo-based plants defines the power generation system as significantly vulnerable to political or market induced supply and pricing variations in the international oil markets

The state-owned company ENEE is responsible for the public sector production of energy, as well as the transmission and distribution systems. The national grid is also vulnerable to frequent interruptions in electricity distribution, and transmissions losses are greater than the norm, due to needed technology upgrades as well as power theft

The issues mentioned above have led to a very gradual shift in government policy largely aimed at trying to diminish its fuels dependency by diversifying its energy matrix to include renewable energy.

The government also hopes to count on the Central American electric interconnection project, or SIEPAC in order to further diversify the its generation portfolio to include additional renewable energy sources, as well as improve power reliability and quality in the country.

Figure 1

Energy Production in Honduras in 2009

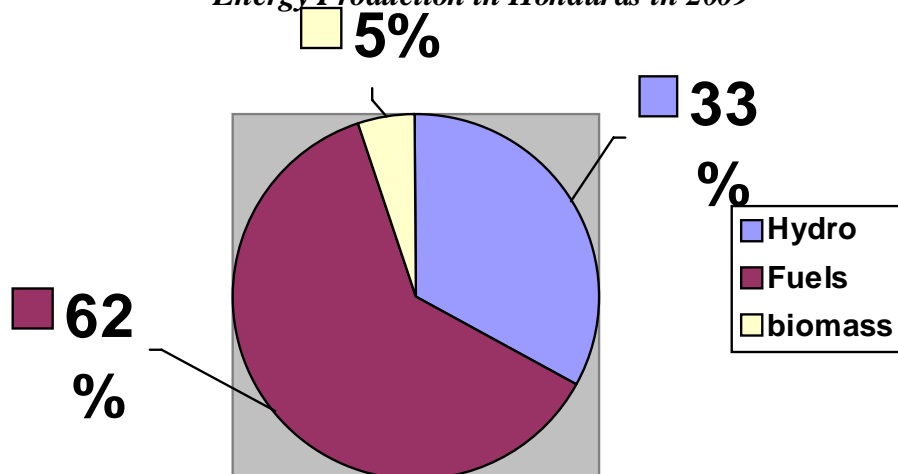
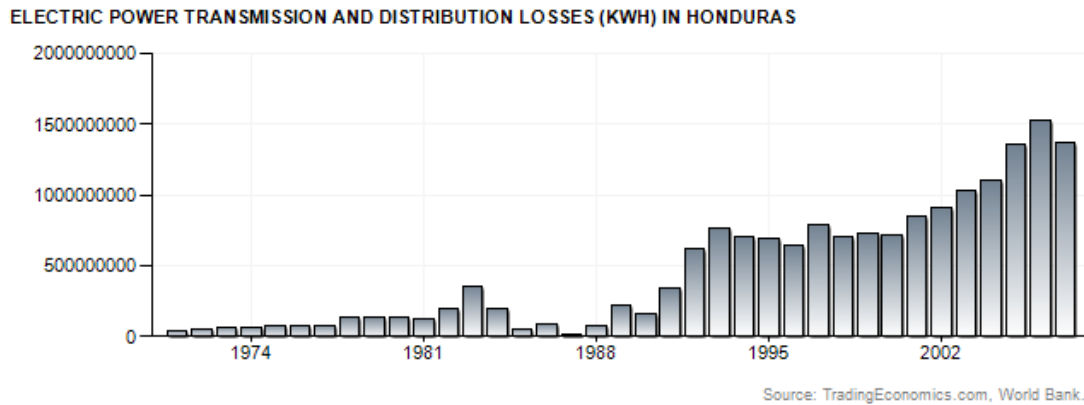


Figure 2



- Electric power: **consumption**
(kWh) in Honduras: **4962000000.0**
- Transmission and distribution losses (kWh) in Honduras : **1366000000.0**
- Transmission and distribution losses (% of output) in Honduras: **21.6%**
- National electrification rate (2009): **79%** (Urban rate: 95%, Rural rate: 45%)

2) Government Policy

Electrification was programmed under the 1994 Electricity Law for the Electricity Sector through the creation of the Social Fund for Electricity Development (FOSODE). The government set a target to increase national electricity coverage to 80% by 2015, giving equal priority to urban and rural. Great strides have been made, with an increase in national coverage from 43% in 1994 to 69% in 2006. 400,000 new connections on the grid are expected to be made by 2015. However, lack of financing has slowed grid development, causing it to lag behind demand.

In June 2007, then-President Manuel Zelaya, declared an “energy emergency.” Honduras faced a looming crisis in its electricity sector due to inadequate generating capacity, over-reliance on high-cost bunker fuel, management instability, technical and administrative losses and a reluctance to raise rates to levels sufficient to cover costs. The state-owned electric company, ENEE, was losing an estimated US\$200 million per year. At that rate, the debt created by ENEE could have approached the total borrowing capacity of Honduras within five years.

An Intervention Board (*Junta Interventora*), headed by the Minister of Defense and the Minister of Finance, was temporarily put in charge of ENEE to manage the crisis. The mandate of the Board was extended until October 2008.

With the end of the international economic crisis, the situation seems to have slightly improved. That has led the current president of Honduras, President Porfirio Lobo, to authorize the creation of an energy commission to define an energy policy for the country. The commission is comprised of the Vice President, Maria Antonieta de Bogran, the head of the ENEE, the Minister of the Secretariat of Natural Resources, the Minister of Planning and Foreign Affairs, the Minister of Public Affairs, and the Minister of Transport.

Concurrent to its efforts to define a new national energy policy, the Lobo government has opened a public bidding process for 250 MW of renewable energy which should enter the system in 2016. Meanwhile, the government must also face the aging of its generation system, as illustrated the bidding launched for the repair of the hydroelectric power plant “El Cajon”.

The current sector organization and institutional challenges must be improved to facilitate electric generation. For example, there has been debate between government entities ENEE and the National Energy Commission (CNE). Due to this regulatory and market uncertainty there is increased concern among private companies, as many had been awarded contracts and were proceeding with negotiating financing terms with national and international banks.

3) Renewable energy

In Honduras there is great potential for renewable energy. What is open for discussion is how the government chooses to take advantage of the prospects. Given the country’s vulnerability to fossil fuels, many argue that Honduras must embrace a more diversified energy matrix. That is to say renewables will figure prominently.

Currently, only Biomass and hydroelectric production are used on a large scale for electric generation. Hydro is now accounting for around 33% of the installed capacity of the national interconnected system. The hydroelectric production in Honduras has been principally medium size plant, (14 out of 16 plant have a capacity of production below 30MW), but two large power plants account for 70% of the total capacity. There is still growth in terms of hydroelectric production that is expected, with the building of an additional 16 power plants by 2011, which would provide an overall capacity of 206.5 MW.

The issue with renewable projects is that, paradoxically, they have huge environmental hurdles, including flooding some land, and impacting the country’s indigenous inhabitants.

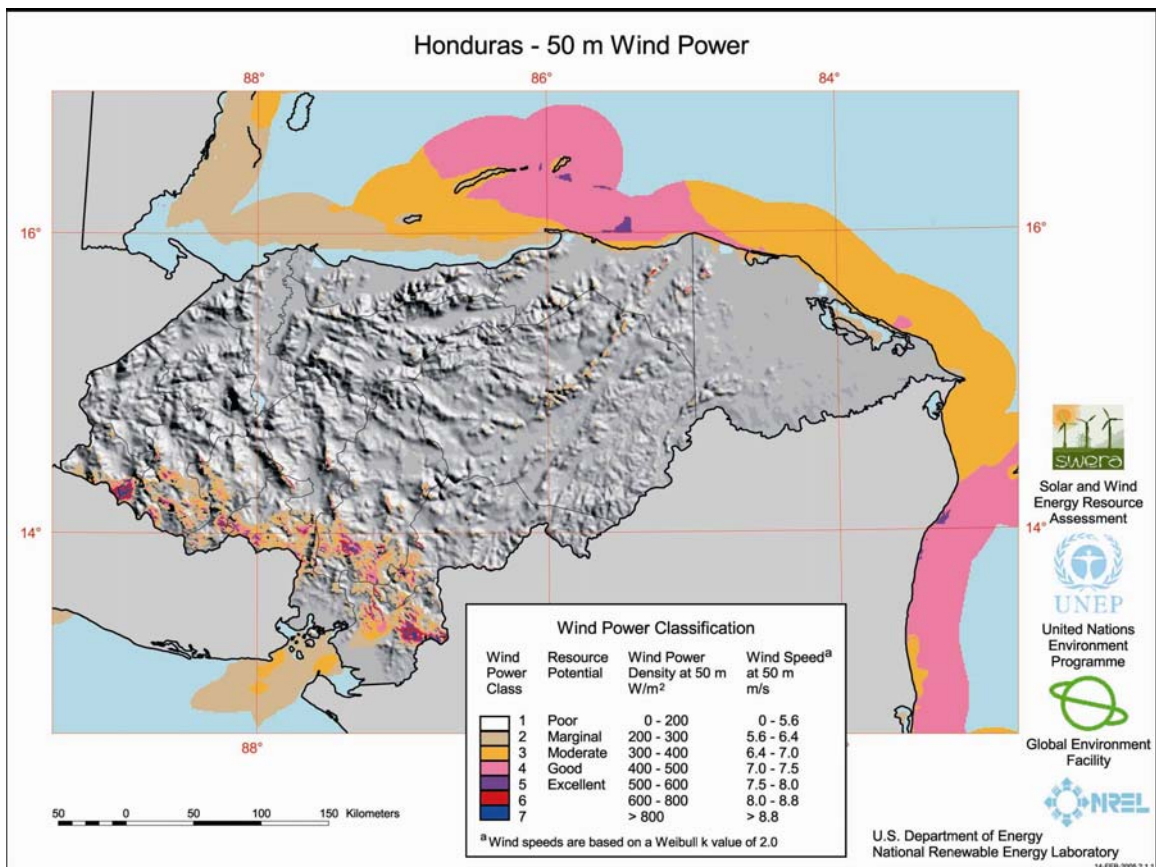
Meanwhile, medium and small dams are being developed mainly by private investors, and they receive fiscal incentive or tax exemptions from the government which creates a bias against other renewable options such as photovoltaic, wind, and geothermal system. Decrees No. 85-98 and 267-98 promote the development of renewable energy-generating plants. The decrees include tax breaks to developers and a secure buyer for energy at prices equivalent to the system’s short-term marginal cost. ENEE, the Honduran utility, which is the default buyer, must pay a premium (10 percent of the same short-run marginal cost) for the electricity generated when the installed capacity is below 50 MW. This framework has facilitated the negotiation of about 30 public/private partnerships with ENEE for small renewable energy plants. In addition, Decree No. 85-98 also establishes tax exemptions in favor of developers: import and sales taxes on equipment, and a five-year income tax holiday.

These fiscal issues are important because a number of projects presented by the Honduran Association of Small Renewable Energy Producers (Ahpper) to the ENEE and to the Secretary of Natural Resources, could be operating in 18 to 24 months, with installed capacity of 150 megawatts. But it is almost impossible to develop small hydroelectric dams, geothermal and wind energy projects with a price below \$0.1 per kilowatt hour. (Estimated cost of installing one megawatt of energy in Honduras is around \$2.5 million.)

4) Opportunities

As noted in the previous section, Honduras counts appealing resources in terms of renewable energy. Recent bidding offers excellent insight into this potential over the coming years. At an event where authorities awarded contracts for generating renewable energy, investors and project developers announced \$2.1 billion in investment over the next 6 years.⁵² renewable energy projects are to be developed between 2010 and 2016, generating over 800MW. ENEE will purchase 250MW at an average price of \$0.1 per kWh.

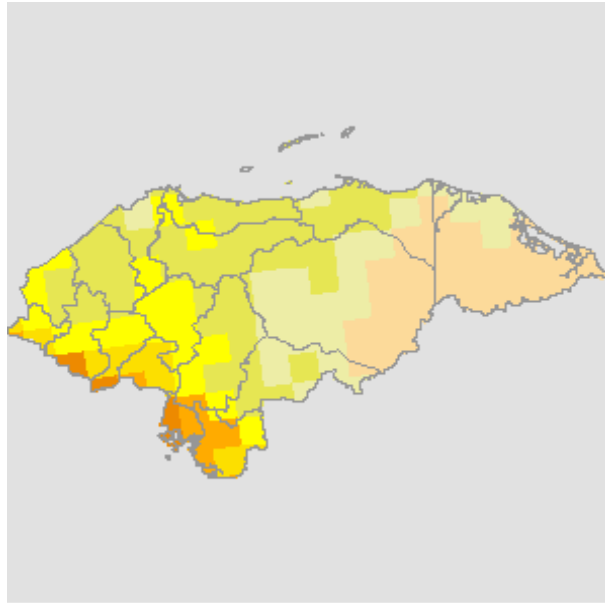
Figure 3



As figure 3 illustrates, the potential for wind power is a bit isolated with the potential off the Northern coast and the Southern mountains. In the offshore north, there is particularly good potential around the three islands of Isla de Guanaja, Isla de Roatán and Isla de Utila.

In addition, a useful case study for Honduras' wind energy potential is underway in the country – the Cerro de Hula project. In May of 2005, Mesoamerica Energy acquired the development rights to a 60MW wind project from Enron Wind, and has since expanded the development to 100MW. The project is located in the municipalities of Santa Ana and San Buenaventura, 20km south of Tegucigalpa. The wind resource at the site is well measured (9 years of wind data) and the company has all of the required development permits. Mesoamerica Energy executed a PPA for 100MW with ENEE on October 1st, 2008, and plans to begin construction in 2010. When completed, Cerro de Hula would be the largest wind energy project in Central America.

Figure 4



Honduras: Solar Power Potential

As Figure 4 shows, the potential for solar energy is quite significant in Honduras. The greatest potential is concentrated to the south, but all departments have good solar radiation. Solar power is a practical solution for servicing energy-isolated rural communities. Currently, there are about 5,000 individual Solar Home Systems, with an average size between 30 W of power and 50 W of power, which makes up for a total capacity of approximately 15 to 25 kW of power. But the growth of a wider photovoltaic market in Honduras has been hampered by a combination of high unit prices, absence of financing assistance and a lack of government support.

Honduras has a large potential for electricity generation from biomass, mainly from the sugar industry. Currently, there are nine biomass facilities, with a total of 81.75 MW installed capacity. These plants have supplied almost 5 percent of the total demand of energy in Honduras in 2009. Also investors from the United States expressed their intention of investing in a project to generate biodiesel from pine nut. “The plantations could be located in the departments of Valle and Choluteca, in the country's south, and in El Paraíso, to the east”, reported Proceso Digital.

There are three planned geothermal projects in Honduras to add up to 85.5 MW of installed capacity. The largest of them is called Platanares, in the Department of Copan, which is expected to begin operations in 2011 with an installed capacity of 40.5 MW and a generation of 354.8 GWh per year.

5) Challenges

Honduras has made a commitment to diversifying its energy matrix and embracing renewable energy to do so. A transition to a new energy paradigm is certainly feasible but will not occur overnight. Indeed, there are several key near and medium term challenges the country faces. The most critical, as the foregoing analysis underscored, is the need for a revised and lucid government policy for the energy sector.

Developing a national policy that sets a clear vision, clear rules and regulations and further streamlines the current institutional framework in the country is of critical importance. Through these efforts the country will be able to deal with the myriad effects of its current fossil fuel dependency as well as further seize the potential for renewable energy sources in the nation – particularly wind, solar and biomass. As the 100MW Cerro de Hula project underscores, there are steps in the right direction, but much more must be done under the Lobo government.