ENEL (Nicaraguan Electricity Company) is an entity of the State of Nicaragua, attached to the Ministry of Energy and Mines (MEM). It is the owner of geothermal, hydroelectric, and thermal plants of different types and capacities.

3. Energy Status

The implementation of the National Energy Policy has generated substantial progress to date: Shift in Energy Mix, Electrification cover and access to SIEPAC. However, it still faces great challenges to continue, projected 73% Renewable and 27% Non-renewable by 2030.

5. Promoting The Development of Geothermal Energy

With the ultimate objective of achieving the proposed energy goals contemplated in the National Energy Policy, a new series of laws and economic incentives have been implemented. These are to attract public, private, national and foreign investments, multilateral financial institutions, as well as international assistance (such as JICA) to promote the sustainable development of geothermal resource with energy efficiency optimized processes as a base load of the energy system.

Legal Framework

Laws
- Law 532 - Electric Generation with Renewable Resources Promotion, 2012
- Law 217 - General environment and natural resources - Reform, 2014
- Law 443 - Exploration and Exploitation of Geothermal Resources - Reform, 2014
- Law 443 - Exploration and Exploitation of Geothermal Resources - Reform, 2014
- Law 956 - Energy Efficiency, 2017
- Law 217 - General environment and natural resources - Reform, 2014
- Ministerial Resolution Feed in Tariff - FIT Renewable Resources, 2017
- Law 956 - Energy Efficiency, 2017

Economic Framework

Incentives
- Declaration of Public Utility
- Concessions (30 years) and extensions (10-30 years) of Licenses
- Use of a Geothermal Reservoir by two or more dealers
- Exemption from Payment of taxes on the import and supply of machinery, equipment, materials and supplies intended solely for Pre Investment and Investment Works.
- Exemption from income tax (7 years)
- Authorization for the use of protected areas for geothermal power generation
- FIT for Renewable Energy - Geothermal (Maximum Price -92USD/MWh)
- Hiring of produced energy
- Rational use and energy efficiency of Renewable Resources

6. Existing Challenge

Nicaragua has a Geothermal Master Plan that identified 12 areas of geothermal interest with an estimated output of 1,519 MW, all located along the Pacific volcanic range. Currently 2 geothermal power plants are operating (Momotombo and San Jacinto - Tizate) - 164.5 MW and projecting 3 new geothermal power plants (Caisa - San Cristobal, Mombacho and Cosquipal) - 135 MW by 2030.

Table 1 Geothermal areas and their present status

<table>
<thead>
<tr>
<th>Geothermal Field</th>
<th>Installed Capacity (MW)</th>
<th>Generating (MW)</th>
<th>Concessioner</th>
<th>Estimated Potential (MW)</th>
<th>Status</th>
<th>Environmental classification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Momotombo</td>
<td>77.5</td>
<td>26</td>
<td>Public - Private</td>
<td>154</td>
<td>Operational</td>
<td>Protected Area</td>
</tr>
<tr>
<td>San Jacinto - Tizate</td>
<td>87</td>
<td>49</td>
<td>Private</td>
<td>167</td>
<td>Operational</td>
<td>Protected Area</td>
</tr>
<tr>
<td>Caisa - San Cristobal</td>
<td>Not Awarded</td>
<td>205</td>
<td>Public - Private</td>
<td>205</td>
<td>Feasibility</td>
<td>Protected Area</td>
</tr>
<tr>
<td>Geothermal Field</td>
<td>Not Concessioned</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Momotombo</td>
<td>Not Awarded</td>
<td>111.5</td>
<td>Pre - Feasibility</td>
<td>Protected Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>San Jacinto - Tizate</td>
<td>Not Awarded</td>
<td>159</td>
<td>Pre - Feasibility</td>
<td>Protected Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caisa - San Cristobal</td>
<td>Not Awarded</td>
<td>163</td>
<td>Pre - Feasibility</td>
<td>Protected Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pico - El Rios</td>
<td>Not Awarded</td>
<td>78</td>
<td>Pre - Feasibility</td>
<td>Protected Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chaparral - Mosquiz</td>
<td>Not Awarded</td>
<td>96.5</td>
<td>Profit</td>
<td>National Park</td>
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<tr>
<td>Paspa</td>
<td>Not Awarded</td>
<td>9</td>
<td>Profit</td>
<td>Protected Area</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mesa de Cristo</td>
<td>Not Awarded</td>
<td>160</td>
<td>Profit</td>
<td>Nature Reserve</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>166.5</td>
<td>75</td>
<td></td>
<td>1,519</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

7. Conclusion

Nicaragua is moving from thermal energy to renewable energy resources found locally. The Government is committed to develop geothermal power through laws and incentives. Geothermal energy has numerous advantages over other sources of energy, such as having a stable base load. The Government is promoting rational use and energy efficiency in the whole National Energy Chain, including geothermal power plants in operation and to come. JICA training is a key to geothermal resource development as it enhances human resource skills (through scholarships). However, the financing of geothermal projects remains the major challenge and involvement of the private sector in geothermal development should be encouraged.