

## *Sustainable Development and Wind Energy in Oaxaca...Who benefits?*

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In the Isthmus of Tehuantepec since 1994 has come to an end diverse projects related to wind energy and, in actuality, there exists twenty-four wind farms operated by various private companies. Based off of justifications and promises up until now uncompleted not only have they managed to complete these projects, but they have also managed to sway public belief that this is a beneficial process for everyone. In this context, the greatest threat that faces the state now is the establishment of the Industrial Inter-Oceanic Corridor of the Isthmus of Tehuantepec, one of the special economic zones designed by the president's cabinet. As such, the establishment of said ZEE<sup>1</sup> is no more than an effort to resume the construction process of new wind farms.

In reality, certain factors can be highlighted that have permitted a rapid growth in the production of wind energy in developing countries:

1. The saturation of wind energy markets located in developed countries.
2. The financial backing towards renewable energy projects on part by non-governmental organizations (NGOs) based off the increasing threat of climate change.
3. Weak legal conditions that dominate in under developed countries have permitted that governments initiate a number of these kind of projects as a sign of progress.

In the case of Mexico, due to the intensity of the air currents in the zone of the Isthmus of Tehuantepec makes the zone into one exceptionally good for the generation of wind energy. In agreement with the AMDEE<sup>2</sup> (2012) it is estimated that the potential for wind based energy production in Mexico is far superior at 50,000 MW<sup>3</sup>. In the state of Oaxaca the SENER<sup>4</sup> (2007) estimates a total output of around 10,000 MW while the CFE<sup>5</sup> an output of up to 5000 MW, a quantity sufficient to satisfy the demand of wind energy of 18 million inhabitants of the rural area annually (Henestroza Orozco, 2008)<sup>6</sup>.

Historically, despite the fact that an experimental wind energy farm was established by the

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<sup>1</sup> Zona Económica Especial. (Special Economic Zone)

<sup>2</sup> Asociación Mexicana de Energía Eólica. (Mexican Association of Wind Energy)

<sup>3</sup> Mega watt.

<sup>4</sup> Secretaría de Energía. (Secretary of Energy)

<sup>5</sup> Comisión Federal de Electricidad. (Federal Commission of Electricity)

<sup>6</sup> In the case of Mexico State it is believed that there is a potential wind based energy output of 33,000 MW in accordance with the Renewable Energy Laboratory of the European Union. However, there is doubt over the accuracy of this estimate, given that it is disproportionately high in comparison with those offered by national institutions (Elliot, and others, 2004).

CFE in 1986, it was not until 1994 when the first wind plant in Mexico (The Venta 1) was constructed in the Isthmus of Tehuantepec. Developed by the Danish Company Vestas, the project was auctioned off and financed by the CFE as a public works Project: their main objective was not to obtain a high production of energy but rather to act as a pilot project to collect data on the performance of the wind turbines.

Later, in 2000 an International Symposium was held over the opportunities for the development of wind energy projects in the Corridor of the Isthmus of Tehuantepec. Their intentions would be to reduce the economic gap that rules the South and North through the creation of jobs, the democratization of productivity nationwide, the creation of value chains, and the change of the production scheme towards better paid activities. Oaxaca would become the leader on a national level of wind energy production in the face of promises to reduce, at that time, the emissions of GHG<sup>7</sup> by 5% for the period of 2008-2012, in accordance with the Kyoto protocol.

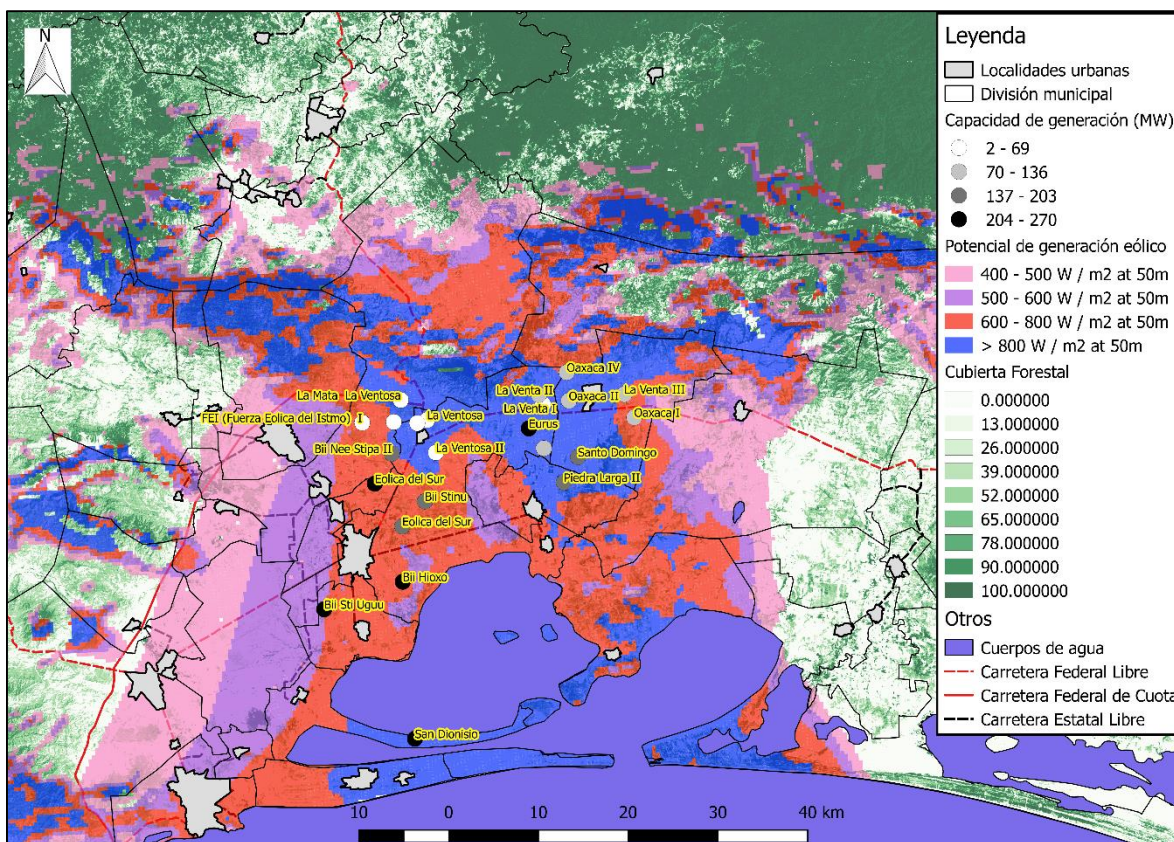
The above point marked the beginning of a boom period of the construction of wind farms in Oaxaca. Since then, the Regulatory Commission of Energy has authorized permits for the installation of 3662<sup>8</sup> MW (see map 1) of wind energy farms on the part of private companies, mainly under two types of contract: self-sufficiency or independent production of energy (PIE). In the first case private companies construct by themselves wind farms in order to meet their energy requirement. Thereby the energy produced is supplied to their factories, which allows them to enjoy lower energy prices than those set by the CFE. Companies like Tiendas Soriana, CEMEX, Bimbo, Nestlé, México, ITSEM, and Cementos Aspaco are some example of self-sufficiency beneficiaries. In the case of the PIE energy is sold directly to the CFE (Juárez Hernández & León, 2014).

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<sup>7</sup> Greenhouse Gasses

<sup>8</sup> In 2016 the Mexican Association of Wind Energy) declared that in Oaxaca the installed capacity to generate wind energy is close to 2,360 MW, however projects that sum up to 1302 MW of the 3,662 MW legally granted have been canceled, either by the private companies or by the conflicts generated between them and the local communities inhabitants.

**Map 1.** Isthmus of Tehuantepec, Oaxaca: Number of units and potential output of energy



**Source:** Map created using information from INEGI and the National Renewable Energy Laboratory.

Some estimates suggest that the cost of production of wind-energy is approximately 0.85 pesos/Kwh, consequently the producing companies are capable of selling the energy to consumers at a cost between 5 to 10% less than that of the CFE. If the average rate of electric energy for the industrial sector has a cost of approximately 1.46 pesos/Kwh the profitability of this type of energy is considerable (Apodaca, 2017). Also, these producing companies receive income from the Clean Development Mechanism included within the Kyoto Protocol. They even receive certificates of reduced emissions when carrying out these projects, which can be sold on the open market.

It is apparent that there exists clear direct benefits in relation with the wind energy, and the promises under which these projects were founded that have been clearly forgotten. Until now, between the affected local communities there exists a number of problems:

1. A lack of access to electrical energy<sup>9</sup>.
2. Creation of temporary jobs that are not viable for long term employment<sup>10</sup>.

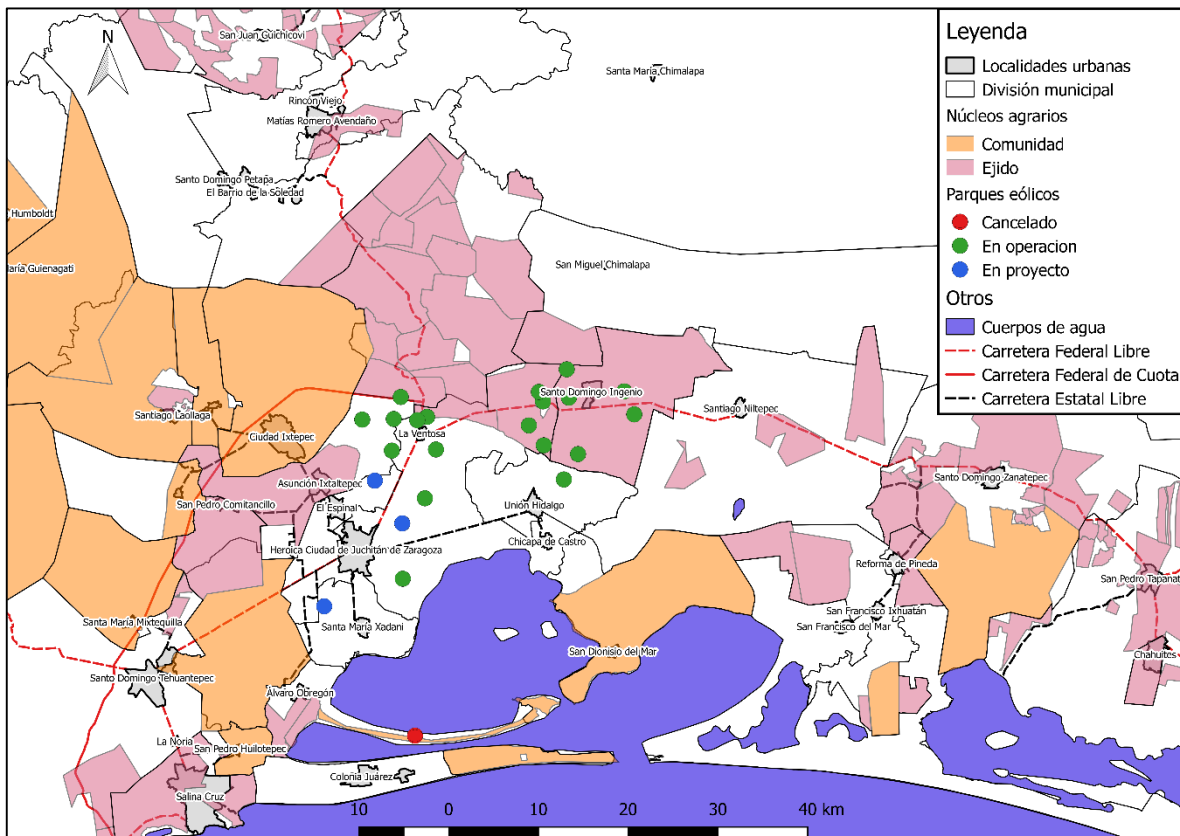
<sup>9</sup> The percentage of homes without access to electric power is higher than the national average.

<sup>10</sup> Particularly during the construction period that does not last more than a year and a half. Also, it is estimated that in 14 plants there are only 300 stable jobs.

- The abandonment of local agricultural production and as a consequence the dependency on foreign businesses, as well as the increase in the price of basic goods (Juárez Hernández & León, 2014).

As one can see in map 2 private companies have managed to approve and even to bring into operation various wind farms, as such during the process they have gone through a lot of conflicts. The ownership of the land represents one of the most significant factors to allow or deny the construction of these projects. It is interesting that the wind farms currently operating can be found in areas where the ownership of the land is private (areas in white) or “ejidal”<sup>11</sup>. The only project that until now has been canceled by the community is located in a communal area in San Dionisio del Mar. On the other hand, there are farms that are still in a test phase like Bii Hioxo and Eólica del Sur. Although they have initiated the construction process it is full of inconsistencies regarding permits, and the acquisition and leasing of land.

**Mapa 2.** Isthmus de Tehuantepec, Oaxaca: Location of wind farms and type of land ownership.



**Source:** Map created using information from Registro Nacional Agrario, INEGI and GeoComunes.

<sup>11</sup> Public property land which is easier to transform into private property than pure communal land.

Likewise, this process has been accompanied by all types of problems which include social and ecological decay. The misrepresentation of assemblies on part of the construction companies, the lack of financial information on the earnings of the wind farm projects for the host communities, and payment for the leasing and royalties six times less than those received in European countries. On the ecological side there has been a loss of biodiversity (birds and bats), deterioration and erosion of agricultural land, hearing damage in humans and livestock to mention a few (Castillo Jara, 2011).

Conflict in this region will not diminish because the state government intends to increase the number of wind energy projects in Oaxaca. "The installation of the Special Economic Zone of the Isthmus of Tehuantepec promises to turn this area into the new Panama Canal," states Alejandro Murat Hinojosa, the state's elected governor. This new canal will connect the Pacific Ocean with the Gulf of Tehuantepec to boost "development" and reduce the economic gap between the north and the south. In particular, is sought the creation of a transoceanic gas pipeline from Coatzacoalcos to Salina Cruz, the rehabilitation of the Isthmus railway and the development of the trans-isthmian highway. All of the above is related to a central objective: to convert the EEZ of the Isthmus of Tehuantepec into the central energy supplier for the other EEZs. Thus, old promises are used once again to justify an environment characterized by greater uncertainty and adversity for local communities.

## References

- Apodaca, J. L. (03 de 10 de 2017). *El negocio de la energía eólica en México*. Obtenido de Observatorio Ciudadano de la Energía: <http://energia.org.mx/el-negocio-de-la-energia-eolica-en-mexico-por-jose-luis-apodaca/>
- Castillo Jara, E. (2011). Problemática en torno a la construcción de parques eólicos. *Desarrollo Local Sostenible*, 1-14.
- Elliott, D., Schwartz, M., Scott, S., Haymes, D., Heimiller, D., & George, R. (2004). *Atlas de Recursos Eólicos del Estado de Oaxaca*. Washington: Laboratorio Nacional de Energía Renovable.
- Eólica, A. M. (2012). *El potencial eólico mexicano: Oportunidades y retos en el nuevo sector eléctrico*. Ciudad de México: AMDEE.
- Henestroza Orozco, R. (2008). Desarrollo del proyecto eólico en la región del Istmo de Tehuantepec. *Investigación y Ciencia*, 18-21.
- Juárez Hernández, S., & León, G. (2014). Energía eólica en el istmo de tehuantepec: Desarrollo, actores y oposición social. *Problemas del Desarrollo*, 139-162.