Wind Energy in Mexico: Who Benefits?

https://www.e-ir.info/2021/08/11/wind-energy-in-mexico-who-benefits/

IAN GRANIT, AUG 11 2021

Wind Energy Development in Oaxaca and Eólica del Sur

Renewable energy is essential for reaching climate change mitigation goals and sustainable development (Allen, Metternicht & Wiedmann, 2019). For Mexico, wind energy serves as the country's main tool for reaching its Nationally Determined Contributions (NDCs) under the Paris Agreement (Elzen et al., 2019). In Mexico, the state Oaxaca has some of the world's best wind energy conditions and has thus experienced large-scale wind energy development (Mejía-Montero, Alonso-Serna, Altamirano-Allende, 2020). However, an integrated approach that acknowledges local-specific contexts is lacking (Guimarães, 2020). This paper will analyze the largest wind farm project in Oaxaca, Eólica del Sur, and with the help of the core principles of environmental justice and political ecology, identify and discuss the outcomes, challenges, and potential improvements of Eólica del Sur.

Eólica del Sur is the largest wind farm in Latin America, consisting of 132 wind turbines with the capacity to generate 396 megawatts of renewable energy (Zárate-Toledoa, Patiño & Fragaa, 2019). The Mexican Government, Oaxaca's Governor, and the project planners of Eólica del Sur (2014) describe the wind farm as a climate change mitigation initiative that simultaneously helps reduce poverty in Oaxaca through investments and job creation (Gobierno de Oaxaca, 2019; SEGOB, 2015). The project has, however, been highly controversial.

The initial phase of Eólica del Sur took place in 2004, planning to construct 132 wind turbines crossing two municipalities in Oaxaca. However, uncertainty over landownership claims and land leasing agreements for the wind farm led the two municipalities into conflict with each other, the Oaxacan Government, and the company in charge of Eólica del Sur (Rueda, 2011). After years of conflict, Eólica del Sur was moved to another municipality in Oaxaca, where the company in charge of Eólica del Sur paid high sums of money to certain community leaders while not informing large parts of the local population about the project (Dunlap, 2018). Local community members in the new location confronted the company and the mayor in charge of the project (Mejía, 2017). The opposition to the wind farm succeeded in stopping the project, and in 2013 the wind farm was suspended through legal action (Dunlap, 2018; OHCHR, 2013).

The construction of Eólica del Sur was relocated to two other municipalities in Oaxaca, Juchitán and El Espinal (Adams, 2014). A new energy reform was passed in Mexico during relocation, demanding that energy sector projects conduct a free, prior, and informed consent (FPIC) procedure within all indigenous areas (Huesca-Pérez, Sheinbaum-Pardo & Köppel, 2016). Due to the large indigenous populations in Juchitán and El Espinal, an FPIC procedure occurred between 2014 and 2015. In 2015 the project was finally approved and construction began in 2017 (Zárate-Toledoa, Patiño & Fragaa, 2019). However, indigenous communities in Juchitán and El Espinal filed a lawsuit against Eólica del Sur on claims of an inadequate FPIC procedure (Chaca, 2019). The court in Oaxaca, and later the Supreme Court in Mexico, ruled that the FPIC had been done correctly and that Eólica del Sur should proceed (Espino, 2018). In 2019, the Eólica del Sur wind farm was inaugurated, portrayed as a climate change mitigation initiative that reduces poverty in Oaxaca (Gobierno de Oaxaca, 2019). However, protests and disapproval of the project from indigenous community members continue (Matías 2019).

Outcomes of Eólica del Sur

According to two of Mexico's largest newspapers and the Governor of Oaxaca, the project's outcome has been successful. All three sources claim that Eólica del Sur will help Mexico reach their NDCs by avoiding 567,000 tons of CO2 emissions per year. Simultaneously, Eólica del Sur will reduce poverty by creating 2,500 jobs while encouraging more regional investments. Oaxaca's Governor emphasizes that Eólica del Sur is the first energy project in the region that has gone through a successful FPIC procedure (Zavala, 2020; El Economist, 2019; Gobierno de Oaxaca, 2019). However, past wind energy projects in Oaxaca have primarily benefitted the Government and private companies at indigenous communities' expense (Howe & Boyer, 2015; Dunlap, 2017; Sellwood & Valdiva, 2018). Opposition against Eólica del Sur from indigenous communities in Juchitán and El Espinal thus indicate that the project follows past wind farm trajectories in the region by creating local struggles leading to opposition (Matías, 2019). Due to the opposition against Eólica del Sur, the remainder of this section will analyze the projects outcome critically, with a focus on the local contexts in Juchitán and El Espinal, with help of the three pillars of environmental justice (Walker, 2009; Setyowati, 2021).

The first pillar, distributive justice, entails equally distributed burdens and benefits concerning energy production and consumption (Setyowati, 2021). Oaxaca is one of the most biodiverse regions in the world, and although wind energy is a tool for climate change mitigation, wind farms can adversely impact local biodiversity (Feria, 2018; UN, 2012; Kati et al., 2021). Eólica del Sur (2014) conducted an environmental impact assessment (EIA) to mitigate any adverse environmental impact of Eólica del Sur. However, the EIA failed to account for several local-specific factors, leading to deforestation, land degradation, noise pollution, and biodiversity loss (Tapia et al., 2015; Nardi & Ramirez, 2017). The indigenous population's livelihoods in Juchitán and El Espinal depend on the local environment and biodiversity to sustain their livelihoods through fishing, forestry, and agriculture. Through noise pollution that scares away fish, deforestation that reduces forestry jobs, and less land for agriculture Eólica del Sur has, therefore, adversely impacted local indigenous communities' livelihoods in the two municipalities (Nardi & Ramirez, 2017).

Moreover, since 2019, once the farm had been inaugurated, many residents have not experienced any employment opportunities from Eólica del Sur while experiencing income losses due to less forests, fishing, and agriculture opportunities (Ramirez, 2019). Instead, Eólica del Sur has created benefits for individual landowners, who lease their lands in exchange for monetary payments (Contreras, 2020). The Government benefits from less emissions due to cleaner energy while creating further investments in the region (Gobierno de Oaxaca, 2019). Furthermore, the multinational companies in charge of the project will reap a high rate of return on their investments (Ramirez, 2019). Hence, the outcomes of Eólica del Sur have led to unequally distributed burdens since the indigenous communities' livelihoods are severely undermined in Juchitán and El Espinal while stakeholders on a local, national, and international level have benefitted from the project.

To capture the full nature of the outcomes of Eólica del Sur, recognition and procedural justice, which are intertwined with distributional justice, must be considered (Walker, 2009). Procedural justice concerns that all stakeholders participate equally and meaningfully in all energy decisions, while recognition justice focus on how energy decisions impact people's histories and distinct identities (Setyowati, 2021). The landownership in Juchitán and El Espinal is complex. In general, individuals have their own land plots for agriculture, while an indigenous assembly must approve decisions concerning broader land-use changes in the community (Huesca-Pérez et al., 2016). According to Eólica del Sur (2014) and the Mexican Government (2015), the FPIC procedure accounted for the local indigenous people's views when planning the project. However, a document with 1167 signatures from Indigenous people's in Juchitán claims that the FPIC procedure occurred after the land for the wind energy project had already been secured (CER, 2017). Eólica del Sur circumvented the indigenous landownership governance structures by establishing leasing agreements with individual landowners directly and by having inadequate FPIC procedures that did not allow active participation of all indigenous peoples (Contreras, 2020; CER, 2017). By not recognizing the indigenous collective governance structures in Juchitán and El Espinal while not allowing full participation of indigenous communities, Eólica del Sur has violated the right of recognition and procedural justice.

Mexico's ambition to reach their NDCs by avoiding 567,000 tons of CO2 emissions per year while reducing poverty in Oaxaca through the Eólica del Sur project has led to unintended outcomes. By not adhering to the three pillars of environmental justice, the outcomes of Eólica del Sur have hence led to social conflict and opposition against the project amongst the indigenous community members (Huesca-Pérez et al., 2016; Matías 2019).

Discussion: Analyzing the Outcomes

Thus far, this paper has explained how the outcome of Eólica del Sur has adversely impacted the local indigenous communities in Juchitán and El Espinal while benefitting local landowners, the Government, and the multinational companies (MNCs) in charge of Eólica del Sur with the help of the three pillars of environmental justice. This section will draw on political ecology and explain why these outcomes occurred for a project intending to achieve environmental and social sustainability.

Robbins (2011: 202) claims that "development and environmental management initiatives, no matter how well intended, tend to be based on assumptions" on what the people subject to the initiative needs. Sixty-seven percent of Oaxaca's population lives in poverty, while half of the population lives in isolated rural areas (Huesca-Pérez et al., 2016). According to Eólica del Sur (2014) and the Mexican Government (2015), the wind farm would help Oaxaca's poverty issues by creating more jobs, especially for people in rural areas far away from other job opportunities. However, sixteen percent of the indigenous population in Juchitán and El Espinal does not speak Spanish, and twenty-five percent are illiterate (Huesca-Pérez et al., 2016). Although Eólica del Sur created 2,500 jobs, most jobs require skilled labour (El Economist, 2019; Friede, 2016). Eólica del Sur and Government officials hence assumed that the project would benefit the poorest population by creating jobs without accounting for the widespread lack of Spanish and illiteracy in Juchitán and El Espinal (Friede, 2016).

Moreover, including local environmental and socio-economic knowledge is crucial for creating environmentally and socially sustainable outcomes in environmental projects (Robbins, 2011). The indigenous peoples in Juchitán and El Espinal expressed that Eólica del Sur would create environmental problems from the beginning of the project and not create any socio-economic benefits for most of the population (Jung, 2017; Burnett, 2016). Even though local indigenous knowledge is recognized as important in environmental projects, the knowledge is hard to account for due to the scales and disturbances modern projects exerts on nature (Tsosie, 2019; Wohling, 2009). According to Robbins (2011: 134), "while local knowledge is increasingly on the agenda, the difference between formal and informal knowledge systems remains a source of conflict." Instead, scientists and 'experts' often gain the dominant influence during decision-making processes. The "separation from local knowledge and practice" undermines both equity and ecological sustainability (Robbins, 2011: 192). Lack of accounting for local environmental and socio-economic knowledge in Juchitán and El Espinal hence led to environmental degradation, undermining indigenous peoples livelihoods, due to favouring scientists' advice that conducted the EIA (Tapia et al., 2015). The lack of employment for many locals can be explained by a lack of knowledge about the local-specific context and assumptions from 'experts' about the local population in Juchitán and El Espinal's needs (Friede, 2016).

A further factor that led to the indigenous communities' adverse outcomes in Juchitán and El Espinal was the approval of individual land leasing agreements of collectively owned lands (Contreras, 2020; CER, 2017). The impact of this led to the privatization of collectively- owned land, disregarding the indigenous governance structures (Huesca-Pérez et al., 2016). The privatization and appropriation of collectively-owned land were justified through a narrative of climate change mitigation and poverty reduction, which was the promised outcome of Eólica del Sur, also known as 'green grabbing' (SEGOB, 2015). Green grabbing "[involves] the restructuring of rules and authority in the access, use and management" of land and resources in the name of an environmental good (Fairhead, Leach & Scoones, 2012: 239). The narrative of climate change mitigation through wind farm deployment on an international and national level can explain the process of green grabbing and hence the lack of procedural and recognition justice in Juchitán and El Espinal.

Green grabbing through privatization is often justified through legislations (Fairhead, Leach & Scoones, 2012), while understanding 'the complexity of property rights over natural goods and systems, especially in traditional societies' is essential to understand socioeconomic and environmental changes (Robbins, 2011: 202). Oaxaca has an indigenous population of sixty percent with complex landownership rights (Mejía-Montero et al., 2020). A decree in 1964 acknowledges the communal pre-colonial indigenous governance structure of the land, recognized by the Mexican constitution (Magaloni et al., 2019). However, according to a decree in 1966, individual landowners can engage in land transactions, while a revision of the Mexican constitution in 1992 allows the privatization of communal property (Contreras, 2020; Dunlap, 2017). According to Villagómez, Gómez, and Zafra (1998: 103), the conflicting

landownership claims remain unsure, and "even government agencies report conflicting data on landholding patterns" in Oaxaca. Due to political marginality, many essential individuals and groups are often ignored by decision-makers and planners in development and environmental initiatives, which is especially prevalent for indigenous people regarding environmental management decisions (Robbins, 2011; Benedict, Amy & Bethany, 2019). The political marginalization of indigenous peoples in Juchitán and El Espinal hence led them to be ignored by decision-makers and planners of Eólica del Sur (CER, 2017). This allowed the individual landowners' leasing agreements to be favoured over the collective indigenous governance system.

Furthermore, green grabbing often involves international, national, and local level collaboration (Dunlap, 2017). Internationally, the narrative of Eólica del Sur as a climate change mitigation initiative and the call from the United Nations (2012) to create policies and business models that remove any barriers to large-scale renewable energy deployment encourage favouring the individual land ownership claims over the collective indigenous governance system in Oaxaca. Furthermore, nationally, the Mexican Constitution's change in 1992 made it possible to privatize indigenous communal lands, a common method to justify green grabbing (Dunlap, 2017; Fairhead, Leach & Scoones, 2012). The complexity over landownership claims in Oaxaca led Eólica del Sur to circumvent the indigenous land governance structures and negotiate leasing agreements with individual landowners, and undermine the FPIC procedure (Huesca-Pérez et al., 2016; CER, 2017). The ability to privatize indigenous lands allowed Mexican courts to favour individual landownership rights, while the international calls to remove any barriers to renewable energy internationally further justified the decision (Dunlap, 2017; UN, 2012). The ability to sign leasing agreements of land in Juchitán and El Espinal with individual landowners and circumvent the collective governance system has hence been made possible due to the privatization of communal land and the narrative of doing whatever it takes to deploy renewable energy, following the typical narrative of green grabbing (Fairhead, Leach & Scoones, 2012). The narrative of climate change mitigation and poverty reduction thus created poor recognition and procedural justice for the indigenous communities in Juchitán and El Espinal by justifying the privatization and appropriation of indigenous communal land by Eólica del Sur.

Conclusion: Potential Improvements

The main issues with Eólica del Sur can be identified as a lack of accounting for local indigenous knowledge, loss of livelihoods, privatization and appropriation of communal land, and lack of transparent consultation of the indigenous peoples in Juchitán and El Espinal. These four issues must be addressed to improve the project.

As shown in this paper, including local indigenous knowledge is crucial for environmentally and socially sustainable outcomes of the wind farm project, further supported by the literature (Robbins, 2011; Tsosie, 2019; Wohling, 2009). Local indigenous knowledge about the environment and socio-economic conditions should thus be included in Eólica del Sur. One way of including indigenous knowledge in renewable energy projects is the Bolivian approach 'dialogue between knowledges'. The approach aims to embrace modern technology and combine it with local indigenous knowledge to create a "non-invasive way to achieve new solutions," (Panosera, 2012: 6702). The impact of this would allow for local indigenous environmental knowledge to be incorporated in the decision-making process and limit the loss of livelihoods for people in the region through better environmental outcomes (Pansera, 2012; Tsosie, 2019).

Since Eólica del Sur has not created any benefits for the local indigenous communities, the project should consider taking a more communal approach to wind energy deployment (Ramirez, 2019). Juchitán and El Espinal acknowledge both communal and individual land legally (Villagómez, Gómez & Zafra, 1998). Eólica del Sur should honour such landownership complexity and seek to implement more communitarian wind farms. Such wind farm projects could foster collective capabilities, include local indigenous knowledge more easily, and allow the indigenous community members to take part in the profits (Contreras, 2020). Such measures have significantly benefitted indigenous communities in other parts of the world by honouring indigenous governance structures and livelihood support (Krupa, 2012).

Since 1,167 indigenous peoples in Juchitán claim that the FPIC procedure was inadequate, they should receive real consultation and active participation, and be recognized as real stakeholders. Achieving this would require the

inclusion of social dimensions of transitioning to renewable energy, such as local community members' needs and interests, full participation, and allowing the indigenous peoples to become real partners in the project (Villavicencio & Mauger, 2017; Baxter, 2017). Furthermore, this would allow the local indigenous knowledge to be implemented further in the project and hence create better outcomes for Eólica del Sur (Coates, 2016).

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