

Contesting energy transitions: wind power and conflicts in the Isthmus of Tehuantepec

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Abstract

This article studies the expansion of large-scale wind energy projects on the Isthmus of Tehuantepec (Mexico) and local socio-environmental conflicts that have emerged in response. It explores how the neoliberal agenda in Mexico is shaping a specific way of implementing wind energy projects, and how this is leading to local resistance and the production of alternatives. The article is based on a historical analysis reconstructing the main features of wind power development, and pathways of struggle. By following a political ecology perspective, wind energy is seen as embedded in a wider frame of power relations and the uneven patterns of the Mexican economy. The struggles of indigenous groups are thus analyzed as the expression of peripheral communities against the enclosure of communal lands, the private appropriation of benefits, and the lack of democratic procedures involved in these projects. The discussion emphasizes the role of communal identities and institutions in building successful networks, while introducing new concepts (energy sovereignty) and alternative schemes in wind power production (cooperatives). The overall approach of the article is that any move towards a different energy system should be politically encouraged by social and cultural means, rather than be largely economically motivated.

Keywords: wind energy, neoliberalism, socio-environmental conflicts, energy sovereignty, cooperatives, Tehuantepec

Résumé

Cet article interroge l'expansion des projets d'énergie éolienne à grande échelle sur l'isthme de Tehuantepec (Mexique) et les conflits socio-environnementaux locaux qui ont émergé en réponse. Il explore comment l'agenda néolibéral au Mexique met en forme une manière spécifique de mettre en œuvre des projets d'énergie éolienne, et comment cela conduit à la résistance locale et à la production d'alternatives. L'article est basé sur une analyse historique qui reconstruit les principales caractéristiques du développement de l'énergie éolienne et sa résistance. En suivant une perspective d'écologie politique, l'énergie éolienne est considérée comme intégrée dans un cadre plus large de relations de pouvoir et les modèles inégaux de l'économie mexicaine. Les luttes des groupes indigènes sont donc analysées comme l'expression des communautés périphériques contre l'enclos des terres communales, l'appropriation privée des bénéfices et l'absence de procédures démocratiques impliquées dans ces projets. La discussion met l'accent sur le rôle des identités et des institutions communautaires dans la mise en place et l'exploitation réussies de leurs réseaux, tout en introduisant de nouveaux concepts (souveraineté énergétique) et des programmes alternatifs dans la production d'énergie éolienne (coopératives). L'approche globale de l'article est que tout mouvement vers un système énergétique différent devrait être politiquement encouragé par des moyens sociaux et culturels, plutôt que d'être extrêmement motivé économiquement (comme actuellement).

Mots-clés: énergie éolienne, néolibéralisme, conflits socio-environnementaux, souveraineté énergétique, coopératives, Tehuantepec

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Resumen

Este artículo estudia la expansión de mega-proyectos de energía eólica en el Istmo de Tehuantepec (México) y la consecuente emergencia de conflictos socio-ambientales en la región. El objetivo central del estudio reside en indagar la influencia de la agenda neoliberal en la implementación de estos proyectos, al tiempo que busca explorar la naturaleza de los conflictos y sus alternativas. El artículo está basado en un análisis histórico que reconstruye tanto las características de los proyectos, como la progresiva gestación de la resistencia. Proponiendo un análisis desde la ecología política, se argumenta que el desarrollo de la energía eólica no aparece como un proceso aislado, sino que se inserta dentro de un esquema más amplio de relaciones de poder y patrones desiguales que caracterizan a la economía mexicana. En este sentido, los conflictos locales se interpretan como la expresión de comunidades indígenas que, desde la periferia, se movilizan en contra de la privatización de tierras y la apropiación privada de beneficios, así como por la falta de procedimientos democráticos vinculados a la implementación de estos proyectos. La discusión enfatiza el rol de las identidades e instituciones comunitarias en la creación de redes de resistencia, así como en la introducción de alternativas conceptuales (soberanía energética) y prácticas (cooperativas) vinculadas a implementación de la energía eólica en el país. Contrario al pensamiento económico dominante, el artículo defiende que cualquier transición hacia un nuevo sistema energético debe estar políticamente motivado para incorporar dimensiones sociales y culturales en su estrategia.

Palabras clave: energía eólica, neoliberalismo, conflictos socio-ambientales, soberanía energética, cooperativas, Tehuantepec

1. Introduction

Wind energy is expanding worldwide. Stimulated by growing concerns over climate change, large-scale facilities are increasingly being organized throughout the rural corners of the world. At the global and national scales, this trend is celebrated as a clear step to promote green growth and sustainable development goals (OECD/IEA 2011; REN21 2016). At the local scale, however, an increasing number of opposing discourses suggest more complex dynamics are at play. As in other countries of around the globe, Mexico is witnessing a growing expansion of wind-farms and the emergence of local opposition against them. In the southeast region of the country, a conflictive process has emerged against the Wind Corridor of the Isthmus of Tehuantepec, one of the most ambitious renewable energy investments currently deployed in the Global South. The Corridor encompasses more than 15 large-scale projects owned and operated by multinational companies. Government and international agencies have supported the Corridor as a milestone to promote the Mexican Climate Change Policy, which foresees reaching a renewable electricity production target of at least 40 percent by the year 2033 (ENCC 2013). However, *Binnizá* and *Ikoots* groups historically inhabiting the region resist the continual expansion of wind power infrastructures, claiming impacts on their territories, livelihoods and identities. After more than ten years of local struggle, the Wind Corridor is still a space of contestation between state policies and private interests on one side, and local-indigenous vindications on the other.

This article offers a historical review on the nature and outcomes of wind energy conflicts in the Isthmus of Tehuantepec. In particular, it seeks to identify the drivers and pathways of local resistance, and discusses how energy transitions are being contested by those affected by renewable infrastructure deployments. The article is based on a systematization of official documentation, media releases and materials from social movements between 2005-2015. The study follows a political ecology perspective, and therefore, approaches issues of environmental change and conflict from the lens of power relations (Bryant and Bailey 1997; Peet and Watts 2004). As defined by many researchers, political ecology entails a political motivation, opening debate on issues previously framed as uncontested (Heynen *et al.* 2006; Robbins 2004; Swyngedouw 2010). Consequently, this study seeks to analyze the environmental inequalities created by dominant ways of implementing wind energy projects, but also intends to unveil the underrepresented voices that are locally contesting such processes.

The analysis is therefore at two different scales. The broader one examines the national policies shaping the ways on which wind energy is being implemented. At the local scale, the focus shifts to grasp the political content of local resistance. The central hypothesis is that neoliberal institutional arrangements

configuring the expansion of wind energy in Mexico are playing a crucial role in creating emergent forms of environmental change and inequality. Deriving from this, a second hypothesis is that communal and territorial identities are bringing diverse forms of resistance, as well as possible pathways to open the energy transition debate in Mexico. The latter includes new imaginaries of "energy sovereignty" and a proposal to build a cooperative wind farm in the region.

Scholarship is critically approaching the social dimensions entailed in renewable energy production. Some authors are advancing in this realm by deconstructing dominant narratives of particular technologies and their impacts at the local scale (Ariza-Montobbio *et al.* 2010; Huber *et al.* 2016). A growing interest is in the spatial dimension of renewable energies and its relationship with social power and justice (Rignall 2016; Yenneti *et al.* 2016). Furthermore, scholars are looking to grasp the political motivation of grassroots initiatives promoting alternative schemes for renewable energy production (Becker and Kunze 2014; Powell 2015; Seyfang and Haxeltine 2012). This article aims to contribute to such discussions by presenting empirical evidence from a local conflict that reflects two interrelated processes: the emergence of social resistance against corporate wind energy projects, and the development of alternative pathways to promote sustainable transitions.

The following section presents a brief theoretical framework guiding the study's approach. Section 3 describes the case study and methods used to systematize the gathered information. Sections 4-5 present the findings on wind energy projects and pathways of conflict. Section 6 is a discussion guided by an argument that resistance is growing to neoliberal energy transitions in Mexico and elsewhere. The last section highlights the salient outcomes of this analysis.

2. Theoretical framework

From the lens of political ecology, environmental conflicts are understood to result from socially unequal and geographically uneven distribution of gains and losses related to economic activities (Temper *et al.* 2015). This includes not only the unjust burdens of externalities, but also uneven access to natural resources (Martinez-Alier and O'Connor 1996). Within this theoretical framework, a particular field is the relationship between changes in the socio-metabolic patterns of human economies and the environmental conflicts deriving from them (Martínez-Alier 2002; 2009; Martínez-Alier *et al.* 2010). Social-metabolism is a concept that draws from the original understanding of metabolic processes in biology to explain how societies interact with nature in terms of the physical throughput (flow of energy and materials) associated with economic activities (Sorman 2014). Throughout production-to-consumption chains, ecological distribution conflicts arise as a result of the uneven allocation of gains and burdens among geographical regions and social groups.

Unequal relations between center and peripheral regions of the world are thus crucial to understand how richer regions appropriate cheap energy and materials from marginal regions that suffer disproportionately from negative socio-environmental impacts (Hornborg 1998, 2005). Whether from state-driven or market-lead institutions, the socio-metabolism perspective emphasizes how economic growth and the consequent expansion of "commodity frontiers" lead to an increasing number of ecological distribution conflicts (Moore 2000, 2011). There is substantial empirical evidence that environmental justice struggles are driven by these inequalities, as well as a vast number of cases of popular environmentalism, particularly located in the Global South (Anguelovski and Martinez-Alier 2014; Martinez-Alier *et al.* 2016).

From a different research perspective, critical geography scholars have emphasized the human metabolization of the environment under specific economic institutions in a given historical context. In this regard, there is increasing discussion of the ways in which neoliberal institutions have reshaped global capitalist dynamics, and thus, environmental issues and conflicts (Heynen and Robbins 2005). Neoliberalism gained force in the 1970s as a new paradigm describing a worldview, a policy discourse and a set of policy measures that liberate individual entrepreneurial activities from state control and regulation (Castree 2010). Strong private property rights, free trade and financial flows are at the core of capital accumulation under neoliberal arrangements (Harvey 2005; McCarthy 2015). As current studies demonstrate, the decades driven by neoliberal processes coincide with wider connectivity of global exchanges and unprecedented levels of physical throughput (Dittrich *et al.* 2012; Krausmann *et al.* 2009), along with the emergence of forceful and

novel forms of capital accumulation (Glassman 2006; Harvey 2004; Prudham 2007). The neoliberal approach to nature and the conceptualization of sustainability is also consistent with private property rights and markets, leading to processes of privatization, enclosure of common goods and the commodification of nature (Heynen and Robbins 2005). These have distributional effects, and are interpreted as the main drivers of emerging forms of socio-environmental contestation, including territorial struggles, revival of the commons and alter-globalization movements (Bakker 2007; Klein 2001; McCarthy 2005).

When exploring the political ecology of wind energy conflicts, political ecology and critical human geography are useful. Recent contributions are addressing how changes in energy production, distribution and consumption are driving (or potentially creating) an uneven distribution of gains and losses among geographical regions and social groups (Hornborg 2014; Zografos and Martinez-Alier 2009). Addressing the distributional effects of neoliberal agendas in energy transition strategies and deployments of renewable energy are key tasks (McDonald 2009; Newell and Mulvaney 2013; Newell and Phillips 2016). Recently, McCarthy (2015) has pointed out how neoliberal agendas lead to potential enclosure processes in large-scale renewable projects, particularly in contexts of the Global South where land rights remain contested. The Mexican context and the empirical evidence from the Isthmus of Tehuantepec offers an opportunity to reflect on these different theories and perspectives.

3. Case study and methods

The Isthmus of Tehuantepec is the narrow land bridge between the Pacific Ocean and the Gulf of Mexico, spanning across the states of Oaxaca, Chiapas and Veracruz. Due to its geographical configuration and the abundance of resources, the Isthmus has been considered as a strategic location for geopolitical control and the expansion of capital accumulation (Delgado-Ramos 2003). From Spanish colonization until recent times, this multi-cultural and biodiverse region has been forefront in the eyes of state interventions, foreign interests and corporate opportunities.² In Oaxaca, the Isthmus is homeland of *Binnizá* and *Ikjoots* groups (*Zapotecos* and *Huaves* in Spanish), whose territories are mostly organized through communal land regimes and customary laws. These communities rely on fishing and farming activities, and have developed a strong political culture to contend "external" attempts to re-organize and re-value their territories (Castillo 2010; Jeffrey 1996).

The political character of *Istmeño* communities, and particularly of the *Zapotecos*, is reflected throughout history by the local defense of territorial rights and cultural identity. The most important symbol of such tradition in modern times is the COCEI; a coalition of workers, peasants and students that during the second half of the 20th century propelled and defended a political project based on their ethnic identity, and the pillars of agrarian and social justice (Jeffrey 1996; Poniatowska 2007). As described in the following sections, local struggles against the expansion of wind power in the region represent one of the most recent expressions of reclaiming territory, ethnic and social identity. This, of course, does not exclude the recognition of inherent conflicts, contradictions and power asymmetries that have historically existed at the local scale: inside and across political and social organizations, and inside and across different indigenous communities.

Data gathering was organized in three parts. First, information about each wind project encompassing the Corridor was researched via various government sources including databases of investment in renewable energies and permits for developing projects. Existing publications regarding wind energy in the Isthmus served as a guide for gathering information (Castillo 2011; Juárez and Leon 2014), though additional cross-referencing was required.

The second part encompassed a thorough research of wind power conflicts on the Isthmus of Tehuantepec. Statements of local and external organizations published between 2005-2015 were retrieved from web sources, including those of the Assembly in Defense of the Land and Territory of the Indigenous People in the Isthmus of Tehuantepec (APIITDIT); the Union of Indigenous Communities of the North

² Over the last decades, the region has been envisioned as part of ambitious development corridors to interconnect Central and North American markets. This includes the well-known Plan Puebla Panamá and its updated version: the Mesoamerican Project; both of which promote large-scale infrastructure in transport, telecommunications, water and energy (Castillo 2010; Delgado 2003).

region of the Isthmus of Tehuantepec (quoted as UCIZONI); the Tepeyac Human Rights Centre and the Organization for a Consultation Process in Juchitán. Additional information included published interviews with local leaders, as well as media sources (documentaries and videos) made by activists in the region. The information was then systematized with Atlas TI, which was utilized to code the actors along with their claims mobilized in the processes of resistance.

Finally, information was organized chronologically and cross-referenced with local and national media (2005-2015), delineating relevant moments and the evolution of conflicts. Three different phases were identified and organized according to the research questions. Phase 1: the articulation of local claims against the Wind Corridor (1995-2005). Phase 2: the emergence of reactive mobilizations against the Corridor (2005-ongoing). Phase 3: the rising of proactive proposals as an alternative to the Corridor (2010-ongoing). Throughout these phases I refer to the general conflict developing in the region. However, in order to better answer the research questions, I emphasize two particular cases: the San Dionisio del Mar community against the Mareña project (a reactive conflict) and the Ixtepec Community Wind Farm (a proactive proposal that emerged within this context). The general information of these two conflicts was also uploaded to the Environmental Justice Atlas [webpage](#).

4. Structural reforms and wind energy in Mexico

Since the consecutive economic crises of the 1980s, Mexico has been immersed in a profound shift towards a neoliberal program, integrating the country in the dynamics of globalized capitalism. After a long phase of state-lead development, changes in monetary, trade and institutional spheres guided by "structural adjustment" have stimulated a rapid privatization of public and common goods, an increasing flow of foreign investments, and the creation of new markets in the natural and social spheres. This has coincided with a new industrial and service economy with a high use of energy and materials (Gonzalez-Martinez and Schandl 2008; Russi *et al.* 2008). In addition the benefits of these changes are highly concentrated, and inequalities have intensified (Harvey 2005; Székely 2005).

In this context, changes in electricity generation and land tenure systems have determined the expansion of wind power as a private and profit-driven industry. In the electricity sector, dismantling the state monopoly began in 1992, when legal reforms began promoting private participation in power-generation activities (Vargas 2010). Afterwards, this trend reached a crucial point with the ratification of the 2014 Energy Reform, extending the possibilities of private participation in generation, transmission, distribution and commercialization activities (Padilla 2016), including particular measures to promote private actors in the renewable electricity sector (PwC 2014).

Simultaneous changes to Mexico's land tenure regime enacted the introduction of private investment in the rural landscape, previously organized through the "social" forms of property. The Agrarian (counter) Reform of 1992 produced a change to *ejidos* – founded after the Mexican Revolution and *comunidades agrarias* (indigenous/pre-Hispanic institutions) by allowing rural communities to legally sell, rent and subdivide the communal land rights that had been obtained after decades of social struggle (Rivera-Herrejón 2007). These reforms were the end of land distribution initiated in the country after the 1917 Constitution, and more than eight decades of state protection of peasants and indigenous livelihoods (Toledo 1996). Since the Agrarian (counter) reform, there has been a return of agribusiness (Herrera 2012) as well as private opportunities for other land-uses, including forestry (DiGiano *et al.* 2013), and more recently, large-scale wind farms. However, these changes do not indicate the complete disappearance of the communal system.

Since the 1980s, technical studies conducted by the U.S. and Mexican governments indicated the Isthmus of Tehuantepec to be one of the most attractive regions in the country to implement commercial wind farms (Elliot *et al.* 2004). After structural reforms of land and electricity were approved, the Federal Government developed a wind farm pilot project (La Venta I) that successfully attracted private investments to the region. Government institutions, research foundations, private companies, multi/bilateral funding agencies, and experts within the sector then organized several *ad hoc* meetings that aimed to eliminate investment obstacles, boost financial support and enhance "market certainty" in the sector (Polycarp *et al.* 2013). Such meetings were a privileged space to envision an ambitious Wind Corridor covering 1,200 km², capable of reaching an installed capacity of at least 6,000 MW (Elliot *et al.* 2004).

With these conditions established, several foreign companies formalized their interest in developing large-scale projects, nudging the government to propose an appropriate territorial division of the region. A new simplified geometry of blocks was superimposed on the existing intricate maps of agricultural fields, forests, rivers, wetlands, villages, small roads, peasant collectives and private properties. As Figure 1 indicates, the Isthmus region was distributed into land plots for private wind energy companies, *without* consulting or gaining permission from the local communities who owned the land. Throughout the initial phase of negotiations, the rights of indigenous communities were ignored, with a few exceptions where informal meetings were held with some landowners (Oceransky 2010; SE GEO n/d).



Figure 1: Territorial distribution for wind energy projects in the Isthmus of Tehuantepec (c.2004). Source: Secretaría de Economía del Estado de Oaxaca.

The first transaction for a large-scale project in the Isthmus occurred in 2006, with the construction of La Venta II. That same year, the Mexican government launched a public-private initiative to expand transmission infrastructure to connect wind farms to the national grid, and the CFE started accepting tenders from private companies. As of 2016, the Mexican government has approved 17 large-scale projects encompassing the installation of approximately 1,780 turbines throughout the Isthmus region (Table 1). Excluding one project, which was cancelled in 2012 (further details in the following section), all the projects presented in this Table remain in stages of construction and operation. In total, the Wind Corridor has reached an installed capacity of 2,317 MW.

Contractor (Project name)	Manufacturer/ Developer	Installed Capacity (MW)	No. of Turbine s	Production Scheme	Supply destination
La Venta II	Vestas/Gamesa/Ibedrola	85	104	IPP	CFE
Energías Renovables Venta III (La Venta III)	Gamesa/Ibedrola	103	121	IPP	CFE
CE Oaxaca (Oaxaca II,III, IV)	Acciona	306	204	IPP	CFE
Energías Ambientales de Oaxaca (Oaxaca I)	Vestas/EYRA	102	51	IPP	CFE
Fuerza y Energía Bii Hioxio (Bii Hioxio)	Gamesa/Gas Natural Fenosa Renovables	227	252	SS	Cementos Moctezuma, Tiendas Chedraui; Crown Plaza Hotels; Union Fenosa Natural Gas Producer
Desarrollos Eólicos de Oaxaca (Piedra larga II)	Gamesa/Renovalia Energy	137	69	SS	Nueva Wall Mart de México; Operadora Vips; Suburbia
Eólica el Retiro (Eólica el Retiro)	Gamesa/Grupo CISA/Grupo México	74	37	SS	Industrial Minera México; Operadora de Minas e Instalaciones Mineras; Ferrocarril Mexicano; Latin America Movie Theatres; Cinemex ; Cinemas Lumiere; Mexicana de Cobre; Ferrosur
Elioteac del Pacífico (Elioteac del Pacífico)	Gamesa/EDF energies nouvelles	160	N/A	SS	N/A
Eurus (Eurus)	Acciona	250	300	SS	Cemex México
Elioteac del Istmo (Bii Sintu)	Gamesa/Mistui and EDF energies nouvelles	164	124	SS	Compañía Siderúrgica de California; Eolioteac de México;; Hewlett Packard de México; Parque de Tecnología Electrónica; Productos Gatorade de México; Sánchez y Martín; Siemens
Parques Ecológicos de México (La Ventosa)	Gamesa/Ibedrola	102	82	SS	Pemex (refinerías y complejos petroquímicos) Cementos Apasco; Volkswagen
Desarrollos Eólicos Mexicanos de Oaxaca (Piedra Larga I - II)	Gamesa/Renovalia Energy	227	152	SS	Renovalia Wind International; Grupo Renovalia de Energía; Caleras de Guanajuato; Corporativo Bimbo; Operadora Vips; Calidra de Occidente; Suburbia; Nueva Wal-Mart de México
Fuerza Eólica del Istmo (Fuerza Eólica del Istmo)	Clipper/Grupo Industrial Peñoles	30	60	SS	Cooperativa Manufacturera de Cementos Portland; Fuerza Eólica; Procesos Electrónicos de México
Stipa Nayaa (Bii Ne Stipa II Stipa Nayaa)	Gamesa/Enel Green Power	74	37	SS	Gamesa ENERGÍA; Jugos del Valle; Nestlé Mexico; Nissan Mexicana; Productos Gerber; Raiston Purina México
Eólica Zopiloapan (Bii Ne Stipa III)	Gamesa/Enel Green Power	70	35	SS	Nissan Mexicana; Alpla Mexico; Nestlé México; CPW México; S.C Johnson and Son
Eléctrica del Valle de México (Not Available)	N/A	180	120	SS	122 Municipios del Estado de México y otras entidades estatales
Bii Nee Stipa Energía Eólica (Bii Nee Stipa)	Gamesa/Ibedrola	26	31	SS	Gamesa Energía; Cableados Industriales; Cervecería Cuauhtémoc Moctezuma; Panamco Bajío; Panamco Golfo; Propimex,; Inmuebles del Golfo, S.A. de C.V.

Table 1: Wind energy projects in the Isthmus of Tehuantepec. SS=self-supply, IPP=independent power production. Own elaboration, data from the Comisión Reguladora de Energía (2016).

Competitive tenders were guided by the liberalization changes in the electrical sector, including two attractive schemes for private companies: self-supply (SS) and independent power production (IPP). In the first case, the energy produced is supplied to a cluster of industrial, commercial or service companies associated with the project itself, while the surplus is sold to the CFE (Federal Electrical Commission). Under this scheme, private producers might have their own transmission lines connecting with the national grid, or they may use the public transmission lines. In the second case, all the energy produced is sold to the CFE (SENER 2013). Although both of these modalities contribute to the privatization of electricity production, the self-supply scheme is of particular relevance as its generation and consumption phases favor private interests. As acknowledged by the Rocky Mountain Institute, self-supply schemes (known in the U.S as "corporate purchase agreements") help big corporations to "green" their business while creating additional financial benefits (Penndorf 2015).

Table 1 shows that 12 out of the total number of projects (66.5% of total installed capacity) follow the self-supply scheme. Private consumers in this category comprise big national and transnational firms including retailers (Walmart, Chedraui, Soriana), food and beverage producers (Bimbo, Jugos del Valle, Nestlé), cement manufacturers (Cemex, Cementos Moctezuma), mining companies (Peñoles), oil refineries (Pemex) and other industrial groups (Nissan, Alpa). It is remarkable that some of these companies (Nestlé, Jugos del Valle and Coca-Cola) are also the biggest private extractors and consumers of water in Mexico, and have been similarly favored by liberalization measures since 1992 (Delgado-Ramos *et al.* 2014). Meanwhile, the remaining five projects (33.5% of total installed capacity) are directed to public distribution.³ However, public supply coming from these projects does not necessarily respond to the needs of local communities, where marginal households face expensive electricity bills (APIITDTT 2008) and over four percent of families remain without electricity supply (INEGI 2014).

5. Local resistance and conflict pathways

Articulating claims and networks (1995-2005)

Local concerns about wind farms in the Isthmus started with the territorial allocation for private wind farms and the initial construction of projects. During this first phase, local opposition was articulated throughout well-established institutions for decision-making (communal and *ejido* assemblies), existing social and political organizations, as well as emergent movements against particular wind power projects. Other local supporting actors included a Catholic organization defending indigenous rights (Tepeyac Centre of Human Rights) and communitarian radio stations. Such efforts were further reinforced through wider resistance networks, such as the Assembly in Defense of the Land and Territory of the Indigenous People in the Isthmus of Tehuantepec ("the Assembly").

External actors were also supportive through a series of events developed in the region, such as the forum gathering support of 34 local organizations and national social movements 2005, as well as 16 international associations (Forum 2005). This included an important presence of organizations opposed to neoliberal policies in Mexico, including the Mexican Action Network Against Free Trade, the National Front of Resistance Against the Privatization of the Electric Industry, and the Mexican Alliance for the People's Self Determination. Such instances led to different actors mobilizing common claims against the Wind Corridor, including the following:

Lack of formal consultation: Mexico's legal framework encompasses a series of instruments protecting indigenous communities, including the 169 ILO Convention, Constitutional articles and secondary laws. However, since the initial negotiations between companies and the government, indigenous communities suffered from a lack of information and formal consultation. As early as 1995, the Tepeyac Human Rights Centre started to demand comprehensive information about wind energy projects; to which the government did not reply (Oceransky 2010). Meanwhile, local communities started to be aware of private companies

³ Independent power producers plus the Electrica del Valle de México Project, commissioned to supply electricity for municipal consumption in the central region of the country.

planning wind farms in their territories, offering low payments for land leases (Juárez and León 2014). In this regard, opposing groups stated clear demands to 1) stop all projects and permissions until formal consultations were made; 2) prohibit any project where agrarian and territorial conflicts exist; 3) disseminate access to information about the context, impacts and risks related with projects; and 4) respect whatever decision the local communities take regarding projects (Forum 2005).

Illegal and unfair leasing contracts: After the initial territorial allocation made by government and companies, negotiations with landowners were signed through confusing processes, leading to legal controversies (Nahmad *et al.* 2011). This is part of the uncertainty derived from agrarian counter-reform and the subsequent voluntary program to certify and alienate communal lands (PROCEDE, by its acronym in Spanish). Smith *et al.* (2009) have shown that hundreds of communities sharing communal land rights in Mexico have not participated in PROCEDE fearing the privatization of their lands, while the outcomes of those who participated vary enormously from one region to another (Herrera 2012). In the particular case of the Isthmus the property status of land is confusing, and long historical struggles have taken place over the restitution of communal territories to indigenous communities (Nahmad *et al.* 2011).

Figure 2 indicates that while there is an important part of the territory formally certified as "common property" (the orange zones), other zones are not part of cadastral information (the non-orange zones). Most windmills have been positioned on the latter, which could be unregistered common property or private property. It is in this heterogeneous and rather unclear context that 126 legal demands of communal landowners were registered to nullify land lease contracts made with foreign companies (APIITDTT 2008). In such instances, communities argued that companies offered unclear information about the projects' characteristics, manipulated and falsified negotiation processes, corrupted local and communal authorities and benefited from the disadvantaged position of indigenous people. This included a lack of translation of contracts to indigenous languages and an absence of oral meetings with non-literate people (Guijarro *et al.* 2009; SEGOB n/d). Several projects were delayed; companies offered financial compensation but most claimants refused to accept them (Oceransky 2010).

Although some contracts were cancelled outside the courts, legal demands were never formally processed. Most contracts remained, awarding 30 to 60 years of land use and access rights to private companies, retaining a large share of revenues from wind power production. The Mexican government itself has acknowledged that while the international average of payments to landowners fluctuates worldwide between 1 and 5 percent of wind farms gross income, on the Isthmus these average between 0.025 and 1.53 percent for Spanish companies, and 3.38 percent for the French ones (SEGOB n/d). Since there is no public agency regulating land leases in the country, the general trend is that companies offer relatively low payments to poor rural landowners.

Against privatization, commodification and enclosure: After coding local organizations' documents, the most recurrent and articulated claim against wind farms in the Isthmus appear to be the enclosure and privatization of natural resources. Here, "territorial dispossession" (*despojo del territorio*) has been a notion recurrently used by indigenous communities who regard the Wind Corridor as an expression of "neo-colonialism" (APIITDTT/UCIZONI 2013; CDHT 2008). Therefore, land issues emerged not only in terms of leasing contracts, but also regarding the close relation between territory, culture and local livelihoods and autonomy. Communities have claimed that the installation of windmills will generate environmental impacts leading to the disruption of local economies and social identities. Bettina Cruz, a prominent indigenous leader of the Assembly, has insisted that they are not against wind power, but against land grabbing and its impacts over local communities (Chávez 2014; Oceransky 2010). Such impacts include increasing biodiversity loss in the areas of infrastructure deployment, soil and water contamination derived from lubricants used by windmills, and reduced hydrological connectivity due to the enclosure of the region's lagoons (Levy *et al.* 2015; Forum 2005). In a similar way, the Assembly has stated that, "by waving the clean energy flag, private companies have turned wind into a commodity, while the wind, sun, sea and land have shaped the life and culture of our *Binnizá* and *Ikjoots* people" (APIITDTT, n/d). As one opponent further declared "we don't need money from the government or the windmills, we want our resources free" (Dell'Umbria 2013).

This shows that the first phase of resistance was characterized by the articulation of social organizations and a common discourse against the Corridor.

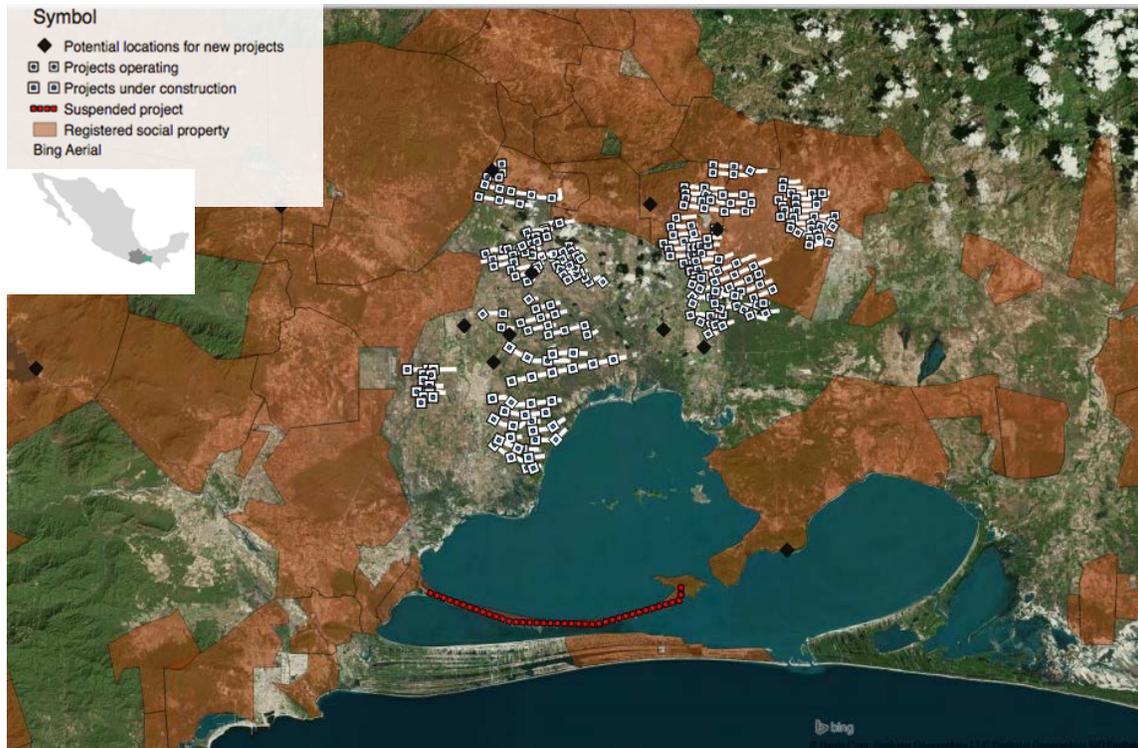


Figure 2: Windmills and land tenure status in the Isthmus of Tehuantepec (2016). Source: Own elaboration from Bing Satellite Map, Inventario Nacional de Energías Renovables and Registro Nacional Agrario.

Reactive mobilizations (2005-ongoing)

Conflicts were triggered when local resistance started to directly confront the construction of private wind farms. In this second phase, focal points of tension and social mobilization emerged, involving cases of corruption, criminalization and repression (Petersen 2013). But while it is difficult to analyze conflicts by differentiating one case of resistance from another, it seems that they have a regional dynamic. To some degree, this responds to the arrangements of the Isthmus region, where communitarian institutions and practices prevail over state and private property logics (Smith *et al.* 2009). To the extent that local inhabitants use parts of the territory regardless of formal land titles, several communities bear the multiple burdens of the impacts of a single project (enclosure of common agricultural and coastal lands; pollution of water bodies affecting livelihoods). The political organization against the Wind Corridor's projects also supports this interpretation, insofar as the formation of several coalitions and resistance networks have reached a regional scale.

In San Dionisio del Mar, for example, the proposal to install 132 turbines through the two coastal bars of the Mareña Area directly impacted not only three different local communities (San Dionisio, Santa María del Mar and San Mateo), but also another 13 nearby that would be affected by the enclosure of the inner sea, disturbing fishing and local commerce (PRCMESM 2012). The Mareña Renovables Project was granted in 2006 to Preneal, expecting to reach an installed capacity of 396 MW. This was considered the largest wind farm in Latin America, financed by the Inter-American Development Bank and designed to provide

electricity to a large beverage company (IDB 2011). Opposition against the Mareña project was primarily lead by the San Dionisio *Zapotec* community, where landowners filed a lawsuit to nullify leases signed with Preneal (Rojas 2013; SEGOB n/a). Except for the *Huaves* of Santa María del Mar, which accepted the contract with Preneal⁴, local groups started an organized opposition against the project in 2011, when they demonstrated outside the Federal Electricity Commission office in Oaxaca, the state capital (APIITDDTT 2014b). Further mobilizations took place, including railway blockades, street protests and the occupation of the San Dionisio Municipality.

All of these actions created political pressure and hindered the entrance of machinery to the region, delaying project construction (Rojas 2014; 2013). Given these unfavorable conditions, Preneal sold the project to another transnational consortium that spurred additional corruption scandals linked with the local mayor (Manzo 2015; Preneal 2011). Controversies and tensions led to stronger local mobilizations triggering criminalization and repression of protesters (Petersen 2013). Violence increased against the members of the Assembly who were struggling against the Mareña project and others planned, such as Bi-Hioxio (SEGOB n/a). Cases of harassment and persecution were registered, as well as illegal police detention (APIITDDTT 2014a). An emblematic case was the arrest of Bettina Cruz in 2012, in a process that according to the International Service for Human Rights (2015), was based on unfounded and baseless accusations. Although Cruz was released on bail and acquitted of all charges after a few years, accusations against her were viewed as a clear message to the opposers of windfarms. By the end of 2012, however, pressure finally succeeded in the suspension of the project, when a Federal judge acknowledged violation of communal property rights (Petersen 2013). Although most of the wind power projects are still under construction and operation, the Assembly recognized the suspension of Mareña Renovables project as a successful outcome for local communities (Rojas 2013).

Reaction and proaction in dialogue (2009-ongoing)

While reactive opposition against Mareña and other private wind farms was spreading throughout the Isthmus, new spaces of dialogue were also organized. One of the most salient moments in this context occurred in August 2009, when the Assembly and other local organizations held a Forum in Juchitán called *Indigenous communities, self-determination and energy sovereignty* (APIITDDTT 2009). As with many other instances at the time, the Juchitán Forum was geared towards strengthening communities' struggles by establishing wider networks with external actors (APIITDDTT 2009). But the uniqueness of this forum was its proactive content: it represented one of the first instances in the world in which the term "energy sovereignty" was used, aiming to link indigenous peoples' rights, territorial struggles and alternatives to energy production and consumption (Oceransky 2010).

During the Juchitán Forum, the proposal to promote community wind-farms was extended as a concrete alternative leading towards energy sovereignty. The idea became particularly salient through the active participation of a foundation (The Yansa Group) looking to build wind farms owned and controlled by local communities. By learning from the experiences of Denmark, Germany and the U.S, Yansa proposed to develop a pilot project in the region (Oceransky 2010). Along with community members of Ixtepec, the Yansa Foundation prepared a proposal to include a wind farm within the community's new territorial plan, which was accepted by the communal general assembly. By exercising direct decision-making with the community, two other extraordinary assemblies followed, in which the project was discussed and approved unanimously (Hoffman 2012). Additional enabling activities were conducted by Yansa, including community meetings and working groups, environmental assessments, contract negotiations, and siting logistics (Hoffmann 2012; Oceransky 2010).

⁴ The situation became more complex when the land leasing contracts intensified previous agrarian conflicts in the region. This happened among the Santa María and San Mateo del Mar communities, where an old struggle to define their territorial borders restarted with the plan to build 30 windmills in a disputed area, including a zone traditionally used for indigenous and Catholic celebrations. This led to further tensions between both communities, as San Mateo del Mar refused to accept the project along with financial compensations for their sacred zone. Simultaneously, this also made visible the latent tensions between the *Zapotecos* and *Huaves* in the region, where the former have historically dominated regional identity, whereas the latter still struggle to define and defend themselves.

The community wind farm was projected to comprise of 44 wind turbines with a 1000 MW installed capacity (Hoffman 2012). This wind farm would operate as an Independent Power Producer (IPP), where electricity would be sold to the CFE over a 20-year period at a fixed price. The project shared similarities with private wind-farms in terms of scale (number of windmills and installed capacity) and amounts of investment required. However, as Table 2 indicates, there were important differences in terms of ownership, decision-making and revenue distribution.

Aspect	Details	Differences to private projects
Ownership	The Yansa-Ixtepec Community Interest Company (CIC)	The community retains communal ownership of land. Assets and revenues owned by the CIC: Yansa and the Community
Financing	Loan scheme provided as debt by social or development banks (70-80% of total costs) Sub-ordinated debt given by investors seeking for "social returns" rather than high economic revenues (20-30% of total costs)	No specific difference. Credits with low-interest rates.
Revenue distribution	Ixtepec community 50% Yansa Foundation 50%	25% to land owners and 25% to community programs. Revenues to replicate the project elsewhere
Decision-making instances ⁵	Special committee ruled by the community by-laws	Democratic representation including: Communal assembly (formed by communal representatives) Existing peasant organizations Youth and women's' forums

Table 2: Ixtepec Community Wind Farm features. Source: own elaboration with information from Hoffman 2012.

In order to sign the contract with the CFE, the Yansa-Ixtepec project needed to participate in the 2012 call for tender (Hoffman 2012). However, the CFE dismissed the project arguing that the Community Interest Company was not an existing legal entity in Mexico (Vargas 2012). After this, the CFE opened two different

⁵ The participatory scheme proposed by Yansa encompassed the traditional representatives of indigenous communities (*comuneros* and *ejidatarios*), but also included the voices of women, youth and peasants. This would mean a substantial change in terms of the recognition of all community members, as well as the distribution of gains created by the project. As such, much of the internal community controversies that in some other cases arose towards the acceptance of projects, would be potentially resolved in these forums.

tenders in the Ixtepec location. The conditions of both tenders were denounced by the community and Yansa as favoring big firms while establishing additional "padlocks" for their project (Manzo 2012). Different political reactions were manifested against CFE's decision, including claims from left and right representatives of the National House of Congress, urging Congress members to follow national and international laws protecting indigenous communities and supporting alternatives to renewable energy production (Méndez and Garduño 2012; Parliament Gazette 2012). Political pressures led the CFE to announce a temporary suspension of the tender (Juárez and León 2014). As of 2017, controversy over the case remains open; while Yansa and some members of the Ixtepec community still discuss the possibility of implementing their alternative wind power project, international media suggests there are moves to deploy a private project in this location (Reve 2015). However, the focus of resistance in Ixtepec seems to be slowly moving towards resisting a mining project proposed in the area (Manzo 2016).

6. Discussion

Wind energy, neoliberalism and conflict

The expansion of wind energy in the Isthmus of Tehuantepec has been embedded in a neoliberal agenda that has been shaping the Mexican economy since the 1980s. A point of departure for this analysis is that *private participation in power generation activities* and *public-private partnerships in infrastructure development* are leading to an increasing presence of transnational corporations in the Mexican electricity sector. While the distributional impacts of such partial privatization are not the main focus of this research, the links to the appropriation of benefits coming from wind power production are relevant. As observed, the *strong reliance on market forces* shaping wind energy policies has enabled the creation of competitive tenders defining the way in which such corporations operate. With "independent power producer" and "self-supply" modalities, transnational companies are able to either sell the electricity for public supply or make corporate agreements with other big companies operating in the country. Center-periphery relations, or perhaps more accurately rural and urban relations, are visible when the electricity produced is destined to supply new energy inputs for the Mexican economy, where private corporations receive the most benefits (in both production and consumption).

A growing *appeal to private property rights* in the rural landscape of the country emerges as the third, and probably most important dimension of neoliberalism in wind power production. Certainly, wind is appropriated as the primary resource for energy production. However, land remains a crucial pre-condition for its operation (Sheidel and Sorman 2012; Smil 2010). Although wind power projects do not always lead to changes in land tenure arrangements, this case study suggests that neoliberal policies might trigger such processes. As McCarthy and Prudham (2004) have pointed out, the foundations of neoliberal approaches draw fundamentally from classical liberalism, where the restructuring of social relations with nature is associated with enclosing the commons to facilitate capital accumulation. This, in turn, is resonant with what Harvey has termed "accumulation by dispossession" (2004). It is not a coincidence that indigenous communities in the Isthmus appeal to their communal property to claim resistance against a "territorial dispossession" by private companies. Parallel denunciations of "neo-colonialism" also reflect how communities acknowledge the echoes of experiences from the past in a new context where both government agencies and corporations enable the cultural and material dispossession of their territories.

While contemporary economic forces drive the expansion of wind power in Mexico, claims made by local communities are part of a longer historical struggle against state and corporate control. The cultural and territorial affirmation of *Istmeño* communities and the construction of a local "ethnic politics" during the 20th century appear as crucial aspects in this regard (Campbell 1994). This political tradition is, at the same time, embedded in a wider set of claims that have been fought in the country since the Mexican Revolution. The struggles of Zapata's movement in 1910 were, indeed, fought in the defense of communal property of land, but also against privatization of water by sugar companies in Morelos (Womack 1970). Peasants and indigenous groups throughout the 20th and 21st centuries have kept defending the commons, and pressuring the state to support them (Bartra 2012). As the Zapatista movement and the neo-zapatista initiatives reflect, the commons are still central in the political imaginary of rural Mexico, and perhaps stronger in the more

peripheral regions. Oaxaca is a state with deeply rooted indigenous and peasant populations, with their own history of disputes for autonomy and communal identity (Pasqualetti 2011). These are all contributing factors for understanding the resistance to corporate wind power installations, and further analysis in other countries could explore such aspects with a wider set of examples. Conflicts against corporate wind power projects might thus be seen as agrarian historical struggles re-emerging through current environmental issues. Scholars have described such processes as the "environmentalization of social struggles" (Acsehrad 2010; Robbins 2004), where ecological issues are increasingly important not only in themselves, but are also used to contest power structures and practices (Temper *et al.* 2015 p.273).

In this regard, it is possible to assert that the overall resistance process in the Isthmus relays a strong communal tradition of indigenous groups (expressed through land tenure regimes, cultural identity and political practices), which in turn is linked to the territorial organization of the region. Through *ejido* and communal assemblies, indigenous groups opened a space of political organization which enabled the creation of resistance networks using divergent "valuation languages" (Martínez-Alier 2002) in comparison to the discourses mobilized by government and companies. As Howe asserted in her own study on the region "local people voice concerns about land, fish, work, and culture" (Howe 2014: 398). The latter includes a variety of meanings, including traditional livelihoods and attachments to the local environment. Additionally, external actors strengthened local claims and contributed to the articulation of a contesting discourse against the Wind Corridor. This form of collective action can be explained as the result of shared common values and interests among different actors (Foyer and Dumoulin 2015) struggling against the neo-liberalization of the economy, defending indigenous autonomy and human rights.

Therefore valuation languages of people on the Isthmus help to understand why some local communities refused or neglected compensation offered by private companies. This happened in the San Dionisio case, where values placed on land (for subsistence and work), water and culture were neither commensurate nor substitutable by the compensation offered by private companies. In other communities, where such "benefits" might be sought as attractive bids to improve the marginalized conditions of localities, the promised payments were seen "as a pittance in comparison to the profits the companies are making" (Howe 2014: 390). Following O'Connor and Spash (1999), these examples illustrate how environmental conflicts are sometimes fought over the monetary or other compensation offered to affected communities, or at other times over a plurality of values which are not commensurable with a single standard (including infringement to territorial, cultural and political rights as well as damage to human livelihoods, biodiversity or sacred places).

Contesting transitions: exploring a hypothesis

The post-political condition framing dominant discourses on climate change has led to the technical and apolitical implementation of green economy approaches in both mitigation and energy transition policies (Berglez and Olausson 2014). In this regard, the perceived inevitability of the market economy has diluted democratic disputes that might emerge, due to the reproduction of unequal social relations (Swyngedouw 2011). This can be observed for the particular case of renewable energies, where scientific expertise, institutions and policies widely support their deployment (Barry *et al.* 2008), disregarding their potential impacts in the global peripheries. In the case of the Wind Corridor, a strong support from national and international agents contrast with negative impacts at the local scale. The absence of acknowledgment of those inhabiting the area reflects the historical denial of indigenous peoples as political entities (Bonfil 1990), while perpetuating the unequal characteristics of the current production and consumption system.

Contrasting with these dynamics, struggles against the Corridor unveil the emergence of forces that potentially re-politicize the debate on energy transitions. Even when claims and mobilizations might not deliberately allude to environmental and climate justice, their struggles represent dissent over the uneven character of the business-as-usual model involved in current mitigation and renewable energy strategies (see also: Chatterton *et al.* 2013). By visualizing social dissent, conflicts therefore push for the democratization of the debate on energy transitions, while opening the possibility of other "socio-ecological futures" (Swyngedouw 2011). When analyzing the temporal process of the conflict in the Isthmus of Tehuantepec, it is possible to observe that reactive and proactive movements reinforce each other in a dialectical and productive

way. Rather than linear conflictive patterns, there appears to be a continuum between periods of mobilization, opposition and participation. The conflict in San Dionisio highlights this, as it emerged in a moment where resistance and organization networks were becoming increasingly robust, helping to strengthen local claims against Mareña Renovables. Simultaneously, those same networks organized the political spaces where the "energy sovereignty" term was coined, and from which the cooperative project in Ixtepec emerged.

Even though the proposed community wind farm in Ixtepec can be further problematized, the project clearly differs from private wind farms in terms of ownership, revenue distribution and decision-making. At the same time, the Ixtepec project entails an active participation of the community both through existing communal institutions (assemblies and peasant organizations) and new spaces of decision-making (women and youth forums). This project suggests a potential reinforcement of collective identity and relations, recurrently threatened by market forces and large-scale investments. The re-emergence of communal relations through territorial struggles is being widely studied by scholars in Latin America, who stress that practices and institutions of indigenous and popular communities entail a potential path to resist hegemonic forces while building alternative futures (Escobar 2014; Esteva 2012). Regarding wind power, similar conclusions have been drawn by Mackenzie (2010) when studying how community buyouts of land in Scotland led to the proposal to install community wind farms in their territory.

The allusion to the "energy sovereignty" term is also a relevant aspect in the politicization of energy transitions. As Ariza-Montobbio (2015) explains, "energy sovereignty" was initially inspired by the "food sovereignty" concept coming out from La Vía Campesina in the 1990s and then adapted by collective movements against the marketization of the energy sector. The Constitution of Ecuador of 2008 briefly mentions one objective of economic policy as achieving "food and energy sovereignty" (art. 284). In a similar respect, the Catalan Network for the Energy Sovereignty defined the term as "the right of individuals, communities and peoples to make their own decisions on energy generation, distribution and consumption in a way that it is appropriate for their ecological, social, economic and cultural circumstances, as long as these do not affect others negatively" (XSE n/d). Similar notions have emerged across Europe and Latin America, linking renewable energies and/or the implementation of different energy mixes to issues ranging from local autonomy, solutions to energy poverty, municipalization of energy supply, direct citizen participation, and with different roles of the State (Ariza-Montobbio 2015).

In Mexico, "energy sovereignty" has been increasingly used at a national scale against the progressive privatization of the oil industry in favor of foreign companies (FTE 2007). A strong anti-neoliberal call to recover the nation's ownership and state control of the most strategic resources in the country is at the core of such an appeal. But as the case of the Isthmus suggests, there are also local mobilizations and cooperative scheme proposals favoring processes of direct democracy for renewable energy production. Rather than seeing both movements as exclusive, their simultaneous existence suggest that a multi-scalar perspective might be useful to achieve the direct participation of communities in everyday energy politics, and a reformed role for the state in organizing national energy matters in a more redistributive way. This aligns with Bakker's (2007) analysis of the "water democracy" movement, where alternative local water management schemes could potentially advance along with a reformed role for the state.

Certainly, "energy sovereignty" is a recent term and its progressive articulation into different movements is to be sought in the near future, both in Mexico and elsewhere. A potential articulation with "food sovereignty" initiatives could create fruitful alliances to address energy, food and territorial matters from the bottom up.

7. Conclusions

By analyzing the expansion of wind energy projects and the emergence of conflicts at the local scale, this research aimed to understand the role of neoliberal processes in driving contemporary struggles over energy transition strategies. By taking the case of Mexico in general and the Isthmus of Tehuantepec in particular, the study showed how partial privatizations in strategic economic sectors, an increasing reliance on market forces and the growing appeals to private property in land appear to be crucial dimensions of neoliberalism in the growth of wind energy in the country. Despite the potential of this technology to promote a low-carbon energy system, the study expressed that there are social, political and cultural dimensions

disregarded in its deployment. Central aspects of this problem relate to the enclosure of communal territories, the private appropriation of benefits and a lack of direct democratic procedures embedded within the implementation of projects. The claims of indigenous communities reflect a reaction against these uneven outcomes, which reveal historical struggles in the defense of territory, identity and autonomy. The resulting discussion invites further research to address the role of power relations and economic arrangements in energy transition strategies, particularly with regards to its implications on the global peripheries.

The hypothesis of a rising movement against neoliberal energy transitions was discussed by analyzing the political meaning of the concept of "energy sovereignty" and the cooperative wind farm project proposed in Ixtepec. It is argued that these proposed alternatives potentially alleviate the uneven imprint of the Wind Corridor. Simultaneously, productive outcomes in the Isthmus align with movements in Latin America and Europe that are creating the idea of a different energy future. In this regard, the binary options between the state and the market on energy issues encounter a third pathway, inspired by the commons and including processes of direct democracy. The relevance of such processes may be sought in future discussions regarding renewable energies and energy transition strategies.

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