Transactional Colonialism in Wind Energy Investments

Energy Injustices against Vulnerable People in the Isthmus of Tehuantepec

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Document Version
Final published version

Published in:
Energy Research and Social Science

DOI:
10.1016/j.erss.2021.102135

Publication date:
2021

Energy Research & Social Science 78 (2021) 102135

Contents lists available at ScienceDirect

Energy Research & Social Science

journal homepage: www.elsevier.com/locate/erss

Original research article

Transactional colonialism in wind energy investments: Energy injustices against vulnerable people in the Isthmus of Tehuantepec

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ARTICLE INFO

Keywords:
Transactional colonialism
Energy justice
Cognitive justice
Indigenous people
Wind energy
Mexico

ABSTRACT

Energy production is a source of disputes across the world. Governments and firms argue that investing in wind energy contributes to the sustainable development of energy systems. However, wind farms perpetuate ongoing injustices and instigate new injustices. Vulnerable groups such as excluded and marginalised indigenous people can trace the injustices in low-carbon investments to a historical continuity of oppression and repression by internal and external elite groups. Based on a qualitative longitudinal study in the Isthmus of Tehuantepec in Oaxaca, Mexico, we expand our understanding of the energy justice framework in two ways. First, we show that cognitive justice is a vital dimension for understanding different ways of life, traditions and customs. Second, we propose the new concept of 'transactional colonialism', which emphasises the role of economic transactions between firms and economically motivated members of indigenous communities with the support of elite actors. This article provides new insights into the conflicting dynamics of wind energy investments in the Global South.

1. Introduction

The Isthmus of Tehuantepec in Oaxaca, Mexico (termed 'the Isthmus' hereafter), has some of the most powerful wind resources in the world [1]. However, the planning, construction and operation of wind farms in this region have been associated with an increase in vulnerable people's[1] struggles [2–7]. Since the first mini-wind farm was established in the Isthmus in 1994, 1600 wind turbines have been installed across 32 sites in this region, with a total capacity of 4199 MW – approximately 62% of the total wind energy produced in Mexico [8,9]. Despite this proliferation, it is argued that development for vulnerable people 'has not arrived' in the Isthmus. While some have benefitted from wind energy investments – such as multinational enterprises (MNEs) and governments – others, including some indigenous people residing in the Isthmus, feel that their way of life has been compromised [10]. These 'vulnerable' groups are heterogeneous, with a long history of internal colonisation, inter-ethnic conflict over land, and elite inter-marriage designed to gain control over territory [11–13]. Wind farms have facilitated alliances among indigenous people while also creating manifold conflicts within indigenous communities in the Isthmus [14–17]. There have also been conflicts within elite groups, with the Mexican federal government deprioritising low-carbon investments since 2018 [3,4].

Energy and social science scholars have increasingly used the energy justice framework to understand the relationship between green energy investments and justice [17–20]. While this framework is insightful, we argue that energy justice scholars have overlooked the cognitive justice dimension [21–23], which recognises the right for different understandings and ways of life to coexist [24,25]. This is particularly important in the context of place-based indigenous communities with heterogeneous forms of knowledges in their worldviews [10]. Energy and social science scholars have also highlighted the dynamics of colonial-like exploitation and the 'grabbing' of vulnerable people's land within the context of wind energy investments in the Global South (e.g., [3,4,14,25–28]). Acknowledging these insights, we seek to expand our understanding of the colonial dynamics of energy investments by building on the theory of internal colonialism [29–33]. We propose a new concept of *transactional colonialism* to discuss the cognitive injustices of colonial relations based on unequal economic transactions between elite groups and vulnerable people.

We conducted a longitudinal study (2013–2021) to explore the following research question: *How can we understand the dynamics of*

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[1] We acknowledge there are wide definitions of 'vulnerable' and 'elite'. The conceptualisation of these terms used herein is discussed in depth in Appendix A.

https://doi.org/10.1016/j.erss.2021.102135
Received 6 January 2021; Received in revised form 27 May 2021; Accepted 2 June 2021
Available online 13 June 2021

relationships between elite groups and vulnerable people involved in wind investments in the Isthmus? We employed a critical realism epistemology to analyse primary and secondary data concerning the Isthmus and Mexican public policies on energy transition, with the aim of giving a voice to diverse individuals and groups on wind energy investments in the Isthmus. This process involved triangulation of different data sources to provide evidence for energy injustice in the policies and practices of wind energy investments. Our findings show that there are multiple socio-cognitive realities in relation to the positive impacts and injustices of wind investments in the Isthmus, which lead to conflicting visions and disputes (e.g., [3,4]). We posit that the existence of these multiple realities illustrates the historical continuity of internal colonialism in Mexico, understood in this research as cognitive injustice [25,26]. We postulate that elite groups' cognitive rationale for ongoing injustices towards vulnerable people is inherently economic. Our research demonstrates that Mexico's low-carbon transition from a fossil fuel-led economy carries a continuity of inequalities and energy injustices (e.g., [15]). Similar to how elite groups benefitted from traditional fossil fuel energy systems, they now benefit from wind investments at the expense of vulnerable groups (e.g., [34,35]). We argue that the concept of transactional colonialism helps us understand the unequal internal dynamics between elite groups and vulnerable people in land debates related to large-scale investments.

This article is structured as follows. First, we review the literature on energy (in)justice and colonialism to elucidate the concept of transactional colonialism. We then outline our methods and present the findings while integrating past research concerning the Isthmus and wind energy investments. Finally, we discuss the theoretical and practical implications of the study, thus contributing to the debate on energy (in)justice issues surrounding low-carbon investments in the Global South.

2. Theoretical context

2.1. Energy justice: The missing cognitive justice dimension

The transition from fossil fuels to alternative energy sources has catalysed social worries surrounding development for economic and environmental interests [15]. *Just* energy transitions[2] that prioritise secure, family-sustaining jobs and healthy communities are urgent given emergent risk multipliers for those on the forefront of shifting energy and labour landscapes [36]. This is connected to the concept of energy justice [37], which calls for 'safe, affordable and sustainable energy' for 'all individuals, across all areas' [38]. The energy justice framework is widely used to discuss tensions among elite groups and vulnerable people (see Appendix B) [15,21]. While this framework has proven to be insightful and effective [18], we argue that scholars have tended to overlook the cognitive justice dimension (see Table 1) [22,39].

Cognitive justice is more than the acceptance of cultural diversity expressed in recognitional justice, as it underlines the need to go beyond symbolic endorsing of international declarations, conventions, and national laws, where there is a persisting continuity of impunity, marginalisation and repression. Visvanathan [25] defines the concept of cognitive justice as follows:

> 'Cognitive justice demands recognition of knowledges, not only as methods but as ways of life. This presupposes that knowledge is embedded in an ecology of knowledges, where each knowledge has its place, its claim to a cosmology, and its sense as a form of life. In this sense, knowledge is not something to be abstracted from a culture as a life form; it is connected to a livelihood, a life cycle, a lifestyle; it determines life chances'.

Table 1
'Three-legged' energy justice framework and missing cognitive justice dimension.

Term	Definition
Distributional justice	The fair and equitable distribution of costs and benefits at individual and societal levels [2,33].
Recognitional justice	The right to self-determination and acknowledgement of a person's rights, values, cultures, and knowledge systems [29,33].
Procedural justice	The implementation of fair and equitable institutional processes [33], international conventions, declarations and 'free, prior and informed consent' (FPIC) principles [40].
Cognitive justice	**The right for different understandings and ways of life to coexist** [22,23].

Accordingly, cognitive justice points to alternative ontologies and lifeworlds and calls for the validation of knowledges and ways of knowing born through struggle and resistance [40–42]. This is of particular importance for recognising the different forms of knowledges and lifeworlds of indigenous people, which often conflict with frames of Western knowledge [10,24,39,43].

We posit that the cognitive dimension of the energy justice framework must incorporate a critical perspective of colonial dynamics, particularly as many ways of knowing have been marginalised by 'the imposition of a dominant knowledge system' [44]. Cognitive justice reminds us that knowledge itself is not neutral or objective but connected to power and must be seen through a historically distinct lens to be understood [5]. Although energy social scientists have identified various injustices that originate from wind investments in the Global South – including disproportionate environmental damage, a failure to not only recognise indigenous people but to acknowledge different knowledges and lifestyles of all parties during planning and decision making, and a failure to distribute low-carbon energy equally [3,4,45] – few scholars have discussed the colonialist aspects of low-carbon energy investments in the Global South (e.g., [2,46]). We explore this perspective further in Section 2.2.

2.2. Towards a theory of transactional colonialism

Energy and social science scholars have used various conceptual frames of colonialism to understand large-scale energy developments in the Global South by emphasising, for example, that energy sovereignty is a condition for justice [10] and that energy developments should be seen as part of a long-standing history of global, unequal exchanges between the Global North and the Global South [20,31]. Less attention has been given to the internal colonialist dynamics within countries in the Global South.

Internal colonialism, which can be understood as a pattern of oppression, repression and violation within countries in the Global South, is both continuous and distinct from classic European colonialism. It focuses on how colonialist dynamics are replicated within countries in the Global South by subjugating people, lifeworlds and remote territories [24,32]. The concept depicts the exploitation of vulnerable people's well-being and resources within a country [30,31]. Within a renewable energy frame, internal colonialism involves the creation of structural political and economic power conditions to pressure vulnerable people into accepting low-carbon investments as a strategy for economic development and climate change mitigation [29]. Under 'green growth' neoliberal models, public policies have been enacted to open up the economy to facilitate private, 'sustainable' investments in renewable energy with limited government intervention [29,47–49]. For example, in Mexico, green neoliberalism has aimed to place the country at the forefront of the 'green energy revolution' and meet the Paris Agreement [15,34,50].

[2] An energy transition is defined as a shift in the way energy is generated, distributed, stored and used, particularly towards low-carbon energy, and the accompanying rearrangement of policies, economies and societies [37].

Green neoliberalist policies are often justified in the Global South by positing that the development needs of modern, urban and industrial areas should be prioritised at the expense of 'backward', 'archaic' and 'traditional' areas (e.g., [20,31,51]). This leads to unfavourable and disproportionately adverse effects on vulnerable people whose livelihoods are threatened by such investments, which, in turn, mobilises people to bring energy justice to their region [2,13,34].

We posit that internal colonialism is an appropriate theoretical framework with which to explore the ongoing cognitive injustices of low-carbon energy investments in the Global South [45,52]. The historical continuity [51,53] of social subordination and unequal conditions brought by internal colonialism are embedded in cognitive injustices among members of a society who do not recognise plurality and tolerance between elite groups and vulnerable people (e.g., [51,54]). Internal colonialism involves unequal or exploitative trade relations, either internationally or domestically [55]. This dynamic is rooted in historical structures of domination by elite groups over vulnerable groups, without their consent and often in response to their resistance both against and within these structures [31,56]. Such structures of domination include public and economic policies and development models that exclusively benefit elite groups or that deny and obscure the subject of vulnerable people's rights [52,54].

An important aspect of the dynamics of internal colonialism is economic transactions in which elite groups (firms or governments) use the logic of investments and payoffs to justify large-scale projects for economic development [4]. This logic has existed for a long time and is now applied to the emerging 'green growth' agenda that aims to fulfil countries' ambitions to transition to a low-carbon economy (e.g., [20,45,49]). The word 'transaction' has its Latin root in '*transactionem*', which describes an agreement or negotiated settlement [57]. However, transactions between vulnerable people and elite groups in low-carbon investments often trigger conflicts instead of settling them [3,57]. For private investors, the apparent goal of such investments is what they can obtain, not what they can give back (e.g., [47,56,58]). This has led to 'green land-grabbing' through unfair land-lease contracts developed under the rhetoric of energy transition, environmentalism or sustainable development [14,29,59]. These 'complicated micro-politics of land acquisition, conflict and unrest' [3] reveal a novel aspect of the cognitive injustices within internal colonialism [30,51], which we term 'transactional colonialism' herein. This concept allows us to combine the internal colonialism and energy justice frameworks to understand the transformation of classic European colonialism (e.g., [57]) into transactional colonialism because of unequal economic transactions and cognitive injustices towards indigenous people [3,22,23,29], which maintain old and create new mechanisms of domination and exploitation [4,46].

Section 3 explains the design of our longitudinal study to explore the impacts of wind energy investments and transactional colonialism in the Isthmus.

3. Material and methods

3.1. Study design

In this longitudinal research, we adopted a critical realism epistemology [60,61] based on multiple forms of data [62]. Critical qualitative inquiry scholars are united in the commitment to expose and critique the forms of inequality and injustices that operate in daily life [63], with the aim of helping people transcend and overcome injustices. Good critical social research focuses not only on 'worthy targets' of critique but also on things that may appear to be good or unproblematic but are much more constraining, repressive or thought-limiting in their effects [64].

Herein, we explore and analyse energy injustices in large-scale wind energy investments, paying particular attention to asymmetrical relations of power and 'taken-for-granted' assumptions and beliefs. In accordance with Charmaz's [65] claims that 'critical inquiry begins with conceptions of justice and injustice', we focus on vulnerable people affected by wind energy investments in the Isthmus by proposing socio-cognitive justice as a novel intellectual insight to draw attention to under-recognised aspects of indigenous people's knowledges within a political agenda of neoliberal green energy investments.

Over nine years, we critically analysed the extensive work on indigenous people's struggles over wind energy investments (e.g., [1–5]) to expand issues associated with repression and marginalisation in the Isthmus. At the same time, we were open to unexpected emerging issues leading to new insights into the extensive fieldwork developed in the region (e.g., [64,66]). This was achieved by identifying and challenging assumptions behind ordinary ways of perceiving, conceiving and acting and recognising the influence of history, culture and social positioning on beliefs and actions to explore and discuss assumptions and deeper social formations [67].

Qualitative data were collected through fieldwork, along with macroeconomic data on indigenous people and transactional agreements for wind farms in the Isthmus. The qualitative method design helped us identify and examine elite groups and vulnerable people involved in wind energy investments in the Isthmus to interpret the overall results (e.g., [61,62]). We were particularly interested in exploring how elite groups and vulnerable people construct their own realities of the positive effects and injustices of wind energy investments.

3.2. Sources of data

We adopted a purposeful sampling technique [62] by selecting elite groups and vulnerable people who were especially knowledgeable about or experienced in wind energy investments, land-lease negotiations and landowners in the Isthmus.

In 2013, the first author began selecting actors for interviews. A lack of access to 'exceptional' actors was a constraint in this research [61]. Initially, the contacted elite groups refrained from discussing wind energy investments in the Isthmus. This was due to different mobilisations of indigenous people in Mexico City at MNEs, governmental dependencies, and European embassies to protest a wind park named *Mareñas Renovables* [68]. Thus, we first conducted desk research based on secondary data. We systematically downloaded publicly available material for nine years (2013–2021). We download approximately 1) 250 newspaper articles written in Danish, Spanish and English, published in Denmark, Mexico and the United States, respectively; 2) 52 firms' annual reports, written in English and Spanish; and 3) international conventions and Mexican regulations, such as International Labour Organization (ILO) Convention 169 on 'free, prior and informed consent' (FPIC); the United Nations' (UN's) Guiding Principles on Business and Human Rights; the UN's Protect, Respect and Remedy Framework; Mexican Agrarian Law; legislation on Mexico's Climate Change and Energy Reform; and the Inter-American Development Bank's (IADB's) official reports on wind projects in Mexico. The purpose of our secondary data analysis was to i) identify and assess elite experts' frames on wind energy investment; ii) explore struggles and conflicts in the Isthmus and develop a broad understanding of the culture of mobilisation in the Isthmus; and iii) identify and assess the laws, regulations and conventions on renewable energy investments.

Instead of starting with traditional qualitative methods of data collection – interviews, focus groups and observations – the first author invited 'exceptional' actors to a public academic seminar on Mexico's energy reform at a business school to discuss wind investments in September 2013. The invited actors were 1) a corporate social responsibility (CSR) manager at a wind energy MNE to present the MNE's position towards business development and strategies in Latin America, particularly Mexico; 2) a representative from the Mexican government to present the approved energy reform; and 3) a non-governmental organisation (NGO) representative to present international conventions on indigenous peoples' human rights and consultation processes.

This approach enabled us to learn about MNEs' commitments towards low-carbon investments and their business models in Latin America, the Mexican government's position towards energy transition through renewable energy investments, and the emerging conflicts with indigenous people in relation to wind investments. Informal conversations with the speakers enabled the first author access to government and MNE representatives in Mexico with whom to follow up the outcomes of the seminar.

Vulnerable populations in the Isthmus – particularly Zapotec and Ikoot indigenous peoples – have been the subject of 'study' for generations. Indigenous peoples' fatigue of being 'studied' was an obstacle to accessing the organisers of protests against wind investments (e.g., [69]). The first author's Isthmus roots and family connections helped contact one of the organisers of a 'road trip' from the Isthmus to Mexico City to protest the *Mareñas Renovables* project. This made it possible to obtain contact details of a resistance group at San Mateo del Mar in the Isthmus. The first author explained the motivation of the research in 2013 regarding the emerging conflicts surrounding wind energy investments in the Isthmus. The resistance group agreed to meet with the first author in October 2013, which opened the door to fieldwork in the Isthmus.

The breakdown of interviewees is given in Table 2. The interview topics were as follows. For the Mexican and Danish government representatives, wind energy MNEs, and consultancy firms (33.31% of informants), the following topics were presented: motivation/challenges for investment in wind energy in the Isthmus; social programmes; relationships with government officials; and the perceptions of and comments on low-carbon public policy changes in Mexico. For indigenous people (61.40% of informants), the topics were as follows: public consultations; implications of wind energy on socio-economic activities (agriculture, fishing, etc.); conflicts within communities; and conflicts with MNEs and government representatives. We also interviewed members of NGOs (5.26% of informants), with whom we discussed the guidance and support given to indigenous people to make their voices heard at national and international forums. To supplement the interviews, focus groups were conducted with Zapotecs and Ikoots (see Table 3) to obtain in-depth accounts from different indigenous people of the reason for their protests and demands and to compare and contrast elite experts' motivations and justifications for wind energy investment in the Isthmus.

Participant observations were conducted to understand the indigenous peoples' rituals, daily life (e.g., market activities), and meetings and informal family discussions in relation to wind energy investments. Observations and informal conversations helped to understand indigenous peoples' work activities, such as creating decorations for festivities, embroidering clothes, fishing, farming and cooking food to sell in the market, in addition to religious rituals. These observations were undertaken to explore and understand indigenous people's roles and their interactions with nature and family members.

Despite our efforts to collect empirical material with a diverse range of actors, we used a local trilingual person to translate between the Spanish, Zapotec and Ikoot languages because we interviewed various Zapotec and Ikoot persons who did not speak Spanish. We considered the political changes in Mexico between 2018 and 2021 in relation to low-carbon investments, but we do not present a full discussion of these changes herein because the topic is beyond the scope of this study. These features might have weakened our interview process regarding capturing the meaning and interpretations of our interactions. Thus, our empirical material was complemented with secondary data.

Table 2
Respondents of interviews conducted between 2013 and 2021.

Respondents	No.	%
Indigenous people	35	61.40
Mexican government	11	19.30
Danish government	2	3.50
Wind energy MNEs	4	7.01
NGOs	3	5.26
Consultancy firms	2	3.50
Total	**57**	**100**

Table 3
Focus groups conducted between 2013 and 2017.

Respondents	No.	%
Communal Assembly at Juchitán (Zapotecs)	45	72.58
Communal Assembly at San Mateo del Mar (Ikoots)	17	27.42
Total	**62**	**100**

3.3. Data analysis

Data analysis was conducted continuously. The data from the academic seminar, desk research, interview transcripts, focus group transcripts, and observation notes were stored electronically using NVivo 11 (qualitative software). The initial topics identified in 2013 were used to design protocols for further data collection. We triangulated the data with previous research concerning the Isthmus's indigenous people (e.g., [2,4,16,70,71]) and secondary data to compare, contrast and complement the informants' inputs. This process helped us develop a broader understanding of wind farms in the Isthmus and identify new insights and categories that emerged during the study.

In accordance with our critical realism epistemology, we critically analysed the realities of elite groups and vulnerable people. This process allowed us to redefine our initial understanding of elite groups, as presented in Appendix A. Critical realism helped us interpret the tenets of energy justice in relation to indigenous peoples' own experiences of wind energy investments in their territories through a critical realism epistemology approach [61,64,66]. In the subsequent analysis of the empirical material, we were attentive to potential environmental and energy challenges in wind investments in the socio-political context of vulnerable groups in the Isthmus, which significantly differs from that of redefined elite groups. We also focused on the strategies used by elite groups to plan, promote and implement wind energy investment policies in the Isthmus. Based on our systematically organised empirical material, we also analysed the following: 1) statements regarding the societal context in the Isthmus; 2) statements regarding low-carbon public policies in Mexico; and 3) statements regarding injustices in the development and operation of wind farms in the Isthmus. Our analysis and interpretation of the empirical material built upon a theoretically informed understanding of the dimensions of energy justice frameworks and internal colonialism.

Section 4 presents our findings. First, we present the heterogeneity found in the Isthmus in terms of indigenous people. Then, we elaborate on the energy transition in Mexico, particularly regarding wind energy investments in the Isthmus, and discuss arguments in relation to energy justice, reflecting on internal and transactional colonialism.

4. Findings

4.1. The Isthmus of Tehuantepec

The Isthmus has been a geopolitical territory since colonial times owing to its physical geography and potential to connect the Atlantic and Pacific Oceans (see Fig. 1 [72]). It is an important multicultural territory in Mexico inhabited by multiple indigenous peoples (Ikoots, Zapotecs, Zoques and Chontals). There is a rich and diverse cultural heritage within these indigenous communities and a strong social life and culture, with each group expressing their own indigenous languages, clothes, festivities and food, among other features, to this day. Fishing, agriculture, cattle raising, and commerce are the main activities in this territory (Observations).

The Isthmus is one of the poorest regions in Mexico and Latin

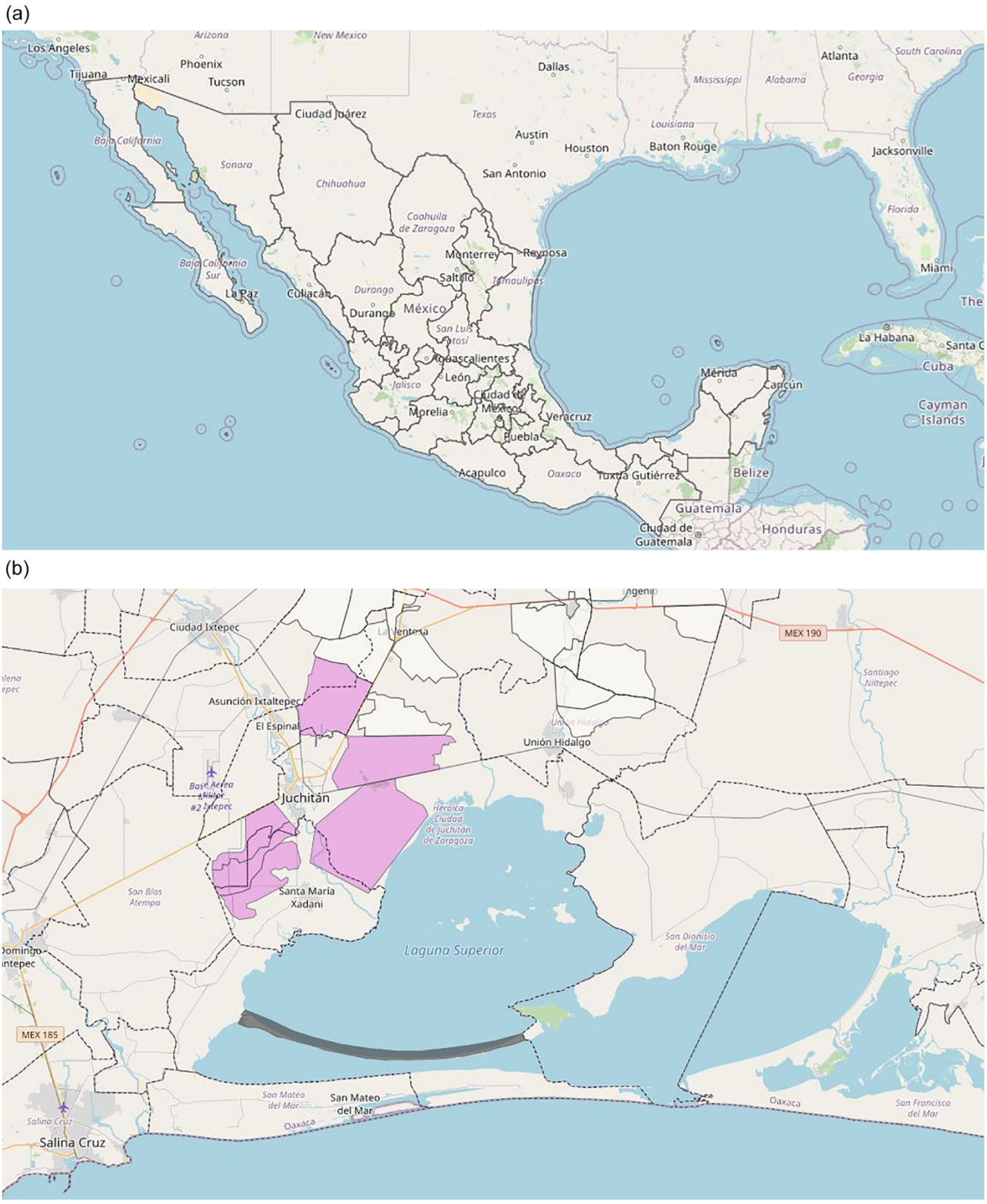

Fig. 1. (a) Mexico, (b) Istmus region. Maps downloaded from [73]. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

America, with low formal education rates according to the Mexican Secretary of Education and limited infrastructure (see Table 4) [74–76]. The leading municipality is called '*Heroica Juchitán de Zaragoza*', or 'the Heroic City of Juchitán de Zaragoza'. This adjective – heroic – encompasses the Zapotecs' inherited rebelliousness and hatred of subjugation [70]. Since the era of European colonialism, inhabitants of the Isthmus have mobilised to achieve justice for their social, economic and ecological well-being [6,46,71,77]. After the Mexican Revolution in

Table 4
Sociodemographics (as of 2015) of municipalities and towns in the Isthmus where fieldwork was conducted (2013–2019).

Town/Municipality	Population [76]	Area (km^2) [76]	Electricity[a] [75]	Solar[b] [75]	Piped water [75]	Drains [75]	Internet[75]	Basic education[c] [76]	Indigenous language[d] [76]	Spanish illiteracy[e] [76]
Juchitán[f]	98 043	1142	99.5%	0.1%	63.0%	98.7%	19.8%	51.2%	57.49%	5.51%
San Mateo del Mar	14 835	75.2	83.2%	0.0%	35.5%	62.0%	1.8%	61.6%	97.62%	18.72%
Santa María Xadani	8 795	89.3	98.4%	0.0%	10.7%	95.3%	5.5%	65.4%	94.90%	21.33%
El Espinal	8 575	82.9	98.7%	0.3%	81.7%	98.4%	35.9%	39.0%	35.64%	0.38%
San Dionisio del Mar	5 127	237.3	96.2%	0.1%	9.1%	75.4%	1.7%	65.2%	46.92%	0.31%
San Francisco del Mar	7 650	400.6	95.0%	0.1%	24.9%	92.5%	1.3%	63.7%	19.53%	0.14%

Source: Data from Refs. [75,76] as indicated in the column headings.
Notes:
[a] Percent of households with access to electricity.
[b] Percent of households with access to solar energy.
[c] Percent of 15-year-olds in education.
[d] Percent of population that speaks local indigenous language(s).
[e] Percent of population that does not speak Spanish.
[f] Heroica Ciudad de Juchitán de Zaragoza.

1917, they continued to resist the hegemony of national cultural domination by the federal government by maintaining their indigenous traditions, including their language, festivities, clothes and food. Indigenous people's culture of mobilisation to achieve justice has continued through legal instruments that recognise their social and economic rights [71,78].

The Isthmus has a long history (prior to European colonisation of Mexico) of inter-ethnic and territorial conflicts. Land speculation and recurrent land disputes have permeated the Isthmus region for centuries [6,11,13]. Before the Mexican Revolution (1910–1917) and after the Mexican Agrarian Reform (1915), land disputes emerged from conflicts over the *ejidal* (communal assets) of Juchitán, with two factions clashing over whether to privatise land or to preserve collective property [6,14,15,79]. In this research, we critically discuss these conflicts among two indigenous communities: Zapotecs and Ikoots.

The internal dynamics between Zapotecs and Ikoots are complex. The Ikoots form an important indigenous population of the Isthmus. San Mateo del Mar (see Fig. 1(b)) leads the municipality. Ikoots live near the coast of the Gulf of Tehuantepec, around *Laguna Superior* (Upper Lagoon) and in the cities of San Mateo del Mar, San Dionisio and Álvaro Obregón.

The Ikoots have traditionally been discriminated against by the Zapotecs. Many of the names by which the Ikoots are known are derogative terms coined by Zapotecs. For example, '*Huaves*' translates as 'people rotting in humidity' [80], while '*Mareños*' or '*Mareñitos*' refers to 'people who live close to the sea' (Interviews), based on the Ikoots' economic livelihoods of collecting crustaceans and molluscs, fishing, commercialisation of surpluses, and transporting goods [11]. In this research, we use the indigenous term 'Ikoot' rather than the Zapotecs' internal colonisation terms '*Huave*'/'*Mareños*'. An Ikoot resident of San Mateo del Mar commented on this issue:

> 'We [the Ikoots] were the first residents of the area where Juchitán is located, but the Zapotecs expelled us, forcing us to move towards the sea [the Gulf of Tehuantepec]. We still have land disputes with the Zapotecs. This might be the why they call us "Huaves"'. (Interview in 2013 – Ikoot fisherman at San Mateo del Mar)

The Ikoot people share the Zapotecs' cultural traditions of mobilisation and resistance, which are argued to have emerged from the '*zapotequización*' (*Zapotecisation*) of the Isthmus. *Zapotecisation* entails a myth of superiority and stigmatisation of the Ikoots' inferiority [11], supported by a set of values, beliefs, prejudices and convictions that the Zapotecs have created, recreated, shared and transmitted among themselves. *Zapotecisation* has formed organisational and strategic repertoires of civil society [81]. Such repertoires, which can be violent and/or contentious, have been used to defend the community's territories from foreigners and natives in its continuous resistance to colonisation.

Zapotecisation illustrates the internal colonisation that exists within indigenous communities of the Isthmus. For example, old inter-ethnic elites – descendants of marriage alliances between Ikoot and Zapotec nobility during the pre-Hispanic period (between the second half of the 18th century and first half of the 20th century) towards new 'bourgeois elites' – and the business opportunities of rural elites multiply with the new rural–urban elite [82]. Over time, the Ikoots' borders and land have been apportioned to agriculture and livestock due to constant pressure from the Zapotecs, Spaniards, *mestizos* and other foreigners, which has increasingly reduced the extension of their lands. Zapotec colonisation throughout the 19th and 20th centuries deepened the unequal exchange between Ikoots' produce from the sea and Zapotec intermediaries' agricultural and other products. This internal colonialism has led to a continuous expansion of Juchitán's area of influence, with enclaves at the local level and a periphery that corresponds to non-Zapotec ethnic groups [11]. The populations of the cities Tehuantepec and Juchitán have urban characteristics, and the Zapotec urban elites from these cities exercised dominion over other ethnic groups in the region [11]. Over the

years, Zapotec inhabitants of Juchitán have changed the municipality into an artisan-focused and commercial city, driven by large-scale infrastructure 'development' in the region, such as the Trans-Isthmic railway and Pan-American road to connect the Isthmus with the State Capital City of Oaxaca (e.g., [13]). In Section 4.2, we present Mexico's recognition of indigenous people in different international conventions and agreements.

4.2. Mexico's commitments to respect of indigenous people

Mexico ratified ILO Convention 169 in 1990, which stipulates principles for public consultations with indigenous people [41], and ratified the UN's Declaration on the Rights of Indigenous Peoples in 2007 [83]. Additionally, Mexico has been a member of the Organisation for Economic Co-operation and Development (OECD) since 1994 and an adherent country of the OECD's Declaration and Decisions on International Investment and Multinational Enterprises. The OECD's declaration provides an open and transparent environment for international investment and encourages the positive contribution of multinational enterprises to economic and social progress [84]. However, wind energy investments in Mexico have traditionally been implemented without proper adherence to the statutes of Convention 169 and framed as 'the cost of development' (Interview in 2017 – member of UN Working Group on Human Rights). We elaborate on Mexico's neoliberal green economy in Appendix C. Section 4.3 presents socio-economic constraints for the implementation of neoliberal green policies in the Isthmus.

4.3. The Isthmus of Tehuantepec and wind energy investments

The Zapotec and Ikoot communities' visions of development are based on their knowledge, awareness and pride in their history of the struggle to gain respect for their right to self-determination (Focus Groups in San Mateo del Mar and Juchitán, 2013 & 2017).

Resistance and mobilisations against wind projects have involved different strategies according to the context of each community and the nature of each project [14,15,79]. The well-documented wind project named *Mareñas Renovables* planned to install 132 wind turbines in the Ikoots' territory (e.g., [85,86]). The Ikoots and Zapotecs joined forces to protest the project, with roadblocks, caravans from the Isthmus to Mexico City, and social media complaints and debates (Facebook, Blogs). They presented a discourse of wind energy as a form of colonisation of their territories (Interviews, Secondary Data). This observation is similar to that presented in previous work (e.g., [69,87]). The *Mareñas Renovables* project was cancelled in 2013. However, it went ahead in 2017 in Zapotec territory following a name change to *Eólicas del Sur* (notes from fieldwork). The Ikoots' achievement in cancelling the *Mareñas Renovables* project in their territories was in part due to alliances made with Zapotecs. As Zapotecs and Ikoots explained:

> '…past disputes between Ikoots and Zapotecs were [temporarily] forgotten, as by the time the Mareña Renovables project was intended to be built, the Zapotecs had entered into an alliance with the Ikoots to oppose the project'. (Interviews and Focus Groups in 2013 – Communal Assembly in Juchitán)

An Ikoot resident of San Mateo del Mar further explained:

> 'The Zapotecs wanted to share their experiences with regard to the 16 wind parks already operating in their territories. They [Zapotecs] wanted to prevent us [Ikoots] from making the same mistakes that they made'. (Interview in 2013 – Ikoot resident of San Mateo del Mar, Oaxaca)

The main causes of the conflict that led to resistance and mobilisation against the *Mareñas Renovables* project were based on imposition, a lack of recognition, and a lack of consensus [81]. There were two main micro sources of conflict. The first was the lack of information. As an Ikoot narrated,

> 'One day we heard unexpected explosions in the lagoon… later we discovered that a firm was building a wind park. Some residents at Álvaro Obregón commented that engineers intended to drive trucks from the town of Álvaro Obregón to the Barra Santa Teresa Key located between Laguna Superior and Laguna Inferior in the Municipality of San Dionisio del Mar. We [Ikoots] didn't know about it, no one asked us, we were taken by surprise…' (Interview in 2013 – Ikoot resident of San Mateo del Mar, Oaxaca)

The second micro source of conflict was fear over how the project would affect their environment and lifestyle. During fieldwork in 2013, two Ikoot fishermen at *Laguna Inferior* explained their work and the importance of protecting the *Barra Santa Teresa* key. They demonstrated the shelters (see Fig. 2) they built to protect themselves against intense wind. San Mateo del Mar has exceptional wind resource potential; it is estimated to have Class 7 + wind resources, with a measured wind power density of greater than 800 W/m^2 at 50 m [1]. The fishermen discussed the importance of the lagoon and of the landscape of the key to their fishing activities. One commented,

> 'If they remove the trees at the Barra Santa Teresa Key to install wind turbines, we will have no more leaves to feed the shrimps that we catch here…so no work, and no food in the future'. (Interview in 2013 – Ikoot fisherman)

Ikoots opposed the *Mareña Renovables* project as it goes against their worldviews. They felt it would ruin their livelihoods, as happened to the Zapotecs living in Juchitán. An Ikoot fisherman explained,

> 'We have a particular way of fishing – we walk through the shallow water, and do not use motorised boats. The Zapotecs claim that wind turbines drip oil and kill birds. We don't want such damage to our livelihoods'. (Interview in 2013 – Ikoot fisherman)

Zanotello and Talle's [17] research at San Mateo del Mar analysed the Ikoot concept of '*monapakiiy*', which loosely equates to 'sustainability'. It can be translated as '*be well in all,* e.g., *health and life*' (WhatsApp communication in 2021 – Ikoot from San Mateo del Mar). We interpret this concept as the balance between meteorological, human and non-human, and water and wind agents that must be preserved at all costs [17]. The acknowledgement of indigenous traditions and work life are key elements for the survival of Isthmus communities' worldviews. This is particularly important for large-scale investments that might influence indigenous peoples' lifestyles, such as wind farms. Zanotello and Talle [17] suggest that 'the possibility of reproducing the lagoons, the fish, the shrimps, the harvest – in one word life – depends on the balancing of these forces'. In other words, indigenous knowledges in

Fig. 2. Fishmen at *Laguna Inferior* (Lower Lagoon), close to San Mateo del Mar. Photograph taken by the first author during fieldwork in 2013.

relation to the wind, sea, lagoon and environment are important.

The successful rejection and relocation of the *Eolicas del Sur* project was caused by the mobilisation and sharing of information among indigenous people and inter-ethnic relationships in the Isthmus region. Zapotecs and Ikoots speak different indigenous languages and have different traditions, such as the methods of fishing (see [17]). However, they share a sense of 'superethnicity' [81]; they are proud of of their culture, traditions, food, nature, the sea, and repertoire of resistance [11]. It could be argued that Zapotecs and Ikoots' repertoires are (re) activated, (re)interpreted and (re)functionalised in the course of conflict derived from the implementation of wind farms [81]. However, this can be seen as the power of *Zapotecisation* of the region. Among the different territorial conflicts, the Zapotec–Ikoot territorial conflict is relevant in relation to wind energy, given the continuity of internal colonialism among indigenous people, as elaborated in Section 4.4.

4.4. Internal colonialism within indigenous people

Although Ikoots and Zapotecs have developed alliances, land disputes over wind energy projects continue to divide indigenous people in the Isthmus (e.g., [64]). In 2020, a Zapotec resident of Álvaro Obregón explained divisions in the Isthmus:

> '…we have three groups in the Isthmus: Anti-eólicos (anti-wind energy), pro-eólicos (pro-wind energy), and a group of people who appear to be indifferent but follow either anti or pro groups according to immediate circumstances'. (Interview in 2020 – Zapotec resident in Álvaro Obregón, via WhatsApp)

Previous work suggests that indigenous peoples' conflicts and divisions are instigated by three causes: 1) Opposition due to worldview; 2) Pragmatic – negotiators creating conflict as a negotiation strategy; and 3) Collaboration – willing to collaborate and be partners in large-scale energy projects [88]. Simple categorisations – *anti-eólicos*, *pro-eólicos*, 'indifferent' – may help to illuminate social problems; however, they may also 'freeze' our understanding of indigenous peoples' divisions in fixed categories [64]. The freezing of social categories may constrain our ability to understand the dynamics and worldviews of indigenous people. A representative from an NGO elaborated on such categorisation:

> 'Our organisation opposes the concept of anti-eólicos leaders, which is based on the counter-narrative of corporate power interests. People who have chosen to protect their land and territory face a hostile environment because of those concepts. Under international human rights law, as well as Mexican anti-discrimination legislation, the word "anti-eólico" is discriminatory' [89].

In order to contextualise wind energy investments, it is necessary to situate indigenous people's categorisation and conflicts in the Isthmus in relation to land speculation, landholding schemes, large-scale 'development' projects and land politics. Land politics within and across indigenous communities have been shaped by different presidential decrees (1962, 1964 and 1966) and the 1992 reform of Article 27 of the Mexican Constitution [6,14,15,90–92]. These concerns are discussed in Appendix D, which presents a brief account of landholding features and conflicts in the Isthmus to situate the *anti-/pro-eólicos/*'indifferent' categorisation in wind energy investments.

In our critical analysis, this categorisation (*anti-/pro-eólicos/*'indifferent') evolved through our reflection on internal colonialism theory and research such as *Zapotecisation* [81] in the context of wind energy. Zapotecisation suggests a continuum of domination and exploitation in the Isthmus. We categorised indigenous people who opposed wind energy investments on economic grounds and supported private land ownership in contrast to community ownership as 'indigenous *pragmatic negotiators*' [15,88]; and those who opposed wind energy on the basis of defending their land and basic principles of human rights, such as access to consultation and worldviews of communal land, as 'indigenous *activists*'.

Zapotecs' grassroots organisations, which have mastered the art of mobilising and bringing legal disputes over their rights since the late 1970 s, have been 'romanticised' by MNE representatives and NGOs. Organisations such as the anti-capitalism *Asamblea de Pueblos del Istmo en Defensa de la Tierra y el Territorio* (APIIDTT) [Assembly of the Peoples of the Isthmus in Defence of Land and Territory] based in Juchitán and *#DefensorES – Mujeres y hombres la voz de la tierra* [Women and men the voice of the earth], have sent a powerful message both within Mexico and internationally against a new wave of 'European colonisation' (Focus Groups in 2013 – APIIDTT member). Indigenous people use several platforms of mobilisation as well as social media (Blogs, Facebook, Twitter and Webinars) to integrate their knowledge to discuss and denounce wind energy colonisation in their territories (e.g., [93,94]). However, romanticizing grassroots organisations in the Isthmus appears to have two implications. This portrayal reveals that '*…their* [anti-eólicos'] *protest is against the* [Mexican] *government…they take our investments in wind energy as a 'pretext' to show their frustrations…*' (Interview in 2019 – Sustainability Manager at a Mexican Multinational firm). The individual farmers who sought to annul rental contracts previously signed through intermediaries for the power companies present their accusations in the narratives of economic imperialism by foreign investors (e.g., [3,4,46,56]).

There is a continuation of internal colonialism among indigenous people in the Isthmus. Zapotecs are well known for their powerful oral communication to diverse audiences. Human rights defenders such as the APIIDTT leader, a self-identified *anti-eólicos*, have been key figures in Mexico and internationally in defence of the Zapotecs territory. The leader stated, '*We do not want any negotiation or contact with firms. We just want to stop more wind energy investment in our territories*' (Declaration – Zapotec leader at the UN Forum on Business and Human Rights in Geneva, 2016). However, a different perception is seen within Zapotec communities, as commented by a resident of Huamúchil, a town 47 km from Juchitán:

> '…Yes, [that leader] sent her people [anti-eólicos] to "direct" us in a public consultation [for a wind energy project] that was taking place in San Dionisio del Mar [approximately 14 km from Huamúchil], but we don't want to get involved with "those" people… We are suspicious about their intentions'. (Interview in 2017 – Resident of Huamúchil, Oaxaca)

The group of indigenous people who defend their worldviews of communal land and rights have another approach to wind projects. For example, in Unión Hidalgo (21.8 km from Juchitán), a group of indigenous people stood for their rights against *Électricité de France's* (EDF) wind project named *Gunaa Sicarú* [89,95]:

> '…they [indigenous communities] tried to begin a dialogue with EDF through the national contact point procedure. They did not oppose the project outright, but wanted the project to be smaller, to enable them to still be and work as a community… However, [EDF] did not want to listen to the communities, and tried to proceed without the consent of the community [89].'

The *Gunaa Sicarú* project is currently suspended and on trial at the Court in Paris under the French Duty to Watch Act. A group of NGOs led by Mexican NGO ProDESC demanded that EDF employ its full potential as a preventive mechanism, taking a human rights-based approach with a gender and intersectional perspective [96]. The communities in Unión Hidalgo try to communicate with corporations because they know that there is a power imbalance in green energy investments, and they know that litigation will be very hard and expensive for them [89].

The self-identified *anti-eólicos* interviewed here are heterogeneous indigenous people who tend to be united by their discontent with the processes by which land-leasing contracts were negotiated (see Section

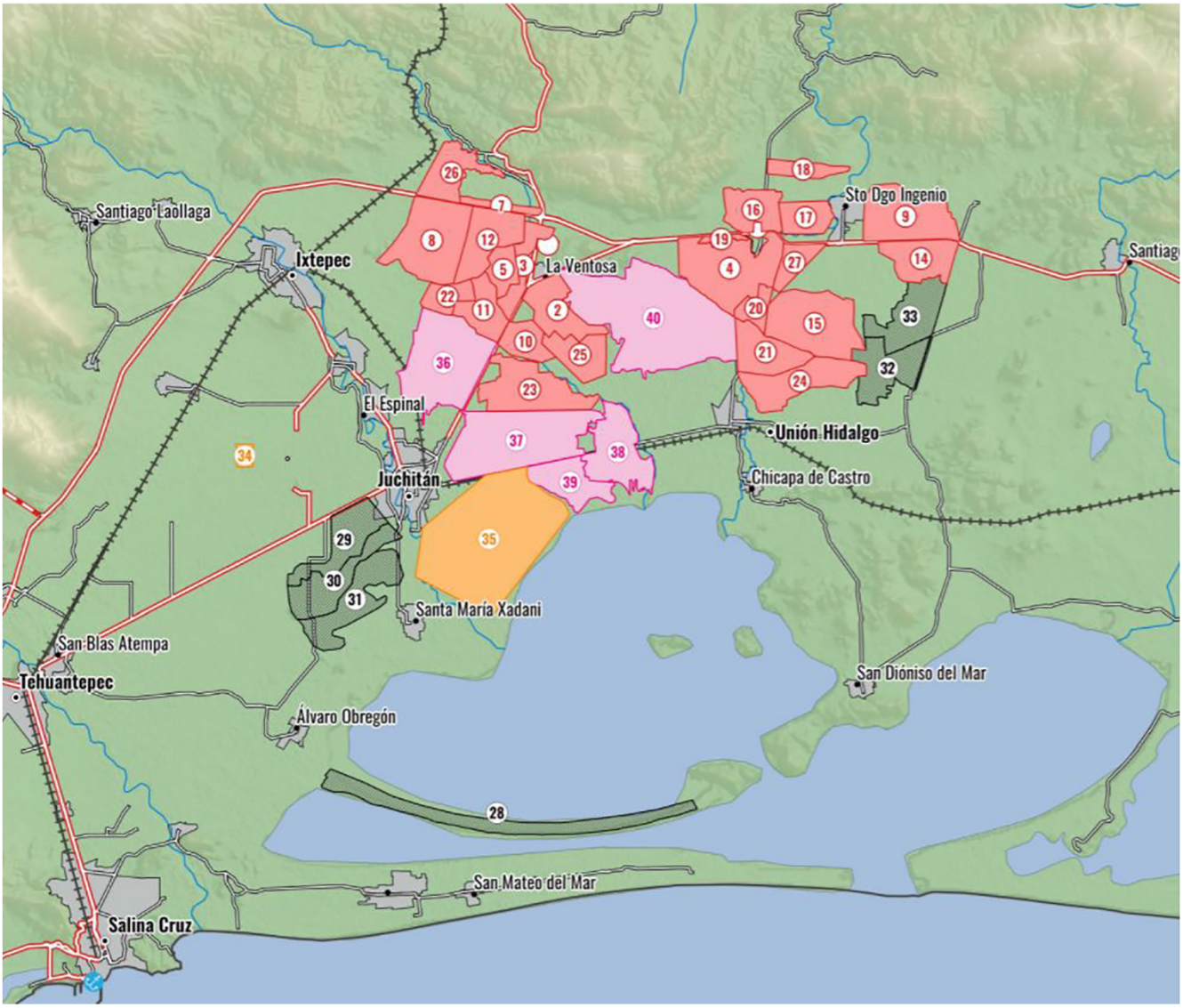

Fig. 3. Wind parks in the Isthmus region in 2017. Map downloaded from [99].

4.5), the impacts on their work lives, and geographical changes in their territories (Interviews in 2013 – Juchitán). Nevertheless, there is vast heterogeneity in the motivations of different wind opponents; for example, indigenous *pragmatic negotiators* seek economic gain, while indigenous *activists* seek to defend indigenous rights that are already established in the current national and international laws. At the same time, these indigenous *activists* may aspire to wind energy investments that respect their community land. The heterogeneity of wind opponents' motivations suggests another layer to internal colonialism that is rarely critically discussed in business and human rights research.

The Zapotec and Ikoot communities' visions of community land are based on their knowledges, awareness and pride in their history of the struggle to gain respect for their right to self-determination (Focus Groups in San Mateo del Mar and Juchitán, 2013 & 2019). Our observations reaffirmed the narratives of scholars and indigenous people in the Isthmus beyond concerns over the respect of sacred sites to indigenous people's rights, regional development, and access to education, health and electricity (e.g., [4,45,70,71]). These concerns are elaborated in Section 4.5.

4.5. Socio-economic conflicts

Table 4 presents the lack of basic infrastructure and education in the Isthmus. The wind farms in the Isthmus (see Fig. 3) illustrate how the neoliberal green economy materialises and alters the geographical spaces of indigenous people and other communities (Fieldwork – visits outside wind parks). Both public and private institutional actors view wind, and the territories it passes through, as a quantifiable resource that can be converted into money [85]. The peculiarity of new goods in a neoliberal economy is that they concurrently take on the function of new exchange values. This also applies in the case of wind: it is a material good that can be converted, through industrial processes, into a commodity (energy) that can be bought and sold [97]. However, it is also a medium of financial exchange through an emerging international system of free carbon market emissions. The outcome is 'financialisation of the landscape' [85].

Fig. 3 presents a map of the wind parks in the Isthmus as of 2017, including those that were planned, cancelled and under construction. In 2020, there were 32 wind parks in operation, one under construction and six cancelled [9,100]. Each of the 32 operating wind parks has its own history and issues that are not possible to discuss in detail in this research. Wind parks are diverse, with a wide range of areas, including

communal and private land; wind developers; numbers of turbines; and energy production capacities [100]. This diversity has led to socio-economic conflicts within indigenous communities. The sources of conflicts are exposed in public consultations, in which some groups refuse to participate (Interviews in 2017 – APIIDTT member). Furthermore, many public consultations in the Isthmus failed to meet the principles of FPIC, in which indigenous people are well versed [101]. For example, a member of the communal assembly APIIDTT commented:

> 'How can consultation be free or prior, when the government and firms negotiate wind investments before asking us…and then firms negotiate individually with landowners…' (Interview in 2017 – APIIDTT member in Juchitán)

Our critical analysis of wind opponents suggests another layer in the heterogeneity and diverse agendas among this group. There is an understanding in the Isthmus that government representatives and MNEs hire intermediaries known as '*coyotes*' or land-leasing 'guides', either natives or outsiders from the Isthmus, who enter negotiations to reserve or secure land for wind projects. As explained by a resident in Juchitán:

> '"Coyotes" look for land for potential wind farms. They function as real estate agents, acting as intermediaries between small landowners and companies or project developers, and make money through commission paid by wind developers for each land-leasing contract'. (Interview in 2017 – Zapotec resident in Juchitán)

Coyotes use money to convince landowners to sign contracts. Some landowners do not speak Spanish well and cannot understand the contracts or the consequences of signing them [15,102]. The wind that passes through the Isthmus represents a 'new currency'; rather than being an intangible resource, wind can be quantified by converting it into money [85]. In such transactions, wind energy developers appear 'unaware' of the local conditions and do not recognise indigenous people's traditions and customs for trade and negotiation. The involvement of government officials, wind developers, and *coyotes* with opponents and supporters of wind energy derives complex relationships in the Isthmus, as explained by different observers:

> '…wind projects could be a detonation of the economy in the region, but as always elites have benefitted by robbing vulnerable indigenous people who own land, who benefit least. A detestable combination of abuse against ignorance led [a wind energy] project to an unfortunate struggle of ambitions of leaders in favour and leaders against, who in the end only seek to benefit through lies and simulations… Landowners must negotiate with representatives who truly seek benefit for all, and companies must avoid coyotes that only create problems… Negotiating in goodwill can solve the infinite problems of the Isthmus, without anyone trying to abuse the other. There are many "anti-eólicos" who have nothing to do with the region and who do not have land … but they [fight for] their cause, generating conflicts that are later negotiated under the table at a very good price, without benefits to those who do own land and, in most cases, want to participate and receive benefits' [103].

After more than 25 years of wind energy investment in the region, indigenous *pragmatic negotiators* [14,15,88] are demanding that land-leasing contracts previously signed with wind energy firms and/or wind developers should be cancelled. A Zapotec commented:

> *'We hope that AMLO's* [Andrés Manuel Lopez Obrador – Mexican President] *electrical counter-reform… will help to negotiate better deals with wind energy consortiums'.* (WhatsApp conversation in 2021 – Zapotec resident in Álvaro Obregón)

In addition, there are various unregulated land-leasing schemes (Focus Groups at Juchitán, 2017). Torres Contreras [14,104] suggests four schemes for land leasing and compensation: 1) the right of wind – this payment is a guarantee that the land is 'reserved' by a wind energy developer and is fixed in the contract; 2) payment for infrastructure – this payment is for the locations at which roads and infrastructure are built; 3) payment for windmills – this payment depends on the turbines' location and capacity; and 4) payment for externalities – this payment serves as compensation for problems caused by wind energy infrastructure (e.g., oil spills, floods, uneven terrain) [14,104]. Table 5 presents examples of land-lease payments 'negotiated' between developers and indigenous people.

There is further diversity in the way in which discussions about building wind parks are conducted, with negotiations held in public consultations and privately with landowners and *caciques* (indigenous chiefs). The unregulated land-leasing schemes create secrecy between indigenous people in the Isthmus and wind developers regarding payment negotiations. This secrecy prevented us from verifying the figures with contract holders; therefore, the figures presented in Table 5 should be treated with caution.

Caciques are important figures in the 'micro dynamics' of land-leasing negotiations and transactions in both closed-door and public consultations in the Isthmus (Focus Groups at San Mateo del Mar 2013). There is diversity in the way discussions about wind parks are conducted, with negotiations held in public consultations, privately with landowners, or privately with *caciques*. As presented earlier, the Ikoots and Zapotecs worked together to successfully reject the initial plans for the *Mareñas Renovables* (*Eólicas del Sur*) project. After rebranding, the *Eólicas del Sur* wind project was the first to hold public consultations in 2014–2015, at which the firm presented the payments shown in Table 5 [106]. The territory in which *Eólicas del Sur* operates is owned by 182 landowners. The landowners initially established one committee to 'negotiate' payments and compensation. However, internal conflicts among Zapotecs resulted in dissolution of the committee, with two groups reforming separate committees. The *caciques* that represented

Table 5
Payments for leasing land to wind energy developers.

Project or firm	Area (ha)	Type of contract	Payment terms	Payment[a] (Mexican pesos)	US$ equivalent
Eurus wind farm [104]	**40**	Right of wind	Annual	320 000	13 335
La Venta II [104,105]	**2088**	Right of wind	Annual	1000	41
		Construction	Annual	13 100	542
		Infrastructure	Annual	8000–18 800	331–778
Eólicas del Sur [105,106]	**4700**	Right of wind	One-off	27.72 million	1.38 million
		Construction	Annual	25 million	1.245 million
		Infrastructure	Annual	45 million	2.24 million
Iberdrola, Grupo México [104,105]	**276**	Infrastructure	Annual	440 000	21 700

Source: Secondary data and interviews.
Notes:
[a] Based on secondary documents (e.g., [14,104,107–110]) and interviews (2015, 2017).

Fig. 4. Protest against the Eólicas del Sur wind farm, at the height of the COVID-19 pandemic, November 2020. Picture taken by Diana Manzo in November 2020, permission to reprint granted.

the two committees negotiated different payments and impact compensations for the landowners and Zapotecs that live in Juchitán and El Espinal. For example, all *Juchitecos* (people of Juchitán) receive a $26.10 Mexican peso (US$1.30) discount on their electricity bill. This payment was negotiated at the public consultations in Juchitán in 2014–2015. However, this discount is not applicable to other municipalities in the Isthmus.

Table 5 presents the discrepancies in payments for land and wind rights. Other examples were discussed in the focus groups, which suggested that the payments range from MXN$16 thousand (US$798) to MXN$2 million (US$99 thousand) annually. A landowner in Juchitán commented,

> '…when the wind farms reached La Ventosa [a town in the Isthmus], one landowner agreed to rent his land… In a year, he receives about MXN$8.3 million [US$400 thousand]. On the other hand, another landowner also rented her land, but there were no turbines. Just for the right of wind, she receives MXN$1 million [US$52 thousand] a year, distributed quarterly' [104].

Unregulated land leasing and secrecy in payment negotiations illustrate the 'micro dynamics' of transactional colonialism in the Isthmus. In such contexts, elite groups – including elite indigenous people – appear to underestimate more than 25 years of social unrest due to wind investments that continue in 2021 (Fig. 4) [14,15,93,94,99], and they fail to understand indigenous people's life-worlds and socio-economic needs (see Table 2). Neoliberal green investments have intensified displacement and conflict among indigenous people and changed the sense of community in the Isthmus.

The economic benefits of transactional relationships with elite groups have encouraged the leasing of indigenous land. Nevertheless, an assembly member in Juchitán commented that the indigenous communities '*have been fragmented by money*' (Interview in 2017 – Juchitán). Similarly, a member of the resistance group in San Mateo del Mar stated that firms are '*going to kill our communities because of the divisions emerging in our region*' (Interview in 2017 – San Mateo del Mar). There are profound complexities and tensions regarding the distributional and procedural energy injustices that threaten the traditions of vulnerable people in the Isthmus.

Nonmonetary compensation is also negotiated differently in the Isthmus (focus groups). MNEs develop CSR activities that seek 'engagement' with local communities (e.g., sponsoring equipment for local schools and uniforms for local sports clubs, food coupons and payment of medical treatment). These CSR 'investments' appear to function as instruments to educate local communities on renewable energy. MNEs have organised public events to present and discuss the 'myths and realities' of wind energy. These events aim to modernise local communities' retrograde visions of wind energy. However, indigenous people claim that wind energy investors have an imperialist agenda:

> '…here comes the discourse [from MNEs] that, yes, in the future, wind energy helps the planet. However, foreign companies come with their double agenda, which is truly an imperialist agenda'. (Interview in 2017 – Zapotec in Juchitán)

Indigenous *activists* – defenders of indigenous rights – are not against the production of energy from renewable sources, but they reject the use of wind energy that '*favour[s] the mere profit of companies and detriment [s] the peoples and their biocultural heritage*' (Interview in 2019 – Zapotec resident of Huamúchil, 2019).

Wind energy investments in Mexico reflect the historical continuity of colonialist patterns in transactional colonialism among elite groups vs. vulnerable people, as reflected in their different visions of the tenets of energy justice. The conflict around wind farms cannot be reduced to a process of negotiation or appropriation of resources; rather, it involves an entire form of life. These arguments are discussed in Section 5.

5. Discussion

In the rush to provide all individuals with safe, affordable and sustainable energy [38], governments and firms have promoted and invested in large-scale low-carbon energy systems, where externalities to vulnerable people are overlooked [93,94,99,100,104–106,111]. Large-scale wind farms in the Isthmus illustrate the continuity of colonialist injustices in the Global South. We posit that the dynamics of energy injustices between elite groups and vulnerable people evolve at a macro level, whereby the conception and implementation of low-carbon energy systems by elite groups fail to consider the participation of vulnerable people, and on a micro level, whereby 'negotiated' payments

overlook indigenous peoples' knowledges and lifestyles. We propose that the socio-cognitive elements of internal colonialism advance our understanding of the dynamics in the 'three-legged' framework of energy justice (e.g., [2,18,22,30]).

Energy injustices and internal colonialism entwine in the context of this research as transactional colonialism, which is embedded in the cognitive injustices that have marred wind energy investments in the Isthmus. We posit that the competing knowledges and realities in relation to the positive impacts and injustices derived from wind energy illustrate the historical continuity of intolerance, discrimination and oppression conceptualised as internal colonialism in Mexico (e.g., [26,31,45]). We observe different forms of continuity of internal colonialism that are 'coproduced' at different levels and enacted by privileged (elites) as well as non-privileged (vulnerable) people. Of course, many people fall outside the superficial *pro-/anti-eólicos/*'indifferent' categorisation, which is a consequence of the way in which wind projects have been implemented. This indicates that the broad orientations of a green neoliberal economy are part of the transactional colonialism proposed in this research. We contend that conflicts over wind turbines are not just about negotiations or the appropriation of resources; they are about a way of life with respect to indigenous people's rights.

The green neoliberal economy suggests energy injustices in which wind, an intangible good, is converted via wind turbines into a commodity (energy) that can be bought and sold. At the same time, wind has become a medium of financial exchange through an emerging international system of free market carbon emissions. As suggested by Zanotello and Talle [17], the final effect is 'financialisation of the landscape'. However, political changes in Mexico since 2018 appear to have altered elite groups (private sector and federal government) internally because the current federal administration has sent strong signals to deprioritise low-carbon investments, such as cancelling public auctions and implementing a counter-energy reform (see Appendix C) [112,113].

In this research, we aimed to build upon cognitive justice and internal colonialism frameworks to advance our understanding of energy justice. We postulate that elite groups that also integrate landowners, *caciques* and *coyotes* have a deeply economic rationale that results in injustices towards vulnerable people in fossil fuel-based energy systems and now wind energy investments in the Isthmus (e.g., [35]). This longitudinal study illustrates how energy injustices are transformed into economic exploitation through unfair land-leasing negotiations and CSR activities. Energy injustices prevent participation in energy planning and production as well as access to low-carbon systems.

Transactional colonialism is distinguished from both internal colonialism and classic European colonialism in that it involves transactions between indigenous *pragmatic negotiators* – with the assistance of intermediaries and negotiators (*caciques* and *coyotes*) – and firms. These transactions are supported by local and federal governments and shape the livelihoods of vulnerable people. Elite groups contend that wind energy can improve the environmental and socio-economic reality of vulnerable people; for example, *coyotes* promise that leasing land to wind developers can increase a landowner's income. However, vulnerable people in the Isthmus argue that elite groups, including indigenous *pragmatic negotiators* such as *coyotes* and *caciques*, have taken control of economic exchanges. This has increasingly intruded into the realm of their own social and economic transactions, which are not recognised by elite groups. In short, landowners and members of committees led by *caciques* tend to endorse wind energy investments. This internal dynamic adds a layer to elite groups. Our argument suggests that elite groups, both external and internal to the Isthmus, have overtaken social and economic transactions in the region. This supports our argument on transactional colonialism in the context of wind energy investments.

Transactional colonialism facilitates a novel way of understanding the patterns of energy injustices in low-carbon investments. Energy injustices are exemplified by Mexico's 2013 energy reform, which prioritised business transactions for low-carbon energy production among national and foreign firms without recognising local communities' life-worlds and 'micro level' dynamics in the planning of wind projects that fuelled land speculation and the privatisation of community-owned

Table 6
Dynamics of historical continuity of colonialism in energy injustices.

Dimension[a]	Energy injustices[b]	Transactional colonialism[c] *Continuity of interlinked injustices*
Distributional	• High electricity bills • Temporal and limited jobs in wind parks • Lack of access to renewable energy	• Local communities that refrain from protesting receive monetary and non-monetary compensation through CSR frameworks • *Eólicas del Sur* firm's contribution in co-payment of electricity bill
Recognitional	• Exclusion of vulnerable people in the process of planning and developing wind energy investments • No room for vulnerable people to be integrated in wind energy investments	• Enactment of Electricity Industry Law in 2014, establishment of consultation principles • Ratification of UN's Declaration on the Rights of Indigenous Peoples • Ratification of ILO Convention 169 (right to FPIC) • Adherent of OECD's Declaration and Decisions on International Investment and Multinational Enterprises • Ratification Paris Agreement
Procedural	• 'Capture of the State' through enacting laws and regulations, which solely facilitate large-scale low-carbon investments • Injustice in negotiation of land-leasing contracts between firms/intermediaries and vulnerable people • Injustice in application of Convention 169 ILO (right to FPIC) and Electricity Industry Law • No sign of application of OECD's Declaration and Decisions on International Investment and Multinational Enterprises	• Public consultation only with local communities that endorse investment • Transactions between firms and persons that hold different economic and ecological visions
Cognitive	• Western conceptualisation of consultation in the Electricity Industrial Law • Extinction of indigenous people's communal landholding • Usurpation: forced nationalisation of indigenous people's lands for low-carbon investments	• Class, caste, ethnicity and gender all prevent individuals from fully participating in decisions that affect indigenous people's lives • Lack of acknowledgement of indigenous people's trade and negotiation traditions • Continuity of degrading indigenous people relation to the environment and work-life activities

Source: Authors' interpretations of data collected (2013–2021).
Notes:
[a] See Table 1.
[b] Concerns the energy system.
[c] Concerns the bargaining power between elite groups and vulnerable people when implementing low-carbon investments.

land. The lack of procedural fairness in negotiating with local communities is a clear recognitional injustice. We posit that recognitional injustices in our conceptualisation of transactional colonialism are instrumented through Mexico ratifying and adhering to international conventions and declarations (e.g., ILO, UN, OECD; see Table 6). These are instruments that governments and firms can use to respect and protect indigenous people's human rights while reaching the targets of the Paris Agreement, particularly climate change mitigation. This portrayal has helped to attract international and national investments in wind energy, which derive in injustices, as presented in Table 6.

Cognitive justice is distinguished from recognitional justice in truthfully understanding Ikoots' and Zapotecs' traditions, customs and work-life activities while failing to practise FPIC and OECD guidelines that would deliver procedural justice. The economic transactions for wind energy planning in the Isthmus suggest that land grabbing has occurred under the premise of giving 'new value' to the 'abandoned and unproductive' land of indigenous people. This replicates land speculation in the region derived from large-scale 'development' (see Appendix D). However, instead of 'new value', the privatisation of communal land has resulted in internal conflicts that threaten the economic livelihoods and ways of life of indigenous people. Cognitive injustice is illustrated in this research by the fact that there is no place in the frames of external elite groups' knowledge for the ways of life and knowledge of vulnerable people, but at the same time, internal elite groups (*coyotes*, *caciques* and landowners willing to rent their lands to wind energy developers) distance themselves from indigenous traditions such as communal assemblies for decision making that affects the Isthmus.

There is no room in Mexico's neoliberal green economy for the integration of vulnerable people's knowledge, diversity, and defence of their indigenous rights, leading to their unfair treatment, both by other members of their society and by national and international firms, in terms of distributing the benefits and impacts of energy investments. The dynamics of transactional colonialism have led to friction and profound complexities between indigenous *activists* and indigenous *pragmatic negotiators*. The socio-economic consequences of energy injustices towards indigenous people are emphasised by unfair transactions involving those who lease their lands (see Table 6). Distributional injustices are illustrated by the fact that local communities cannot access wind energy produced on their own land because it is primarily consumed by MNEs. Indigenous *pragmatic negotiators* strategically interweave their opposition to wind projects with economic market-oriented arguments in unregulated land-leasing schemes. Additionally, indigenous *pragmatic negotiators* and indigenous *activists* both demand energy systems that reflect their traditions. We contend that vulnerable communities' profound cognitive knowledge of their roots in relation to trade and commerce and the neoliberal green economic policies implemented in Mexico have matured into energy justice frames, as vulnerable people aspire to be part of low-carbon energy systems (e.g., [13,93,94]).

In our research, distributional injustices are exemplified by unregulated and inconsistent payments, compensation and CSR benefits in the Isthmus (see Table 6). Procedural injustices develop divisions among vulnerable people who oppose and 'accept' wind energy investments. Despite being involved in decision-making processes (e.g., public consultations), consultations in the Isthmus tend to function as transactional agreements regarding the benefits of wind energy for communities. Moreover, the consultations do not cover energy choices or planning dimensions. Consultation processes that address how wind investments might affect vulnerable people, and thus the benefits they might obtain, are in effect seeking 'consent' for elite groups to effectuate their plans. Such consultation processes lead to conflict when indigenous landowners are economically motivated to support wind investments by leasing their land and demand to 'speed up' the consultation process (see Table 6). However, indigenous *activists* cite poverty and underdevelopment in their region and argue that they harm their self-determination, autonomy and human rights.

Transactional colonialism is proposed in this study as a powerful framework for presenting the struggles of vulnerable people to international audiences. Mexico's energy transition presents the continuity of internal colonialism in the injustices associated with 'decentralised' energy systems that benefit elite groups while leaving vulnerable people behind. Crucially, the practices of territorial dispossession, discrimination, exclusion, and denial of fundamental human rights, which are traditionally discussed with respect to extractive economy models, are more frequently attributed to projects that are portrayed as contributing positively to climate change [4,15,45]. In wind energy investments, transactional colonialism underlies an inequitable distribution of energy injustices. In contrast to classic colonialism, transactional colonialism may be enacted by a political entity that is geographically outside the boundaries of the exploiting power (e.g., [29,30]). When European MNEs invest in wind energy in the Global South, there is a pattern of domination and exploitation of local vulnerable people, followed by the departure of the investors who came to build wind farms. At the same time, transactional colonialism brings together supporters of the green economy, who can be motivated by novel aspirations such as the urgent need to mitigate climate change and open up energy systems, in addition to individuals motivated by economic gains. Transactional colonialism unpacks the depth and complexity of internal tensions, such as in vulnerable people's communities, and external tensions, such as among elite groups. Importantly, transactional colonialism helps us understand the patterns of rejection, discrimination and oppression of vulnerable people around energy systems.

We posit that the supremacy of wind technology and the notion of mitigating climate change through further large-scale wind energy investments have resulted in a continuous pattern of subordination of indigenous communities who have experienced systematic inequality even before European colonisation. Equal access to low-carbon energy systems and equal recognition and participation in the use of indigenous people's land [2,3] are at the centre of transactional colonialism. However, the struggles from energy injustices are more challenging when their claims threaten major economic interests (e.g., [4,15]). Surely, wind energy could provide a solution to ensure access to affordable, reliable, sustainable and modern energy for all [38,50]. We hope that future research will build on the arguments presented in this article to discuss the dynamics of transactional colonialism between 'pro-transition' MNEs, NGOs and other organisations that identify sustainability as energy justice in transitioning to a decarbonised energy mix. In addition to internal colonialism within indigenous people, the protagonism of human rights defenders and the role of NGOs in their activism should be assessed. Future research should also explore the more recent dynamics of transactional colonialism regarding the Mexican federal government's deprioritisation of low-carbon investments [113].

6. Conclusions

This study enhances our understanding of how transactional colonialism contributes to discussing low-carbon energy dilemmas associated with inclusion or exclusion in the democratisation of energy systems. The economic transactions that arise in a neoliberal green economy between elite groups and economically motivated vulnerable people (including indigenous people) reveal a novel aspect of transactional colonialism. This study highlights the depth of the conflicting dynamics in the neoliberal green economic model, which lead to conflict within indigenous communities. Elite groups appear to neglect the cognitive particularities of indigenous people in their historical continuity of resilience and struggle against local and foreign invasions and conflicts within indigenous communities. Wind energy invasions have further exacerbated the injustices suffered by indigenous people who fight to defend their territories from neoliberal green investments. Transactional colonialism in neoliberal green investments appears to be

endorsed under false premises of energy justice (e.g., mitigating climate change and opening up the energy system) and false beliefs about the economic, social and environmental reality. However, indigenous people in different regions of the world demand protection of their basic human rights to self-determination, autonomy and access to low-carbon energy [3,4,57]. Alternatives to the neoliberal green economic model are needed that provide recognitional justice (e.g., the rights of local communities), participatory justice (e.g., fair decision making), distributive justice (e.g., equal distribution of outputs), and cognitive justice (e.g., the right for the coexistence of different ways of life) [22,24,33].

Based on this longitudinal research, different models could be explored to disrupt the continuity of transactional colonialism in low-carbon investments. Partnership schemes should be explored whereby wind farms are co-owned and economic benefits are delivered to currently vulnerable people. However, such partnership schemes are unlikely to fully address cognitive justice dimensions, as these interactions between firms, governments and indigenous people will lead to new conflicts given the different lifeworlds of partnership participants [33,35,56]. We call on analysts, experts and academics to be more aware of the dynamics of transactional colonialism and cognitive justice with regard to understanding large-scale renewable energy investments.

Funding

This work was supported by 'HoD-MSC-2016′. The funding received was used in the fieldwork performed in the Isthmus of Tehuantepec, Oaxaca, Mexico.

8. Data availability statement

Data sharing is not applicable to this article, as the data are confidential.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Acknowledgements

We express our gratitude to the indigenous people in the Isthmus of Tehuantepec who shared their experiences and thoughts in relation to wind farms in their region. The authors are extremely grateful for the constructive and thoughtful guidance provided by Professor Benjamin Sovacool, Editor-in-Chief of *Energy Research & Social Science*, and by the three anonymous reviewers. We thank Lourdes Alonso Serna, Mary Lambeth, Gerardo Torres Contreras and Stefano Ponte for their helpful comments regarding earlier versions of this manuscript.

Appendices.

Appendix A: Definitions of elite groups and vulnerable people

In this research, we refer to elite groups and vulnerable people. While there are wide definitions of these groups, we understand them herein as follows. Our initial conceptualisation of elite groups entails those external to the Isthmus, such as members of national and international firms and government officials that consolidate economic and political power, and those internal to the Isthmus, such as wealthier and economically motivated indigenous people [7]. The conceptualisation of vulnerability involves areas (spaces, regions) and people (social actors) [7,55]. Vulnerable people are the 'non-dominant social classes' (e.g., communal landowners, artisans), 'poor middle classes', and 'marginalised' and excluded people. They may struggle against neoliberalism, social relations, and the reproduction of ethnicity, class, caste, gender and heritage.

During the research, we redefined our original conceptualisation of 'elite' and 'vulnerable' based on the perceived dynamics among different groups at the Isthmus with respect to wind energy investments. For example, the concept of *Zapotecisation* altered our perspective on the balance of power in the region. We identified *caciques* as internal elites because of their position of power within indigenous communities. *Coyotes* also emerged as internal elites owing to their influence on negotiations. In particular, we extended the concept of elite groups beyond government or firms' representatives to encompass indigenous and non-indigenous people who benefit from the opportunistic economic transactions of land leasing to make profits and protagonist individuals – both 'human rights' *activists* and those who defended wind energy investments. Vulnerable people are defined as indigenous people who are abused, robbed, and subjected to criminalisation for defending their territories and basic principles of human rights. There is a trend to label vulnerable people as *anti-eólics* or anti-development and to associate them with socialist or Marxist orientations. However, we must be very careful about how we use those concepts, as they incite hostility against indigenous peoples who aim to safeguard their human rights, particularly in a country such as Mexico, where human rights defenders encounter a high rate of violence and endemic corruption and impunity (e.g., [89]).

Appendix B: Energy justice framework in wind energy investments

The 'three-legged' framework of energy justice builds on environmental and climate justice debates, highlighting distributional, recognitional and procedural dimensions [18,21,56] and is widely used to discuss tensions among elite groups and vulnerable people.

Energy injustices at the distributive level originate from uneven social contentions between elite groups and vulnerable people and undermine access to basic human rights and income equality [35]. In the Global North, distributive injustices appear to take an economic approach. For example, constant appeals from the Saami indigenous people against wind energy developers in northern Europe led to direct negotiations between wind energy proponents and Saami communities. The negotiations yielded opportunities to invest in wind farms, the collective infrastructure for Saami's reindeer-herding activities, and monetary compensation – percentages of production per windmill and, in some cases, direct payments upon windmill construction [20,47]. However, in the Global South, little attention is given to ensuring that vulnerable people have fair and open access to low-carbon energy and the economic benefits thereof [2,15,35]. To achieve distributional energy justice, the planning, design and implementation of energy systems should be shared, and all participants – including vulnerable groups – should benefit as equally as possible [35].

Recognitional justice concerns the right to self-determination; a person's rights, values, cultures, and knowledge systems should be acknowledged [29,33]. Coolsaet [114] argues that the recognition of cultural diversity provides space for social acceptance [115,116]. Indeed, the 'under-recognition' of communities can make them 'invisible' and unable to participate equally in social interactions [2,114,117]. ILO Convention 169 gives all

people the right to 'free, prior and informed consent' (FPIC) regarding decisions that affect their territories [40]. However, not all elite groups who recognise this convention comply with FPIC principles [3,4]. For example, Sweden has not ratified Convention 169 [41]; therefore, Saami communities are considered a minority group. Scholars argue that the right to self-determination of Saami and other minority groups disputing renewable and non-renewable energy investments in their territory yields diverse injustices [7,47]. In 2007, 144 members ratified the UN Declaration on the Rights of Indigenous Peoples, which states that (Article 31.1):

> 'Indigenous peoples have the right to maintain, control, protect and develop their cultural heritage, traditional knowledge and traditional cultural expressions…' [83].

However, many vulnerable and indigenous people suffer from ongoing poverty and lack access to low-carbon energy [16]. The recognitional dimension of energy justice shows that an energy transition can create new vulnerabilities or worsen existing vulnerabilities. Thus, scholars urge elite groups to identify and recognise under-represented groups in energy-related decision-making processes [35,38].

Procedural energy justice concerns existing laws and regulations for public participation, such as in consultation processes. The procedural dimension emphasises the necessity of identifying elite groups that plan and make the rules, laws and decisions; vulnerable groups who can have a say in such processes; and how their vulnerability might be affected by energy systems [35]. Therefore, procedural justice is concerned with fairness and transparency in decision-making processes and 'the adequacy of legal protections and the legitimacy and inclusivity of institutions involved in decision making' [19].

Appendix C: The neoliberal green economy: implementation and challenges

Mexico, an oil-producing country, has gradually implemented neoliberal policies since the late 1980s to diversify its energy dependency and transition to a low-carbon energy system, which has been suggested as a neoliberal green economy (e.g., [3,4,20]). The first major milestone in this process was when President Carlos Salinas de Gortari (1988–1994) reformed Article 27 of the Mexican Constitution, ending the recognition of land redistribution and enabling the sale and purchase of previously inalienable communal landholdings known as *ejidos* (parcels of land given to landless peasants).

The Mexican government was the exclusive actor in energy production, commercialisation and distribution until the early 1990s. However, in 1992, the *Ley del Servicio Público de Energía Eléctrica* reform enabled private sector participation in electricity production for consumption and/or sale to third parties. In the mid-1990s, President Ernesto Zedillo (1994–2000) launched a mega-project for the 'development' of the Isthmus through investment in infrastructure and industry [87]. In 2001, President Vicente Fox (2000–2006) announced a broader framework called *Plan Puebla Panama* to accelerate development and integration among Central America and Mexico's southern and south-eastern states through sustainable and participatory energy projects [118].

Under the administration of President Felipe Calderón (2006–2012), Mexico joined the Clean Technology Fund, a 'business plan' agreed on and owned by the government of Mexico, the International Bank for Reconstruction and Development, the IADB, and the International Finance Corporation; the goal was to provide support for the low-carbon objectives contained in Mexico's 2007–2012 national development plan, national climate change strategy, and special climate change programme [119]. In 2012, Mr. Calderón, accompanied by Spanish executives, inaugurated the wind parks *La Venta I*, *II* and *III*, which were developed by the Spanish energy firm Iberdrola [120].

In 2013, President Enrique Peña Nieto (2012–2018) launched a constitutional energy reform to increase the production of renewable energy and facilitate private energy investments, and laws governing private investments in Mexico's energy sector came into force the following year. Under these new laws, project developers had to inform both property owners and the Mexican Energy Secretary of their proposed plans for energy development [97]. However, Peña Nieto's energy reform was not well received by indigenous people who opposed wind energy. In 2007, several self-identified *anti-eólicos* formed the APIIDTT. The following statement characterises their reaction to Nieto's energy reform:

> 'We express our total rejection of the so-called energy reform that the government of Enrique Peña Nieto is imposing, since it is only a way to privatise the resources that are owned by our nation for the benefit of foreign companies; this reform means more losses for the indigenous peoples of Mexico and the Isthmus.'

Despite protests for structural reform and human rights abuses in relation to wind investments (e.g., [45,98]), the march towards the neoliberal green economy in Mexico continued. The energy reform's policies signalled that the government's role was not to encourage development and investment but rather to create the conditions for private, large-scale renewable energy (e.g., [3,107,121]). The large scale of these energy projects is exemplified by IADB financing for wind farms in the Isthmus [108,118]. Nevertheless, such large-scale projects do not always improve communities' basic needs, such as access to renewable energy [109,110] (see Table 2). Wind farms in the Isthmus were primarily built under the self-supply model, with energy exclusively produced for customers (e.g., MNEs) – a consequence of the UN's Clean Development Mechanism that encourages MNEs to 'mitigate' the damage that they do to the environment by purchasing carbon credits [112].

The rapid speed at which MNEs built wind parks in the Isthmus was not matched by the government-led building of infrastructure to transmit the energy to central and northern Mexico, which resulted in congestion of the electricity transmission networks [113]. A new high-capacity (3000 MW) transmission line was planned from Ixtepec, Oaxaca (in the Isthmus) to Yautepec, Morelos (central Mexico) [9,112]. However, since 2018, the federal government under Andrés López Obrador (2018–2024) has enacted a series of public policy shifts that have deprioritised low-carbon energy investments with the intention of reversing the 2013 energy reform [113]. The new transmission line, which was a priority for wind energy developers, was cancelled in 2019 [8]. In March 2021, the Mexican federal government published a decree that amended and added various provisions of the Electricity Industry Law (*Ley de la Industria Eléctrica*). Among the changes, the Energy Regulatory Commission is set to review and invalidate the electric power self-supply permits obtained, where appropriate, through 'fraud of the law' [122]. These events prevent the construction of several planned wind parks in the Isthmus.

The 2021 amendment resumes aspects of the failed Policy of Reliability, Safety, Continuity and Quality of the National Electric System (*Política de Confiabilidad, Seguridad, Continuidad y Calidad en el Sistema Eléctrico Nacional*) issued by Mexico's Ministry of Energy (*Secretaría de Energía*) on 15 May 2020, in relation to the prioritisation of dispatch and interconnection to the National Electric System; the issuance of Clean Energy Certificates; and in

general to benefit the Federal Electricity Commission above other industry participants [85].

However, international organisations representing the green energy industry urged the Mexican government to restore regulatory stability in the energy sector and put the country back on track towards an energy transformation. According to the World Wind Energy Council and the World Solar Energy Council, the Mexican government has weakened the investment climate in the country over the last two years by reverting to a dependence on fossil fuels, despite global inertia [88]. The amendments to the Electricity Industry Law would influence local businesses, homes, and the overall investment climate, in addition to the electricity market. The private sector claims that recent widespread blackouts in Mexico (in February 2021) demonstrate that climate change is real because it impacts and challenges a broad variety of privileges, including the right to life, employment, health, and a safe environment, and that Mexico as a nation is extremely susceptible to its consequences. Furthermore, they state that granting dispatch priority to state-owned fossil fuel or large hydroelectric plants – which produce electricity at far higher expense and carbon emissions – violates the premise of equal competition and jeopardises environment and climate commitments, such as the Paris Agreement, in which Mexico invested millions of US dollars [85,88,93,94]. The critical claims advanced by private corporations on the policy change further relegate green energy supply to the back seat in Mexico, outpacing the country's energy transformation across the last decade and reversing the 2015 movement towards sector liberalisation. However, private sector corporations and national and foreign organisations remain silent on violations of human rights and the effect of green energy investments on indigenous peoples and human rights defenders.

Approximately 65 cases of '*writ amparo*' – a Mexican legal procedure – were brought by private corporations and groups, including environmentalist groups such as Greenpeace, on or before 17 March 2021. On 19 March 2021, private firms secured the permanent suspension of the reforms to the Electricity Industry Law demanded by the Republic's Presidency and accepted by Congress on 9 March 2021. With these measures, the judge halted all improvements to the service of the country's energy grid until the Court decided whether the reform was lawful. Juan Pablo Gómez Fierro, the second judge specialising in Economic Competitiveness, issued the suspensions despite initially issuing temporary suspensions, causing President Andrés Manuel López Obrador to order an inquiry into him [123–126].

The consequences of the Electricity Industry Law reform are suspended for all electricity market investors during the period of the *writ amparo* tribunal, which will determine the fairness of the reform. The hearing was scheduled for 27 April 2021. The federal government may also submit a petition for consideration, which must be heard by a judge. At the same time, a group of Zapotecs are now pursuing justice at the Court of Appeal in Paris, with the support of non-governmental organisations, per the French Duty to Watch Act. The group of Zapotecs is seeking to secure their values, beliefs, and territories through a human rights-based approach, as well as to establish public consultations in accordance with national and international laws and conventions. This is not the first time the Zapotecs filed lawsuits opposing wind projects in Mexico. For example, the APIIDTT filed a petition to the Mexican Supreme Court for the termination of the *Eólica del Sur* project via a *writ amparo* in 2018 [127,128]. The National Supreme Court of Justice issued a decision on 10 January 2018 to exercise its power to accept the *writ amparo* [129]. On 24 July 2018, Mr Rolando Crispín López, a member of the municipal assembly at Álvaro Obregón, was assassinated in connection with the *Eólica del Sur* wind farm project [127]. Nonetheless, the *writ amparo* refused by the Mexican Supreme Court on 14 November 2018. According to the Supreme Court minister, it 'complies with the condition that was carried out previously, because it was carried out as soon as possible, understanding that it is in the early stages of the project' [130].

The unity of private organisations in their lawsuit against Mexico's changes to the Electricity Industry Law reflects transactional colonialism. Private national and foreign organisations frame their demands in terms of defending their investments and rights, such as the climate, but they remain silent about vulnerable people's rights. However, vulnerable people who lack access to green energy are exploited in leasing contracts that only favour private firms and intermediates (e.g., *coyotes*) and are oppressed and criminalised for defending their fundamental human rights values, as stated in the UN Declaration on the Rights of Indigenous Peoples [52].

Appendix D: Land tenure disputes in relation to large-scale investments

The Isthmus has been an important geopolitical territory since colonial times, as its geographical location allows it to connect the Atlantic and Pacific Oceans with a distance of just 215 km (see Fig. 1) [6,131]. Large-scale investments that began in the 1900s gave new value to land in this

Table D.1
Landholding schemes in Mexico.

Landholding	Definition
Private property (*pequeños propietarios*)	Private property (typically referred to as *pequeñas propiedades* [smallholdings] regardless of size) is commoditised land. Like other commodities, it can be productively or unproductively consumed, left idle, or transferred (by sale, gift or inheritance) according to the desires (and resources) of its owner [91].
Communal land of indigenous origin	Communal land is *de jure* property of one or more communities. The community determines its distribution and use, as in the pre-colonial period [91]. These lands are recognised by indigenous communities as belonging to them, but they may lack documentation to prove their ownership. Communal land is typically divided into plots that belong to all community members but are used temporarily by individuals [134]. Life use of some plots is also allowed for the benefit of community members and their families, who can inherit or exchange them within the community, but cannot sell or gift them like private property. Control of the land is exercised and governed by an assembly of *comuneros*[b] elected by the traditional authorities (governors, principals, councils of elders) [90].
Ejidos	*Ejidos* are defined as the lands, forests and waters given by the government to a *nucleus* of peasant population for their exploitation [135]. *Ejidos* were distributed among communities after the Mexican Revolution. They are governed by 'a complex Agrarian Code, which is administered in each community by a locally elected Commissioner overseen by a Vigilance Committee' [91]. Initially, *ejidatarios*[a] could use and work the land but could not use it as collateral or sell it. However, a reform passed in 1992, known as the Certification Programme of *Ejido* Rights and Land Titles (*Programa de Certificación de Derechos Ejidales y Titulación de Solares* (PROCEDE)), enabled *ejidos* to be leased or sold if the majority of *ejidatarios* agreed [14,136].

Source: Authors' interpretation of information in secondary documents [6,14,90,91,134,136].
Notes:
[a] *Ejidatarios* are members of an *ejido*.

[b] *Comuneros* are governors of communal lands.

Table D.2
Destination of the land within an *ejido*

Destination of land	Information
Land for human settlement	According to Article 63 of the Agrarian Law, "*The lands destined for human settlement make up the area necessary for the development of the community life of the* ejido, *which is made up of the lands on which the urbanization zone and its legal estate are located*" [135].
Parcelled land	Parcelled lands are the lands of the agrarian *nuclei* that were divided and distributed among members of a community. They can be exploited individually, in groups or collectively. These lands correspond to the *ejidatarios* and *comuneros*, with the right of exploitation, use and usufruct of parcelled lands [135,137].
Common use land	According to Article 73 of the Agrarian Law, "*The lands of common use constitute the economic sustenance of the community life of the* ejido *and are made up of those lands that have not been reserved by the Assembly for the settlement of the population nucleus, nor are they parcelled lands*" [135].

Source: [135].

region, leading to recurrent landholding struggles and land speculation [90] that have caused divisions and violent clashes until the present day. This appendix presents some of the most significant large-scale investments and land politics that have transformed the Isthmus. We first briefly present the different land tenure schemes in Mexico, followed by an overview of land politics and a discussion of the current unsolved land disputes in the Isthmus on account of wind energy investments, which reproduce land speculation. The aim is to situate the existing categorisation of indigenous people, divisions and conflicts in the Isthmus in relation to wind energy.

Landholding schemes and issues

According to Torres Contreras [14], 'green grabbing' (the appropriation of land and resources for environmental purposes) is rooted in agrarian history. After the Spanish conquest, the Isthmus was divided into two types of territories with different legal statutes: communal lands of indigenous origin, and private lands (see Table D.1). This territorial organisation was maintained through different regimes; the communal lands created by the Spanish Crown formed the municipalities of the liberal state, which remained throughout the tutelage of the political leadership of the Porfirian districts [6,132]. Even at present, the municipalities largely follow the same boundaries. On the other hand, the lands that were granted to Hernán Cortés after the Conquest later passed into private ownership. In the late 16th century, the Cortés family expanded livestock production and cattle ranches across the interior upland of the Isthmus, consolidating what would come to be known as the *haciendas marquesanas*. The most important of these belonged to the Dominicans and the seigneurial *Marquesado del Valle* [133]. Part of the community lands located east of Juchitán also acquired a private statute when the communities were granted livestock by the Spanish Crown. Lands granted to individuals were known as *hacendados*, while those granted to communities became communal land [132,133].

Land redistribution came about in Mexico through a decades-long social struggle after the Mexican Revolution (1910–1917), and involved a series of constitutional reforms. Much land had been dispossessed by the large estates and *haciendas marquesanas* after 1750, particularly during the Porfiriato (the period of General Porfirio Díaz's presidency in the late 19th and early 20th centuries). Land redistribution began with the publication of the Agrarian Law on 6 January 1915, which was intended to restore land ownership by guaranteeing land (*ejidos*, see Table D.1) to landless rural communities and prohibiting ownership of rural land by corporations.

The Agrarian Reform was an important first step towards land redistribution; however, it focused more on restitution than on endowment and failed to support the communal nature of the lands returned to communities [137]. Two years later, Article 27 of the Mexican Constitution was revised

Table D.3
Timeline of political land changes in Mexico

Land change	Explanation
1960: Construction of the *Benito Juárez* Dam	To undertake work related to the construction of the *Benito Juárez* dam and irrigation system, the Department of Agrarian Affairs and Colonization ordered the expedition of communal land of the communities of Asunción Ixtaltepec, Juchitán de Zaragoza, Jalapa del Marqués, and San Juan Blas Atempa. In practice, proof of ownership was requested for private property (*pequeños propietarios*) within the perimeter of Juchitán's communal land.
21 November 1962: Presidential Decree (President Adolfo López Mateos)	The 1962 decree exempted *ejidos*, communal lands, inhabited lands, and urban zones from the expropriation of 47,000 hectares of land in the Isthmus in the public interest. This to some extent stopped land speculation in relation to the dam construction and irrigation project.
14 June 1964: Presidential Resolution (President Adolfo López Mateos)	The 1964 resolution ordered the expropriation and *ejidalization* of the entire of the entirety 68,000 hectares within the Juchitán municipality and its five annexes: La Ventosa, Santa María Xadani, Unión Hidalgo, Chicapa de Castro and Espinal [90,91]. The resolution stated that 'no private properties within the communal area have to be excluded from the present recognition' and that 'the total area of 68,000 hectares…is incorporated as *ejido*, to be divided among approximately eight thousand eligible peasants who will receive certificates of agrarian rights and land titles' [90,91]. This gave Juchitán's land legal recognition.
31 March 1966: Presidential Resolution (President Gustavo Díaz Ordaz)	The 1966 resolution allowed the issue of 3,800 property titles to residents of Juchitán and its 'annexes' and 100 to residents of San Blas Atempa, protecting the rights of up to thirty hectares per landholder [90], but not to rent, sell or in any other way alienate it. However, the titles lacked the legal standing of private property titles, and were plagued by several interpretations and irregularities, such as imprecision, overlapping of boundaries and multiple claimants possessing identical titles to the same lot [90]. Nevertheless, these problems went unnoticed for some years, and *Juchitecos* bought, sold and rented land, justifying their right to do so by reference to the titles distributed by the president.
1992: Reform of Article 27 of the Mexican Constitution (President Carlos Salinas de Gortari)	The neoliberal economic development introduced by President Carlos Salinas de Gortari promoted re-privatisation and addressed official support for alternative land tenure arrangements [136,139]. The 1992 reform created legal strategies that granted certainty and legal security to private investment. Communal lands could be traded for projects of any kind, including agricultural, livestock, agro-industrial, real estate, tourism, mining and housing projects [131,136].

Source: Authors' interpretation of information in secondary documents [6,13,70,90–92,131,136,139].

to enshrine the principles that governed the existence and operation of population centres known as agrarian *nuclei*, with a spirit that favoured social interest over the individual [137]. The grand *haciendas* were expropriated to produce agrarian *nuclei*, which comprised *ejidos* and communal lands (see Table D.1) [134]. Each *ejido* in an agrarian *nucleus* contained land that was designated as either land for human settlement, parcelled use, or common use [135], as shown in Table D.2. The *ejidos* could be physically separate and constitute somewhat independent geographic units, and did not necessarily fall within the same state or municipality.

Ejidatarios (members of an *ejido*) had the right to use two types of land within the *ejido*: a section of parcelled land, and common use lands [14]. Land transactions were regulated by the Agrarian Law, so that no *ejidatario* could own more than five per cent of the *ejido* land, and they could only select one person to inherit their land [135]. However, *ejidatarios* could transfer their parcel rights to other *ejidatarios* or residents of the same agrarian *nucleus* [137], effectively selling their certificate of common use [14]. This practice seems to be derived from land speculation in this region, as presented in the following section.

Land speculation in the Isthmus

Land tenure and transfer have played a considerable role in political conflict in the Isthmus [6,90]. The Isthmus once comprised communal land controlled by descendants of the original settlers. The land in Oaxaca (including in the Isthmus) contained *haciendas marquesanas*, but was never dominated by private land to the same extent as that in other colonial provinces in Mexico, partly because of the generally low productivity of the land and the persistence of a system of mercantile control of cash crop production [91]. This means that a portion of land in the Isthmus was still communal land of indigenous origin by the time of the Agrarian Reform. Meanwhile, the land on the Isthmus that had been controlled by *hacendados* was returned to the original Zapotec owners under the *ejidal* framework. Communal land use rights continued to be regulated by local inhabitants. *Juchitecos* (people of Juchitán) were *comuneros* (governors of communal lands) by tradition, although they did not receive legal recognition as such, nor did they request a conversion of their land to *ejidos* [90,91].

Land in the Isthmus acquired new value in the last century on account of four large-scale 'development' investments: 1) the Trans-Isthmic Railroad to connect the Pacific Ocean to the Gulf of Mexico (1898–1907); 2) the Pan-American road to connect the Isthmus with the state capital of Oaxaca (1942–1947); 3) *Benito Juarez* Dam (1956–1961); and 4) a large-scale irrigation system (*Distrito de Riego de Tehuantepec*) (1962). The first of these projects, the Trans-Isthmus Railroad, was designed to connect Salina Cruz in the state of Oaxaca (Pacific Ocean) to Veracruz City and Coatzacoalcos in the state of Veracruz (Gulf of Mexico). This project led to the expropriation of an important part of the indigenous communities' lands. Private properties sprang up, especially in the Tehuantepec River plain, a region well protected from winds on account of a windbreak that had been maintained there for hundreds of years [90]. The federal government granted land along the banks of the rivers to individuals and capitalist companies with the expectation of development (e.g., coffee and rubber plantations) oriented towards international markets. However, the largesse of the federal government never produced the expected effects in terms of productive development, and the plantations were never fully exploited. The railroad project was soon affected by a structural shortage of labour [6].

The community of Juchitán was less affected by this expropriation because it had little land in the plain. However, the presence of private property began to break the unity in the region, and two alternative models of land tenure were developed: one private, in which land tenure fundamentally served a commercial purpose for the production of capital; and one communal, whereby land tenure served as a basis for the reproduction of life and society [138]. The Trans-Isthmus Railroad project transformed the head of the municipality, Juchitán, into a commercial hub.

Table D.3 presents a timeline of the main political land changes in relation to the above large-scale projects at the Isthmus region.

According to Binford [90], there is no evidence that inhabitants of the affected communities were consulted in the investigation leading to either the 1962 decree or the presidential resolution that followed in 1964. There was strong opposition to the 1964 resolution, mainly from owners of private property and other committees in defence of private property (*pequeñas propiedades*). Some of the problems stemmed from inconsistencies between the 1962 degree and 1964 resolution. Notably, the resolution ignored and contravened the guarantees offered to 'private properties legitimately acquired before 1955' in the 1962 decree, because representatives of the federal government had engaged in activities that implied the tacit recognition of private property in Juchitán [90,91]. The aim of this stipulation was to stem the tide of land speculation that had washed over the region with the news of the proposed dam [90,91].

The 1966 resolution failed to resolve the land speculation issues that had plagued the Isthmus since the late 1950s. The Coalition of Workers, Peasants, and Students of the Isthmus (*Coalición Obrera, Campesina, Estudiantil del Istmo*) (COCEI)[3] later challenged the 1966 resolution, after which government officials acknowledged serious errors in the wording of the titles and in the expedition of the act [90].

Article 62 of the 1981 Federal Law of Agrarian Reform stated that only *comuneros* could solicit a change from communal land to *ejido* [136]. The 1992 reform, reinforced by neoliberal views of the economic superiority of private property, created a legal basis for individual plots of *ejidos* to be mortgaged, rented or sold to private investors [131]. This effectively ended social ownership of *ejidos* and paved the way for the transfer of rural land to MNEs [139]. Since the late 1990s, wind power debates have revived conflicts between those seeking the privatisation of land and those advocating communal ownership [14,139].

Unresolved land conflicts in the Isthmus

The privatisation of land in the Isthmus has occurred intermittently since the 1900s [91]. Current land issues in the Isthmus on account of wind investment trace back to the Agrarian Reform, which sought to legalise land tenure in Mexico. However, the reform did not provide legal recognition of the land in the Isthmus, and the property of the surviving Isthmus communities was never recognised by law [138]. Under the confusion of different political land changes, various state and private interests sought to transform the communal land of the Isthmus into private property, leading to recurrent land disputes [13,138].

By 1992, when Article 27 of the Mexican Constitution and the respective Agrarian Law were reformed to end the redistribution of land to *ejidos*, more than half the national territory had been distributed into more than 30,000 agrarian *nuclei*, of which 8,000 were controlled by indigenous communities (63% as *ejidos* and 37% as communal lands) [15,131]. The 1992 reform recognised three forms of land and water ownership: public, private and *social*, where the latter corresponded to the agrarian *nuclei* [137].

According to the *Instituto Nacional de Estadística y Geografía* [National Institute of Statistics and Geography], in 1999, there were several agrarian

[3] COCEI, a Mexican socialist political organisation in support of agrarian reform and worker rights [13,70,91], was founded in Juchitán, Oaxaca, in 1973/74. In 1981, they won municipal elections, after which they formed the first socialist city council in Mexico [91].

nuclei in the municipality of Juchitán de Zaragoza: 1) five *ejidos* and communal lands, ranging from 500 to more than 4,000 hectares; 2) two parcelled and common use lands, ranging from 3,500 hectares to more than 4,000 hectares; 3) one common land use for human settlement ranging from 500 hectares to 1,000 hectares; and 4) two common, parcelled, and human settlement lands ranging from 500 hectares to 1,500 hectares [137]. The social land (communal lands and *ejidos*) in the municipality of Juchitán Zaragoza gained new economic significance in the late 1990s owing to its potential for wind energy investment [73].

Access to land for a capital purpose, such as leasing land for wind farm construction, is at the centre of land disputes in the Isthmus. Indigenous *pragmatic negotiators* or collaborations that favour wind energy investment can negotiate ownership and rights of land transfer. This appears to continue to be important for small producers (the majority) who retained rights to their land [90,91].

While some divisions in the Isthmus can be attributed to ethnic differences (*mestizo* bureaucrat versus Zapotec landowner), divisions of indigenous people in the Isthmus have a strong orientation towards *pequeños propietarios* (private property owners), COCEI (in the 1980s) and the APIIDTT. Land tenure problems that affect peoples and communities include violent invasions of land by individuals and agrarian protection of non-indigenous owners [134]. Despite programmes such as the Certification of Rights and PROCEDE, many *ejidos* and communities still lack documentation to prove their legal possession of the land [13,134]. Additionally, some of the presidential resolutions were never fully implemented [134]. In this context, the problem of agrarian backwardness is concentrated in the *ejidos* and indigenous communities, which has become a source of conflict and insecurity that sometimes translates into acts of social violence [134].

The arrival of wind energy in the Isthmus accelerated the separation of land into parcels and emission of individual titles. According to Zárate-Toledo and colleagues [15], wind energy developers first convinced local landowners to lease their lands and accept wind farms with help from government agencies such as the Agrarian Ombudsman (*Procuraduría Agraria*). In this manner, land reserve contracts that gave companies rights to occupy and use collective land (*ejidos*) were signed with different *ejidatarios*. Subsequently, the developers sought to convince individual *ejidatarios* to sign contracts for individual parcels, depending heavily on local leaders' patronage relationship networks. The federal government began a policy of parcel certification and emission of land titles to individual *ejidatarios*. However, adoption was inconsistent across Mexico, with some *ejidos* opting to maintain collective ownership and others opting to privatise their lands.

According to Torres Contreras [14], the main feature of La Venta (the locality in which the *Eólicas del Sur* wind farm is located) is that the more land a landowner possesses, the better a wind developer will pay. In *ejidos* where land distribution has been skewed to a few hands and where land transactions are governed by the Agrarian Law, major landowners have capitalised on wind energy by diversifying income from less land [14]. *Ejidatarios* who own large areas of land have implemented multiple activities and assets on their terrain to compensate for the lack of payment from wind companies. Thus, the *pro-eólicos*, *anti-eólicos* and indifferent categorisation of indigenous people in relation to wind energy can be traced back to unresolved conflicts of struggles of indigenous peoples in defence of their land and territory.

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