

# Energy justice in the context of green extractivism: Perpetuating ontological and epistemological violence in the Yucatan Peninsula

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Final pp added when special issue is complete

## Abstract

As the world gets warmer, the deployment of low-carbon infrastructure is seen as the cornerstone to mitigate the pressures created by fossil capitalism, prompting questions over what constitutes a 'just' energy transition. This has simultaneously broadened the discussion over what are the social justice and colonial legacies embedded in the infrastructural, technological and material composition of energy systems. Drawing on semi-structured interviews with different actors, this article looks at the deployment of low carbon infrastructure in the Yucatan Peninsula, Mexico, as the colonial legacies, politics and power relations embedded in energy systems interact with the construction of the so-called "Maya Train", a regional integration project seeking to interconnect the southeast of Mexico. It asks the question: can we speak of energy justice in a context of total extraction? Drawing on the literature of green extractivism, it argues that as long as energy justice is linked to a Westernized conception of modernity and development it risks reproducing injustices instead of solving them. The article suggests that political ecology must pay closer attention to emancipatory struggles in defense of the territory as they move away from a universal definition of energy justice.

**Keywords:** Green extractivism, energy justice, political ecology/ontology, coloniality, fossil fuel+

## Résumé

Alors que le monde se réchauffe, le déploiement d'infrastructures à faible teneur en carbone est considéré comme le point d'ancrage des efforts d'atténuation du capitalisme fossile, ce qui soulève des questions sur ce qui constitue une transition énergétique "juste." Cela a également élargi le débat sur la justice sociale et les héritages coloniaux intégrés dans la composition infrastructurale, technologique et matérielle des systèmes énergétiques. S'appuyant sur des entretiens semi-structurés avec différents acteurs, cet article examine le déploiement d'une infrastructure à faible émission de carbone dans la péninsule du Yucatan, au Mexique, alors que les héritages coloniaux, la politique et les relations de pouvoir intégrés dans les systèmes énergétiques interagissent avec la construction du "train maya", un projet d'intégration régionale visant à interconnecter le sud-est du Mexique. Il pose la question suivante : peut-on parler de justice énergétique dans un contexte d'"extraction totale" ? S'appuyant sur la littérature de l'extractivisme vert, il affirme que tant que la justice énergétique est liée à une conception occidentalisée de la modernité et du développement, elle risque de reproduire les injustices au lieu de les résoudre. L'article suggère que l'écologie politique doit accorder une plus grande attention aux luttes émancipatrices pour la défense du territoire en s'éloignant d'une définition universelle de la justice énergétique.

**Mots-clés:** Extractivisme vert, Justice énergétique, Écologie politique/Ontologie, Colonialité, Combustible fossile 2.0.

## Resumen

A medida que el mundo se calienta, el despliegue de infraestructuras bajas emisiones de carbono se considera la piedra angular para mitigar las presiones creadas por el capitalismo fósil. Esto plantea la

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cuestión de qué constituye una transición energética "justa." Ello ha ampliado simultáneamente el debate sobre cuáles son los legados coloniales y de justicia social arraigados en la composición física, tecnológica y material de los sistemas energéticos. A partir de entrevistas semiestructuradas con diferentes actores, este artículo analiza el despliegue de infraestructuras con bajas emisiones de carbono en la Península de Yucatán (México), en la medida en que los legados coloniales, la política y las relaciones de poder integrados en los sistemas energéticos interactúan con la construcción del llamado "Tren Maya", un proyecto de integración regional que pretende interconectar el sureste de México. Se plantea la pregunta: ¿podemos hablar de justicia energética en un contexto de extracción total? Basándose en la literatura del extractivismo verde, argumenta que mientras la justicia energética esté vinculada a una concepción occidentalizada de la modernidad y con el desarrollo, esta corre el riesgo de reproducir injusticias en lugar de resolverlas. El artículo sugiere que la ecología política debe prestar más atención a las luchas emancipadoras en defensa del territorio a medida que se alejan de una definición universal de justicia energética.

**Palabras clave:** Extractivismo verde, justicia energética, ecología política/ontología, colonialidad, combustibles fósiles 2.0

## 1. Introduction

As Calvert (2016) argues, energy is the prime mediator between humans and nature, and the last decade has seen a surge in research on energy justice. New research frontiers of political ecology and geography have examined the spatial dimensions of energy systems, including how injustices are spatiotemporally linked across entire supply chains (Bridge *et al.* 2013; Kirshner *et al.* 2020; Sovacool 2021). Additionally, as the world warms, there is increasing pressure to rapidly transition from fossil fuels to so-called "renewable" (and sustainable, just, and affordable) energy (Newell *et al.* 2022). However, this energy transition is often framed by governments and corporations as a *transformismo* or a 'passive revolution', a process of integration and subordination that keeps segments of society powerless (Spash 2021). As Peter Newell (2019: 28) explains, *transformismo* describes

...the ability to accommodate pressures for more radical and disruptive change and to employ combinations of material, institutional and discursive power to ensure that shifts which do occur in socio-technical configurations do not disrupt prevailing social relations and distributions of political power.

Thus, this coopted form of transition discourse actually helps maintain the existing system of exploitation and extractivism that is causing the current socio-ecological crisis.

The concept of 'energy justice', according to some scholars, has emerged as a 'novel' way to counter these dominant frameworks. It adapts environmental justice's main tenets—distribution, recognition, and participation—to energy systems. Proponents contend that the concept can locate injustices, determine who is ignored, and establish a fair process when applied to the entirety of energy systems (i.e., mineral extraction, generation, transmission, distribution, and consumption) (Jenkins *et al.* 2016: 175; Sovacool *et al.* 2021). Energy justice is concerned with social differences in accessing and benefiting from energy systems—it centers those who suffer the negative consequences of new technologies and capitalist energy grids (Day 2021; Sovacool 2021). Energy justice scholarship often directs its efforts at lobbying state and corporate actors and promoting policy recommendations (see Sovacool *et al.* 2016). Unfortunately, this means it often downplays oppositional movements and leaves colonial power dynamics and privilege intact.

The problem, as Healy and Barry (2017: 452) note, is that "the fight against injustice is not necessarily the same as outlining some positive conception of justice." Political ecology research on energy generally adopts environmental justice frameworks that prioritize the distributive character of injustices around energy infrastructure (Temper *et al.* 2015; Yanneti *et al.* 2016; Avila-Calero 2017). Recent contributions understand energy beyond a resource; it is also an interconnected metabolic and spatiotemporal political, economic, and social relation (Cederlöf 2019; Dunlap 2019, 2021; Knuth *et al.* 2022). Others have noted how coloniality and (neo)colonial projects continue to underpin what counts as 'just,' 'sustainable,' and 'renewable' energy (Dunlap 2018b; Lennon 2021; Lohmann 2021; Dunlap & Correa-Acre 2022; Tornel 2022). For example, recommendations from the International Energy Agency (IEA) and UN Sustainable Development Goals (SDG) usually align with Western modernity and colonial notions of progress and well-being. Chris Hesketh (2021) also reveals the colonial epistemology of development (i.e.,

a unilinear capitalist conception of well-being) embedded in wind factories and other green initiatives like the clean Development Mechanism (CDM).<sup>2</sup> Finally, Anibal Quijano (2000) argues that this coloniality codifies racial difference by hierarchizing, institutionalizing, and naturalizing Western/modern knowledge to separate humans from nature and to control labor systems.

So-called 'renewable energy' projects are often a manifestation of 'green extractivism.' Green extractivism promotes *green* (i.e., sustainable) practices and rhetoric to legitimize and further commodify nature (Dunlap 2019; Dunlap & Brock 2021; Verweijen & Dunlap 2021; Dunlap & Riquito 2023), all the while expanding extractivism. This may include counterinsurgency strategies to sustain and reproduce colonial and gendered structural violence and secure access to 'cheapened' nature, resources, land, labor, information, and data (Moore 2015; Verweijen & Dunlap 2021; Changon *et al.* 2022). The assemblage that justifies and legitimates green extractivism is rooted in what Dunlap & Jakobsen (2019: 6) call total extractivism: "the deployment of violent technologies aiming at integrating and reconfiguring the earth and absorbing its inhabitants, meanwhile normalizing its logics, apparatuses, and subjectivities, as it violently colonizes and pacifies various natures." Total extractivism is the capitalist aspiration to enclose, commodify, exploit, and extract everything. "Greening" gives the impression of fairer outcomes, inclusive decision-making, and the proliferation of participatory spaces around industrial activities while remaining firmly within the ontologies and epistemologies of capitalism.

The relationship between energy justice and extractivism—particularly green extractivism—remains underexplored. Most work on energy transitions and energy justice has steered clear of extractivism, and vice versa with a few exceptions focusing on environmental justice and extractivism around energy systems (see: Howe & Boyer 2016; Hesketh 2021; Bainton *et al.* 2021) with few others explicitly addressing it from the perspective of energy justice (see: De Onis 2021; Partridge 2022). Therefore, this article bridges these two apparently disparate literatures to argue that energy justice's strict focus on 'just' and 'fair' energy development frequently accelerates and intensifies green extractivism. I question how energy justice accounts for or challenges this trajectory of total extractivism and responds to calls for more cognitive justice by considering how it is limited by its Western and modern frameworks (Leff 2017; Santos 2014; Temper 2019; Rodriguez 2020). Without a de/anti-colonial critique, the framework will reproduce other forms of violent dispossession (e.g., cognitive, ontological, structural, and physical violence). This article contributes to the study of political ecology by bridging the recent work of environmental-energy justice and extractivism, identifying how the liberal framework of energy justice operates as tactic for 'inclusionary control' and, how energy justice, without a decolonial critique, normalizes Modern capitalist relations as universally valid and extractivism as an obligatory path towards 'development.'

This article draws on the case of a solar mega-project proposed in Yucatan, Mexico. This project is part of an economic reorganization in southeast Mexico centered around a new freight and passenger railway problematically called 'the Maya Train' (*Tren Maya*). I draw on fifty semi-structured interviews, site visits, documentary evidence, and observations of the solar energy mega-project. The first round of 36 interviews was conducted remotely<sup>3</sup> (due to COVID-19) from January to August 2021 with Indigenous and peasant community leaders, civil society organizations, former local and federal government officials, private sector consultants, and academics working on the energy transition process in Mexico. A second round of 14 in-depth semi-structured interviews, site visits, and field observations at low-carbon infrastructure projects in the Yucatán took place between February and March 2022. These interviews were conducted with the same sets of actors and included visits to project sites and the city of Mérida. The interviews were anonymized (and are reported as actor & date). I used thematic analysis (Evans 2017) to identify patterns and themes within the data, including the meanings people attach to "energy justice," "renewable energy," and "territorial rights."

I first came in contact with some of the civil society organizations supporting Indigenous legal cases in Yucatan in 2018. Using a snowballing sampling method, I was able to interview and establish a degree

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<sup>2</sup> This article uses the term wind and solar factories, instead of parks and farms, following the language of fossil fuel+ technologies, as explained below, it argues that such terms hide the real costs and socio-ecological impacts associated with their production, installment, and decommissioning (Dunlap & Correa-Arce 2022). The term is adopted to call-out the use of 'renewable energy' and 'energy transition' in academic scholarship as misleading and inappropriate to describe the interconnected, multilayers and invisible supply-webs of destruction (Dunlap 2021b).

<sup>3</sup> The COVID-19 pandemic complicated the process of in-person fieldwork from 2020 to 2021.

of trust by contacting existing activist and community networks via video calls in 2020-2021. This process was later reaffirmed by the site visits in 2022. However, doing research at a distance inevitably produced a series of limitations such as scheduling and technological disruptions, a lack of in-depth ethnographic research and issues with my own positionality as an 'outsider' trying to do research with Indigenous groups. Several actors refused to speak to me, particularly private companies and Civil Society Organizations (CSO) while others repeatedly questioned my intentions. As a *mestizo*, male researcher working at a northern university, these are legitimate questions that need to be addressed to tackle a trend of epistemic extractivism (Grosfoguel 2016), which consists of extracting Indigenous ideas by removing them from their context and giving them new meanings. Following Halverson (2018) I sought to remain in dialogue with activists and communities, supporting their cause, albeit at a distance, and continued to publish research results in Spanish, meanwhile giving public talks in academic and non-academic spaces to bring attention to their struggles.<sup>4</sup>

The next section briefly reviews the energy justice concept and its intersections with the literature on conventional and green extractivism. I use the term "fossil fuels+" to emphasize how low-carbon energy technologies foster plantation economies that reproduce fossil-style political economies (Dunlap, 2021a). The third section examines two case studies—a proposed solar mega-factory and the so-called Maya Train—to highlight how they make land legible for capitalist investment. The use of free prior informed consent (FPIC) in consultations, and social and environmental impact assessments (SIA/EIA)—the tools of energy justice—serve as mainstream counterinsurgency mechanisms for green extractivism and capitalist (re)organization of the Yucatán Peninsula. The fourth section reflects on the findings to consider whether the concept of energy justice can interrogate the dynamics of structural oppression and power inherent in energy systems. Finally, the article concludes by calling for an *energy research insurrection* (Dunlap 2022) and for moving beyond the notion of energy justice in favor of pluriversal, post-development, and radical energy autonomy.

## 2. From energy justice to green extractivism and beyond

The energy justice framework has emerged in political ecology and energy research to conceptualize multiple and complex energy-society relations (Sovacool 2021). Energy justice considers the entire energy system (Jenkins *et al.* 2016) and attempts to separate ('bound out') specific energy concerns from broader environmental and climate justice challenges (Bickerstaff *et al.* 2013). The concept usefully captures how energy systems can produce maldistribution, misrecognition, and a lack of participation (Fraser 2003). The core energy justice tenets—participation, recognition, and distribution—are adapted from environmental justice frameworks (Schlosberg 2007). It assesses where, how and why injustices happen to formulate better energy policy (McCauley *et al.* 2013; Jenkins *et al.* 2016; Jenkins 2018). However, energy justice has not always acknowledged the concerns of social movements, or the corresponding colonial and extractive continuities they identify.

While early iterations of the energy justice concept were mobilized by movements like the Energy Justice Network (Partridge 2022: 91), subsequent scholarship has ignored (or even completely disavowed) political movements' demands. Energy justice has forgotten its roots (i.e., environmental justice and the 'environmentalism of the poor' (Guha & Martinez-Alier 1997)) and now speaks directly to state and corporate actors. However, as Heffron and McCauley (2017: 664) argue, "to some degree environmental and climate justice as concepts have been naïve in their approach" since energy policy is dominated by economists and experts. Jenkins (2018: 119-120) goes further, suggesting that energy justice can benefit from its 'non-activist past,' focusing instead on this technocratic approach. The concept remains committed to a liberal-modern view of justice that is oriented around policymaking and statist interventions (Sovacool & Brisbois 2019). This is despite Heffron's (2021) interventions to extend its core tenets to include cosmopolitanism and restorative justice. Other scholars have also highlighted the conflictive nature of mining and extraction needed to sustain energy systems (Sovacool 2021; Sovacool *et al.* 2021). The concept remains committed to a liberal-modern conception of justice oriented around policy-making and statist interventions (Sovacool & Brisbois 2019). The supposed *naïveté* with which these authors accuse social and political movements' demands for justice, allows (neo-)colonial extractivist mentalities and capitalist

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<sup>4</sup> Part of the research was translated into an *Amicus Curiae* that supported the community in their legal struggle, and other articles were translated into Spanish and co-authored with members of the community to present, in their own words, their process of organization and resistance against green extractivism (See: González *et al.* 2022).

development to go unchallenged. Like environmental justice, energy justice remains "geographically and conceptually bound to [the] hegemonic-Western idea of modernity [and] Western-inspired political ideals" (Álvares & Coolsaet 2020: 55). The concept is presented as a universalized solution to be transposed onto different contexts, including where coloniality persists within energy infrastructure and its connections to global supply chains (De Onis 2021; Tornel 2022).

Energy justice should engage with criticisms of environmental justice and the ideas emerging from the extractivism literature. Scholars have disregarded the wider context that pressures energy systems to transition (Dunlap 2021b). The global extractive economy renders territories and people extractible, binds energy systems, and reproduces a necropolitics of domination and violence (Gomez Barris 2017). Studies of energy infrastructure and policy in the Global South often disregard colonial legacies (see Baptista 2018; Castan Broto *et al.* 2018; Allen *et al.* 2021) and obscure, invisibilize, and downplay the role of energy systems in the reproduction of coloniality (e.g., internal and cognitive forms of colonialism, extractive activities in the name of progress, sustainable development (Dunlap 2021b), and even development alternatives like *Buen Vivir* (Altmann, 2020) and the rights of nature (Tola 2018)). Grassroots movements struggling against large-scale low-carbon energy projects often employ concepts like energy sovereignty (Del Bene *et al.* 2019), energy democracy (Becker *et al.* 2020), and energy autonomy (Dunlap 2018b; 2022) to demand access, self-management, participatory design, and democratic deliberations. These demands go beyond energy justice's Western conception of development; as Rodriguez (2021) suggests, they draw on the roots of environmental justice.

Studies on extractivism (and extended concepts like 'total extractivism' (Dunlap & Jakobsen 2019); 'hyper-extractivism' (McNeish & Shapiro 2021) and 'green extractivism' (Verweijen & Dunlap 2021)) illustrate the limitations of the energy justice framework. Hyper/total extractivism draws on the Latin American concepts of *extractivismo* and *neo-extractivismo* (Gudynas 2021). Despite the end of colonialism, most extraction sustains colonial-style oppression over the Global South through the provision of raw materials and the international division of labor (Svampa 2015). However, the link between extractivism and global capitalism has become more spatially and temporally complex via expanding commodity frontiers. Martín Arboleda (2020: 25) argues that such expansion is underpinned by a technological and organizational modernization that has made the geographies of extraction ubiquitous at a global scale. Data flows in 'new' directions, not only along traditional North/South paths; extractive operations move from everywhere and in every direction. This, however, does not mean that the expansion or the experience of extractivism ceases to reproduce imperial and neocolonial forms of domination.

Mezzadra & Neilson (2019: 19) expand the concept of extraction to include financialization, logistics, and extractive global commodity chains to better understand the current politico-economic logic of capitalism. Durante and colleagues (2021: 20) also define extractivism as an ontology, "a particular way of thinking and the properties and practices organized towards the goal of maximizing benefit through extraction, which brings in its wake violence and destruction." McNeish & Shapiro (2021) demonstrate how multiple forms of 'resource' extraction—be it fossil fuel extraction, atomic power, hydropower, biomass and industrial agriculture, or low-carbon infrastructures—co-produce an accelerated global capitalism and give way to an interconnected "hyper-extractivism." The capitalism that created our socio-ecological and climate catastrophe is often equated with fossil fuels (Malm 2016); however, this fails to account for wider mineral extraction, chemical manufacturing, and nature commodification. Understanding this broader context of extraction is essential in accounting for "total extractivism."

'Total extractivism' alludes to the expansion of extractivism beyond its traditional purview as an economic activity with a material character. Total extractivism entails a 'new phase of capitalism' or "a particular mode or imperative of capitalist accumulation" (Machado Araoz 2013: 213; Ye *et al.* 2019) that moves toward a *global totality* of material and resource appropriation. Extractivism is the "dominant mentality of our era" (McNeish & Shapiro 2021: 3). It now includes financial (through debt creation), logistical (expanding around the globe), digital (data and information mining) (Durante *et al.* 2021: 22), and epistemic (extracting knowledge) forms of extraction (Chagnon *et al.* 2022; Grosfoguel 2018), all of which perpetuate capitalism's violent logic of "accumulation for accumulation's sake" (Marx 1967: 416). Extractivism is ontological; it universalizes and normalizes multiple types of violence (Middeldorp & Le Billon 2020). It is also geographical, creating expanding sacrifice zones and cost-shifting strategies legitimized by 'green' promises (Zografos & Robbins 2020). Finally, extraction is necropolitics (Mbembe 2003: 39-40). It manifests as a system that institutionalizes, manages, and organizes coloniality through the

subjugation of life and the power over death. This is even true of supposedly 'green,' 'clean,' and 'renewable' low-carbon infrastructures.

The concept of green extractivism emerges from extractivism and green grabbing research that focuses on how "the appropriation of land and resources" can be justified in the name of "environmental ends" (Fairhead *et al.* 2012: 237). While green grabbing is 'an act' to seize land (Dunlap & Riquito 2023), green extractivism is structural (i.e., systematic, intensive, and continuous). Green extractivism expands the notion of extraction beyond minerals and hydrocarbons; it pushes the frontiers into forestry, fishing, and farming (Acosta 2013) and incorporates so-called "renewable resources" (by calling their 'renewability' into question). Isla (2022) argues that greening is the "highest stage" of extractivism as it uses discourses of sustainable development to introduce new forms of global capital accumulation (Changon *et al.* 2022). It enrolls previously non-commodified nature and (women's) bodies to extract 'cheap' resources and labor. Green extractivism produces new extractive frontiers and justifies its expansion through narratives of 'cleaning' supply chains, mitigating GHG emissions, and providing the tools for green growth (Riofrancos 2019; Dunlap 2021a). Meanwhile, its colonial/racialized policy instruments continue to frame economic growth as the highest priority.

Assemblages of discourses, technologies, instruments, and actions enable capitalism's expansion into new frontiers and legitimate and naturalize the continued exploitation of already-existing modes of extraction. As Verweijen & Dunlap (2021: e5) argue, green extractivism legitimizes new opportunities for extraction. Bainton and colleagues (2021) show how a growing number of mining and low-carbon technology companies adopt the language of 'transitions'—including adjectives like 'clean' or 'just'—that coincides with the proliferation of offsetting branding practices. Brock (2020) and Dunlap & Jakobsen (2019) argue that green extractivism also opens new avenues for 'green' investments and markets, while simultaneously quelling and dispersing opposition to extractive practices.

Green extractivism includes a series of strategies, practices, actors, and tactics that render extraction socially and politically feasible. It deploys social engineering to mold the 'hearts' and 'minds' of people, manage dissent, and manufacture consent (Verweijen & Dunlap 2021: e1). Such practices have a five-century history and draw from colonial discursive practices of land appropriation. They include imagining land through an "extractive gaze" and constructing *terra nullius* on supposedly "unoccupied" and "unutilized" land (Gomez-Barris 2017). As several scholars have recently argued, neoliberal practices like free, prior, informed consent (FPIC) that celebrate participation and multiculturalism give the appearance of democratic inclusion to pacify resistance and legitimize extractive practices (Ulloa 2015; Dunlap 2018b; Torres-Wong 2019; Le Billon & Middeldorp 2021).

Corporate and state actors use 'hard' and 'soft' social engineering techniques (Dunlap, 2020: 663) to either forcibly or persuasively enroll people into 'beneficial' schemes. They manipulate and weaponize ideas like development to mitigate political opposition and craft legitimacy. Under the liberal-modern regime of environmental/energy justice, indigeneity and ontological differences are translated into multi- or intercultural tools of "inclusionary control" (Coulthard 2014; Leff 2017; Dunlap 2018; Verweijen & Dunlap 2021). Recognition and participation are simply a condescending hospitality of Otherness (Walsh 2018). FPIC and corporate social responsibility (CSR) programs use the facade of dialogue and recognition to pacify, co-opt, and demobilize autonomous-seeking movements. Contrary to their publicly stated goals, FPIC and CSR legitimize forms of extraction and are averse to inclusion. They extend dispossession by distracting and dispersing efforts for self-determination and engage in "endless bargaining over distributive 'benefits' and unfulfilled rights" (Gutierrez Aguilar 2020: 7).

The first form of inclusionary control involves political ontology. CSR and FPIC tactics suppress ontological incommensurability and seek to integrate ontologies and knowledges into the modernist project (Blaser 2013; de la Cadena 2015; Escobar 2016). The 'recognition' process weaponizes indigeneity and identity by dividing Indigenous groups (especially those without state recognition) and non-Indigenous people with similar visions and concerns. Colonial values and epistemologies, such as development and progress, legitimize extraction (Grosfoguel 2018; Maldonado Torres 2015) and material and epistemic injustices actively erase otherness and ways of being-in-the-world (Burman 2017). As Sullivan (2017) gestures, this is a key concern for political ecology, as it highlights how power imbalances over access to nature and resources are mediated by a particular way of seeing and understanding reality that devalues and obscures otherness.

Verweijen and Dunlap (2021: e5) identify two types of green extractivism: direct and indirect. Direct includes the "vital or kinetic energetic extraction from wind, solar, hydrological and bioenergy resources," while indirect refers to "the supply chain and extractive operations that produce the apparatuses that enable direct green extractivism." Both direct and indirect forms of green extractivism are embodied in "fossil fuel+ technologies" (Dunlap 2021a: 84). Fossil fuel+ rejects the "fossil fuel vs. renewable energy" dichotomy promoted by governments and industry; instead, it highlights how hydrocarbons underpin the entire low-carbon supply-web. So-called 'renewables' mirror the political economy of fossil fuels (Raman 2013) and reproduce a plantation economy that radically simplifies landscapes and perpetuates extractive relationships (Stock 2022). Acceptance of so-called "renewables" tends to disregard and invisibilize the mining, labor, and fossilized energy required to build, install, operate, and dismantle this infrastructure (Batel 2022).

Dunlap & Jakobsen (2019) conceptualize the "Renewable Energy-Extraction Nexus (REEN), which reveals how capitalist growth and the financial economy are prioritized. 'Greening' is a violent technology of extraction that enables the extractive potential of "fossil fuel+" technologies (McCarthy & Thatcher 2019) and reorganizes entire regions and landscapes. As Franquesa (2018) reminds us, energy has long remained invisible in modern capitalist societies. This invisibility alienates energy from its socio-ecological context, making it appear as an abstract standalone entity. This is a key feature of the plantation economy (Tsing 2015: 5-6)—a process that simplifies landscapes into standalone assets where "everything else becomes weeds or waste." Reorganizing territories into 'renewable energy zones' (McEwen 2017) often requires violent militarization, coercion, and dispossession to secure access to (grabbed) land (i.e., 'green sacrifice zones' (Zografos & Robbins 2020). This is key to understanding how extractivism mediates multiple forms of violence through energy systems (e.g., immediate/displaced over time; overt/covert, structural/cognitive, ontological/epistemic (Davis 2022; Grosfoguel 2018; Santos, 2014; Nixon 2011)). As Partridge (2022: 8) notes, the logics of extraction and extractivism continue to define most global energy infrastructures. Unfortunately, political ecology of energy and energy justice research tends to neglect or openly disregard this fact. The next section examines how these forms of violence and totalizing processes of extraction unfolded in the Yucatan Peninsula.

### 3. A solar mega-factory in Muna, Yucatan

Unlike the neighboring states of Tabasco and Veracruz, the Yucatan peninsula was not at the forefront of the Mexican oil boom in the 1970s and 1980s (Breglia 2013). Instead, the region received investments from the tourism and agricultural sectors. In the 2000s, the Yucatan peninsula was recognized as a promising site for rapid low-carbon wind and solar infrastructural development. In 2003, the U.S. Department of Energy's National Renewable Energy Laboratory (NREL) determined that Oaxaca was among the windiest places in the world (Oceransky 2011). This triggered a wind rush in the region (Dunlap 2019) and increased interest in developing low-carbon infrastructures in Northern Mexico and the Yucatan (despite ardent resistance).

The Peninsula became a 'viable' site for fossil fuel+ technologies only in the last decades, as solar and wind technologies lowered their costs and Mexico experienced a dwindling of its hydrocarbon reserves (Baker 2015). Therefore, in 2013, the newly-elected government of Enrique Peña Nieto (2013-2018) instituted a sweeping constitutional amendment to further liberalize the Mexican energy sector. Previously, private entities' involvement in the oil and electricity sectors was limited to specific activities like *autoabasto* (self-supplying) and the outsourced construction and maintenance of infrastructure (González-Lopez & Ortiz-Guerrero 2022). In 2015, the government approved the Energy Transition Law (Cámara de Diputados 2015), which required achieving a 35% "clean energy"<sup>5</sup> target by 2024. The government also submitted an Intended Nationally Determined Contribution (INDC) (SEMARNAT, 2015) as part of the Paris Agreement. This included a firm commitment to reduce 22-36% of GHG emissions by 2030 and adhere to the 1.5°C global target by the end of the century. In 2018, president-elect Andres Manuel Lopez Obrador (AMLO) presented six so-called "priority projects" to integrate Mexico's south and south-east into the global financial economy (GeoComunes 2019; Clavijo & Castrejon 2020). These projects—physically linked by the newly-proposed "Maya Train"—were justified with a supposedly 'post-neoliberal' discourse

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<sup>5</sup> The definition of clean energy in Mexico's legal system includes so called "renewables" plus, high efficiency cogeneration, energy paired with carbon capture and storage technologies, as well as nuclear and hydroelectric power, (see: Cámara de Diputados, 2014).

that promoted 'sustainable development' and economic spillover for the 'benefit of the people' (López Gómez *et al.* 2020). The projects and the railway were intended to reorder communal property, make space legible for capital investment (Torres Mazuera *et al.* 2021), and provide an outlet for the energy generated through the creation of new international transit, tourism and freight routes in the region.

The energy reforms approved projects to develop low-carbon infrastructure and contribute to Mexico's 'ambitious' climate commitments. Private entities were also now allowed to sell energy to Mexico's state-owned Federal Commission of Electricity<sup>6</sup> (CFE) through the newly inaugurated wholesale electricity market (WEM). In 2016, the Ministry of Energy (SENER) and the Center for Energy Control (CENACE) conducted the first of three long-term energy auctions (LTEA) (SENER 2017) as part of the newly developed WEM. Private actors submitted proposals to develop and operate power plants. Meanwhile, activists and land defenders argued that this system would reward bidders with the lowest generation cost, regardless of the technology chosen or the social, environmental, and political considerations (or lack thereof) (Articulación Yucatán 2018). Market-based cost-benefit analyses structurally subordinated socio-ecological considerations.

The first LTEA allocated 9 of 16 projects to Yucatan. The nine projects consisted of five large-scale wind and four solar factories, totaling 1,344 megawatts. The construction and operation of these nine projects has been characterized by a lack of transparency and a tumultuous approval process (Articulación Yucatan, 2018). Local groups raised concerns over their impact on local biodiversity, with several actors complaining about the lack of territorial and spatial planning in the region (Zárate Toledo *et al.* 2021). The fossil fuel+ technologies prioritized energy potential and discounted environmental and social issues. As in Oaxaca, several academics and civil society organizations denounced the lack of an aggregate territorial impact evaluation (Dunlap 2017; 2018a; 2019; Avila-Calero 2017; Zárate Toledo *et al.* 2019). Without any assessment of the territory's carrying capacity, its landscapes became saturated with fossil fuel+ technologies and other extractive megaprojects like mega-pig farms, housing, tourism construction, agroindustrial plantations, and hydrocarbon infrastructure (Clavijo & Castrejón 2020; GeoComunes 2020). A process that, as highlighted by Morosin (2020), has drawn on Indigenous cosmovisions to articulate defensive strategies and networks of multiple actors against mining and low carbon energy infrastructure.

Indigenous communities, local activists, and civil society organizations argued that the projects were not appropriate given Yucatan's fragile *Geohydrogeological Reserve*.<sup>7</sup> They could impact the region's clean water supply (with knock-on effects for local tourism and traditional Mayan farming (GC-TTM 2019)). Their concerns centered around LTEA – the allocated projects' lack of planning, territorial organizing, and communication.<sup>8, 9</sup> As local activists noted, the Strategic Impact Assessment—a tool mandated by the Energy Transition Law (LTE)—was never conducted by the environment ministry (Articulación Yucatán 2019). According to Zárate Toledo and colleagues (2019; 2020), to properly assess the cumulative impacts of fossil fuel+ technologies in the state would require a planning mechanism that considers the carrying capacity and the aggregate impacts of energy, the railway, and other industries on peninsular landscapes. The next section examines two of the nine fossil fuel+ technologies proposed through the LTEA: Ticul A and B.

### *Ticul A and B*

The 'Ticul A and B' project seeks to remove 604 hectares of jungle to deploy more than 1.2 million solar panels. Vega Solar split the project in two in hopes of presenting two different Environmental Impact Assessments (EIA) and Social Impact Assessments (SIA) to downplay the project's cumulative impact. The total installation includes about 738 hectares, of which 330 belong to the *ejido*<sup>10</sup> of San José Tipcéh. The project's land was acquired by an intermediary who told *ejidatarios* (landowners) that the land would be used to plant citrus trees. When the community realized the real purpose of the land, they demanded a

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<sup>6</sup> *Comisión Federal de Electricidad*.

<sup>7</sup> Which consists of *cenotes* and subterranean aquifers and rivers.

<sup>8</sup> Interview No. 45 with an ex-government official. Conducted on 12 March 2022.

<sup>9</sup> Interviewee No. 29 with local activists. Conducted on 4 June 2021.

<sup>10</sup> *Ejidots* are communal land used for agriculture where community members have usufruct rights rather than ownership rights to land, which is held by the Mexican state.

revision to the contracts, which should be voided under the current Mexican National Agrarian System (RAN).<sup>11</sup>

The group of Indigenous and *ejidatarios* I spoke with opposed the development of the project from the beginning. A process that has since divided the community and a tension that is still present as new government programs, such as "Planting Life" continue to roll into the region (see AUSM 2022). These dialogues extended to networks of activists and academics supporting and/or researching the impacts of fossil fuel+ technologies in the Peninsula. The Ticul A and B project must be understood as a continuation of previous development and environmental policies in the region which pushed towards creating a new energy-extractive frontier, most notably the expansion of transgenic soya plantations since 2012 (Torres-Mazuera 2018; Toledo *et al.* 2015). This was a process that led most of these networks, working on environmental and social issues, to focus on low-carbon infrastructure in Yucatan since 2012 when the plans to build the first wind factories emerged in the region. Despite the differences in tactics and ontologies (Morosin, 2020) the case of Yucatan resonates with other Indigenous and *campesino* non-violent territorial mobilizations, supported by civil society networks across Mexico. A process that, as Darcy Tereault (2023: 64) argues, has peaked during AMLO's presidency, as the government continues to support the neoliberal-extractivist framework to exploit subterranean resources, regulate extractive activity and capture resource rent from previous governments. A process that has led to progressive militarization of social life and to an explosion of violence against land and human rights defenders.

Some members of the Indigenous community contested the project in the courts with the support of several Mexican environmental organizations. In the legal injunctions (CEMDA 2019), locals argued that the project was assigned by SENER and the ministry of environment (SEMARNAT), and approved by the local authorities, without ever carrying out a free, prior, informed consent (FPIC). This violated Convention 169 of the International Labour Organization, a constitutional guarantee ratified by the Mexican senate in 2011 (Gutiérrez-Rivas 2020). The *ejidatarios* and the Indigenous communities lamented how they were deceived by the operators and intermediaries to lease the land; these intermediaries resorted to deceptive tactics like gathering signatures in blank pages to later certify the lease.<sup>12</sup>

A landowner in the San José *hacienda* contacted other *ejidatarios* and offered to buy their land for \$20,000 pesos [US\$1,000] per hectare. The purpose, he said, was for a citrus and stevia plantation project. Many agreed to this deal. Later, with contracts already signed, this person announced that a solar project with more than one million solar panels (*sic.*) would be built instead. When we learned this, we felt deceived by the practices of the company and the intermediary. The citrus project was proposed in order to obtain the concession more easily, but more importantly, as this land is community owned, the sale was illegal – as it can only be leased – which led us to demand the nullity of the contracts.<sup>13</sup>

After the case went to the Interamerican Court of Justice (IACJ), SENER scheduled a consultation process in 2017. Prior to the consultation proceedings, tensions between landowners and some of the local Indigenous members increased, as the community was split on whether the project should be approved. After the consultation took place, the disagreements reached a point of violence and complete division.<sup>14</sup> As one member of the Indigenous community explained:

They first argued [the government and the company] that there were no Indigenous in the area through the *EVIS* [Social Impact Assessment] and denied a consultation. They labeled the project "Ticul" because, according to them, there are no Indigenous in the city of Ticul, but this is actually Muna and San José. [...] I live here, I'm Indigenous and I speak Mayan, so we asked them for a consultation... but we had to go to Panama before the Interamerican

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<sup>11</sup> Interview No. 41 with Indigenous community members. Conducted on 25 February 2022.

<sup>12</sup> Interview No. 42 with Indigenous community members. Conducted on 26 February 2022.

<sup>13</sup> Interview No. 43 with an Indigenous community member. Conducted on 27 February 2022.

<sup>14</sup> Interview No. 42 with Indigenous community members. Conducted on 26 February 2022.

Court to get to talk to SENER! [...] During the first consultation, a year later, *ejidatarios* came to blows. This happened mainly because SENER and the company wanted to do everything in one day. The process took a long time. However, in the last consultation in 2018, when they asked for our supposed "consent," we were surrounded by armed police in an effort to coerce us to sign and grant it.<sup>15</sup>

As one of the community members argued: "The project was then approved in this 'coerced' assembly, with a part of the community contesting the results of the consultation and the occupation of land."<sup>16</sup> SENER fast-tracked this process since the federal government was in a transition period, and solar and wind project contracts were coming under intense scrutiny by the incoming government.<sup>17</sup> One activist working in the peninsula relayed:

We don't see EIA or SIA or even public or Indigenous consultations as mechanisms that can guarantee community involvement, information or participation. Instead, we view them as mechanisms used to secure investments and already-agreed-upon land distribution deals. The language used in them elevates the discussion to a technical level, alienating communities and local populations; they are often presented in a rushed manner, without considering community understanding or involvement. [...] In other words, these are not instruments that seek to promote community autonomy or self-determination practices as the Constitution and even some civil society organizations claim.<sup>18</sup>

At the time of writing, the Ticul A and B project remains suspended – but not canceled – due to injunctions presented by the Indigenous community. The local *ejidatarios* and communities reflected on the struggle, noting the skewed participation and consultation process. The *ejidatarios* explained how the company and the state used EIA/SIA procedures to preemptively sow discord within the communities. An Indigenous land defender argues:

For the authorities, these are, by definition, good projects: they help us fight climate change, they allow us to reduce GHG emissions and also, they ensure that Mexico becomes a country that promotes green growth. However, renewable energies only affect us (peasant and Indigenous communities), while the benefits remain exclusively for corporations and cities. Why did they decide that it is the Indigenous territories that must be sacrificed for the advancement of clean energy goals? Isn't our way of seeing the world or relating to nature, equally valid as other visions? When they talk to us about megaprojects of any kind, we see an imposition of a model of life over ours, in which we are 'wrong' or 'backward' for opposing, because we do not want 'progress' or because we are poor and in need of their help.<sup>19</sup>

Some *ejidatarios* were offered money for their land, without consideration for Indigenous communal use of the territory.<sup>20</sup> Throughout the process, the Indigenous community had to certify their 'indigeneity' to access information. One local judge even refused to acknowledge their identity and denied their request for free access to information, participation, and recognition as outlined by FPIC procedures.<sup>21</sup> One community member reflects:

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<sup>15</sup> Interview No. 42 with Indigenous community members. Conducted on 26 February 2022.

<sup>16</sup> Interview No. 42 with Indigenous community members. Conducted on 26 February 2022.

<sup>17</sup> Interview No. 30 with an Indigenous community member. Conducted on 10 June 2021.

<sup>18</sup> Interview No. 33 with a civil society and activist collective. Conducted on 5 August 2021.

<sup>19</sup> Interview No. 40 with an Indigenous community member. Conducted on 24 February 2022.

<sup>20</sup> Interview No. 29 with local activists, Conducted on 4 June 2021.

<sup>21</sup> Interview No. 46 with local activists. Conducted on 3 March 2022.

Communities have realized that the companies have a very different vision of development from ours and that what they bring is more of the same (i.e., jobs, progress and infrastructure). For us, everything is alive (...), we do not understand nature as a resource but as something that coexists with us. But, according to the legal framework we can only contest extraction or occupation as subjects to the right to consultation when we suffer "direct" impacts on our "homes." Before the law, to have legitimate interest means that you need to prove that you are Indigenous and that the place where you live is at risk. But there is a small detail to consider! This cannot be understood in the same way between Indigenous and non-Indigenous people. For us Mayans, our home is the Peninsula, any harm on the territory is harming all of us and our relationship with the territory. So I ask myself, if we are really a multicultural country, why are we being judged according to the vision of the western culture and not according to Mayan culture? This is a form of racism!<sup>22</sup>

The negotiations with the company focused on the so-called 'co-benefits' – the possibility of temporary employment and leasing contracts for more than 30 years. However, these 'co-benefits' did not include a reduction or cancellation of electricity tariffs, something the community repeatedly requested since most of the energy would be allocated for private consumption in other places (see Dunlap 2019 on similar issues in Oaxaca).<sup>23</sup> The community also had concerns about how the company presented project information. It failed to account for some of the community's main concerns, including increasing local temperatures, problems with beekeeping, and difficulties maintaining traditional forms of farming and agriculture (i.e., *milpa*)<sup>24</sup> (see Figure 1).

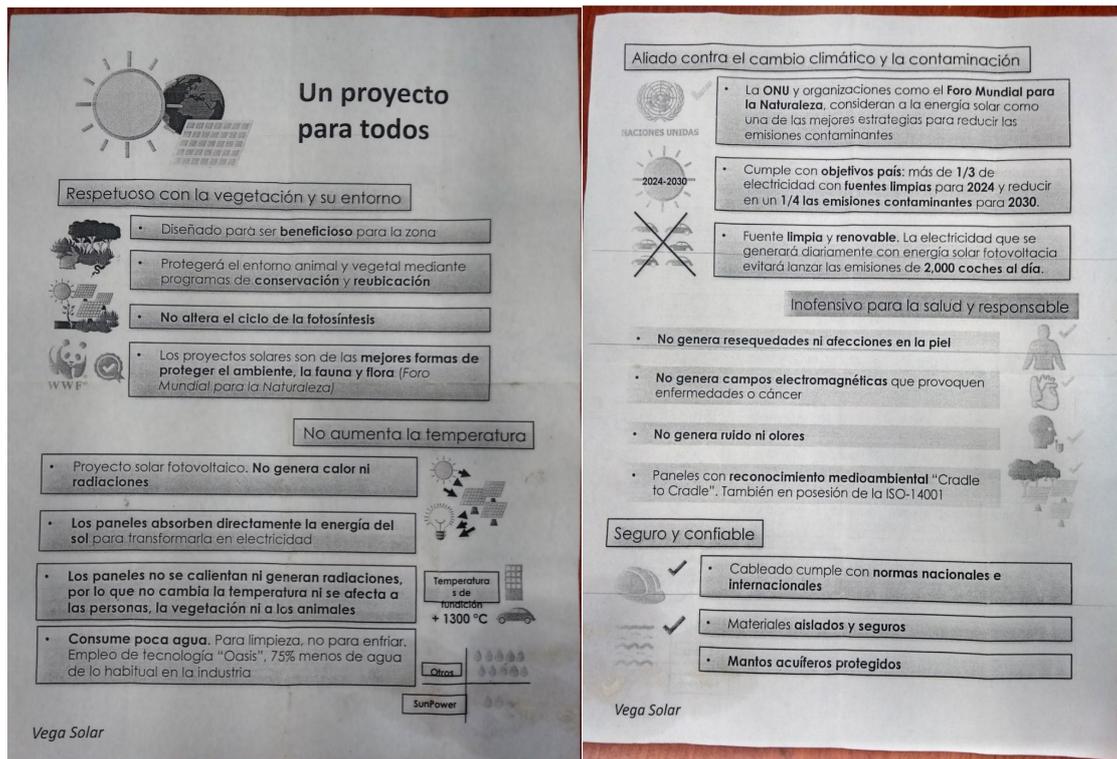


Figure 1: Information provided during the Indigenous consultation process. The print-out did not address any negative impacts or problems with the project. Source: Vega Solar. Picture credit: Luis David Patiño

<sup>22</sup> Interview No. 30 with an Indigenous community member. Conducted on 10 July 2021.

<sup>23</sup> Interview No. 43 with Indigenous community members. Conducted on 27 February 2022.

<sup>24</sup> Interview No. 46 with local activists. Conducted on 3 March 2022.

*Total extraction in Yucatan: ontological violence and the Maya Train*

The 'Maya Train,' which consists of 1,525 km of track in the states of Tabasco, Chiapas, Campeche, Yucatan, and Quintana Roo, was framed as the inaugural project to connect southeastern Mexico. As several authors, activists, and civil society organizations have explained, the name 'Maya Train' is misleading, as this is a high-speed freight, tourism, and passenger train that will move products, fuels and people throughout the peninsula. The 'Maya' name is only a ploy to promote 'sustainable' and 'cultural tourism' (CRIPX 2019; Múuch' Xíinbal 2021; Ansotegui 2021). *Tren Maya* is a reformulation of *Plan Puebla-Panama* and *MesoAmerica*, which sought to promote modernist development, territorial control and capital accumulation by connecting central Mexico to the rest of central and South America via highways, megaprojects and telecommunication infrastructure (Veiga 2019; Isla 2022). The train reproduces the colonial idea that southern Mexico is a land 'outside' of development (Hesketh 2021). Ceceña (2019) argues that the railway fits into wider geopolitical reorganizations (which also include a new mega-refinery in Tabasco (Vázquez & Vandergest 2022), a new airport in Mexico City, and the *transisthmian train* that connects Oaxaca and Veracruz). These new 'development poles' seek to reorganize 'underdeveloped' territories into transit routes made legible for capitalist investment and mobility. One activist and civil society member noted:

Although AMLO's discourse is presented as anti-neoliberal. When you look at what is being proposed, these infrastructure projects are a continuation of the same development model implemented since the seventies. Previous governments issued decrees to recognize most of these places as exclusive economic zones (SEE), it is not a coincidence that these projects are now being constructed in the same places [...] the only difference is that so-called new forms of 'development' are not for the benefit of the rich -although the Train will continue to increase foreign and private capital investments- but in the name of sustainability and the poor.<sup>25</sup>

Torres Mazuera (2023) has extensively documented Yucatan Peninsula's rapid land-ownership transformation over the last two decades (see also Torres Mazuera *et al.* 2021; Torres Mazuera *et al.* 2020). Land reorganization—often deployed through bureaucratic procedures and legal and illegal loopholes—has transformed Yucatan communal land into a market commodity. Land parceling enabled industrial expansion (e.g., tourism, housing, pig farming, mono-crop plantations, and fossil fuel+ technologies), which will be linked by the Maya Train. The land rush in the Peninsula created new avenues for investment and new frontiers for capitalist expansion (usually through intermediaries).

The deployment of large-scale infrastructure projects and the progressive militarization of sites under AMLO's administration have systematically sidestepped consultation processes<sup>26</sup> and increased physical violence against land defenders, while maintaining previous efforts to expand extractive activities and a regional market integration with North America (Tetreault 2023). The Maya Train will demand and enhance new fossil fuel+ technologies by providing an outlet for the energy generated. It is promoted using the rhetoric of economic integration to encourage free trade, sustainability, infrastructure improvement, and job creation (FONATUR 2019). New offshore exploration and exploitation sites on Yucatan's shores are also made possible since the train can move crude oil to the Dos Bocas refinery in Tabasco (Clavijo & Castrejon 2020). The government believes the train will inaugurate 18 new 'development poles' (Ceceña 2019) around train stations and increase the deployment of fossil fuel+ infrastructure and energy demand. It will also drive urbanization and land speculation, economic activities, and migration into the urbanizing areas, creating important pressures on water and other ecosystems in the region (GC-TTM 2019).

The Maya Train serves as an "articulating" mega-project: it links the peninsula's extractive frontiers to advance the exploitation of natural resources and cheap labor (see Figure 2) (Ceceña 2019; PODER 2019). It is a government strategy to simultaneously capture global over-accumulated financial capital and

<sup>25</sup> Interview No. 25 with members of a civil society organization. Conducted on 21 May 2021.

<sup>26</sup> A review by the federal auditing body of Mexico indicates that 97 of the 296 agreements resulting from the indigenous consultation on the project were not complied with. In addition, 2,749 petitions regarding the project were not validated. Although AMLO assured in 2018 that it would cost 120 billion pesos, the project now exceeds 371 billion pesos (US\$21bn). He also said that not a single tree would be cut down. So far, only as far as the train track is concerned, almost 3.5 million have been cut down or moved (ASF, 2023).

dump the region's overwhelming extractive output (Gutiérrez-Rivas 2020). Like with Ticul A and B, the train's EIAs were split into several sections that only accounted for the direct impacts of the tracks and disregarded indirect and cumulative socio-ecological pressures (CRPIX 2019).<sup>27</sup> The train is an infrastructural spatio-temporal fix: it can displace capitalist crises and provide new avenues for 'primitive accumulation' and 'accumulation by dispossession' (Cabrera Pacheco 2017). As a member of civil society highlighted:

The Mayan Train is by no means a new idea. It is the continuation of a colonial model that for centuries has identified the Yucatan peninsula, specifically the south of the country, as a less-developed, backward area. The history of community struggles to maintain their self-determination has been a constant struggle against repeated attempts of development. The Train will come to swallow this long history of resistance, making everything from Mayan culture to biodiversity and history commodifiable.<sup>28</sup>

The project fits with Guillermo Bonfil Battalla's (2009) conception of coloniality in Mexico: it exalts Mayans' Indigenous past while condemning contemporary Mayans to that past, and using their narratives to increase 'cultural tourism' (Ansotegui 2021). This fits into a broader historical process of de-Indigenization and ethnocide, missions that have shaped class and identity relations in independent Mexico built around Christianizing, civilizing, democratizing and development. In this vein, advocates say the project will bring 'development' to a historically unproductive area. The Yucatan Peninsula was a plantation frontier, where sugarcane and *henequen* (*Agave fourcroydes*) plantations proliferated through the deployment of *haciendas* that subsumed the Mayan population via debt and slavery throughout the 19<sup>th</sup> century (Barabas 2000: 198-99). The so-called 'War of the Castes (1847-1915) lasted well into the 20<sup>th</sup> century, and open insurrection was not quelled until the 1938 *reparto agrario* (land reform). As an ex-government official told me:

In Yucatan there is a history of discrimination against Maya knowledge. Federal housing programs, for example, often neglect traditional construction methods and materials. For them, the Maya are poor if they do not have concrete floors. The same is true for Milpa production systems. The Western model is more concerned with yield and volume, while the former works in terms of sufficiency [...] Projects such as the Mayan Train and renewable energy projects do not include these types of knowledges and forms of production, and even if they do not explicitly say so, they imply a return to the same model of food, energy, merchandise, touristic production and services: The Mayan identity remains something 'folkloric,' while the Indigenous are classified as 'lazy' or as a 'bad workers.' This is a pattern that has existed since colonial times and that today justifies the continuous expansion of megaprojects in the area.<sup>29</sup>

The National Tourism Development Fund (FONATUR) promotes solar projects in the peninsula as a "complement [to] the functionality of the Mayan Train" that will "bring benefits to local communities" (Chavez 2021). These projects utilize discourse like 'sustainability,' 'strengthening land use planning,' and 'invigorating the tourism industry for the region.' AMLO's government says that regional infrastructure will bring development to an impoverished region that needs to 'catch up' with the rest of the country. As happened at Ticul A and B, a nationwide consultation was carried out to either approve or reject the railway project (over two days—24 and 25 November). The consultation yielded over 92% approval; however, the process was criticized due to the lack of information presented at the ballot box, the limited number of participants (less than 2.4% of the national electorate and only 2% of the directly affected population, see AUSM (2022)),<sup>30</sup> and an open disregard for the international standards of Indigenous consultation (ONU-

<sup>27</sup> Interview No. 31 with an Indigenous community member. Conducted on 10 July 2021.

<sup>28</sup> Interview No. 48 with an academic. Conducted on 10 March 2022.

<sup>29</sup> Interview No. 45 with an ex-government official. Conducted on 2 March 2022.

<sup>30</sup> The question posed was: "Build the Maya Train that will connect the states of Chiapas, Campeche, Yucatan and Quintana Roo, which will boost the economy and tourism." As with the Ticul A and B 'project information sheet' (see

DH 2019). Yet, the government promoted these results to legitimate the construction and progressive militarization of the Maya Train, declaring it a "national security" issue and using the COVID-19 pandemic to sidestep any legal challenges, and to quell and repress opposition (Ceceña 2019). As an activist in the peninsula argued:

The government usually dictates the terms of the consultation as a fast-track legal procedure. These are the times and terms of capital and companies. People ask: why do we have to adapt to their times? So the proposal becomes: Give me the information, give me all the elements and let me, as a *pueblo*, go and talk in my own decision-making bodies and based on that, we'll decide which project is approved and how. We'll let you know in three months. That is real consent. The problem is that the company and the government say no, because they've already invested [...] This reveals a lot about the nature of the process and its true purpose, as well as the possibilities that emerge through self-consultation.<sup>31</sup>

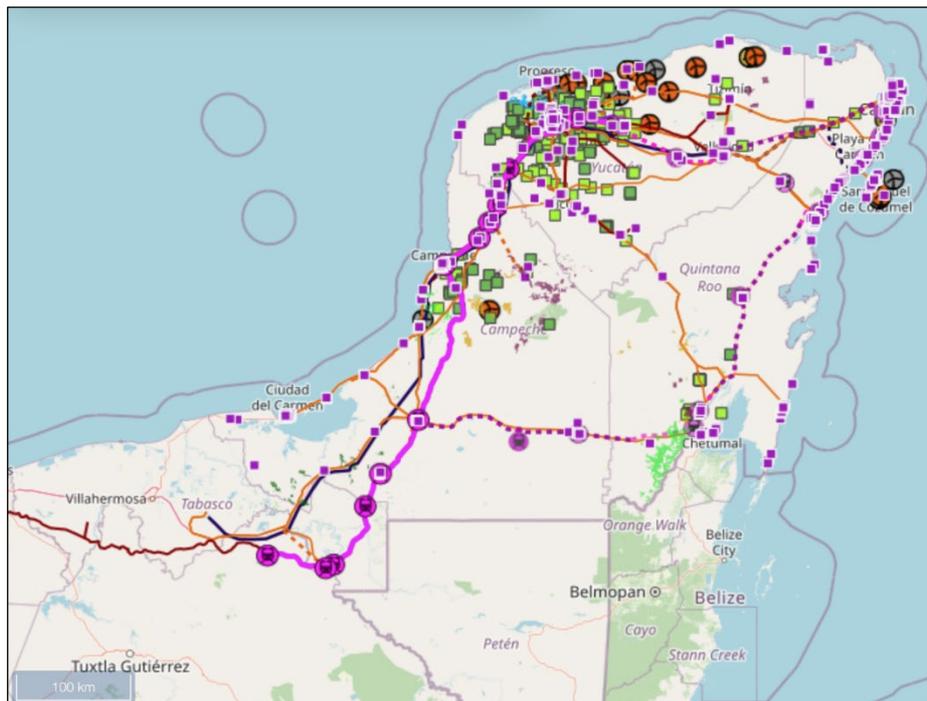


Figure 2: The extractive frontier in the Yucatan peninsula. The map depicts the proposed "Maya Train" route and the accompanying expansion of fossil fuel+ technologies, agribusiness, pig farms, and tourism. Source: (<http://geocomunes.org/Visualizadores/PeninsulaYucatan/>)

Both peasant and Indigenous communities in the region now share a distrust of consultations. Opaque and flawed public and Indigenous consultations often focused in rubber-stamping procedures, not obtaining democratic consent (Temper 2019; Torres-Wong 2019). In 2021, the community of Homun—which lies a few kilometers north of the Ticul A and B projects and near the Maya Train's tracks—held an Indigenous self-consultation about a proposed pig farm project in their territory (Indignación 2021; Torres-Wong 2022). According to several activists in the region, this process reimagined how energy projects are deployed and highlighted how:

Figure 1), this question was framed as a simple 'yes or no.' No information was included about the possible 'side effects' (or even the benefits). See: <https://lopezobrador.org.mx/2018/11/16/presenta-gobierno-electo-boleta-para-consulta-nacional-de-programas-prioritarios/>. Accessed 21 December 2022.

<sup>31</sup> Interview No. 23 with an activist and civil society representative. Conducted on 19 May 2021.

"(...) autonomy and self-determination have to begin with the Indigenous and peasant communities, which are the ones that lay down the guidelines, but not all communities have the same organizational processes or the same capacity to articulate themselves. Listening to the communities and their internal organizational processes, is the first step we need to take. This is a process that takes time and yet, most communities begin to organize as a result of the arrival of (imposed) projects. Slowly it becomes increasingly possible to see communities organized and proposing radical alternatives based on their own view of development."<sup>32</sup>

#### 4. Discussion: From green extractivism to struggles for resistance/re-existence

These case studies demonstrated how the extractive political economy of fossil fuel+ technologies retains the organizing principles that shaped the socio-ecological regime of accumulation linked to oil and gas in Mexico (Raman 2013; Boyer 2014; Dunlap 2018a). While so-called 'renewables' are said to usher in a just, clean, and safe energy future (see UN 2015), the political ecology and ontology of energy infrastructure on the ground tells a very different story. On the one hand, the coloniality of so-called "renewable energy" (Batel 2022) is expressed in the remapping and reconfiguration of the Yucatan Peninsula (as connected by the Maya Train). As Isla (2022) reminds us, green extractivism—the highest form of total extractivism—is expressed by colonial necropolitics and sacrifice zones. On the other hand, it is mediated by Indigenous and peasant *daily strategies of resistance* (Bonfil Batalla 2009, f 132), including resisting by preserving cultural spaces and collective beliefs, rejecting outside colonizing innovations, and appropriating cultural elements from the colonizers into their own beliefs and practices.

The Ticul A and B projects show how fossil fuel+ technologies feed into colonial and settler colonial land occupation (Batel 2022; De Onís 2021). They also utilize *terra nullius* claims and broader colonial reconfiguration strategies to deploy infrastructure (Gomes Barris 2017; Allen *et al.* 2021). The racist legal system disregards, discounts, or completely obscures Mayan knowledge. As decolonial thinkers have long known, racism is the main driver of the capitalist political economy and provides access to land and cheap labor (Grosfoguel 2018). The rendering of these knowledges as either 'backward' or 'underdeveloped' has subjected Mayan territory, livelihoods, and identities to a long history of commodification and dispossession (Cabrera Pacheco 2017). As Sullivan (2017) argues, political ecology must recognize the diversity of environmental knowledges, explore ethical constructions of justice, and recognize their importance for identifying power imbalances. The ontological erasure of otherness in the peninsula is not limited to the imposition of energy infrastructure through mapping and highlighting particular aspects of the landscape (erasing others) (Kirsher *et al.* 2021; Avila *et al.* 2022). It is also deployed as a tactic for inclusionary control.

The case studies evidence the role of coloniality in shaping energy transitions and landscape transformations. As Castan Broto (2019) argues, energy landscapes reflect the spatial arrangements of energy systems accumulated over time in particular places. Thus, landscapes encapsulate memories of past development and 'civilizing' projects, and reflect particular spatial arrangements, material legacies, and collective memories (Kisrhner *et al.* 2020). The landscapes of Yucatan are imbued with a colonial and extractive history that cannot be separated from the discursive, material, spatial, and political framing of the current energy regime and its adoption of fossil fuel+ technologies. Extraction on so-called 'unproductive' communal land (including fossil fuel+ technologies, urbanization, tourism expansion, and mono-crop farming) feeds into the broader (colonial) peninsular land rush (Torres Mazuera *et al.* 2021).

Figure 3 depicts several manifestations of this colonial legacy. The statue of the *Montejos* (father and son) stands along Yucatan's capital city main avenue depicting how colonizers mapped supposedly 'empty' land (*terra nullius*), surveyed the territory, and claimed it for colonization and civilization. Similarly, the city's motto, *Mérida, Ciudad Blanca* (Mérida, the white city), describes more than the white facades of the capital's buildings. For centuries, the peninsula has been seen as a fringe territory in need of 'civilization,' 'development' and 'progress' (Barabas 2000). The *henequen hacienda* a few meters from the proposed Ticul A and B site serves as a form of internal colonialism (González Casanova 2004) and a remembrance of the colonial occupation. Energy systems and infrastructure are now spatially, historically, and politically embedded within the same structures of extraction and, sometimes, literally the same sites

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<sup>32</sup> Interview No. 29 with activist collective. Conducted on 4 June 2021.

as the colonial occupation. These realities shape power imbalances (Allen *et al.* 2021) and contemporary politics of land access.

'Sacrificable' spaces reproduce the ontological, necropolitical character of extraction into a *totalizing* enterprise. Mega-infrastructure projects to commodify wind and solar energies provide new avenues for unburdening extractive outputs via the inauguration of new investment and transit routes, which are part of a broader logistical, operational, spatial and geopolitical reorganization of the south of Mexico (Ceceña 2019; Geocomunes 2019). These sites—'Special Economic Zones' or 'development poles'—are new 'green sacrifice zones' necessitated by the cost-shifting practices of the energy transition and the pursuit of sustainability (Zografos & Robbins 2020). They simultaneously inaugurate new capitalist extractive frontiers and displace capitalist crises through spatial fixes (McCarthy 2015; Gutiérrez-Rivas 2020). The necropolitics of total extraction determines who will live and who will die through the deployment of infrastructure and the remapping of the territory (e.g., the militarization of the Maya Train, skewed consultation processes, and 'ethnodevelopment'<sup>33</sup> framings). As Franquesa (2018) and Stock (2022) would argue, such processes entail radical simplification, an alienation of energy from its social context and the reproduction of plantation-like economies.



Figure 3: Images depicting Merida's "the white city" moniker (top left), the Montejos statue (top right), and the *henequen* San José Tipcéh Hacienda (bottom). Source: <https://descubro.mx/merida-ciudad-blanca/>; [https://www.yucatan.gob.mx/?p=san\\_jose\\_tip\\_ceh](https://www.yucatan.gob.mx/?p=san_jose_tip_ceh).

<sup>33</sup> In the EIA presented by the government for the first section of the train track, the government announced that they would put a 'positive spin' on ethnocide by transforming it into ethnodevelopment (FONATUR, 2019: 404-405). After a series of critiques, the government backed down calling it a 'mistake', arguing that: "ethnodevelopment would be 'the positive opposite of ethnocide', because the consultation process will allow the project not only to respect and guarantee their rights, but also to accommodate their own values and future aspirations in order to achieve sustainable community development (Contreras Camero, 2020). As several critics argued, this 'correction' in fact made the mistake seem even worse, as it uses the notion of ethnodevelopment, discounting the fact that the project was imposed and that no FPIC consultation process was carried out under the 169 ILO Convention (For a critique see: Esteva (2020) and Ansotegui (2021)).

In the Ticul A and B project, concepts like 'green,' 'renewability,' 'GHG mitigation,' and 'transition' are deployed alongside CSR umbrella terms like 'local development' and 'co-benefits' to increase social participation and deploy so-called "renewable energy infrastructure." After deploying fossil fuel+ technologies (from 2014-2018), the Yucatan government produced a series of reports investigating 'co-benefits' (e.g., increasing capital investment, bringing jobs, and conserving biodiversity (see Gobierno de Yucatán 2021a; 2021b; 2021c)). Such CSR language and tactics depoliticize dissent, engineer consent, and 'divide and conquer' the opposition (Dunlap 2018; 2019). Government and company officials use these narratives to legitimize a fossil fuel+ socio-ecological regime of accumulation designed to discipline, enchant, and engineer the 'hearts and minds' of the 'target population.' The reports notoriously turn environmental impacts into commensurable 'co-benefits.' They fail to present the negative cumulative consequences of the projects (Zárate Toledo *et al.* 2021) while also discounting other ways of being, doing and living.

'Hard' coercive techniques (e.g., displacements and the threat of physical violence) are accompanied by 'soft' technologies of social engineering and discursive legitimating (e.g., promoting recognition, participation, and 'lessons learned') (Dunlap 2020). The tenets of energy and environmental justice (i.e., recognition, participation and distribution), as deployed through mechanisms like EIAs, SIAs and FPICs, become tools to subvert demands for radical autonomy, sovereignty, and pluriversal forms of well-being. These instruments impose a universalized notion of justice embedded in the epistemology of development that further entrenches the coloniality of power, being and knowledge (Rodríguez 2021). This inevitably reproduces ontological occupation—rendering everything into commensurable and interchangeable monetary terms. The Maya Train also used popular consultations and ethnodevelopment claims to weaponize identity and legitimize destruction in the name of sustainable development.

These tools constitute what Álvares & Coolsaet (2020) call the 'coloniality of justice,' a process that sustains one epistemological and ontological reality over others. Ontological incommensurabilities (Escobar 2016; Burman 2017) are often translated into cognitive, material, and physical forms of violence (e.g., see Behn & Bakker's (2019) analysis of EIAs on a hydroelectric dam in Canada and Milbourne & Mason's (2017) analysis of participatory measures in coal mining in Wales). Inclusion through recognition, distributive, and participatory justice risks reducing local communities' different imaginaries and opposition into utilitarian and 'transactional' forms of justice (i.e., monetary compensations and 'community benefits') and rendering the sacred technical. These instruments fail to account for the 'coloniality of justice' and become counterinsurgency and social engineering tactics when deployed by bureaucratic, CSR, and other neoliberal-multicultural regimes. Such inclusionary control (Verweijen & Dunlap 2021) provides a legitimizing discourse. It weaponizes inclusion and recognition disarticulating community struggles for existence and against extractivism (Leff 2017; Escobar 2020) that attempt to reclaim community ways of being, doing and living in accordance with cultural traditions (as depicted in Figure 4).

While the FPIC process appears to be inclusive, it actually operates as 'window-dressing' to further alienate communities from claims to resources, nature, territorial autonomy, and self-determination (Torres-Wong 2019; Dunlap 2018a). Top-down participatory spaces like FPIC and public information meetings can hardly account for local histories and complexities (Barragan Contreras 2021: 383). As Kimberly R. Marion Suseeya (2021: 45-6) claims, the 'participatory turn' was largely "a response to distributive injustice and poor environmental outcomes and not firmly rooted in community concerns about procedural injustice." Processes like FPIC promote a form of 'condescending hospitality' and present the facade of dialogue through a discourse of citizenship and interculturality (Walsh 2018: 58). They also reduce diverse ontological differences into economic and CSR terms and language that ultimately facilitate extractive expansion while hindering democratic decision-making (Verweijen & Dunlap 2021; Middeldorp & Le Billon 2020). This includes operationalizing 'indigeneity' to exclude Indigenous and non-Indigenous people with equally valid socio-ecological concerns and pacifying conflict in favor of extractive industries (Dunlap 2018b).

The community of Homun's efforts for self-determination, as described above, can serve as a heuristic to reclaim energy justice from the reproduction of material, ontological and epistemic violence. The *autoconsultas* are a first step towards ontological and epistemological disobedience (i.e., disagreeing with colonial terms of reality and the 'right' knowledge) (De Onis 2021; Burman 2017). As Torres-Wong (2022) argues, self-consultations are surging as a direct result of a disenchantment with state-led consultations and the obvious tendency towards the use of these instruments as tactics such as inclusionary control, manipulation and the obfuscation of legitimate socio-ecological concerns. While the community at

San Jose Tipché was able to halt the development of the project via an international legal route, the continual militarization of the State now presents new concerns and possibilities. It might be too soon to tell if the experience of Homun could have broader legal and political consequences in the region. There is, however, a shared history of a plantation economy, a lack of access to information about energy and other infrastructural and development programs (including the Maya Train), and a growing distrust with the efficacy of the tools available to the government (including FPIC, EIA, and SIA). This has mobilized several communities to seek alternatives based on what essentially constitutes cognitive justice (Santos 2014; Temper 2019): by simultaneously calling out the tendency towards a *transformismo* built-in to the hegemonic notion of the energy transition and the way that these instruments exercise a form of tokenism through the facade of inclusion and recognition. *Autoconsultas* offer the possibility of de-linking energy justice from its Western and Universal conception of development. It could create other decolonized possibilities.

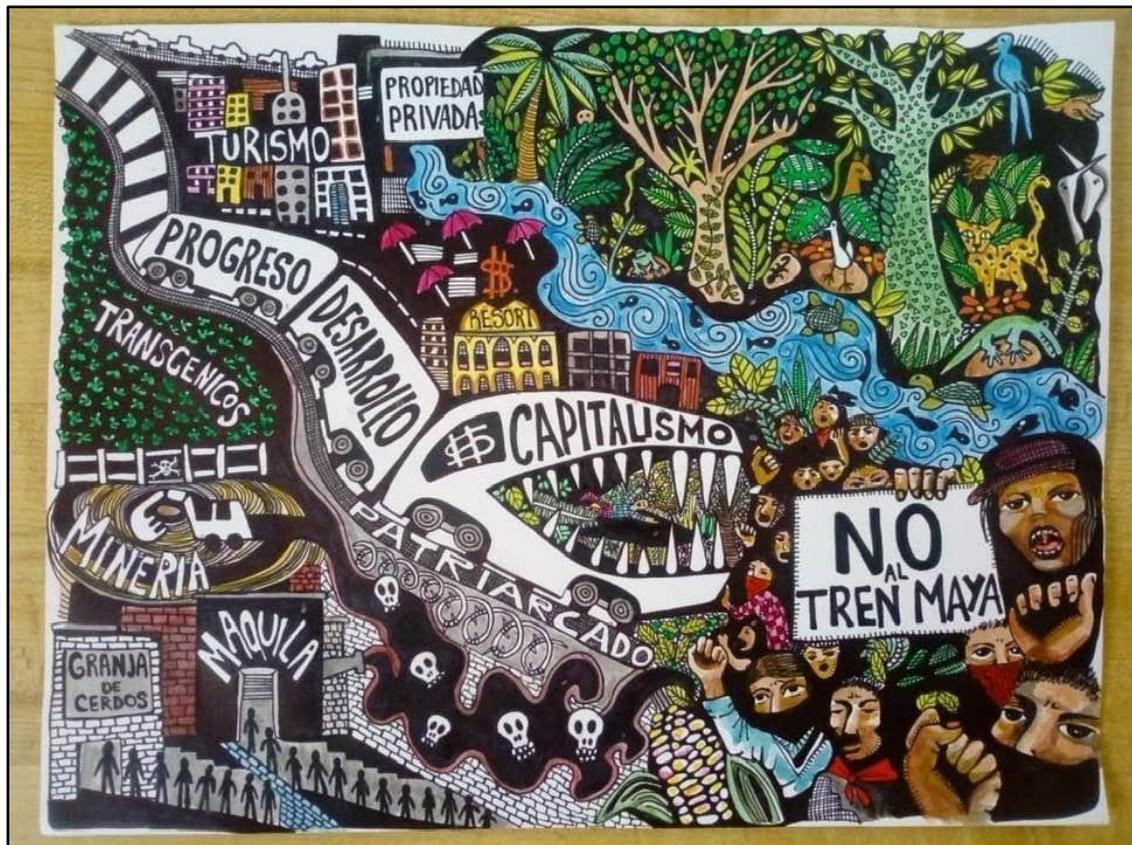


Figure 4: The Maya Train and ontological extractivism: everything is rendered extractible, and struggles for re-existence oppose the project. Source: <https://mujeresylasextaorg.com/2020/05/14/noaltrenmaya/>

These case studies provide critical tools for political ecologists: they help us to understand how uneven burdens and privileges are experienced, and answer calls to 'ground' material, ontological and cognitive practices, realities, and understandings of justice (Coulthard 2014; Cariou 2017; Tornel 2022). Unsettling energy justice is the first step towards denouncing the concept's disavowal of colonial histories, territorial struggles for emancipation, self-determination, and autonomy. We must also denounce its complicity with the coloniality of power, being and knowledge, which results in superficial inclusion, control, pacification, counterinsurgency, and corporate sovereignty (Dunlap 2019). Energy justice facilitates, rather than questions, the logics of green extractivism. It simplifies landscapes and alienates energy from its socio-ecological context. The haze of superficial recognition, inclusion, and potential distributive solutions distract and dissolve efforts for collective emancipation, reducing them to "an endless

negotiation of unfulfilled rights" (Gutiérrez-Aguilar 2020: 7). Simultaneously, it provides the tools to legitimize green extractivism, making destruction and harm compatible with the imperative of economic growth in the name of sustainable development.

## 5. Conclusion

We have the right to decide what type of development we want, the possibilities are endless. If we talk about generating clean energy in ways that do not affect the environment, solar panels could be installed on the roofs of houses to provide enough for the consumption of a family. If what we are really looking for is to create real benefits for communities, it would be possible to find ways in which technological advances coexist with the type of development, of housing, of harvesting and forms of living that already exist within our territories.<sup>34</sup>

This quote encapsulates this article's aims: to frame the energy transition as a form of *transformismo* and consider how the universalized western conceptions of energy and justice reproduce colonial power that deploys fossil fuel+ technologies. The solar and wind factories that saturate the Yucatan Peninsula are juxtaposed with other extractive frontiers and, now, are articulated by the so-called Maya Train. Both of this article's cases highlight how green extractivism legitimizes new practices of extraction, expropriation, and exploitation by deploying tactics, technologies, and discourses of green and sustainable development. This sustains the structures of epistemic, ontological, and physical violence and reproduces forms of internal colonialism and injustice.

The energy justice concept, in the context of green extractivism, can only grant distributive, recognition and participatory outcomes *within* the capitalist-colonial system. It actually perpetuates and sustains (not subverts or contests) the coloniality of power. Energy justice scholars overwhelmingly focus on policymaking and openly disavow ontological differences. Within this context, energy justice becomes the 'coloniality of justice' by negating other realities, forms of knowing, living and being (Álvarez & Coolsaet 2020). The tenets of environmental and energy justice must be unsettled, dislodged, and disturbed to create epistemic and ontological disobedience and resist the politics of injustice (see Temper 2019; De Onis 2021; Tornel 2022). The decolonization of energy justice will first need to separate energy and justice from hegemonic development epistemologies guiding energy transitions in the Global South. Secondly, it must unsettle and contest the pervasive stage of capitalist exploitation and expropriation (total extractivism) now experienced in its highest form: green extractivism.

The Maya Train experience further entrenched the notion that consultations are equivalent to 'popular electoral democracy'.<sup>35</sup> It utilized concepts like 'sustainability' and 'ethnodevelopment' to promote ethnocide and (apparently ubiquitous) extractivism. The proliferation of green sacrifice zones, the necropolitical character that shapes the mapping and identification of potential for fossil fuel+ technologies and the 'naturalization' and legitimation of extractive practices in the name of sustainable development are all persistent in the reorganization of landscapes in the peninsula. FPICs and impact assessments serve as counterinsurgency mechanisms; they weaponize indigeneity in favor of a particular form of development and integrate Indigenous and peasant ontologies into the spatiotemporal regime of capital accumulation. Thus, decolonial critiques simultaneously seek to abolish mechanisms that grant justice via the state, private property, and separation-ontology (all of which constitute capitalist modernity and are built from an epistemology of progress, civilization, and development).

Different Maya communities have offered proposals to confront extractivism and promote pluriversal alternatives (Escobar 2018) rooted in their traditions and historical links to the territory. As Willow (2018) argues, where there is extractivism, there is also *extrACTIVISM*—projects and ontologies that challenge the extractive onto-logic or capitalist modernity. Guillermo Bonfil Batalla (2009, 130-135) outlines how everyday forms of resistance operate as 'weapons of the weak' (Scott 1985) and allow

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<sup>34</sup> Interview No. 24 with an Indigenous community member. Conducted on 21 May 2021.

<sup>35</sup> Interview No. 46 with a civil society representative. Conducted on 3 March 2022.

communities to retain their cultural values and traditions. Strategies to increase autonomy and self-determination, like *autoconsultas*, further destabilize and unsettle energy justice.

We must question whether energy justice is conceptually useful for supporting alternatives to development. Other concepts are more directly linked to struggles on the ground (e.g., energy autonomy, insurrection, sovereignty, and democracy) and have 'grounded' praxis beyond the state, the market, and formal democratic measures (Becker *et al.* 2020; Del Bene 2019; Temper 2019; Author 2022). Critical energy research and praxis should go beyond the material and physical possibilities of emancipation (e.g., distributed generation, community energy, democratic decision-making) (Dunlap 2022). Political emancipation, a decolonization of the imagination, and insurrectionary possibilities are needed to resist further alienation, abstraction, and commodification of energy resources. Research and praxis should promote total liberation, self-determination, and emancipatory projects.

The tools available to address the current epochal crisis are outdated and inadequate (Zibechi 2022). As this article has shown, the state and capital are entangled with green extractivism practices, especially in Latin America. There are limitations to 'justice' within the persistent coloniality of 'green' and 'total' extractivism. If decolonization is, in fact, an urgent political project, then we likely do not need energy justice. The term can only be salvaged if it provides tools for decolonial self-determination, dismantling the ontological separation of nature, energy, and society, and questioning why energy is generated, from whom and how. In other words, energy justice must go beyond decentralization and the so-called 'acceptance' of fossil fuel+ technologies on the ground. It must link emancipatory energy projects with pluriversal alternatives emerging from the epistemic and ontological disobedience that goes beyond Westernized epistemologies of development.

## References

- Acosta, A. (2013). Extractivism and neoextractivism: Two sides of the same curse. In M. Lang & D. Mokrani (Eds.) *Beyond development: Alternative visions from Latin America* (pp. 61–86). Amsterdam: Rosa-Luxemburg Foundation, Quito and Transnational Institute.
- Allen J, Lemaadel M. & Lakhal, H. (2021). Oppressive energopolitics in Africa's last colony: Energy, subjectivities, and resistance. *Antipode*, 54(1), 44–63. <https://doi.org/10.1111/anti.12765>
- Altmann, P. (2020). The commons as colonisation – The well-intentioned appropriation of Buen Vivir. *Bulletin of Latin American Research*, 39 (1), 83–97. <https://doi.org/10.1111/blar.12941>
- Álvares, L., & Coolsaet, B. (2020). Decolonizing environmental justice studies. *Capitalism Nature Socialism*, 31(2), 50–69. <https://doi.org/10.1080/10455752.2018.1558272>
- Ansotegui, E. (2021). Tren Maya o barbarie: Comunidades indígenas en el contexto de la globalización. In Ejdesgaard Jeppesen A. M., Palomares Rodríguez E. G. & Wink G. (Eds.) *Pensamiento Social Danés sobre América Latina* (pp. 113–130). CLACSO. <https://doi.org/10.2307/j.ctv2v88bwk.11>
- Arboleda, M. (2020). *Planetary Mine: Territories of extraction under late capitalism*. Verso.
- Articulación Yucatán (2018). *La transición energética en Yucatán: Una propuesta en tiempos de transición política*. Available at: <https://articulacionyucatan.wordpress.com/>
- Articulación Yucatán (2019). *Perspectiva de los territorios del norte de la Península de Yucatán de cara al Tren Maya: una visión integral de sus condiciones socioeconómicas, socioambientales y socioculturales al 2019*. Retrieved January 10, 2023, from <https://articulacionyucatan.files.wordpress.com/2020/04/gc-ttm-2-2019.pdf>
- Auditoría Superior de la Federación (ASF). (2023). Informe de la cuenta pública 2021. Retrieved March 7, 2023, from [https://www.asf.gob.mx/Section/58 Informes\\_de\\_auditoria](https://www.asf.gob.mx/Section/58 Informes_de_auditoria)
- Autonomous University of Social Movements (AUSM). (2022). The Fourth Transformation and the future of Mexico. *The Bullet*. Retrieved March 15, 2023 from <https://socialistproject.ca/2022/02/the-fourth-transformation-and-the-future-of-mexico/>
- Avila, S., Daniau, Y., Sorman, A. H. & McCarthy, J., (2022). (Counter)mapping renewables: Space, justice, and politics of wind and solar power in Mexico. *Environment and Planning A: Nature and Space*, 5(3), 1056-1085. <https://doi.org/10.1177/25148486211060657>
- Avila-Calero, S. (2017). Contesting energy transitions: Wind power and conflicts in the Isthmus of Tehuantepec. *Journal of Political Ecology*, 24(1), 992-1012. <https://doi.org/10.2458/v24i1.20979>

- Bainton, N., Kepm, D., Lèbre, E. M., Owen, J. R. & Marston, G. (2021). The energy-extractives nexus and the just transition. *Sustainable Development*, 29(4), 1-11. <https://doi.org/10.1002/sd.2163>
- Baptista, I. (2017). Space and energy transitions in sub-Saharan Africa: Understated historical connections. *Energy Research & Social Science*, 36, 30–35. <https://doi.org/10.1016/j.erss.2017.09.029>
- Barabas, A. M. (2000). *Utopias indias: Movimientos sociorreligiosos en México*. Grijalbo.
- Barragan Contreras, S. J. (2021). Procedural injustices in large-scale solar energy: A case study in the Mayan region of Yucatan, Mexico. *Journal of Environmental Policy and Planning*, 24(4), 375-390. <https://doi.org/10.1080/1523908X.2021.2000378>
- Batel, S. (2022). A brief excursion into the many scales and voices of renewable energy colonialism. In Feldpausch-Parker, A. M., Endres, D., Rai Peterson, T. & Gomez, S. L. (Eds.) *The Routledge handbook of energy democracy*. (pp. 119-132). Routledge.
- Becker, S., Angel, J. & Naumann, M. (2019). Energy democracy as the right to the city: Urban energy struggles in Berlin and London. *Environment and Planning A: Economy and Space*, 52(6), 1093–1111. <https://doi.org/10.1177/0308518X19881164>
- Behn, C. & Bakker, K. (2019). Rendering technical, rendering sacred: The politics of hydroelectric development on British Columbia's Saaghii Naachii/Peace River. *Global Environmental Politics*, 19(3), 98–119. [https://doi.org/10.1162/glep\\_a\\_00518](https://doi.org/10.1162/glep_a_00518)
- Bickerstaff K., Walker, G. & Bulkeley, H. (2013). Introduction: Making sense of energy justice. In Bickerstaff, K., Walker G. & Bulkeley, H. (Eds.) *Energy justice in a changing climate: social equity and low-carbon energy*. (pp.1-13). Zed Books.
- Blaser, M. (2013). Notes towards a political ontology of 'environmental' conflicts. In Green, L. (Ed.) *Contested ecologies: Nature and knowledge*. (pp. 13-27). HSRC Press.
- Bonfil Batalla, G. (1996) [2009]. *México profundo: Reclaiming a civilization*. University of Texas Press.
- Boyer, D. (2014). Energopower: An introduction. *Anthropological Quarterly*, 87(2), 309–334. <https://doi.org/10.1353/anq.2014.0020>
- Breglia, L. (2013). *Living with oil: Promises, peaks, and declines on Mexico's Gulf Coast*. University of Texas Press.
- Bridge, G., Bouzarovski, S., Bradshaw, M. & Eyre, N. (2013). Geographies of energy transition: Space, place and the low-carbon economy. *Energy Policy*, 53, 331-340. <https://doi.org/10.1016/j.enpol.2012.10.066>
- Brock, A. (2020). Securing accumulation by restoration—exploring spectacular corporate conservation, coal mining and biodiversity compensation in the German Rhineland. *Environment and Planning E: Nature and Space*, 0(0), 1-32. <https://doi.org/10.1177/2514848620924597>
- Burman, A. (2017). The political ontology of climate change: Moral meteorology, climate justice, and the coloniality of reality in the Bolivian Andes. *Journal of Political Ecology*, 24(1), 921–938. <https://doi.org/10.2458/v24i1.20974>
- Cabrera Pacheco, A. J. (2017). Primitive accumulation in Indigenous Mexico. The contested transformations of the Maya solar of Yucatán. *City*, 21(3-4), 503–519. <https://doi.org/10.1080/13604813.2017.1335476>
- Cámara de Diputados (2015). Ley de Transición Energética. Retrieved December 1, 2022 from <https://www.diputados.gob.mx/LeyesBiblio/pdf/LTE.pdf>
- Cámara de Diputados (2014). Ley de la Industria Eléctrica. Retrieved December 1, 2022 from <https://www.diputados.gob.mx/LeyesBiblio/pdf/LIElec.pdf>
- Cariou, W. (2017). Aboriginal. In Szeman, I, Wenzel, J. & Yaeger, P. (Eds.) *Fueling culture: 101 words for energy and environment*. (pp. 17-20). Fordham University Press.
- Castán Broto, V., Baptista I., Kirshner, J., Smith, S. & Neves Alves, S. (2018). Energy justice and sustainability transitions in Mozambique. *Applied Energy*, 228(C), 645–655. <https://doi.org/10.1016/j.apenergy.2018.06.057>
- Castán Broto, V. (2019). *Urban energy landscapes*. Cambridge University Press.
- Ceceña, A.E. (2019). Megaproyectos para el mercado mundial. In Ceceña, A. E. & Veiga, J. (Eds.) *Avances de investigación Tren Maya*. (pp. 3-10). Observatorio Latinoamericano de Geopolítica, Universidad Nacional Autónoma de México.

- Cederlöf, G. (2021). Out of steam: Energy, materiality, and political ecology. *Progress in Human Geography*, 45(1), 70–87. <https://doi.org/10.1177/0309132519884622>
- CEMDA (2019). Consulta indígena para mega parque solar en Muna, Yucatán, incumple estándares internacionales. Retrieved December 1, 2022, from <https://www.cemda.org.mx/consulta-indigena-para-mega-parque-solar-en-muna-yucatan-incumple-estandares-internacionales/>
- Chagnon, C. W., Durante, F., Gills, B. K., Hagolani-Albov, S. E., Hokkanen, S., Kangasluoma, S.M.J., Kontinen, H., Kröger, M., LaFleur, W., & Ollinaho, O. (2022). From extractivism to global extractivism: The evolution of an organizing concept. *The Journal of Peasant Studies*, 49(4), 760–792. <https://doi.org/10.1080/03066150.2022.2069015>
- Chavez, J. C. (2021). Fonatur propone granjas solares para la península de Yucatán. *Energía Hoy*. Retrieved December 1, 2022, from <https://tinyurl.com/2743zzz8>
- Clavijo, I. & Castrejón, D. (2020). *El Tren de las élites. Empresas beneficiadas y proyectos energéticos en el sureste mexicano*. Proyecto sobre Organización, Desarrollo, Educación e Investigación (PODER).
- Contreras Camero, A. (2020). Fonatur considera el etnodesarrollo un «opuesto positivo» al etnocidio. Pie de Página. Retrieved December 1, 2022, from <https://piedepagina.mx/jueza-ordena-frenar-obras-en-un-tramo-del-tren-maya-durante-la-pandemia/>
- Coulthard, G. S. (2014). *Red Skin, white masks: Rejecting the colonial politics of recognition*. University of Minnesota Press.
- CRIPX [Consejo Regional Indígena y Popular de Xpujil S.C.] (2019). Pronunciamiento. Retrieved December 1, 2022, from <https://cripx95.com/public/pdf/Pronunciamiento%20CRIPX%201%20de%20septiembre%202020.pdf>
- Davis, T. (2022). Slow violence and toxic geographies: 'Out of sight' to whom? *Environment and Planning C: Politics and Space*, 40(2), 409–427. <https://doi.org/10.1177/2399654419841063>
- Day, R. (2021). Energy justice. In Coolsaet, B. (Ed.) *Environmental justice: Key issues*. (pp. 161–175). Routledge. <https://doi.org/10.4324/9780429029585>
- de la Cadena, M. (2015). *Earth beings: Ecologies of practice across Andean worlds*. Duke University Press.
- Del Bene, D., Soler, J. P. & Roa, T. (2019). Energy sovereignty. In Kothari, A., Salleh, A., Escobar, A., Demaria, F. & Acosta, A. (Eds.) *Pluriverse: A post-development dictionary*. (pp. 182-185). Tulika Books.
- De Onis, C. (2021). *Energy islands: Metaphors of power, extractivism, and justice in Puerto Rico*. University of California Press.
- Dunlap, A. (2017). Counterinsurgency for wind energy: The Bii Hioxo wind park in Juchitán, Mexico. *The Journal of Peasant Studies* 45(3), 630–652. <https://doi.org/10.1080/03066150.2016.1259221>
- Dunlap, A. (2018a). "A bureaucratic trap:" Free, prior and informed consent (FPIC) and wind energy development in Juchitán, Mexico. *Climate, Nature and Socialism*, 29(4), 88–108. <https://doi.org/10.1080/10455752.2017.1334219>
- Dunlap, A. (2018b). The 'solution' is now the 'problem:' wind energy, colonization and the 'genocide-ecocide nexus' in the Isthmus of Tehuantepec, Oaxaca. *The International Journal of Human Rights*, 42(4), 550-573. <https://doi.org/10.1080/13642987.2017.1397633>
- Dunlap, A. (2019). *Renewing destruction: Wind energy development, conflict and resistance in a Latin American context*. Rowman & Littlefield.
- Dunlap, A. (2020). Wind, coal, and copper: The politics of land grabbing, counterinsurgency, and the social engineering of extraction. *Globalizations*, 17(4), 661–682. <https://doi.org/10.1080/14747731.2019.1682789>
- Dunlap, A. (2021a). Does renewable energy exist? Fossil fuel+ technologies and the search for renewable energy. In Batel, S. & Rudolph, D. (Eds.) *A critical approach to the social acceptance of renewable energy infrastructures*. (pp. 83-102). Palgrave Macmillan.
- Dunlap, A. (2021b). Spreading 'green' infrastructural harm: Mapping conflicts and socioecological disruptions within the European Union's transnational energy grid. *Globalizations*, 1-25, <https://doi.org/10.1080/14747731.2021.1996518>
- Dunlap, A. (2022). Conclusion: A call to action, toward an energy research. In Nadesan M. H., Pasqualetti

- M. J. & Keahey, J. (Eds). *Energy democracies for sustainable futures*. (pp. 339-348). Elsevier.
- Dunlap, A. & Brock, A. (2021). When the wolf guards the sheep: The industrial machine through green extractivism in Germany and Mexico. In Mateer, J., Springer, S., Locret-Collet, M. & Acker, M. (Eds.) *Energies beyond the state: Anarchist political ecology and the liberation of nature*. (pp. 91-123). Rowman & Littlefield.
- Dunlap, A. & Correa-Acre, M. (2022). 'Murderous energy' in Oaxaca, Mexico: Wind factories, territorial struggle and social warfare. *Journal of Peasant Studies*, 49(2), 455-480. <https://doi.org/10.1080/03066150.2020.1862090>
- Dunlap, A. & Jakobsen, J. (2019). *The violent technologies of extraction: Political ecology, critical agrarian studies and the capitalist worldeater*. Palgrave.
- Dunlap, A. & Riquito, M. (2023). Social warfare for lithium extraction? Open-pit lithium mining, counterinsurgency tactics and enforcing green extractivism in northern Portugal. *Energy Research & Social Science*, 95, 102912. <https://doi.org/10.1016/j.erss.2022.102912>
- Durante, F. Kröger, M. & LaFleur, W. (2021). Extraction and extractivisms. Definitions and concepts. In Shapiro, J. & McNeish, J.A. (Eds.) *Our extractive age: Expressions of violence and resistance*. (pp. 19-30). Routledge. <https://doi.org/10.4324/9781003127611>
- Escobar, A. (2016). Thinking-feeling with the earth: Territorial struggles and the ontological dimension of the epistemologies of the South. *Revista de Antropología Iberoamericana*, 11(1), 11–32. <https://doi.org/10.11156/aibr.110102e>
- Escobar, A. (2018). *Designs for the pluriverse: Radical interdependence and the making of worlds*. Duke University Press.
- Esteva, G. (2019). El atropello redentor. *La Jornada, Opinión*. Retrieved December 1, 2022, from <https://www.jornada.com.mx/2020/06/29/opinion/018a2pol>.
- Evans, C. (2017). Analysing semi-structured interviews using thematic analysis: exploring voluntary civic participation among adults. *SAGE Research Methods Datasets Part 1*. <http://dx.doi.org/10.4135/9781526439284>
- Fairhead, J., Leach, M. & Scoones, I. (2012). Green grabbing: a new appropriation of nature? *The Journal of Peasant Studies*, 39(2), 237-261. <https://doi.org/10.1080/03066150.2012.671770>
- FONATUR (2019). Proyecto regional del Tren Maya. Retrieved December 1, 2022, from <https://www.gob.mx/fonatur/acciones-y-programas/proyecto-regional-tren-maya>
- Franquesa, J. (2018). *Power struggles: Dignity, value, and the renewable energy frontier in Spain*. Indiana University Press.
- Fraser, N. (2003). Social justice in the age of identity politics: Redistribution, recognition and participation. In Fraser N. & Honneth, A. (Eds.) *Redistribution or recognition? A political philosophical exchange*. (pp. 7-109). Verso.
- GC-TTM (2019). Territorios Mayas en el paso del tren: situación actual y riesgos previsibles. Retrieved December 1, 2022, from [https://www.ccmss.org.mx/wp-content/uploads/Territorios\\_mayas\\_en\\_el\\_paso\\_del\\_tren\\_Tr.pdf](https://www.ccmss.org.mx/wp-content/uploads/Territorios_mayas_en_el_paso_del_tren_Tr.pdf)
- GeoComunes (2019). El Tren Maya. Un proyecto de articulación territorial en la Península de Yucatán. Retrieved December 1, 2022 from [https://geocomunes.org/Analisis\\_PDF/TrenMaya.pdf](https://geocomunes.org/Analisis_PDF/TrenMaya.pdf)
- GeoComunes (2020). Análisis general del proyecto de Corredor Interoceánico del Istmo de Tehuantepec. Retrieved December 1, 2022, from [http://geocomunes.org/Analisis\\_PDF/GeoComunes\\_Trans%C3%ADstmico\\_22Abril2020.pdf](http://geocomunes.org/Analisis_PDF/GeoComunes_Trans%C3%ADstmico_22Abril2020.pdf).
- Gobierno de Yucatán (2021a). Programa piloto de cuantificación de co-beneficios de las energías renovables y la eficiencia energética en México. Retrieved December 1, 2022, from [https://iki-alliance.mx/wp-content/uploads/Factsheet-cobeneficios\\_G.pdf](https://iki-alliance.mx/wp-content/uploads/Factsheet-cobeneficios_G.pdf)
- Gobierno de Yucatán (2021b). Co-beneficios de la energía sustentable: una oportunidad para impulsar el bienestar y desarrollo sostenible en México. Retrieved December 1, 2022, from [https://sds.yucatan.gob.mx/co-beneficios/documentos/Resultados\\_Estudio\\_Co\\_beneficios\\_de\\_la\\_energia\\_sustentable.pdf](https://sds.yucatan.gob.mx/co-beneficios/documentos/Resultados_Estudio_Co_beneficios_de_la_energia_sustentable.pdf)
- Gobierno de Yucatán (2021c). Co-beneficios. Oportunidades de empleo y beneficios locales de la participación de las comunidades en proyectos de energía renovable en Yucatán. Retrieved

- December 1, 2022, from <https://iki-alliance.mx/co-beneficios-opportunidades-de-empleo-y-beneficios-locales-de-la-participacion-de-las-comunidades-en-proyectos-de-energia-renovable-en-yucatan/>
- Gomes Barris, M. (2017). *The extractive zone: Social ecologies and decolonial perspectives*. Duke University Press.
- Gonzalez Casanova, P. (1969 [2004]). *El colonialismo interno*. CLACSO. <http://biblioteca.clacso.edu.ar/clacso/se/20130909101259/colonia.pdf>
- González, R., Mugarte Xool, A. & Tornel, C. (2022) Resistencia frente a las energías renovables como formas de extractivismo: El caso y las lecciones aprendidas de San José Tipché. Fundación Debido Proceso Legal & Consejo Regional Indígena Popular de X'pujil. Retrieved December 1, 2022, from [https://www.dplf.org/sites/default/files/estudio\\_-\\_cripx\\_y\\_dplf\\_-\\_resistencia\\_energias\\_renovables\\_el\\_caso\\_san\\_jose\\_tibceh.pdf](https://www.dplf.org/sites/default/files/estudio_-_cripx_y_dplf_-_resistencia_energias_renovables_el_caso_san_jose_tibceh.pdf)
- González-López, R. & Ortiz-Guerrero, N. (2022). Integrated analysis of the Mexican electricity sector: Changes during the Covid-19 pandemic. *The Electricity Journal*, 35(6), 107142. <https://doi.org/10.1016/j.tej.2022.107142>
- Grosfoguel, R. (2016). [Del extractivismo económico al extractivismo epistémico y ontológico](#). *Revista Internacional de Comunicación y Desarrollo*, 1 (24), 123–143.
- Grosfoguel, R. (2018). La compleja relación entre modernidad y capitalismo: Una visión descolonial. *Pléyade*, 21, 29-47. <http://dx.doi.org/10.4067/S0719-36962018000100029>
- Gudynas, E. (2021). *Extractivisms: Politics, economy and ecology*. Fernwood Publishing.
- Guha, R. & Martinez-Alier, J. (1997). *Varieties of environmentalism: essays North and South*. Earthscan.
- Gutierrez-Aguilar, R. (2020). [Producir lo común: Entramados comunitarios y formas de lo político](#). *Revisión*, 10, 1-17.
- Gutierrez Rivas, R. (2020). El derecho a la consulta previa para obtener el consentimiento libre e informado frente a los megaproyectos de inversión y la industria extractiva. In Gutierrez Rivas, R. & Burgos Matamoros, M. (Eds.) [Globalización, neoliberalismo y derechos de los pueblos indígenas en México](#). (pp. 239-260). UNAM, Instituto de Investigaciones Jurídicas.
- Halverson, S. (2018). Cartographies of epistemic expropriation: Critical reflections on learning from the South. *Geoforum* 95, 11-20. <https://doi.org/10.1016/j.geoforum.2018.06.018>
- Healy, N. and Barry, J. (2017). Politicizing energy justice and energy system transitions: Fossil fuel divestment and a "just transition." *Energy Policy*, 108, 451–459. <https://doi.org/10.1016/j.enpol.2017.06.014>
- Heffron, R.J. (2021). Applying energy justice into the energy transition. *Renewable and Sustainable Energy Reviews*, 156, 111936. <https://doi.org/10.1016/j.rser.2021.111936>
- Heffron, R. & McCauley, D. (2017). The concept of energy justice across the disciplines. *Energy Policy* 105, 658–667. <https://doi.org/10.1016/j.enpol.2017.03.018>
- Hesketh, C. (2021). Clean development or the development of dispossession? The political economy of wind parks in Southern Mexico. *Environment and Planning E: Nature and Space*, 5(2), 543–565. <https://doi.org/10.1177/2514848621991764>
- Howe, C. & Boyer, D. (2016). Aeolian extractivism and community wind in Southern Mexico. *Public Culture*, 28(2), 215–235. <http://doi.org/10.1215/08992363-3427427>
- Indignación (2021). Autoconsulta. Pueblos Mayas en defensa de su derecho a decidir. Retrieved December 1, 2022, from [http://indignacion.org.mx/wp-content/uploads/2021/07/Autoconsulta\\_Ficha\\_t%C3%A9cnica.pdf](http://indignacion.org.mx/wp-content/uploads/2021/07/Autoconsulta_Ficha_t%C3%A9cnica.pdf)
- Isla, A. (2022). "Greening," the highest stage of extractivism in Latin America. In Brownhill, L., Engel-Di Mauro, S., Giacomini, T., Isla, A., Löwy, M. & Turner, T. (Eds.) *The Routledge handbook on ecosocialism*. (pp. 67-80). Routledge. <https://doi.org/10.4324/9780429341427>
- Jenkins, K., McCauley, D., Heffron, R., Stephan, H. & Rehner, R. (2016). Energy justice: A conceptual review. *Energy Research and Social Science*, 11, 174–182. <https://doi.org/10.1016/j.erss.2015.10.004>

- Jenkins, K. (2018). Setting energy justice apart from the crowd: Lessons from environmental and climate justice. *Energy Research and Social Science*, 39, 117–121. <https://doi.org/10.1016/j.erss.2017.11.015>
- Kirshner J., Castán Broto, V. & Baptista, I. (2020). Energy landscapes in Mozambique: the role of the extractive industries in a post-conflict environment. *Environment and Planning A: Economy and Space*, 52(6), 1051–1071. <https://doi.org/10.1177/0308518X19866212>
- Knuth, S., Behrsin, I., Levenda, A. & McCarthy, J. (2022). New political ecologies of renewable energy. *Environment and Planning E: Nature and Space*, 5(3), 997–1013. <https://doi.org/10.1177/25148486221108164>
- Le Billon, P. & Middeldorp, N. (2021). Empowerment or imposition? Extractive violence, Indigenous peoples, and the paradox of prior consultation. In Shapiro, J. & McNeish, J.A. (Eds.) *Our extractive age: Expressions of violence and resistance*. (pp.71-93). Routledge.
- Leff, E. (2017). Las relaciones de poder del conocimiento en el campo de la ecología política: Una mirada desde el Sur. *Ambiente & Sociedade São Paulo*, 20(3), 229–262.
- Lennon, M. (2021). Energy transitions in a time of intersecting precarities: From reductive environmentalism to antiracist praxis. *Energy Research & Social Science*, 73, 1-11. <https://doi.org/10.1016/j.erss.2021.101930>
- Lohmann, L. (2021). Bioenergy, thermodynamics and inequalities. In Backhouse, M., Lehmann, R., Lorenzen, K., (Eds.) *Bioeconomy and global inequalities: Socio-ecological perspectives on biomass sourcing and production*. (pp. 85-103). Palgrave Macmillan.
- López Gómez, A. L., Alfaro Andrade, J. L., Islas Barrios, A. & Alemán Gutiérrez, J. D. (2020). El Tren Maya: Un escenario de conflictividad socioambiental. *Ecología Política*, 60, 94-100
- Machado Araoz, H. (2013). Extractivismo y "consenso social": Expropiación – consumo y fabricación de subjetividades (capitalistas) en contextos neocoloniales. *Revista Cuestiones de Población y Sociedad*, 3(3), 29-42.
- Malm, A. (2016). *Fossil capital: the rise of steam power and the roots of global warming*. Verso.
- Marion Suiseeya, K. R. (2021). Procedural justice matters: power, representation, and participation in environmental governance. In Coolsaet, B. (Ed.). *Environmental justice: Key issues*. (pp. 37-51). Routledge.
- Marx, K. (1867) [1975]. *El capital tomo 1: crítica a la economía política*. Siglo XXI.
- McCarthy, J. (2015). A socioecological fix to capitalist crisis and climate change? The possibilities and limits of renewable energy. *Environment and Planning A: Economy and Space*, 47(12), 2485–2502. <https://doi.org/10.1177/0308518X15602491>
- McCarthy, J. & Thatcher, J. (2019). Visualizing new political ecologies: A critical data studies analysis of the World Bank's renewable energy resource mapping initiative. *Geoforum*, 102: 242-254. <https://doi.org/10.1016/j.geoforum.2017.03.025>
- McCauley, D., Heffron, R. & Stephan, H. (2013). Advancing energy justice: The triumvirate of tenets. *International Energy Law Review*, 32(3), 107–116.
- McEwen, C. (2017). Spatial processes and politics of renewable energy transition: Land, zones and frictions in South Africa. *Political Geography*, 56, 1-12. <https://doi.org/10.1016/j.polgeo.2016.10.001>
- McNeish, J. & Shapiro, J. (2021). Introduction. In Shapiro, J. & McNeish, J. (Eds.). In Shapiro, J. & McNeish, J.A. (Eds.) *Our extractive age: Expressions of violence and resistance*. (pp. 1-14). Routledge.
- Membe, A. (2003). Necropolitics. *Public Culture*, 15(1), 11-40.
- Mezzadra, S. & Nielson, B. (2019). *The politics of operations: Excavating contemporary capitalism*. Duke University Press.
- Milbourne, P. & Mason, K. (2017). Environmental injustice and post-colonial environmentalism: Opencast coal mining, landscape and place. *Environment and Planning A: Nature and Space*, 49(1), 29–46. <https://doi.org/10.1177/0308518X16665843>
- Moore, J. W. (2015). *Capitalism in the web of life: Ecology and the accumulation of capital*. Verso.
- Morosin, A. (2020). Comunalidad, Guendaliza'a and anti-mine mobilizations in the Isthmus of Tehuantepec. *Journal of Political Ecology*, 27(1), 917-938. <https://doi.org/10.2458/v27i1.23237>

- Múuch' Xiinbal (2021). Posicionamiento de Múuch' Xiinbal ante el violento e ilegal avance del mal llamado Tren Maya. Retrieved December 1, 2022, from <https://asambleamayawixsite.com/muuchxiinbal/pronunciamiento>.
- Newell, P., Geels, F., & Sovacool, B. K. (2022). Navigating tensions between rapid and just low-carbon transitions. *Environmental Research Letters*, 17(4), 041006. <https://doi.org/10.1088/1748-9326/ac622a>
- Newell, P. (2019). Transformismo or transformation? The global political economy of energy transitions. *Review of International Political Economy*, 26(1), 25–48. <https://doi.org/10.1080/09692290.2018.1511448>
- Nixon, R. (2011). *Slow violence and the environmentalism of the poor*. Harvard University Press.
- Oceransky S. (2011). Fighting the enclosure of wind: Indigenous resistance to the privatization of the wind resource in southern Mexico. In Abramsky K. (Ed.), *Sparking a worldwide energy revolution: Social struggles in the transition to a post-petrol world*. (pp. 505-522). AK Press.
- Partridge, T. (2022). *Energy and environmental justice: Movements, solidarities, and critical connections*. Springer. <https://doi.org/10.1007/978-3-031-09760-7>
- Quijano, A. (2000). Coloniality of power and Eurocentrism in Latin America. *International Sociology*, 15(2), 215–232. <https://doi.org/10.1177/0268580900015002005>
- Raman, S. (2013). Fossilizing renewable energies. *Science as Culture*, 22(2), 172-180. <https://doi.org/10.1080/09505431.2013.786998>
- Riofrancos, T. (2019). What green costs. *Logic*, 9 (Nature). Retrieved December 1, 2022, from <https://logicmag.io/nature/>
- Rodriguez, I. (2021). Latin American decolonial environmental justice. In Coolsaet B (Ed.). *Environmental justice: Key issues*. (pp. 78-93). Routledge.
- Santos, B. de S. (2014). *Epistemologies of the South: Justice against epistemicide*. Paradigm Publishers.
- Scott, J. C. (1985). *Weapons of the weak: Everyday forms of peasant resistance*. Yale University Press.
- SEMARNAT (2015). Compromisos de mitigación y adaptación ante el cambio climático para el periodo 2020-2030. Retrieved December 1, 2022, from [https://www.gob.mx/cms/uploads/attachment/file/162974/2015\\_indc\\_esp.pdf](https://www.gob.mx/cms/uploads/attachment/file/162974/2015_indc_esp.pdf)
- SENER, (2017). Resultados preliminares de la subasta de largo plazo de 2017. Retrieved December 1, 2022, from <https://www.gob.mx/sener/prensa/anuncian-sener-y-cenace-resultados-preliminares-de-la-subasta-de-largo-plazo-de-2017>
- Schlosberg, D. (2007). *Defining environmental justice: Theories, movements, and nature*. Oxford University Press.
- Sovacool, B. (2021). Who are the victims of low-carbon transitions? Towards a political ecology of climate change mitigation. *Energy Research & Social Science* 73, 101916. <https://doi.org/10.1016/j.erss.2021.101916>
- Sovacool, B. & Brisbois, (2019). Elite power in low-carbon transitions: A critical and interdisciplinary review. *Energy Research & Social Science*, 57, 101242. <https://doi.org/10.1016/j.erss.2019.101242>
- Sovacool, B., Heffron, R., McCauley, D. & Goldthau, A. (2016). Energy decisions reframed as justice and ethical concerns. *Nature Energy*, 1(5), 16024. <https://doi.org/10.1038/nenergy.2016.24>
- Sovacool, B., Hess, D. & Cantoni, R. (2021). Energy transitions from the cradle to the grave: a meta-theoretical framework integrating responsible innovation, social practices, and energy justice. *Energy Research & Social Science*, 75, 102027. <https://doi.org/10.1016/j.erss.2021.102027>
- Spash, C. L. (2021). Apologists for growth: Passive revolutionaries in a passive revolution. *Globalizations*, 18(7), 1123-1148. <https://doi.org/10.1080/14747731.2020.1824864>
- Sullivan, S. (2017). What's ontology got to do with it? On nature and knowledge in a political ecology of the 'green economy.' *Journal of Political Ecology*, 24, 217-242. <https://doi.org/10.2458/v24i1.20802>
- Svampa, M. (2015). Commodities consensus: Neoextractivism and enclosure of the commons in Latin America. *The South Atlantic Quarterly*, 114(1), 65-82. <https://doi.org/10.1215/00382876-2831290>
- Temper, L. (2019). Blocking pipelines, unsettling environmental justice: from rights of nature to responsibility to territory. *The International Journal of Justice and Sustainability*, 24(2), 94–112. <https://doi.org/10.1080/13549839.2018.1536698>

- Temper, L., del Bene, D., & Martínez-Alier, J. (2015). Mapping the frontiers and front lines of global environmental justice: the EJAtlas. *Journal of Political Ecology*, 22(1), 255–278. <https://doi.org/10.2458/v22i1.21108>
- Tetreault, D. (2023). Mexico's mining and petroleum policies under AMLO. A turn to neoextractivism? In Veltmeyer, H. & Ezquerro-Cañete, A. (Eds.). *From extractivism to sustainability: Scenarios and lessons from Latin America*. (pp. 53-69). Routledge.
- Tola, M. (2018). Between Pachamama and mother Earth: gender, political ontology and the rights of nature in contemporary Bolivia. *Feminist Review*, 118(1), 25-40. <https://doi.org/10.1057/s41305-018-0100-4>
- Toledo, V., Garrido, D., & Barrera-Bassols, N. (2015). The struggle for life: Socio-environmental conflicts in Mexico. *Latin American Perspectives*, 204(42-5), 133–147. <https://doi.org/10.1177/0094582X15588104>
- Torres-Mazuera, G. (2018). 'Nosotros decimos ma': La lucha contra la soya transgénica y la rearticulación de la identidad maya en la península de Yucatán. *The Journal of Latin American and Caribbean Anthropology*, 23(2), 262-280. <https://doi.org/10.1111/jlca.12322>
- Torres Mazuera, G. (2023). Dispossession through land titling: Legal loopholes and shadow procedures to urbanized forestlands in the Yucatán Peninsula. *Journal of Agrarian Change*, 23(2), 346–364. <https://doi.org/10.1111/joac.12520>
- Torres Mazuera, G., Madrid, S., & Benet Keil, R. (2020). Tres décadas de privatización y despojo de la propiedad social en la península de Yucatán. México. *Consejo Civil Mexicano para la Silvicultura Sostenible*. Retrieved December 1, 2022, from [https://www.ccmss.org.mx/wp-content/uploads/2020\\_22\\_TresDecadasPrivatizacion.pdf](https://www.ccmss.org.mx/wp-content/uploads/2020_22_TresDecadasPrivatizacion.pdf)
- Torres-Mazuera, G., Yannick, D., Velazquez-Quesada, S. I., & Flores Rangel, J. A. (2021). Extracting the (un)productive trait from communal lands in the 21st century: Point of departure for Yucatan Peninsula capitalist expansion. *Trace*, 80, 138-170. <https://doi.org/10.22134/trace.80.2021.794>.
- Torres-Wong, M. (2019). *Natural resources, extraction and Indigenous rights in Latin America: Exploring the boundaries of environmental and state-corporate crime in Bolivia, Peru, and Mexico*. Routledge.
- Tornel, C. (2022). Decolonizing energy justice from the ground up: Political ecology, ontology, and energy landscapes. *Progress in Human Geography*, 47(1), 43–65. <https://doi.org/10.1177/03091325221132561>
- Torres-Wong, M. (2022). [Mitos y realidades sobre la autoconsulta indígena en Yucatán: El caso del municipio maya de Homún](#). *Desacatos. Revista de Ciencias Sociales* 68, 30–49.
- Tsing, A. L. (2015). *The mushroom at the end of the world: On the possibility of life in capitalist ruins*. Princeton University Press.
- Ulloa, A. (2015). Environment and development: Reflections from Latin America. In Perreault T., Bridge G. & McCarthy J. (Eds.) *The Routledge handbook of political ecology*. (pp. 320-331). Routledge.
- United Nations (2015). *Sustainable Development Goals*. Retrieved December 1, 2022, from <https://sdgs.un.org/goals>
- Vázquez, L. & Vandergeest, P., (2022) Coastal erosion narratives in the Gulf of Mexico: implications for climate change governance, *Journal of Political Ecology* 29(1), 705–724. <https://doi.org/10.2458/jpe.5375>
- Veiga, J. (2019). La Cuarta Transformación viaja en tren. In Ceseña, A. E. & Veiga, J. (Eds.) *Avances de investigación Tren Maya*. (pp. 11-52). Observatorio Latinoamericano de Geopolítica, Universidad Nacional Autónoma de México.
- Verweijen, J. & Dunlap, A. (2021). The evolving techniques of the social engineering of extraction: introducing political (re)actions 'from above' in large-scale mining and energy projects. *Political Geography*, 88, 102342. <https://doi.org/10.1016/j.polgeo.2021.102342>
- Walsh, C. (2018). Decoloniality in/as praxis. In Mignolo W. D. and Walsh, C. (Eds.) *On decoloniality. concepts, analytics, praxis*. (pp. 15-104). Duke University Press.
- Willow, A. J. (2018). *Understanding extractivism: Culture and power in natural resource disputes*. Routledge. <https://doi.org/10.4324/9780429467196>

- Yenetti, K., Day, R. & Golubchikov, O. (2016). Spatial justice and the land politics of renewables: Dispossessing vulnerable communities through solar energy megaprojects. *Geoforum* 76, 90–99. <http://dx.doi.org/10.1016/j.geoforum.2016.09.004>
- Ye, J., van der Ploeg, J. D., Schneider, S. & Shanin, T. (2019). The incursions of extractivism: Moving from dispersed places to global capitalism. *The Journal of Peasant Studies*, 47(1), 155–183. <https://doi.org/10.1080/03066150.2018.1559834>
- Zárate Toledo, E., Patiño, R. & Fraga, J. (2019). Justice, social exclusion and Indigenous opposition: A case study of wind energy development on the Isthmus of Tehuantepec, Mexico. *Energy Research & Social Science*, 54, 1–11. <https://doi.org/10.1016/j.erss.2019.03.004>
- Zárate Toledo, E., Wood, P. & Patiño, R. (2021). In search of wind farm sustainability on the Yucatan coast: Deficiencies and public perception of environmental impact assessment in Mexico. *Energy Policy*, 158, 112525. <https://doi.org/10.1016/j.enpol.2021.112525>
- Zibechi R. (2022). *Mundos otros y pueblos en movimiento. Debates sobre anti-colonialismo y transición en América Latina*. Libertad Bajo Palabra.
- Zografos, C. & Robbins, P. (2020). Green sacrifice zones: Or why a Green New Deal cannot ignore the cost shifts of just transitions. *One Earth*, 3(5), 543–546. <https://doi.org/10.1016/j.oneear.2020.10.012>