The production of unequal energyscapes: Contested colonial spaces for tar sands development in Canada

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Abstract

This article develops the concept of energyscapes to examine the production, governance, and transformation of socio-material spaces for tar sands extraction, distribution, and consumption in Canada. We argue that energyscapes is a helpful concept to understand the key but understudied role of competing material-discursive practices in shaping tar sands spaces. Connecting research on energy geographies, settler colonialism, and political ecology, this work considers settler and Indigenous assertions of jurisdiction over land as key drivers of tar sands spaces. Through the lens of energyscapes, we analyze the dispute over the controversial Trans Mountain Pipeline Expansion Project (TMX) in British Columbia and Alberta between the federal government and a First Nations-led movement. Using document analysis and participant observation, we discuss the influence of conflicting land claims, discourses on fossil fuels, and knowledge systems in (re)producing and disrupting the physical spaces and sociopolitical arenas through which the TMX is governed. A focus on the political ecology of struggles against tar sands infrastructures opens research avenues to explore the challenges of dismantling the colonial and capitalist logics underpinning tar sands spaces.

Key words: Energyscapes, tar sands spaces, Canada, fossil fuel infrastructures, land dispossession

Resumen

Este artículo profundiza en el concepto de energyscapes para examinar la producción, gobernanza y transformación de espacios socio-materiales para la extracción, distribución y consumo de petróleo de arenas bituminosas en Canadá. Nuestro argumento central es que energyscapes constituye un

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concepto útil para entender el papel clave, pero poco estudiado, de diversas practicas discursivo-materiales en la configuración de espacios de arenas bituminosas. Conectando la investigación en geografías energéticas, colonialismo de colonos y la ecología política, este artículo considera reivindicaciones coloniales e indígenas territoriales como fuerzas motrices detrás de dichos espacios. Mediante el concepto de energyscapes, analizamos el conflicto entre el gobierno canadiense y un movimiento de resistencia liderado por Primeras Naciones en torno a la expansión del oleoducto Trans Mountain (TMX) en Columbia Británica y Alberta. Empleando análisis documental y observación participante, debatimos la influencia de reinvindicaciones territoriales, discursos sobre combustibles fósiles y sistemas de conocimiento en la reproducción y disrupción de espacios físicos y arenas sociopolíticas para la gobernanza del proyecto TMX. Un énfasis en la ecología política de los conflictos en torno a infraestructuras de arenas bituminosas abre vías de investigación para explorar los retos que plantea el desmantelamiento de las lógicas coloniales y capitalistas que sustentan los espacios de arenas bituminosas.

Palabras clave: Energyscapes, espacios de arenas bituminosas, Canadá, infraestructuras fósiles, despojo de tierras

Zusammenfassung

Dieser Beitrag entwickelt das Konzept der Energyscapes weiter, um die Produktion, Governance und Transformation sozio-materieller Räume für den Abbau, -Transport und -Verbrauch von Teersanden in Kanada zu untersuchen. Wir argumentieren, dass das Konzept der Energyscapes zu einem tieferen Verständnis der wichtigen, aber noch zu wenig erforschten Rolle konkurrierender materieller und diskursiver Praktiken bei der Gestaltung von Teersandräumen beitragen kann. Dazu werden Ansätze der politischen Ökologie und der Energiegeographie mit einer Analyse des Siedlerkolonialismus in Kanada verbunden. Der Fokus liegt dabei auf dem Einfluss der Landansprüche der First Nations und der kanadischen Regierung auf die Produktion von umkämpften Teersandräumen. Dies illustrieren wir anhand des Konflikts um das Trans Mountain Pipeline Expansion Project (TMX) in British Columbia und Alberta zwischen der kanadischen Regierung und einer von den First Nations angeführten Bewegung. Mittels Dokumentenanalyse und teilnehmender Beobachtung wird veranschaulicht, wie widersprüchliche Landansprüche, energiepolitische Diskurse und Wissenssysteme physische Räume und soziopolitische Arenen transformieren, in denen Auseinandersetzungen um die TMX stattfinden. Die Fokussierung auf die politische Ökologie der Teersandinfrastrukturen eröffnet Perspektiven für die Transformation der zugrundeliegenden kolonialen und kapitalistischen Strukturen der Teersandräume.

Schlagwörter: Energyscapes, Teersanderäumen, Kanada, fossile Infrastruktur, Landenteignung

1. Introduction

The spaces of tar sands[2] development across Canada are connected through networks of physical infrastructure that provides abundant crude oil to the Canadian and the United States economies, and constitutes vital components for the organization of everyday life (Wilson, Carlson & Szeman, 2017). Infrastructures for tar sands extraction, mining, production, transportation, consumption, and waste are not only technical systems but are created and maintained by political-economic and ideological forces (Haarstadt & Wanvik, 2016). Transnational oil corporations,

[2] Tar sands refer to heavy crude oil made of bitumen, clay, sand, and water (CAPP, 2021), more emission-intensive than conventional oil (Hughes, 2020). In this article, we prefer the term 'tar sands' to 'oil sands' because the former underlines the economic and socio-environmental implications of tar sands while the latter, used by the oil industry and the Canadian state, downplays tar sands' adverse effects (Huseman & Short, 2012). Tar sands are classified as ‘unconventional' oil, which, compared to ‘conventional' oil, is heavier, more viscous, difficult to extract and produces more toxic byproducts (Adkin, 2016).

financial institutions, and the Canadian state[3] have played a key role in consolidating Canada's position as a major oil producer and exporter, primarily to the United States (US), and in the geographic expansion of tar sands operations (Black *et al.*, 2014), particularly in the province of Alberta, which holds the world's third largest proven unconventional oil reserves (Government of Canada, 2020). Through legislation, energy policymaking, finance, media framing, and technological development, corporate and state actors have significantly shaped the decision-making processes and the hegemonic meanings associated with tar sands (e.g., economic growth, job creation, sustainability) (Adkin, 2016; Carroll, 2021). The concentration of decision-making power and corporate ownership in the oil industry has not only reinforced carbon-intensive path dependencies but also (re)produced a wide range of socio-environmental impacts and inequalities at all stages of the tar sands supply chain (Adkin, 2016).

A large body of literature has examined the essential role of tar sands development[4] in driving greenhouse gas emissions (GHG), deforestation, biodiversity loss, surface and groundwater, and soil pollution, public health, violations of Indigenous peoples'[5] rights, and the disruption of Indigenous livelihoods (Nikiforuk, 2010; Huseman & Short, 2012; Black *et al*., 2014; Veltemery & Bowles, 2014; Westman & Joly, 2019). However, political ecology scholarship has paid relatively little attention to the contested politics of tar sands (Adkin, 2016). In particular, the significance of uneven power-knowledge relations for the configuration of spaces of tar sands development and their discursive representation remains largely underexplored (Wanvik, 2018). A focus on discursive-material practices brings to the fore the networks of physical spaces and governance scales that enable continued fossil fuel extraction and the normalization of discourses of fossil fuel dependence.

This article aims to provide a better understanding of the production and transformation of tar sands spaces by bringing political ecology into conversation with research on energy geographies and settler colonialism (Veltemery & Bowles, 2014; Rossiter & Burke Wook, 2016). Drawing on energy geographies research, we primarily use the concept of energyscapes because it allows us to explore how these spaces are constituted, governed, and disrupted through divergent material-discursive practices (e.g., land claims, discourses, knowledge production, representations of space). Our analysis is informed by the framework of settler colonialism, which serves as a supportive approach to elucidate the historical tensions over land claims in the Canadian oil sector. Here, our main argument is that the production and contestation of tar sands spaces are driven by the Canadian state's assertions of land ownership and Indigenous land rights contestations. By uncovering these underlying power dynamics, this work seeks to advance scholarly discussions on the political ecology of conflicts over fossil fuel infrastructures in Canada.

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[3] The term 'Canadian state' makes reference to Canada's major political-legal institutions, including the monarch, the federal government, the 13 provincial, territorial, and municipal governments, the Parliament, and the judiciary. By contrast, the term 'federal government' describes the body responsible for the federal administration of the country, which includes the Prime Minister and the Ministers (Government of Canada, 2023a).

[4] We use 'tar sands development' and 'tar sands operations' as synonyms to describe extraction, mining, production, refining, distribution, consumption, and waste management activities.

[5]Indigenous peoples as we use the term in this article are the original inhabitants of what is now known as Canada and their descendants. Despite their different cultures, socio-economic situations, legal orders, and political organization, Alfred and Corntassel (2005: 597) note that: "the struggle to survive as distinct peoples is what is shared by all Indigenous peoples, as well as the fact that their existence is in large part lived as determined acts of survival against colonizing states.' efforts to eradicate them culturally, politically and physically."

To illustrate these contested dynamics, we look at the conflict over the government-owned Trans Mountain pipeline expansion (TMX), which began in the 2010s. The conflict took place in British Columbia (BC) and Alberta between the federal government and a social movement comprised of First Nations,[6] local and international environmental organizations and groups, and citizens with overlapping and contrasting agendas (the pipeline was completed in 2024). Combining document analysis and participant observation at anti-pipeline demonstrations, this article shows how these actors articulate and mobilize competing land and knowledge claims and discourses to produce, (de)legitimize, and (de)stabilize tar sands spaces.

Our analysis begins by further developing the notion of energyscapes and underscoring its importance for conceptualizing tar sands spaces. We then highlight the centrality of fossil capitalism and settler colonialism to the constitution of these spaces. Next, we explore how the federal government expands tar sands spaces by exerting control over the lands crossed by the TMX and their discursive representation. At the same time, we look at how the First Nations-led movement[7] unsettles the physical spaces and socio-political arenas for this project by confronting settler territorial sovereignty. The article concludes with a discussion of the possibilities for and limitations of dismantling the power-knowledge structures embedded in tar sands spaces.

2. Constructing energyscapes

Although scholarship on environmental justice, settler colonialism, and fossil capitalism has examined conflicts between Indigenous peoples, fossil capital,[8] and the Canadian state over tar sands development (Black *et al.*, 2014; Veltmeyer & Bowles, 2014; LeQuesne, 2019; Mazer *et al*., 2019; Carroll, 2021; Spiegel, 2021), political ecology has surprisingly paid little attention to this issue (Adkin, 2016). We argue that political ecology research on energy development (Watts, 2013; Huber, 2015; Castán-Broto & Calvet, 2020) helps understand the production of socio-spatial inequalities in the access to and control over lands where tar sands are extracted and fossil fuel infrastructures (e.g., pipelines) are built. This observation is relevant as there has been little research on the configuration of uneven spaces for tar sands operations (Le Billon & Vandecasteyen, 2013; Wanvik, 2018). Connecting political ecology with energy geographies provides a useful analytical starting point for examining energy spaces not as fixed locations, but rather as historically constituted through a myriad of socio-environmental relations, processes, narratives, knowledge systems, and worldviews in specific contexts (Watts, 2013; Huber, 2015; Calvert, 2016; Bridge *et al.,* 2018; Cederlöf, 2019). Energy spaces are thus (re)made and experienced by multiple actors in divergent and often competing ways (Calvert, 2016; Broto & Baker, 2017; Bridge *et al.,* 2018; Hunsberger & Larsen, 2021).

Energy geographies scholarship uses the concept of energy landscapes to scrutinize the physical, socio-cultural, political-economic, and environmental transformations of landscapes brought about by energy systems (Zimmerer, 2011; Calvert, 2016). This literature underscores how

[6] First Nations are one of the three groups of Indigenous peoples along with Inuits and Métis, which are "officially recognized" by the Canadian state. While it may be more appropriate to refer to each Nation by its name, 'First Nations' is used here as an umbrella term to refer to sovereign Indigenous peoples with inherent territorial rights and their own distinct legal systems, governance structures, and identities (Frost, 2019).

[7] The movement consists of heterogenous, decentralized, and polycentric networks of First Nations, Indigenous groups, international and local environmental non-governmental organizations (ENGOs), and citizens. While ENGOs may play a significant role in organizing and funding anti-fossil fuel campaigns and public communication strategies, some First Nations have been at the forefront of the fight against tar sands expansion. We explore this issue in more detail in sections 5 and 6.

[8] This concept refers to the transnational fossil fuel and financial corporations that dominate Canada's oil sector (Carroll 2020, 2021).

landscapes shape and are shaped by the interplay of energy technologies, policy frameworks, market dynamics, geopolitical arrangements, and sociocultural meanings (Haarstadt & Wanvik, 2016; Calvert, Greer & Maddison-MacFadyen, 2019; Kirshner, Castán Broto & Baptista, 2019). Of particular relevance are the overlapping governance scales at which the legitimacy and authority over the uses and representations of energy landscapes are redefined and challenged (Bridge *et al.,* 2018; Bridge & Gailing, 2020; Van Neste & Couture-Guillet, 2022). Stressing the dynamic nature of energy landscapes helps us to see them as fragmented and unstable socio-material spaces subject to processes of (re)configuration (Haarstad & Wanvik, 2016). Yet, as outcomes of historical processes, energy landscapes also maintain existing energy technologies and reinforce power relations (Nadaï & Van der Horst, 2010).

Whereas the term 'energy landscapes' tends to concentrate more on the spatial (re)configuration of energy-related activities (Castán Broto, 2019), the more recent concept of energyscapes emphasizes the unequal production of space and socio-environmental relations in energy development processes (Howard *et al.,*2013; Wanvik, 2018; Bridge & Gailing, 2020). For example, Cardosa and Turhan (2018:339) define energyscapes as "landscapes of social, material, spatial, and discursive relations" to analyze multidimensional inequalities along international coal supply chains. Following this line of thinking, other studies conceive energyscapes as assemblages of energy systems and competing political-economic arrangements, institutional-legal frameworks, and values (Delina, 2020; Harlan & Baka, 2024). Inspired by the notion of energyscapes, studies have used the terms 'carbonscapes' (Haarstad & Wanvik, 2016; Jordhus-Lier, Houeland & Ellingvåg, 2022; Müller & Sareen, 2024) and 'petroleumscapes' (Hein, 2021) to scrutinize the spatial configurations of power relations in fossil fuel extraction, processing, distribution, and consumption activities.

Building upon these connected strands of literature, we conceptualize energyscapes as socio-material spaces of energy extraction, production, transportation, consumption, and waste, characterized by multi-scalar struggles over the unequal appropriation and distribution of the political-economic benefits and socio-ecological costs of such activities. Energyscapes, we argue, constitute a more appropriate framework than energy landscapes for analyzing how different actors legitimize, shape, and contest tar sands spaces through multiple material-discursive practices (e.g., land claims, policymaking, discourses,[9] and knowledge production).[10] A similar study explores contested oil spaces in Canada, focusing on the pragmatic engagement of Métis communities in tar sands activities (Wanvik, 2018). Yet it leaves underexplored the role of Indigenous-led movements in destabilizing tar sands spaces. Our research on the contentious spatial politics of the TMX illustrates this point. Attention here to the colonial dimension of tar sands development fosters a convergence of political ecology and energy geographies with settler colonial studies (Adkin, 2016; Spice, 2018; Carroll, 2021). Settler colonialism refers to the appropriation of Indigenous peoples'

[9] Discourses are broadly understood as dynamic assemblages of identities, objectives, visions, and meanings entwined in power struggles (Wolford & Keene, 2015).

[10] We also distinguish energyscapes from related conceptual frameworks, such as Industrial Political Ecology (IPE) (Huber, 2017) and Political-Industrial Ecology (PIE) (Baka, 2025). In general, IPE examines the influence of economic and sociopolitical forces in shaping the flows of energy, raw materials and other resources of industrial systems (Huber, 2017). By contrast, PIE underscores how flows of energy and natural resources are politically mediated and unevenly distributed, giving rise to inequalities in terms of access to, use and profit form these resources (Baka, 2025). In contrast to these frameworks, energyscapes offers an advantage for exploring the material-discursive practices through which spaces for energy development are configured, governed and contested. The notion of energyscapes also elucidates the uneven socio-spatial distribution of the impacts of energy extraction, production, transportation and consumption activities (Calvert, 2016; Bridge *et al.,* 2018).

lands for resource extraction and settlement, and the forced assimilation, replacement and elimination of the Indigenous population (Alfred & Corntassel, 2005; Simpson, 2017). As a polymorphic process, settler colonialism permeates several dimensions of social life, from the prohibition of cultural practices, the systematic neglect of health education and housing, to the forced removal of children and gendered violence (Rifkin, 2017). These manifestations reveal the interwoven structures of white supremacy, patriarchy, and capitalism at the core of the settler colonial project (Preston, 2013; Coulthard, 2014). A key observation here is that the presence of Indigenous peoples poses an inherent challenge to the Canadian state's land claims, requiring the perpetual assertion of territorial control and jurisdiction over Indigenous lands (Simpson, 2017).

In the Canadian case, the imposition of private land rights since the 16th century – premised upon the assumption that Indigenous peoples had no land rights – has normalized the dispossession of Indigenous peoples through physical violence, policy interventions, and legislation (Alfred & Corntassel, 2005; Pasternak, 2014; Mackey, 2016). Looking at the settler colonial foundations of tar sands development (Preston, 2013) provides insights into the power-knowledge structures that govern unequal access to, control over, and ownership of land, tar sands reserves, and oil infrastructures (Huseman & Short, 2012; Adkin, 2016; Carroll, 2021). Such infrastructures enable and sustain fossil capitalism, a historical mode of conceptualizing and organizing society-nature relations that relies on intensive fossil fuel extraction and consumption for capital accumulation (Malm, 2012; Carter, 2014).

An analysis of settler colonialism and fossil capitalism entails considering how tar sands expansion has turned Indigenous peoples' homelands into 'sacrifice zones' through air pollution, toxic waste discharge (e.g., tailings ponds), and deforestation (Black *et al.*, 2014; Westman & Joly, 2019). Such analysis also involves looking at the long-standing struggles of Indigenous peoples against tar sands operations expressed through their land governance structures, laws, knowledges of places, and worldviews (Atleo, 2020). Examining the contested politics of tar sands spaces, we argue, advances theorizations of the political ecology of struggles against hydrocarbon infrastructures (Watts, 2013; Willow & Wylie, 2014; Brock, 2020; Llavero-Pasquina *et al.,* 2024).

3. The historical production of tar sands spaces in Canadian settler colonialism

Viewed through the prism of energyscapes, tar sands spaces can be understood as dynamic sociopolitical arenas and physical places for the extraction and mining of tar sands, but also including production, distribution, consumption, and waste. These spaces influence and are influenced by multi-scalar interactions of political-economic arrangements, fossil fuel technologies, place-based identities, discourses, knowledge systems, and future visions. Figure 1 shows the components of tar sands spaces and highlights key actors, practices, and arenas. Fossil fuel infrastructures play a central role in this assemblage as they form the material foundation of tar sands spaces. By infrastructures, we refer to drilling and mining machinery, refineries, pipelines, railways, roads, storage facilities, marine terminals, and shipping routes that connect Alberta's tar sands to oil consumption areas in Canada and foreign markets (LeBillon & Vandecasteyen, 2013; Scott, 2014; Pickern, 2019). Through these spatial interconnections, tar sands are extracted and transformed into everyday products, used for transportation and heating, and eventually released into the environment as waste and GHG emissions (Scott, 2014). Rather than operating in isolation, tar sands infrastructures are entwined in transnational networks of conventional oil, shale gas, coal, and mining projects that require large amounts of land, water, energy, and raw materials (Lokman, n.a). Here, energyscapes extend our view of fossil infrastructures beyond their technical characteristics to consider them as "systems of interconnection, dependence, and exchange between built, natural, and social environments that shape patterns of production and consumption that develop around them" (Scott, 2014:18).

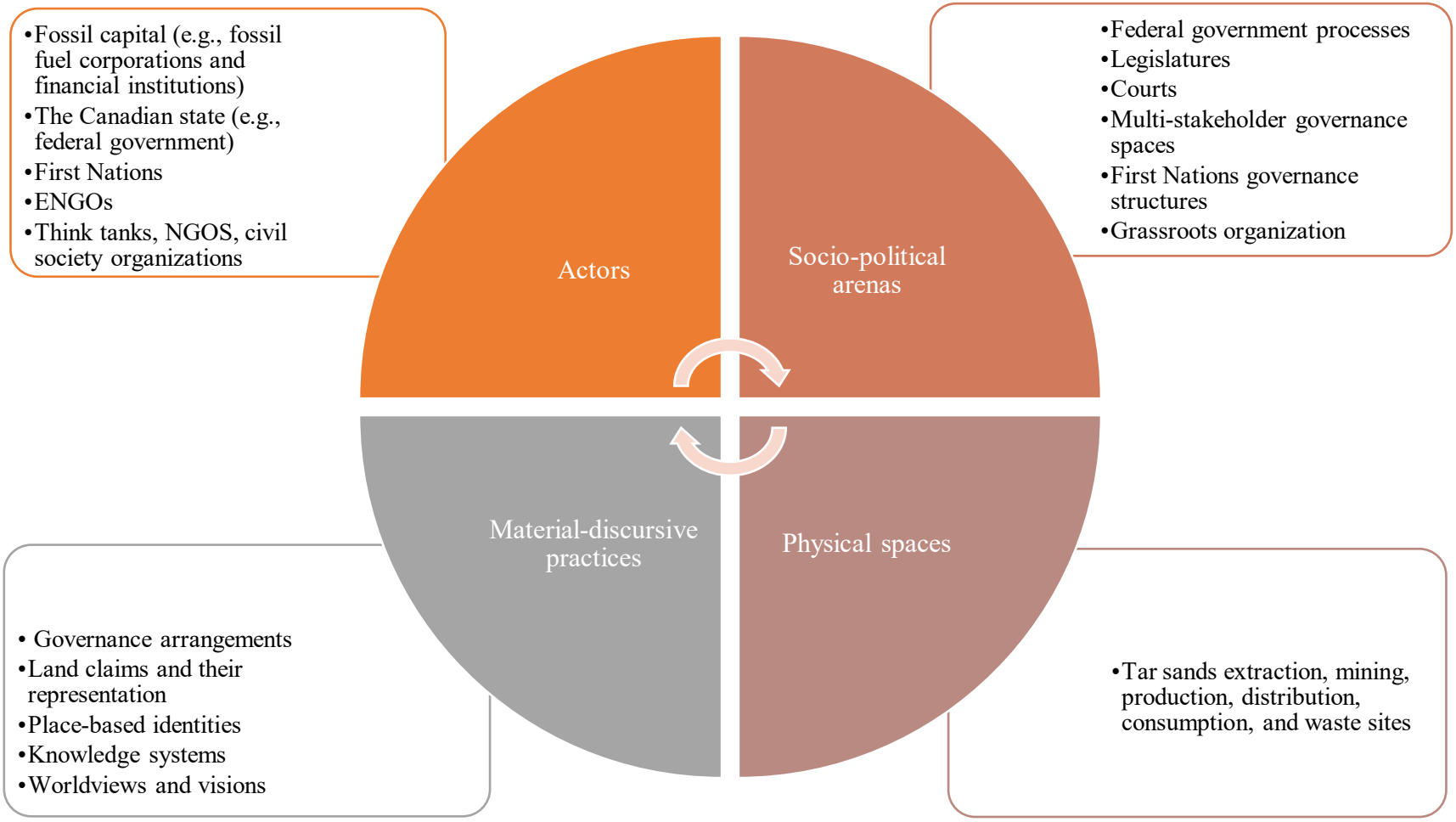

Figure 1: The production of tar sands spaces. Source: Own elaboration

Central to fossil capitalism in Canada is the commodification and appropriation of land and tar sands reserves, and their incorporation into transnational circuits of capital (Pineault, 2018; Simpson, 2019; McCreary, 2021). Our main argument here is that the constitution of tar sands spaces rests on the settler state's claims to Indigenous lands and its authority to lease the rights to extract, produce, and distribute crude oil to private corporations. Put differently, we see land appropriation and dispossession as key drivers of the constitution of tar sands spaces (Figure 1). The identification of 'exploitable' tar sands can be traced back to the 19th century, when Canadian state-sponsored commercial and scientific assessments (e.g., cartography and geological studies) were central to the creation of a future tar sands frontier (Simpson, 2019; Schmidt, 2020). Yet large-scale tar sands extraction was not technically or economically feasible at the time. After the federal government implemented the National Oil Policy in 1961, commercial tar sands operations started in 1967 (Manning, 1968). During the 1970s international energy crisis, concerns about energy security, high oil prices, and the peak of conventional oil motivated Canada to encourage further investments in the Alberta tar sands (Longley, 2018, Figure 2). It was, however, not until the commodities boom in the 2000s that tar sands development expanded internationally (Hussey *et al.*, 2020), leading to a prolonged rise in oil prices between 2004 and 2014 and increased oil production and export capacity (Huseman & Short, 2012; Veltmeyer & Bowles, 2014).

During the tar sands boom (2000-2014), former conservative Prime Minister Stephan Harper proclaimed Canada as an "energy superpower" to accelerate tar sands extraction, providing subsidies to oil corporations, dismantling environmental regulations, and implementing legal and financial barriers to public participation in energy decisions (Carter, 2014, 2020). This support led to the concentration of corporate ownership in the oil industry, which is currently dominated by companies such as ExxonMobil and Royal Dutch Shell, and large financial services companies, particularly Canadian banks such as the Royal Bank of Canada, Toronto-Dominion Bank, and Bank of Montreal (Carroll, 2020). As a result of economic growth in the oil industry, tar sands oil became Canada's major export commodity, representing 14.1% of the country's total exports (CER, 2022). In fact, Canada is the world's third major oil exporter with 8% of the total exports, and the fourth largest oil producer with 5.6% of the global output (IEA, 2022).

Tar sands spaces cannot be analyzed without considering cross-border energy development with the US. Indeed, 98% of Canada's oil exports go to the US market (CER, 2020), which is not surprising given that the US government has historically framed tar sands as a reliable and affordable energy source due to their geographical proximity and low transportation costs (Nikiforuk, 2010). Indeed, almost all existing and proposed fossil fuel pipeline projects in Canada (Figure 3) are designed to meet US fossil energy needs (LeBillon & Vandecasteyen, 2013; Mazer *et al.*, 2019). Canada's oil trade with the US is uneven, with Canada's eastern provinces still dependent on foreign oil imports, particularly from the US, due to various factors, including limited pipeline access to Alberta's tar sands, high oil transport costs by rail, and proximity to US oil refineries (Carter, 2014; Benton-Connell & Cochrane, 2020). The country's dependence on crude oil exports and imports illustrates its subordinate integration into the US energy security strategy (Black *et al*., 2014). In the case of the TMX (at the upper left corner of Figure 3), most of the oil transported through the existing pipeline is delivered to the US. In contrast, the expansion project will carry 900,000 oil barrels per day (bpd) from Edmonton, Alberta, to a marine terminal in Burnaby, BC, from where 120,000 tonnes (t) of oil will be exported to Asian markets every month (Trans Mountain, 2021).

Figure 2: Alberta's tar sands mines. Source: Castillo Jara (2023)

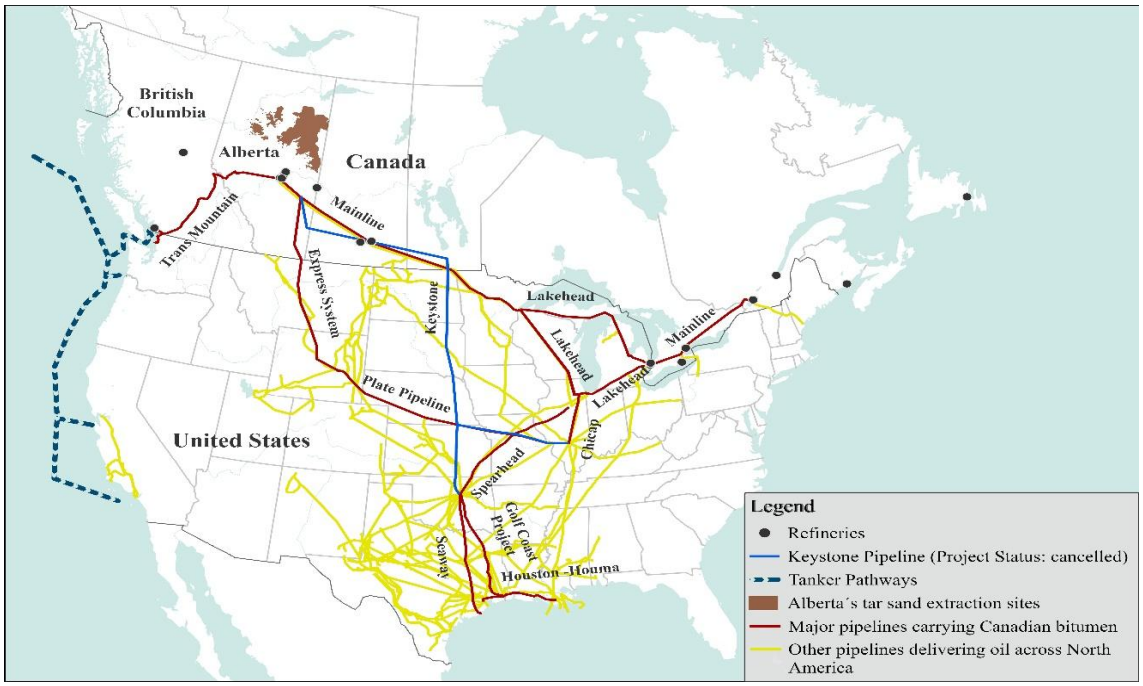

Figure 3: Tar sands infrastructure network across Canada and the US. Source: Castillo Jara (2023). Thanks to Isis Kahlis for her assistance in the elaboration of this map.

Fossil fuel trade is not the only factor reshaping the spatialities of tar sands operations; the volatility of oil markets (e.g., boom-bust cycles), economic changes (e.g., the COVID-19 pandemic), and the geopolitics of climate change (e.g., the US-Canadian dispute over the climate impacts of the cross-border Keystone pipeline) are also important (Hussey *et al*., 2021). Our focus, however, is on the role of First Nations,[11] Indigenous-led groups (e.g., Indigenous Climate Action and the Tiny Warriors), and ENGOs (e.g., Stand. Earth and West Environmental Law) in delaying the construction of tar sands pipelines, such as the TMX, one of the most controversial pipeline projects in Canada in recent years (Black *et al*., 2014; LeQuesne, 2019; Mazer *et al*., 2019). These groups have expressed concerns about the potential impacts of the TMX, including oil spills on fragile marine ecosystems and wildlife endangered species, GHG emissions, disruption of livelihoods (e.g., limitation and/or loss of access to land for hunting, fishing, and holding ceremonies), and land rights violations (Tsleil-Waututh Nation v. Attorney General of Canada, 2018; West Coast Environmental Law, 2019).

With respect to Indigenous peoples, there are 140 First Nations and Métis along the TMX route, who have contrasting and shifting approaches depending on several factors, including their location relative to the pipeline, their economic base, and the environmental risks posed by the project (Owen, 2018; Purdon & Palleja, 2019). Even those First Nations opposed to the TMX have different concerns and agendas (West Coast Environmental Law, 2019). Conversely, other First Nations and Indigenous groups, including Iron Coalition, the Reconciliation Project, and the Western Indigenous Pipeline Group (WIPG), have expressed support for the TMX, often viewing the project as a vehicle for economic self-determination, equity ownership, and land sovereignty (Atleo, 2020; Westman, Joly & Gross, 2020). A full exploration of the complex and diverse Indigenous perspectives on the TMX is beyond the scope of this article.

Regarding ENGOs, a multi-scalar network exists that connects transnational groups like Greenpeace to regional organizations, such as the RAVEN Trust, and grassroots collectives like Climate Convergence. While these groups have aligned their interests in mobilizing against the TMX project, their levels of engagement vary significantly, ranging from rhetorical support to direct protests and grassroots mobilization (Hoberg, 2021). Furthermore, these ENGOs navigate internal contradictions and competing interests with Indigenous people. Tensions, for example, arise where environmental protection goals clash with First Nations jurisdiction over their territories and their visions of economic development (see Grossman, 2017). A full examination of these power dynamics, however, lies beyond the scope of this article.

In addition to the anti-pipeline movement, there are multiple actors (e.g., the federal, Alberta, BC and municipal governments, and fossil capital) also involved in, or affected by, the TMX project. In this article, we paid special attention to the federal government and the First Nations-led movement, as their diametrically opposing positions lie at the heart of the pipeline conflict. Within the federal government, we focused on the key role of the Prime Minister and the Ministry of Natural Resources in approving the TMX and implementing consultation processes with Indigenous people along the pipeline route. Although distinct from the federal government, we also included the National Energy Board (NEB, now known as the Canada Energy Regulator) and the Federal Court of Appeal as relevant state actors. Their roles are central to legitimizing the TMX through environmental impact assessments (EIAs) and judicial rulings. Importantly, the federal government and these state institutions are not a unified block; they frequently pursue contradictory and competing policy objectives, creating frictions that result in fragmented tar sands governance (Carroll, 2021).

Another important actor in tar sands governance is the Alberta government, which has historically prioritized fossil fuel development as a cornerstone of the provincial economy (Carter,

[11] The *Tsleil-Waututh* Nation, the *Squamish* Nation, the Coldwater Indian Band, the Upper Nicola Band, the *Stz'uminus* Nation, *Ts'elxweyeqw* Tribes, the *Shxw'owhamel* First Nation, the Upper Nicola Band, and the *Stk'emlupsemc te Secwepemc* Nation (West Coast Environmental Law, 2019).

2020). This support is institutionalized through a combination of favorable regulatory frameworks, research funding, and a corporate and state-driven narrative that fosters a collective identity deeply tied to it (Adkin, 2016). In this sense, the Alberta Government has been a strong proponent of the TMX, highlighting the project's economic and employment benefits while downplaying its negative environmental and social impacts (Solomon, 2018).

Despite a united front on the TMX, the interests of the Alberta and federal governments sometimes diverge. This friction manifested when legal challenges delayed the TMX construction due to inadequate federal consultation processes, which frustrated Alberta's projected revenues (Hoberg, 2021). Furthermore, tensions have intensified as the federal government, particularly under Justin Trudeau (2015-2024), adopted a climate change discourse, proposing regulations such as emissions caps and net-zero goals (Castillo Jara, 2025). These initiatives clashed with Alberta's preference for a deregulated oil sector and its defense of provincial jurisdiction over fossil fuel resources (Adkin, 2016; Carroll, 2021). This tension also extended to interprovincial disputes over the regulation of crude oil distribution.[12] Having identified the primary actors involved in the TMX conflict, we now turn to the methodology employed to examine, among other factors, the role of these actors in shaping and contesting tar sands spaces.

4. Methodology

We used a qualitative approach combining archival research, participant observation and document analysis, specifically newspaper articles, public hearings on the TMX, and reports. Collectively, these sources provide a robust foundation for exploring the contested nature of tar sands spaces. Navigating them required a reflexive engagement with our own positionality, acknowledging our privilege within academic structures of knowledge production that have historically subjugated Indigenous epistemologies (Abbot & Cavendert, 2004; Tuck & Yang, 2012; Mackey, 2016).

To address these challenges, we draw on research on settler colonialism and Indigenous resurgence. Doing so allowed us to problematize colonial structures of knowledge production (Mackey, 2016) and shift the focus away from 'studying' Indigenous peoples toward the responsibility of scholars to highlight the injustices that obstruct Indigenous self-determination (Grossman, 2017). Here, we do not claim to speak on behalf of Indigenous communities or propose solutions to the challenges they face. Instead, we aim to understand the conditions under which tar sands spaces and the Indigenous-led opposition to pipelines emerge (Black *et al.*, 2014; Adkin, 2016; Spice, 2018). We acknowledge that our research remains constrained by the academic structures we critique. Building on this reflection, we now detail the methodology that guided our study.

Archival research

The first author conducted archival research at the Provincial Archives of Alberta, the City of Edmonton Archives and the City of Burnaby Archives. These sites were selected for their extensive records on Canada's oil industry history (late 1800s to the early 2000s), including legislation, federal court records, policy papers, books, maps, and audiovisual recordings. A catalogue keyword search, including 'oil sands', 'Alberta', 'oil industry', and 'federal government', retrieved 35,000 results. Given the large size of the dataset, the selection was narrowed to federal and Alberta policy records that document pivotal phases in Canada's oil sector, particularly the

[12] The BC government, for instance, citing ecological risks of oil spills, attempted to stop the TMX by submitting a reference to the BC Court of Appeal in 2018 (Lawson, 2021). This legal maneuver sought a determination on whether the province had the authority to amend the Environmental Management Act and to regulate crude oil transportation via a pipeline (Hoberg, 2021). This legal challenge was unsuccessful, as the Supreme Court of Canada dismissed the BC government's appeal because it sought to regulate a pipeline project that fell under federal jurisdiction (Solomon, 2018).

onset of commercial operations (1960–1970) and their major expansion (2010–2014). Following an initial review of 247 documents, 68 items were selected for closer examination due to their relevance to understanding the production of tar sands spaces. In particular, we paid attention to federal court documents on the TMX as these capture the official perspective on the project and the specific legal arguments deployed throughout the TMX controversy.

We also prioritized the selection of cartographic records of oil reserves and photographs of oil facilities, including aerial shots of tar sands mining and extraction sites in Alberta taken by the first author. From an initial sample of 1,420 images, we selected 40 items (1880-2023) that demonstrate the settler colonial logic underpinning the mapping of oil resources and the physical transformation of tar sands spaces. To examine both visual materials and policy documents, we draw inspiration from research on settler colonialism, which considers archives as sites of power that reproduce colonial truths and conceal Indigenous perspectives (Davis & Todd, 2017; Huang & Weaver-Hightower, 2019).

Document analysis

Reports, newspaper articles and media releases on the TMX conflict served as a primary source for reconstructing the historical trajectory of this dispute (see Dusyk, Axsen & Dullemond, 2018). We conducted a keyword search with Google, including 'TMX', 'Indigenous people', 'First Nations', 'land rights', and 'federal government', for the 2012-2025 period. This selection allowed us to capture the historical development of the TMX from its initial proposal throughout its various political and legal shifts. From an initial retrieval of 1,359 items, we narrowed the sample to 652 items by first looking at the prominence and recurrence of the keywords within the titles and subtitles of each item (Raso & Neubauer, 2016), ensuring that the TMX conflict was the central topic rather than a tangential mention.

Adopting an inductive and iterative coding approach (Way, 2011; Ganowski *et al*., 2018), we reviewed the materials and categorized them into primary thematic clusters. Among these, we deliberately paid attention to documents describing the strategies used by some First Nations (e.g., the Tsleil-Waututh Nation) and Indigenous groups (e.g., Tiny House Warriors) to exercise their land and consultation rights concerning the TMX approval. Furthermore, our analysis considers the discourses of First Nations, Indigenous groups and ENGOs to sustain their opposition to the TMX. Rather than conducting a formal discourse analysis, we treat discourse in a broader sense, as defined in footnote 9, focusing on its relevance to counter-frame tar sands development. After reviewing the initial sample, 148 documents were selected to specifically investigate the role of land claims in challenging the power structures underpinning tar sands spaces.

Transcripts of the TMX

Following a similar procedure, we analyzed transcripts and audio recordings of public hearings conducted by the National Energy Board (NEB) between 2014 and 2020 to assess whether the TMX served the public interest (CER, 2024). These records include testimonies from diverse actors on the benefits, impacts, and risks of the TMX. As government-regulated processes, hearings regulate citizen participation in energy governance decisions by imposing restrictive eligibility criteria and predefining discussion themes (CER, 2024). Despite these institutional constraints, public hearings also serve as platforms for First Nations and ENGOs to challenge tar sands operations. Thus, TMX transcripts reveal arenas where Indigenous perspectives and knowledges collide with state-sanctioned expertise (Patel, 2012; Richardson *et al*., 2022).

To narrow our sample, we focused on the testimonies from members of the main First Nations involved in the legal challenges against the TMX (see footnote 11), as their perspectives have been historically marginalized (see Whitney, *et al*., 2024). We then examined the transcripts to identify the most consistent and recurrent themes across the testimonies. Our analysis centered here on testimonies detailing the effects of the pipeline on local livelihoods, lands and the

environment. From an initial sample of 35 testimonies, we selected 15 that explicitly challenge colonial notions of land as an 'empty' space, given the centrality of land claims to the TMX dispute. Importantly, rather than scrutinizing individual histories or personal narratives, our study interrogated whether these testimonies were considered legitimate evidence by the federal government within the pipeline approval process.

Participant observation

To complement document analysis, the first author conducted participant observation at climate justice and anti-TMX demonstrations in Vancouver and Burnaby, BC, during 2022 and 2023, as these cities were the epicenter of the opposition to the TMX. This was important for gathering information not accessible through document analysis (see Kearns, 2016; Mansvelt & Berg, 2016) and for gaining first-hand insights into the anti-TMX mobilization dynamics. During demonstrations, the first author took field notes, pictures and videos of the protests' locations, demographics, the atmosphere, speeches, and informal conversations with attendees (see Swain & King, 2022).

Before conducting fieldwork, the first author contacted spokespersons and members of TMX-oppositional groups in Vancouver and Burnaby via email. During these initial interactions, the author disclosed his status as a researcher and expressed his concerns about the effects of tar sands expansion on climate change and Indigenous land rights. To build rapport with organizers and protesters, the first author engaged in conversations regarding their motivations, strategies against the TMX, and Canada's energy and climate policies (see Westerhoff *et al.*, 2018; Lachapelle, Morin-Chassé & Nadeau, 2021).

Informed consent for photography, video recording, and note-taking was obtained orally from participants after ensuring that data would be anonymized through alphanumeric coding and used for research and publication purposes (see McCurdy & Uldam, 2013). Some participants declined to be recorded, citing concerns regarding state surveillance, which has been documented in the context of pipeline protests (Crosby & Monaghan, 2016). To ensure ethical representation of research participants, we avoided direct quotes from field observations. COVID-19 restrictions, wildfires, and a limited research timeframe prevented the development of the long-term reciprocal relationships necessary to quote participants responsibly, including First Nations. Thus, we relied on informal conversations, direct observations and publicly available declarations of pipeline opponents themselves.

During the fieldwork, the first author engaged in 27 informal interactions at demonstrations and in follow-up meetings. Following the identification of key themes in these interactions, 18 of them were selected for further examination based on their relevance to understanding the discursive articulation of climate concerns and demands for meaningful consultation concerning tar sands pipelines on Indigenous lands. To mitigate the risk of perpetuating power imbalances, we avoided extracting personal or collective experiences of those affected by the TMX (see Yarbrough, 2020). Rather, we were interested in the structural inequalities and power imbalances that drive opposition to tar sands development (see Castillo Jara & Bruns, 2022).

Drawing on the empirical materials outlined above, we operationalize the concept of energyscapes to examine competing discursive-material practices through which the TMX project is governed. Specifically, we analyze three intersecting practices:

1) Contested land claims and their spatial representations, which serve to(de)legitimize tar sands projects (Rossiter & Burke Wook, 2016);
2) discursive framings used to manufacture social consensus and fuel counter-narratives regarding tar sands operations (Davine, Lawhon & Pierce, 2017; Spiegel, 2021a); and

3) knowledge hierarchies in energy decision-making that determine who has the authority to speak and decide on tar sands development (Barker & Westman, 2018; see Foucault, 2019).

We examine these practices across sociopolitical arenas (e.g., courts, public hearings, consultation processes, demonstrations and protests) and geographies of the TMX pipeline.

5. Land dispossession through tar sands expansion

To understand the colonial roots of tar sands spaces, we consider that tar sands expansion embodies the Canadian state's claims to territorial sovereignty[13] and its fossil fuel extraction imperative (Pasternak, Mazer & Cochrane, 2019). In this sense, land appropriation and commodification require rendering Indigenous lands as 'empty' and governable spaces, detached from their political, cultural, and socio-ecological meanings (Rossiter & Burke Wood, 2016; Spice, 2018; Simpson, 2019). One of the main practices that structures and governs tar sands spaces has been the negotiation of treaties to define land and resource rights, also known as modern treaties (see Government of Canada, 2023). This aspect is especially relevant in provinces such as BC, where land ownership remains a highly contested issue as several First Nations have never ceded their land title to the Canadian state (UBCIC, 1998; Manuel & Derrickson, 2015; Rossiter & Burke Wood, 2016). Central tensions in land negotiations include the delimitation and use of land, promises of resource revenue-sharing, and the cumulative impacts of extractive industries (Shaw, 2008). In the case of pipelines like the TMX, tensions frequently arise because the Canadian state authorizes their construction by narrowly defining Indigenous peoples' claims to their traditional lands and failing to obtain full consent of First Nations along the pipeline route (Rossiter & Burke Wood, 2016).

Other mechanisms for accessing land for tar sands operations include Impact Benefit Agreements (IBAs), through which the federal, provincial, and territorial governments delegate to oil corporations their constitutional duty to consult with Indigenous peoples on proposed tar sands projects (Stendie & Adkin, 2016). Companies usually negotiate land use with First Nations in exchange for training and employment opportunities and other incentives (e.g., monetary compensation for environmental damages) that do not compensate for the impacts of tar sands on First Nations' livelihoods and cultural heritage (Wanvik, 2016; Barker & Westman, 2018). According to critics (Black *et al.*, 2014; Urquhart, 2018), treaties and IBAs allow the Canadian state and fossil capital to 'fabricate' consent to energy projects and disarticulate social opposition to them, and create or exacerbate divisions between and within First Nations. Due to their socio-economic conditions,[14] levels of social cohesion, and limited legal and financial resources, some First Nations and Métis are forced to enter into negotiations with corporate and state actors to defend their land rights and obtain certain benefits even if they have strong concerns about tar sands (Barker & Westman, 2018; Atleo, 2020). Regardless of First Nations approaches to tar sands, evidence shows that they still face significant challenges in addressing the colonial legacies of tar sands operations (Black *et al.*, 2014; Adkin, 2016). Indeed, the transformation of landscapes for corporate and state fossil energy needs (Figure 4) has disrupted Indigenous livelihoods and ways of perceiving and being on the land (Black *et.al.*, 2014; Treaty Alliance Against Tar Sands Expansion, n.a).

[13] While there are competing land claims over the TMX within the Canadian state, these do not problematize settler territorial sovereignty (Atleo, 2020).

[14] Indigenous peoples in Canada are disproportionately affected by unemployment, poverty, violent crime, and food insecurity (Government of Canada, 2021).

Figure 4: Oil processing plant and tailing ponds. Source: Castillo Jara (2023)

The concept of 'energyscapes' brings into view how tar sands spaces are inextricably linked to discourses that de/legitimize decisions about why and where to extract oil and build fossil infrastructures, and how to distribute the benefits and costs of their operation. For example, former Prime Minister Trudeau insisted on building the TMX due to its contribution to job creation, tax revenue generation, economic growth, and oil exports (Prime Minister of Canada, 2016, 2019). In characterizing tar sands as a 'vital source' of national income (Kuteleva & Leifso, 2020), despite pipeline projects designed to meet US energy needs, the federal government discursively associates tar sands with notions of economic development and national prosperity (Davine, Lawhon & Pierce, 2017). Any attempt to question tar sands development is frequently perceived by state institutions as an obstacle to economic prosperity, which in turn normalizes the surveillance, detention, and prosecution of opponents blocking hydrocarbon infrastructures (Crosby & Monaghan, 2018; Mazer *et. al.*, 2019). These criminalization measures tend to portray Indigenous and environmental movements as threats to national security, in order to delegitimize their concerns about tar sands operations (Huseman & Short, 2012; Spiegel, 2021a).

By framing tar sands as a matter of national interest, the Canadian state also subsumes Indigenous peoples' diverse identities into a 'unified national identity' (Davine, Lawhon & Pierce, 2017). Although the Canadian state has pursued a policy of cultural recognition of Indigenous peoples (Simpson, 2017), its fossil fuel discourse replicates a colonial conception of Indigenous identity defined in terms of blood descent, legal status, and official membership to a specific community located in a reserve (Shaw, 2008; Palmater, 2011). Such a conception has significant ramifications for the exercise of Indigenous jurisdiction because it does not regard Indigenous peoples as sovereign nations with decision-making authority over their territories (Rossiter & Burke Wood, 2016; Davine, Lawson & Pierce, 2017). Rather, it spatially restricts Indigenous

rights within reserves, reinforcing settler assertions of sovereignty (Daigle, 2016). Land rights infringements disrupt not only Indigenous legal orders but also the worldviews, knowledges and stories associated with land-use practices, which are central to the cultural survival of First Nations (Napoleon, 2012).

6. Resistance to tar sands infrastructures

Tar sands spaces are transformed as Indigenous-led movements resist their expansion in the extraction zones, in the path of pipelines, or near refineries across Canada. Geographically localized protests are interconnected as they seek to stop the physical and financial flows from tar sands (Veltemery & Bowles, 2014; Gobby & Gareau, 2019). These movements are an obstacle to settler sovereignty and capital accumulation, given that Canada, particularly the province of Alberta, requires ongoing land appropriation and the spatial circulation of crude oil to sustain its economy (LeQuesne, 2019; Pasternak, Mazer & Cochrane, 2019). As Stendie and Adkin put it: "The greatest obstacle to tar sands expansion is the effort of Indigenous and environmental movements to block every new route to market" (2016: 447). Pipelines have been targeted for disruption given their strategic importance for international oil trade (Janzwood, 2020; Lawson, 2021). Through multiple strategies, including blockades and permanent camps at fossil fuel infrastructure sites, lawsuits, street demonstrations, and fossil fuel divestment and media campaigns, First Nations and allies have played a crucial role in the cancellation of three of four major proposed pipeline projects in Canada – Keystone XL, Energy East, and Northern Gateway – but not the TMX (Gobby & Gareau, 2019).

Despite these delays and cancellations, crude oil continues to be transported by rail, truck and other existing pipelines like the TMX. This case illustrates the potentialities and limitations of the Indigenous-led resistance movement to dismantle the entrenched fossil fuel interests of the federal government, the Alberta government, and private companies like Kinder Morgan – the former owner of the pipeline (Prime Minister, 2016; Trans Mountain, 2021). Using the notion of energyscapes, we explore these conflicting dynamics, underscoring the discursive-material practices mobilized by the main antagonists, namely the federal government and the First Nations-led movement (Table 1).

Contested land claims and their representations

Informed by the findings gathered through archival research and document analysis, our study shows that the TMX controversy is part of broader historical conflicts between the Canadian state and Indigenous peoples over claims to lands and resources (Frost, 2019; Atleo, 2021). Although these conflicts unfold in multiple sociopolitical arenas, legal disputes are key arenas where the Canadian state legitimizes and maintains the settler-colonial land property regime while First Nations exercise their land rights within the limits and constraints of state institutions. Drawing on its unilateral assumption of land title, the federal government approved the TMX in 2016, declaring it properly consulted Indigenous communities along the pipeline and assessed its environmental risks (Prime Minister, 2016). In contrast, a group of First Nations filed lawsuits in the Federal Court of Appeal (FCA), contending that the federal government infringed their unceded land rights by not addressing their concerns about the project's impact on their lands and by predetermining the outcomes of land-use consultation (NEB, 2016; Figure 5).

Contrary to the plaintiffs' expectations, the FCA rejected the TMX approval in 2018, arguing that the federal government failed to fulfill its constitutional duty (section 35 of the Constitution Act, 1982) to consult, accommodate, and seek consent from affected First Nations

(*Tsleil-Waututh* Nation v. Attorney General of Canada, 2018: 7-8). While the FCA's verdict ordered the Trudeau administration to stop the TMX and conduct further consultation, illustrating the divergent viewpoints within the Canadian state on this project, it did not question settler jurisdiction over land, as it only established the conditions needed for the future pipeline approval (*Tsleil-Waututh* Nation v. Attorney General of Canada, 2018, para. 771).

Following the FCA's resolution, the federal government purchased the TMX after Kinder Morgan abandoned the pipeline project, citing legal and economic reasons (Kinder Morgan, 2018; USSEC, 2018). This decision created a conflict of interest because the government became the pipeline owner (Hoberg, 2021). After the new round of consultations, the FCA determined that there was no bias in the TMX decision-making as the federal government did consult and attempt to accommodate First Nations concerns and "was under no obligation to obtain consent before approving the project" (Coldwater Indian Band *et al.* v. Attorney General of Canada *et al.,* 2020:28; Pasternak, Mazer & Cochrane, 2019).

This ruling was accompanied by a more pronounced shift in the federal government's discourse, one characterized by an emphasis on reconciliation and the pursuit of a 'nation-to-nation' relationship (Frost, 2019). By framing First Nations as 'partners', the federal government sought to manufacture a sense of inclusion and consent (Hoberg, 2021). However, this conciliatory tone masked the federal government's pre-determined commitment to complete the TMX and its use of the consultation process as a procedural mechanism to legitimize its assertion of land jurisdiction (Coldwater Indian Band et al. v. Attorney General of Canada et al., 2020). Indeed, the Supreme Court validated in 2020 the TMX approval by rejecting an appeal from affected First Nations (Hoberg, 2021), removing any legal obstacle to the construction of the pipeline, which was completed and began operations in 2024 (Williams, 2024). This legal dispute shows the importance of settler legal procedures and restrictive interpretations of Indigenous land rights in (re)producing and sustaining tar sands spaces.

These restrictive legal procedures render Indigenous lands as fragmented parcels, clearing the path for transforming space into industrial corridors, articulating the TMX with networks of fossil fuel infrastructures. Despite the TMX construction, First Nations have maintained their opposition both inside and outside the courtroom. For instance, the Tiny House Warriors of the Secwepemc Nation built tiny houses on wheels in the Secwepemc territory (Kamloops, BC) to reassert jurisdiction and block access to the TMX construction sites (Tiny House Warriors, 2020). Similarly, members of the Tsleil-Waututh Nation (TWN) and supporters built a watch house in the Musqueam, Squamish, and Tsleil-Waututh territories (Vancouver, BC) to monitor operations at the TMX marine terminal on Burnaby Mountain (TWN, 2021). While other First Nations have adopted different strategies against this pipeline (Atleo, 2020), these examples illustrate attempts to problematize colonial interpretations of Indigenous land as 'empty' spaces and undo the territorial arrangements that facilitate state and corporate control over land for tar sands activities.

Actor	Land claims	Discourses	Knowledge systems	Sociopolitical arenas where actors influence energy/climate decision-making	Physical spaces for tar sands development
The federal government	Treaties land-use consultations IBAs	Economic development Job creation Decarbonization	Hegemonic scientific/ technical knowledge informing energy policies	Federal court NEB hearing sessions EIAs Consultation and accommodation process Parliament sessions Mainstream media	Construction and operation of the pipeline and related infrastructure from Alberta to BC.
First Nations-led resistance movement	Land reoccupation Pipeline blockades Lawsuits Demonstrations	Climate justice Fossil fuel divestment Indigenous sovereignty	Indigenous knowledges Critical academic research	Community meetings and decision-making processes Protests on streets, squares, and outside government/corporate buildings Social media and other communication channels Physical and online events	Blockades and construction of watch houses along the pipeline, specifically in Blue River and Burnaby, BC.

Table 1: Discursive-material practices and spaces related to the TMX. Source: Own elaboration

Figure 5: Placard used at a protest against the TMX in Vancouver, BC. Source: Castillo Jara (2022)

To visualize how these colonial interpretations are physically manifested, we looked at aerial photographs depicting tar sands extraction, mining, production, and distribution sites in Alberta. These images capture hegemonic meanings embedded in tar sands spaces: the "emptiness" of land claimed by the Canadian state to justify extractive operations, and the subsequent normalization of environmental destruction (Spady & Angus, 2020). While illustrative, we acknowledge that these photographs, as well as the map of tar sands infrastructures (Figure 3), are inherently limited by their Western cartographic perspective. As Rose-Redwood *et al.* (2020) indicate, such visual representations often fail to reflect Indigenous ways of perceiving space and risk erasing the presence of Indigenous people and their diverse geographies. In direct opposition to colonial abstractions of land, First Nations mobilize heterogeneous understandings of the land as a system of responsibilities to past and future generations and the non-human world that sustains and revitalizes their cultures (Coulthard, 2010; Daigle, 2016; Aleck, 2020). These responsibilities are not merely abstract concepts; they are actively manifested through grassroots resistance. In anti-pipeline protests, members of First Nations articulated these conceptions of the land, stressing the threat the TMX poses to their land rights and ways of life.

Discourses on fossil fuel production

Based on participant observation at TMX protests and our analysis of documents featuring the perspectives of pipeline opponents, we identified prominent discursive elements mobilized against the TMX. Among these are critiques of the climate impacts of tar sands operations, which have been central to reshaping public debates on Canada's energy policy by exposing the environmental implications of continued fossil fuel path dependence and the historical inequalities it perpetuates (Spiegel, 2021; Castillo Jara & Bruns, 2022). In particular, First Nations and ENGOs have criticized the federal government for approving the TMX without conducting a comprehensive and independent assessment of the pipeline's lifecycle emissions (Coast Protectors, 2020). While the emissions from a single pipeline may be relatively small, the main

issue is that tar sands-related emissions have increased by 85% since 2005[15] (Government of Canada, 2019), becoming the fastest-growing polluting source in the country (Al-Aini, Severson-Baker & Gorski, 2022). Tar sands development therefore obstructs Canada's ability to meet its climate goals (Gooderham, 2016; Hughes, 2020).

Building on this critique, TMX opponents mobilize discourses of climate justice that transcend local concerns, linking specific pipeline struggles to the historical responsibility of fossil capital and the Canadian state for climate change (INET, 2017). Divestment campaigns have been one of the main strategies adopted in this regard, as evidenced during demonstrations against the TMX in Vancouver, where participants called on former Prime Minister Trudeau, the oil industry, banks, and insurance companies[16] to divest from the TMX (Figure 6). These discourses reveal the multi-scalar nature of tar sands spaces. The TMX case connects the material sites of the pipeline to national debates over Canada's commitment to reduce its GHG emissions and global concerns regarding the need to phase out fossil fuel production and consumption. This connectivity shows that the TMX is not merely a local pipeline project but a node that links fossil fuel extraction to the global environmental crisis.

Evidence from field observations and document analysis reveals three major intersecting concerns among pipeline opponents: contradictions between fossil fuel expansion and climate commitments; the concentration of corporate power in the oil industry; and the disproportionate exposure of First Nations to environmental burdens of tar sands operations (Black *et al.,* 2014; LeQuesne, 2019; Spiegel, 2021a). By foregrounding these issues, the First Nations-led movement reframed the TMX debate, shifting focus away from economic growth arguments towards climate justice and Indigenous self-determination. In doing so, this movement emphasized that Indigenous land sovereignty is fundamental to limit tar sands expansion and rebuild relationships with nature.

Demonstrations, however, lost momentum in the context of COVID-19 as public gatherings were restricted and attention focused on measures to support the oil sector amid the resulting economic crisis (Forrest, 2020). The post-COVID recovery of the oil industry reinforced this trend, providing the federal and Alberta governments and fossil capital an opportunity to advance pro-fossil fuel discourses. Indeed, although some institutional investors limited or stopped financial support for the TMX (Benton-Connell & Cochrane, 2020), most continued to fund this project. Due to inadequate regulation of fossil fuel financing, even those who withdrew assets from the TMX could have reinvested them elsewhere in fossil fuel projects labeled as 'carbon neutral' (Graham, 2019). In this vein, the former Prime Minister of Canada, Justin Trudeau, "announced that every dollar the federal government earns from this project will be invested in Canada's clean energy transition" (2019). The rhetorical reconciliation between tar sands extraction and climate protection is part of corporate and state strategies to promote the decarbonization[17] of the oil industry (Parson & Ray, 2018; Kraushaar-Friesen & Busch, 2020).

[15] It is important to note that Canada's official oil statistics exclude emissions from crude oil exports and consumption abroad, which account for a large proportion of total oil-related emissions (Al-Aini, Severson-Baker & Gorski, 2022).

[16] A list of these companies can be found in the source Insurance our Future (2022).

[17] In general, decarbonization refers to multidimensional, complex and often contradictory processes aimed at reducing GHG emissions from the economy. It involves a technological shift from fossil fuel-powered systems to renewable energy, a structural reorganization of industrial activities and trade, and changes in lifestyle and consumption patterns (Rizzoli, Norton & Sarrica, 2021). In this article, we refer to decarbonization initiatives as those proposed primarily by the Canadian state and fossil capital to reduce GHG emissions in Canada's oil sector.

Figure 6: Banners in a protest against the TMX in Vancouver, BC. Source: Castillo Jara (2022)

These discursive strategies are materially supported by regulatory frameworks, policy initiatives, research programs and technological systems designed to reduce GHG emissions in the oil industry (Graham, 2024). Through these mechanisms, the federal government and fossil capital attempt to discipline and co-opt counter-hegemonic discourses that consider tar sands development as unsustainable (Graham, 2019). By reframing this activity as 'carbon neutral', fossil fuel proponents make strategic concessions to secure the 'social license' needed to ensure continued access to Indigenous lands for tar sands operations (Parson & Ray, 2018). Indeed, while Trudeau's liberal administration rhetorically encouraged a more environmentally friendly energy policy than its conservative predecessor, it actively promoted tar sands extraction (Carter, 2020). Although this issue was not particularly prominent in the demonstrations we attended, First Nations and ENGOs expressed concerns about greenwashing as the Canadian state and fossil capital increasingly turn to net-zero plans to 'reduce' GHG emissions (Carroll, 2020; RAN *et al.,* 2022). In the face of opposition to tar sands, we see decarbonization initiatives within the oil sector as an attempt to stabilize tar sands spaces through the renewal of capital accumulation.

Knowledge hierarchies in energy policy

Our analysis of the TMX public hearings and EIAs reveals the politics of knowledge and its relevance to the production and circulation of meanings attributed to tar sands spaces. Some First Nations presented oral and documentary evidence to the NEB about the potentially irreversible impacts of oil spills and increased marine tanker traffic on their livelihoods, land rights, and ecosystems (TWN, 2016; NEB, 2016, 2018). Drawing on conceptions of land as co-constructed through complex human-nonhuman interactions (Powell, 2018), First Nations like the *Tsleil-Waututh* Nation spoke of their cultural and spiritual connections with killer whales and salmon on the BC coast. In doing so, they emphasized their responsibility to protect non-human nature endangered by the transport of oil by tanker (NEB, 2018: para. 3980). As discussed earlier, Indigenous conceptions directly challenge colonial notions of 'empty land' expressed through, for instance, aerial photos of tar sands development sites. By highlighting their presence on, and

stewardship of the land, these First Nations attempted to reshape official energy decision-making processes, introducing different epistemological and ontological frameworks. The NEB, however, disregarded Indigenous viewpoints, alleging that stricter environmental management measures would reduce oil spill risks and other ecological damage (NEB, 2016). Based on the assumption that hegemonic scientific and technical knowledge provided 'objective' and 'reliable' information concerning the risks of tar sands (Barker & Westman, 2018), the NEB concluded that the TMX would not "cause significant adverse environmental effects" and recommended its approval (NEB 2016:18).

This decision was problematic because it reflected a narrow understanding of tar sands' environmental repercussions and an oversimplification of First Nations relationships with the land.[18] At its core, the NEB's technocratic approach dismisses Indigenous knowledges as less legitimate compared to the 'objectivity' of Western hegemonic scientific knowledge (Barker & Westman, 2018). While the FCA certainly determined in 2018 that the NBE failed to properly assess the TMX risks after the First Nations-led movement demanded a reassessment of the project (*Tsleil-Waututh Nation* v. Attorney General of Canada, 2018), the FCA validated the EIA in 2019, claiming that the federal government complied with environmental legislation (Coldwater Indian Band v. Attorney General of Canada, 2020).

Disputes over the legitimacy of knowledge claims are central to the materiality of tar sands spaces. By underscoring the ecological implications of the TMX, some First Nations foreground the connections of their cultures with the health of local and global ecosystems. In doing so, they translate environmental risks into tangible vulnerabilities, arguing that the physical presence of tar sands infrastructures constitutes a threat to the ecological foundations upon which their sovereignty and survival as culturally distinct people depend. Indigenous relational knowledges challenged the NEB's technocratic knowledge, which produced 'empty spaces' where socio-ecological risks are minimized, prioritizing abstract 'national interest' concerns and metrics, particularly oil production and export outputs.

In our view, the rationale behind the NEB and FCA's decisions reflects knowledge hierarchies of oppression created and sustained by the Canadian state to delegitimize Indigenous experiences and conceptions of the land. Our intention here is not to reproduce essentialist notions of Indigenous peoples, but rather to emphasize the failure of legislation, public hearings, and EIAs to engage with Indigenous forms of knowledge and address concerns about the potential impacts of tar sands operations. This observation leads us to argue that the (re)production of tar sands spaces rests on the reinforcement of technocratic knowledge claims and the subordinate inclusion and/or exclusion of Indigenous knowledges in energy policymaking. Viewed as settler colonialism, this marginalization not only functions as a form of epistemic erasure but also facilitates land appropriation.

7. Conclusions

Bringing together research on political ecology, energy geographies, fossil capitalism, and settler colonialism, we theorized energyscapes to examine the (re)production, governance, and contestation of tar sands spaces in Canada. Energyscapes provide insights into key competing material-discursive practices through which physical spaces and socio-political arenas for tar sands development are configured, (de)legitimized, and disrupted. We showed that conflicting settler colonial and First Nations assertions of jurisdiction over land are central to these processes. In doing so, we have sought to advance debates on the political ecology of disputes over unconventional fossil fuels in Canada.

[18] This pattern can be seen in other hearings of pipeline projects, where First Nations declarations did not count as evidence-based recommendations to approve or reject pipeline projects (Carroll, 2021).

Through energyscapes, we analyzed the divergent land claims, discourses, and knowledges of the federal government and a First Nation-led movement to structure, maintain, and challenge the socio-material spaces of the TMX project. The TMX case elucidates that the materialization of tar sands spaces is inseparable from Indigenous land appropriation, the discursive legitimation of fossil fuel expansion, and hegemonic scientific-technical knowledge claims. Together, these aspects reflect and materialize the interests of fossil capital and the Canadian state, transforming local spaces into extractive sites that marginalize Indigenous territorial sovereignty while integrating them into global networks of crude oil circulation. Simultaneously, this case study sheds light on the importance of Indigenous-led resistance in confronting settler territorial jurisdiction and physically obstructing the circulation of tar sands. By grounding their struggle in the defense of the land, this movement sought to disrupt the material basis of tar sands spaces and rearrange the territorial agreements upon which these rest.

Given that the TMX will continue to undermine Indigenous land rights, disproportionately expose communities to environmental hazards, and exacerbate fossil capitalism, energy policy-making must be restructured around Indigenous self-determination and climate justice. For the federal government, this necessarily involves engaging in meaningful dialogue with diverse Indigenous forms of land governance and knowledge systems. Future studies should explore how tar sands decision-making processes could draw on Indigenous discursive-material practices to address land-use conflicts, climate change and community participation in energy governance. In doing so, more attention is needed to place-based forms of social resistance to investigate further the obstacles and possibilities of dismantling the colonial and capitalist foundations of tar sands spaces.

While the concept of energyscapes enables a critical reading of tar sands spaces, political ecology has yet to address crucial questions. Under what socio-political conditions might it be possible to slow down tar sands expansion? What might tar sands development look like under forms of Indigenous sovereignty? These questions are relevant in the context of Canada's energy transition as decarbonization efforts in the oil sector may accelerate resource extraction and produce new forms of injustice, rather than addressing the climate crisis and settler colonialism. Engaging with these questions requires political ecology scholars to rethink and reformulate the analytical and empirical tools with which they attempt to make sense of how energy spaces are imagined, produced, and transformed.

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