Crisis in the Tar Sands: Fossil Capitalism and the Future of the Alberta Hydrocarbon Economy

Tyler McCreary | ORCID: 0000-0001-6305-6325
Assistant Professor, Department of Geography, Florida State University, Tallahassee, Florida, United States of America
tmccreary@fsu.edu

Abstract

Using a case study of Alberta, Canada, this paper demonstrates how a geographic critique of fossil capitalism helps elucidate the tensions shaping tar sands development. Conflicts over pipelines and Indigenous territorial claims are challenging development trajectories, as tar sands companies need to expand access to markets in order to expand production. While these conflicts are now well recognised, there are also broader dynamics shaping development. States face a rentier’s dilemma, relying on capital investments to realise resource value. Political responses to the emerging climate crisis undercut the profitability of hydrocarbon extraction. The automation of production undermines the industrial compromise between hydrocarbon labour and capital. Ultimately, the crises of fossil capitalism require a radical transformation within or beyond capital relations. To mobilise against the tar sands, organisers must recognise the tensions underpinning it, developing strategies that address ecological concerns and the economic plight of those dispossessed and abandoned by carbon extraction.

Keywords


In July 2006, Stephen Harper, the newly elected Prime Minister of Canada, used his first international speech to announce his government’s intention to
make the country an ‘emerging energy superpower’.\textsuperscript{1} Possessing the third largest reserves in the world, after Venezuela and Saudi Arabia, there was considerable potential for growth in the Canadian hydrocarbon economy. The vast majority of Canadian reserves, over 97\%, are within the bituminous Athabasca tar sands in northern Alberta. While there had been decades of experimental research into tar sands production, these unconventional hydrocarbons only became commercially viable as oil prices spiked in the opening years of the new millennium and technological innovations decreased production costs.\textsuperscript{2}

Tar sands production doubled from 653,000 barrels per day in 1998 to 1.25 million barrels in 2006, nearly doubling again to 2.31 million barrels by 2014.\textsuperscript{3} That year, the International Energy Agency (IEA) predicted that with shifting global energy supplies and policies, Canadian tar sands production should reach 5.2 million barrels per day by 2040.\textsuperscript{4} Sounding the alarm, James Hansen declared that the consequences of fully exploiting the tar sands would be ‘apocalyptic’, with ‘concentrations of carbon dioxide in the atmosphere eventually ... reach[ing] levels higher than in the Pliocene era, more than 2.5 million years ago, when the sea level was at least 50 feet higher than it is now’.\textsuperscript{5}

Prior to the deluge, however, a political and economic crisis engulfed the province. Alberta oil prices fell from $86.56 per barrel in June 2014 to $16.30 in February 2016.\textsuperscript{6} Accounting for 80\% of Canadian oil production, the impact of the price crash was most pronounced in Alberta; its unemployment rate more than doubled, increasing from 4.4\% in November 2014 to a peak of 9.1\% two years later.\textsuperscript{7} While employment in the rest of Canada grew by 122,000 in 2016, 69,000 jobs were lost in Alberta, the largest pre-Covid annual decline in the province since data became available in 1976.\textsuperscript{8} While prices slowly recovered, returning to $53.25 per barrel by May 2018, the IEA revised its projections for Canadian tar sands production that year. They lowered the 2040 production estimate to 3.8 million barrels per day, 1.4 million less than it had forecast four

\textsuperscript{1} Quoted in Taber 2006.
\textsuperscript{2} Chastko 2004.
\textsuperscript{3} Alberta Energy Regulator 2019.
\textsuperscript{4} The IEA actually offers a range of projections to deal with the uncertainty associated with responses to the climate crisis, including a projection based on the continuation of current policies, the cautious implementation of more sustainable policy proposals, or the adoption of policies that would ensure that global emissions are capped to prevent a long term increase in the temperature by 2\degree C. The figure of 5.2 million barrels per day represents the estimate based on the second ‘New Policies Scenario’ and is thus the more moderate projection. International Energy Agency 2014, p. 124.
\textsuperscript{5} Hansen 2012.
\textsuperscript{6} Government of Alberta 2021a.
\textsuperscript{7} Government of Alberta 2021b.
\textsuperscript{8} Bourbeau and Fields 2017.
years before. The viability of the industry again came into question in late 2018, when refinery maintenance shutdowns resulted in a regional crisis of overproduction and Alberta oil prices collapsed to $5.97 per barrel. The provincial government introduced temporary production controls to restore prices and prevent producer bankruptcy. Following the restoration of refining capacity, tar sands production continued its slow expansion, reaching 3.1 million barrels per day in 2019. However, the arrival of the Coronavirus pandemic again decimated tar sands operations, as Alberta oil prices fell to $3.50 per barrel in April 2020. From January to May, \textit{in situ} tar sands production fell by 22.1%, and the unemployment rate in the province peaked at an unprecedented 15.5%. Though the industry has significantly recovered since, with prices returning to $31.57 per barrel and 98.5% of tar sands production restored by November 2020, there are enduring structural concerns with the hydrocarbon economy in Alberta. The most optimistic IEA projections now suggest that Canadian tar sands production will plateau at 3.5 million barrels per day, with limited growth after the completion of current projects.

Looking beyond the pandemic to the future of the Athabasca tar sands, this paper situates tar sands development within broader transformations in the political, economic, and environmental realm. Referring to the chronic turbulence of Alberta oil prices in 2018, prime minister Justin Trudeau described the situation as ‘very much a crisis’. In Canadian political discourse, this has been conventionally understood as an infrastructural problem, with access to market bottlenecked by the limited regional pipeline network that suppresses prices. While there is substantial merit to this explanation, it obscures the broader dynamics structuring the tar sands economy. I argue that the ‘crisis’ in Canadian tar sands is better understood as classically overdetermined by broader tensions in the political economy. Misrecognising the nature of the problem, government policies encouraging the expansion of tar sands development have consistently failed to resolve conditions in the industry. A rigorous critique of fossil capitalism demonstrates how government interventions to support tar sands production in Canada only defer the impending economic

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9 Again, this is in accordance with the moderate ‘New Policies Scenario’. International Energy Agency 2018, p. 144.
14 This projection is based on the ‘Stated Policies Scenario’ in which existing policies are projected forward without a move towards greater sustainability. International Energy Agency 2020, p. 264.
15 Quoted in Stephenson 2018.
crisis while deepening the advancing climatic crisis. Eventually, the crisis dynamics engendered by the relations of capitalism require a radical transformation within or beyond it.

Addressing tar sands extraction in Alberta is necessary because of the particular characteristics of this energy source in the world economy. As capitalist firms adopt technologies to increase labour productivity and maintain control over the workforce, there has been a general tendency to increase the organic composition of capital and a related rise in the dependence on fossil energy.\(^\text{16}\) However, in recent decades, unconventional sources have become increasingly important to the overall dynamics of global hydrocarbon production, as access to conventional oil sources has been limited by reserve depletion and political conflicts over reserve ownership and access.\(^\text{17}\) Globally, the vast majority of two major unconventionals, heavy oil and bitumen, are concentrated in two reserves. The Athabasca tar sands contain 81% of the known recoverable bitumen, while the Venezuelan Orinoco heavy-oil belt contains 90% of the extra-heavy oil.\(^\text{18}\) In 2001, M.B. Dusseault estimated that these two reserves had the potential to produce ‘an amount that is approximately equal to all the oil that has been consumed in the world to date’.\(^\text{19}\) These unconventional reserves also contribute to higher greenhouse gas emissions than conventional sources, as they require significantly greater energy to extract.\(^\text{20}\) The volume and carbon-intensity of these reserves thus lend them particular significance within ongoing debates about the climate crisis. Simply put, if we are to curb atmospheric CO\(_2\) releases, these reserves cannot be fully exploited. Conversely, as the most capital-intensive reserves to exploit, they are the reserves most likely to remain in the ground if there is a transition to alternative energy sources.\(^\text{21}\) There is now an expanding Marxist literature on how the historic exploitation of oil within fossil capitalism led to the current climate crisis.\(^\text{22}\) However, the struggle to transform fossil capitalism also requires a critique of the major sites of contemporary unconventional oil production.

Through this paper, I seek to reflect upon the social, political, and environmental relations shaping Alberta tar sands development, and how an understanding of these processes can frame contemporary political mobilisations against fossil capitalism. To situate and inform the empirical discussion, I begin by outlining the lines of analysis that frame my critical enquiry into the

\(^{16}\) Christie 1980.

\(^{17}\) Bridge 2010.

\(^{18}\) Meyer and Attanasi 2003.

\(^{19}\) Dusseault 2001.

\(^{20}\) Brandt 2011.


\(^{22}\) Altvater 2007; Moore 2015; Angus 2016; Malm 2016.
dynamics of fossil capitalism. Then through the body of the paper, I highlight five prominent tensions shaping fossil capitalism in Alberta. I open with the standard narrative of the territorial conflicts shaping tar sands development, discussing the dynamics of pipeline and Indigenous politics. While agreeing with the importance of both these struggles, I argue that three additional tensions within fossil capitalism need to be integrated into critically theorising the dynamics of tar sands production. First, the state is confronted with the rentier's dilemma, constrained by its reliance upon extractive capital investments to realise the value of its claimed natural resources. Second, the emerging climate crisis is creating new challenges for the hydrocarbon economy that are reorienting financial flows, as global shifts towards decarbonisation dissipate hydrocarbon markets and disruptive local environmental campaigns increase the costs of hydrocarbon production and transportation. Third, the automation of production is rendering increasing numbers of workers irrelevant in the oil sector, potentially rupturing the industrial compromise between labour and capital.

Ultimately, I argue that political struggles against fossil capitalism need to more clearly strategised with regard to the conjunction of these different tensions. Focusing on questions of consumption, the environmental movement has long positioned itself against the concerns of poor and working-class communities. Terrifyingly, conservative populist and white-nationalist movements have found traction in poor and working-class white communities, alienated from the elitism of environmental politics. To build a mass constituency capable of making a radical challenge to tar sands development, left movements must be more attentive to the concerns of those dispossessed and abandoned by relations of fossil capitalism in the tar sands. Environmentalists have increasingly and laudably sought to make alliances with Indigenous movements. However, attention also needs to paid to the growing population of unemployed people, as fossil capitalism threatens to render an ever-larger population surplus and vulnerable to intensifying economic and environmental crises.

Understanding Fossil Capital

While empirical analysis of circumstances in the Alberta tar sands occupies the core of this paper, this discussion is grounded in an established Marxist literature on the ecological and geographical relations of capitalist development. These frames highlight significant gaps in conventional environmental accounts of the tragedy of the tar sands. Most significantly, they demonstrate the need to extend analysis beyond moral arguments to address productive
relations and the possibilities for challenging both the cultural hegemony and material configuration of fossil capital. Thinking through the contemporary crisis in the tar sands, I draw upon Marxist analysis of fossil capital, the geography of capital, and political moments. While resolving the theoretical tensions between these different frameworks remains beyond the scope of this paper, they provide a scaffolding for the empirical analysis to follow.

Environmentalists have made extensive critiques of the environmental impacts of tar sands exploitation. However, environmental critiques have tended to rely on moral arguments around the social injustices and environmental unsustainability of the extractive economy. Capitalism is often undertheorised in such critiques; instead, the problem is rooted in the amorphous qualities of modernity or civilisation. However, situating the issue within the breadth of modern civilisation obscures the particular relations of fossil capital that underpin the issue, lending itself to strategies that either reject technology entirely or seek reforms that fail to directly confront capital dynamics. This is very problematic as capitalism has proven itself an incredibly dynamic system, capable of appropriating the momentum of critical movements to reinvent itself. On the one hand, purportedly green capitalist initiatives have captured a considerable faction of the environmental movement with promises to reinvent the future through new forms of finance. On the other hand, new modes of capital accumulation have emerged in response to environmental catastrophes, making disaster and death sites from which to extract tremendous profit. It is insufficient to assume that uncovering capitalism’s moral and ecological corruption will prove adequate to its overturning. Explicit political struggle against fossil capitalism is necessary.

Generations of green Marxists have stressed the ecological contradiction or metabolic rift that capitalism effects in relations between social and natural systems. Extending this tradition, Andreas Malm has traced the origins of the contemporary climate crisis to its historical roots in fossil capitalism. His analysis highlights how capital, in order to subjugate labour, employed hydrocarbon energy to expand rates of production. For Malm, understanding the massive transformations and rapid economic growth enabled by fossil capitalism requires attention to its peculiar temporality and historicised nature, as fossil fuel consumption releases hydrocarbon energy stored over millions of years.
of years, powering intensified development and thereby radically altering the future environment. Through his analysis, Malm captures the unique temporal qualities of fossilised carbon exploitation that shape the historical development of capitalism. However, to understand spaces of contestation in the present, it is also necessary to attend to the geographies that shape unconventional oil production.

Thinking spatially, my point of departure is the tradition of Marxist geography, particularly the foundational work of David Harvey. Over the last half century, Harvey has highlighted the importance of spatial processes to the formation and resolution of crises under capitalism.\(^\text{29}\) Neil Smith has extended this analysis, demonstrating how the capitalist production of space reshapes the natural world.\(^\text{30}\) However, natural processes, such as forest ecosystems or weather systems, also maintain their own dynamism, imposing limits and initiating feedback mechanisms that shape the processes of resource extraction and environmental politics.\(^\text{31}\) Attempting to theorise the embedded nature of capitalism-in-nature, Jason Moore has proposed a hyphenated analysis that stresses the constant hybridisation of the social and the natural.\(^\text{32}\)

Ontologically, I believe that the social and natural world are entwined; however, analytically, the fusion of multitudinous processes into a single totality often obscures more than it reveals. To develop theories capable of informing political practice, it is necessary to conduct grounded, empirical analysis of the conjuncture of different economic, sociotechnical, politico-legal, and environmental processes, operating across a variety of scales.

Specifically, rigorous critique of the geographic tensions of tar sands development is necessary to effectively assess the constellation of forces shaping it and more-effectively politically challenge it. Developing such an analysis, I draw inspiration from Antonio Gramsci’s discussion of the role of critical analysis within revolutionary praxis. Gramsci stressed that strategic analysis of the political moment requires attending to the objective relations of forces, independent of the will of different actors, and then reflecting on political relations through which hegemonic norms can be contested.\(^\text{33}\) These insights have influenced critical analysis of the cultural hegemony of energy elites in Canada.\(^\text{34}\) However, as Malm has recently stressed, the struggle over the future

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\(^\text{29}\) Harvey 1984.
\(^\text{30}\) Smith 2008.
\(^\text{31}\) Prudham 2005.
\(^\text{32}\) Moore 2015.
\(^\text{33}\) Gramsci 2000.
\(^\text{34}\) Eaton and Enoch 2018; Carroll, Graham, Lang, McCartney and Yunker 2021; Gunster, Neubauer, Bermingham and Massie 2021.
of fossil capital involves not only morally contesting dominant industrial relations, but also challenging their material infrastructure.\textsuperscript{35} In order to politically and economically challenge fossil capitalism, and rupture its cultural dominance, Malm emphasises the need for environmental organisers to be far more attentive to questions of livelihood and subsistence. However, his analysis pays little attention to the geographies of carbon extraction. This paper aims to extend strategic analysis by charting the contested and contradictory relations of tar sands production, including the region’s transportation infrastructure, political and legal geography, labour relations, and location within global climate policy debates. Doing so, I aim to highlight spaces of contingency and agency, where the trajectory of development remains undetermined and can be contested and transformed.\textsuperscript{36}

The Impossible Promise of Pipelines

Pipelines have increasingly become the focus for the future of Canada’s carbon economy. For instance, Gerry Angevine, in a report for the conservative Fraser Institute, argues that transportation bottlenecks in Canada are ‘inflicting economic and financial losses not only on petroleum companies and their shareholders, but also on governments of oil-producing provinces and territories’.\textsuperscript{37} This argument resonates with long-standing geographic scholarship that emphasises the importance of transportation infrastructure to the unfolding geography of the capitalist economy. With limited pipeline access to tidewater for global distribution, Canadian oil producers are land-locked and constrained in their ability to realise the value of their products; however, in order to access tidewater, pipelines would need to cross jurisdictions with little to gain from expanding market access for Alberta hydrocarbons.

Critical geographers have long highlighted how transportation infrastructure shapes the uneven development of capitalist economies. As Harvey describes in \textit{Limits to Capital}, the logic of capital accumulation is deeply entangled with questions of transportation. He argues, ‘the drive to accumulate must also be manifest as a drive to reduce these costs of circulation…. The removal or reduction of these barriers is as much a part of the historical mission of the bourgeoisie as is accumulation for accumulation’s sake’.\textsuperscript{38}

\begin{flushleft}
\textsuperscript{35} Malm 2021.
\textsuperscript{36} Massey 2005.
\textsuperscript{37} Angevine 2013, p. 20.
\textsuperscript{38} Harvey 1984, p. 87.
\end{flushleft}
Places that effectively integrate into global capital and commodity flows derive a locational advantage and become sites of agglomeration. However, Harvey stressed, these advantages are ‘perpetually in the course of alteration through investment in transportation and the shifting geographical distribution of economic activity and population’. Innovations in transportation and communication continuously accelerate the rate of commodity circulation and reduce the turnover time of capital. However, these innovations devalue production in locations with outmoded transportation infrastructure. Thus, to overcome periodic crises of devaluation, governments often directly sponsor or encourage investments in transportation infrastructure.

Infrastructural issues contribute, in part, to the price differentials negatively affecting Western Canadian oil development. Studies of oil prices indicate that bottlenecks in transportation and storage capacity associated with the recent expansion of unconventional shale and tar sands developments in North America have caused spikes in the price differentials between UK Brent, West Texas Intermediate (wti), and Western Canadian Select (wcs). Although the price differential can be explained partially by quality differences of Canadian crude that is both heavy and sulfur-rich, spikes in the differential have been associated with times in which there is insufficient transportation or storage capacity. In the two years between November 2015 and November 2017, the wti–wcs differential consistently remained between $9.38 and $15.31 per barrel. However, between 2015 and 2018, Alberta oil production increased from 3.1 million to 3.7 million barrels per day, approaching the maximum provincial pipeline export capacity of 4.3 million barrels per day. The majority of Alberta oil production is transported to the US Midwest via the Enbridge Mainline, which has a capacity of 2.9 million barrels per day. However, Midwestern refineries are largely operating at capacity. Midwestern refinery shutdowns for maintenance in 2018 resulted in the storage of record amounts of Alberta oil and a collapse in wcs prices to $5.97 per barrel, a startling $43.55 per barrel less than wti. Improving the transportation infrastructure would provide Alberta producers with greater market access and reduce the likelihood of such regional overproduction crises.

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39 Harvey 1984, p. 354.
41 Galay 2017.
However, the construction of pipelines relies upon approvals from jurisdictions beyond Alberta. Authority over interprovincial and export pipelines in Canada belongs with the federal government. The current Canadian government has sought to engage Alberta in transactional negotiations, essentially offering to support tar sands expansion in exchange for provincial participation in a system of carbon pricing. However, the conservative Alberta government staunchly opposes this bargain, leaving the path forward for pipelines uncertain. Moreover, provinces transected by pipelines, while not having explicit jurisdiction over them, control environmental assessment, regulatory, and permitting processes that could prevent development. The uneven geographic distribution of the costs and benefits associated with transportation of the diluted bitumen from the tar sands increases the likelihood that provinces such as British Columbia and Quebec will resist pipeline development. While the collection of provincial resource rents from the Alberta tar sands depends on expanding pipeline infrastructure, other provinces only collect revenue from the construction and operation of the transportation infrastructure, and thus have far less to gain financially from expanding tar sands production. Moreover, after the completion of pipeline construction, there are relatively few jobs associated with transportation infrastructure, thus limiting pressure to approve development from the labour movement in these provinces. Coastal provinces, such as British Columbia, also face substantial risks associated with spills, which threaten significant established fisheries economies. These provinces are thus far more likely to prioritise environmental policies and minimise the costs associated with the climate crisis over the benefits of pipelines. Similarly, pipeline proposals to the US are entangled with competing environmental and economic agendas, including a potential desire to prioritise market access for US producers competing with the tar sands.

Uncertainty surrounding pipeline approvals and legal challenges interfere with project planning and financing timelines, and ultimately the very viability of projects. In 2014, five major projects proposed to expand the Alberta pipeline’s export capacity by an additional 3.8 million barrels per day. However, after legal challenges overturned the approval of the 525,000 barrel per day Enbridge Northern Gateway project, in 2016 the Canadian government cancelled the

45 Newman 2013.
46 MacNeil and Paterson 2018.
47 Hoberg 2018; Olszynski 2018; Urquhart 2019.
48 Hoberg 2013.
49 Levy 2009.
51 Hoberg 2013.
project. In 2017, TransCanada cancelled the proposed 1.1 million barrel per day Energy East project citing regulatory obstacles. The Obama administration blocked the 830,000 barrel per day TransCanada Keystone XL extension in 2015; while Trump revived the project in 2017, legal obstacles in Nebraska and Montana slowed development, and after his inauguration in 2021 Biden cancelled the pipeline. In 2018, Kinder Morgan announced it was suspending work on the 560,000 barrel per day Trans Mountain expansion project, subsequently selling their existing pipeline infrastructure and interests in expansion to the Canadian government for $4.5 billion. Only the 760,000 barrel per day Enbridge Line 3 replacement is scheduled to start construction by 2021.

Moreover, there are limitations to using an infrastructural fix to resolve regional crises of overproduction. As huge investments in fixed capital, major infrastructural projects have the effect of locking-in a particular trajectory of development, and there is a significant possibility that they could prove a trap, particularly if public money is used. Transforming transportation networks requires massive investments ‘be immobilized in the land … in order to achieve spatial integration and to eliminate spatial barriers to the circulation of capital’. Once these pipelines are built, it becomes necessary to realise the economic growth that they were designed to serve in order to realise the value of the infrastructural investment. ‘To realize the value fixed in an existing pipeline’, as Éric Pineault describes, ‘a certain volume of oil must flow through it’. Thus, there is an inertia associated with infrastructural development. Once built, a pipeline sets particular development pathways in motion and makes it increasingly difficult to pursue alternative development trajectories. At a certain point, ‘the value embodied in the produced space of the transport system becomes the barrier’ that must be overcome to facilitate the emergence of new forms of economic development. The economic rigidity associated with massive infrastructure investments effectively locks Canada into a hydrocarbon development trajectory that limits efforts to promote a sociotechnical transition to a green energy future. Moreover, the fix that infrastructural investment provides is necessarily temporary; there is, as Harvey argues, ‘no “spatial fix” that can contain the contradictions of capitalism in the long run’. Building pipelines may only exacerbate and deepen the crises engendered by fossil capitalism, making an eventual transition more difficult.

52 Kirkpatrick and Smith 2011; Furlong 2019.
53 Harvey 1984, p. 380.
54 Pineault 2018, p. 141.
55 Harvey 1984, p. 380.
56 Haley 2011.
57 Harvey 1984, p. 442.
Recognising this context, environmental movements have particularly focused struggle on pipelines, aiming to limit the rate of tar-sands development.58 They have had particular success through focusing mobilisations on pipeline struggles in jurisdictions that must be traversed by pipelines but garner little benefit from tar-sands production or refining. Central to this strategy has been leveraging relationships with Indigenous struggles to pressure settler governments.

The Settler-Colonial Problem

In recent years, Indigenous peoples in Canada have been exercising increasingly effective jurisdiction over their traditional lands. Reviewing the global energy outlook in 2014, the IEA stressed that the expansion of Canadian production remained uncertain because of questions related ‘to the transport capacity required to get the oil to market’, specifically noting the uncertainties associated with Indigenous territorial rights.59 Earlier that year, the Supreme Court of Canada determined that the Tsilhqot’in Nation possessed Aboriginal title to a portion of their traditional lands in British Columbia. Expressing industry anxiety, the IEA noted that the decision affected projections for Canadian hydrocarbon production growth, as pipeline projects crossing British Columbia will face additional burdens in ‘obtain[ing] the consent of the title-holder’.60 Simultaneously, environmental organisers increasingly sought to build alliances with Indigenous groups, who had unique legal and political leverage to stop pipelines.61 While historically marginalised and ignored, Indigenous peoples have recently asserted increasing authority, disrupting the territorial foundations of the settler political economy and calling into question who can be said to govern this land.62

Since the extractive economy relies on resource access, Indigenous claims to the land unsettle the territorial foundations of the political economy of fossil capitalism. Karl Marx famously theorised the importance of primitive accumulation to the foundations of capitalism.63 Harvey, however, noted that accumulation by dispossession was not temporally bounded to the origins of capitalism but rather remained an ongoing process, one that contemporary struggles continue to contest.64 Building upon this discussion, Glen Coulthard has stressed

58 Avery 2013; Hoberg 2013.
60 Ibid.
61 Thomas-Muller 2014.
63 Marx 1981.
64 Harvey 2003.
how Indigenous peoples in particular continue to contest settler-colonial relations of territorial dispossession. In his analysis, Coulthard stresses how Indigenous movements ground their claims in an alternative Indigenous political economy, using traditional kinship relations to contest the commodification of land that underpins extractive regimes. As Indigenous relations to the land continue to be enacted in the present, they remain a contemporary challenge to settler-colonial economies.

Settler law attempts to mediate this conflict, providing delimited recognition of Aboriginal rights while securing the legal foundations of extraction. As E.P. Thompson described in his classic work, *Whigs and Hunters*, the law has a complex, contradictory character: ‘On the one hand it is true that the law did mediate class relations to the advantage of the rulers. ... On the other hand, the law mediated these relations through legal forms, which imposed, again and again, inhibitions upon the actions of the rulers’. Within Canada, settler legal regimes possess a similar complexity, mediating relations between Indigenous peoples and development proponents even as the courts naturalise the colonial occupation of the territory.

The recognition of Aboriginal rights has provided Indigenous peoples with increased leverage to shape the course of development on their territories. In 1982, responding to Indigenous demands, the government constitutionalised protection for Aboriginal rights. While Canadian judicial interpretation has established that the settler sovereign can infringe Aboriginal rights, such infringement must be legally justified by a compelling and substantive objective, such as ‘the building of infrastructure and the settlement of foreign populations to support those aims’. Implementing such objectives, the government must uphold fiduciary duties to preserve the current and future interests of Indigenous peoples. The Supreme Court of Canada has determined that ‘incursions on Aboriginal title cannot be justified if they would substantially deprive future generations of the benefit of the land’. Moreover, the justification of infringement requires the government to demonstrate that the infringement is necessary for the government to achieve its objectives, that the infringement goes no further than necessary to achieve governmental objectives, and that Indigenous interests do not suffer adverse impacts from the infringement. In evaluating the impact on Indigenous interests, the government needs to consult

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65 Coulthard 2014.
66 McCreary and Milligan 2014; McCreary 2020; McCreary and Milligan 2021.
68 Henderson 2006.
69 Supreme Court of Canada 1997, p. 1021.
70 Supreme Court of Canada 2014, p. 297.
Indigenous communities.\textsuperscript{71} There is thus considerable legal uncertainty associated with Aboriginal rights for major developments such as pipelines that pose substantial risks to Indigenous interests. Environmental activists have sought to build alliances with Indigenous land defenders, supporting Indigenous campaigns against extractivism.\textsuperscript{72} The development of the Enbridge Northern Gateway project was halted, after Canadian government approval, by a legal challenge by the Gitxaala Nation, highlighting the impact of Indigenous legal claims on governmental sovereignty over natural resources.\textsuperscript{73}

Alongside the expanding court recognition of Aboriginal rights, there has been a parallel resurgence of Indigenous legal traditions and Indigenous communities’ willingness to assert their jurisdiction on the ground through blockades and other forms of direct action.\textsuperscript{74} While Indigenous claims are often grounded in distinct relationships to the land, they present clear impacts to the political economy of pipelines.\textsuperscript{75} As Nicholas Blomley pointed out a quarter-century ago, the material assertion of Indigenous territorial claims disrupts colonial extractivist flows, unsettling elements of the Canadian political economy.\textsuperscript{76} The political outcomes of such campaigns have been uneven, at times creating a flashpoint or political crisis for settler authorities that contributes to fundamental policy changes, but also often resulting in the criminalisation and suppression of Indigenous land defenders.\textsuperscript{77} Increasingly government officials have sought to develop strategies to control Indigenous movements and stabilise the flow of resources.\textsuperscript{78} In economic terms, Indigenous mobilisations have also intensified pressure on companies to both develop strategies to ameliorate Indigenous concerns and control the cost of uncertainties associated with Indigenous resurgence.\textsuperscript{79}

One of the major impacts of Indigenous mobilisations has been the proliferation of strategies to reconcile different political, economic, and environmental agendas around pipeline development with Indigenous community concerns. As Michael Watts highlighted in his classic study of oil politics in Nigeria, Indigenous claims are not strictly forms of local opposition to the global geographies of resource extraction.\textsuperscript{80} Indigenous claims to territory

\begin{thebibliography}{9}
\bibitem{lambrecht} Lambrecht 2013.
\bibitem{davis} Davis (ed.) 2010; Klein 2014.
\bibitem{mccreary} McCreary and Lamb, forthcoming.
\bibitem{borrows} Borrows 2005; Christie 2013; Pasternak 2014.
\bibitem{mccrearyturner} McCreary and Turner 2018.
\bibitem{blomley} Blomley 1996.
\bibitem{simpson} Simpson and Ladner (eds.) 2010; Belanger and Lackenbauer (eds.) 2015.
\bibitem{lebillon} Le Billon and Carter 2012; Pasternak and Dafnos 2018; Ceric 2020.
\bibitem{manuel} Manuel 2015.
\bibitem{watts} Watts 2004.
\end{thebibliography}
Inflect the global geographies of oil extraction, forcing corporate capital to negotiate resource rents with non-state authorities that can disrupt oil production and export infrastructures. In the Canadian context, corporations have sought to use private industry–Indigenous contracts to secure support for development proposals. These private agreements enrol Indigenous communities as project beneficiaries through employment, community development, investment, and revenue-sharing measures.

Industry–Indigenous agreements have restructured resource sector labour markets, securing particular opportunities for Indigenous workers. These political and legal dynamics have led to higher relative employment rates in resource-extractive sectors. Indigenous workers ‘accounted for 6.3% of the direct Canadian oil and gas industry workforce in 2016, or 11,900 workers, compared with 3.9% of the national workforce’. The Canadian Association of Petroleum Producers estimates that oil sands operators spent $3.3 billion on Indigenous procurement contracts between 2015 and 2016, ‘work[ing] with 399 Indigenous companies in 65 Alberta communities’. These contracts likely underlie the high relative Indigenous employment rate in the oil and gas services subsector, where 6,800 Indigenous workers make up 7.4% of the workforce, despite composing only 6.5% of the population. However, as Suzanne Mills has noted, there are often tensions between new Indigenous entrants to the labour market and the normative whiteness of established unionised industrial labour, with predominantly-white unions often working to restrict the duration of Indigenous employment. This raises significant questions about the durability of industry–Indigenous compromises as conflicts between Indigenous workers and white workers intensify.

In addition to addressing racism in the workplace, it remains vital to protect Indigenous peoples’ ability to pursue livelihoods beyond capitalism. As Malm argues, wild places continue to provide spaces less fully subjugated to capital where people can enact freedom and alternative lifeways. While fossil capitalism is rapidly destroying such places, they remain crucial models for imagining community beyond its hegemony. Efforts to translate Indigenous rights into employment–contracting seek to subsume Indigenous territorial relationships within the logic of capital extraction. With the limitations of settler-colonial law and overwhelming concentration of police and military capacity...
in the hands of the state, the relations of force do not favour Indigenous peoples stopping development alone. Many Indigenous communities, historically marginalised by settler-colonialism, view industrial partnership as their best option in the circumstances for survival and delimited self-determination.\textsuperscript{87} To radically transform these circumstances, and build broader coalitions capable of overthrowing fossil capitalism in Alberta, we need a broader critique of the political economy of the tar sands.

**The Rentier’s Dilemma**

To deepen conversation about the Athabasca tar sands, it needs to be positioned within a broader understanding of relations between the rentier state and extractive economy. The dynamics of capital investment in resource extraction fundamentally remain beyond the control of the state. Government policies can facilitate opening up land and resources for exploitation, but the state remains dependent upon extractive capital investing and developing those resources. Thus, the geography of hydrocarbon development is structured less by state policy than the relations of global capital. Requiring investment to realise the value of hydrocarbons, resource-rich states reduce the costs of production in their jurisdiction. These policies maximise corporate profit rates through limiting the value that workers and the broader public retain from the commodified resource through wages or resource rents. However, with a superabundance of global hydrocarbon reserves, oil companies have historically focused on maintaining oil scarcity and high prices rather than maximising production.

Notwithstanding popular narratives about the potential end of oil and the quest to find new reserves, the central issue for the oil industry remains how to limit hydrocarbon flows and maintain high prices. Understood from the industry perspective, as Matthew Huber argues, ‘the political economy of oil is ... profoundly shaped by fears of overproduction and glut’.\textsuperscript{88} To suspend crises of overproduction, corporations need to maintain relations of oil scarcity.\textsuperscript{89} ‘The size and productivity of oil reserves’, Mazen Labban stresses, ‘are not fixed and are not determined by geological limits as much as by economic, political, and technological developments in production’.\textsuperscript{90} Capital investments and technological developments often lead to the discovery of new reserves, as well as

\textsuperscript{87} Slowey 2008; Montsion 2015.
\textsuperscript{88} Huber 2011, p. 817.
\textsuperscript{89} Labban 2010; Mitchell 2011; Huber 2013.
\textsuperscript{90} Labban 2010, p. 3.
creating possibilities for the exploitation of unconventional sources such as tar sands and oil shale. However, the integration of additional reserves into the global market intensifies competition and results in price declines. Investment dynamics are shaped by the need to control the threat of overproduction and thereby maintain profitability.

Unconventional hydrocarbon production, such as the Athabasca tar sands, occupies a unique position in increasingly volatile oil markets. While geologists have been developing processes to extract hydrocarbons from the tar sands for more than a century, the process has only recently become economically profitable. A dense, fluid energy source, oil plays an important role in capitalism as a whole, and other energy sources cannot easily be substituted for it. Under conditions of high demand, ‘market value is determined by commodities produced under the worst conditions, even if they do not constitute the bulk of commodities’. Moreover, as Labban explains, market prices for an inelastic commodity in conditions of structural scarcity can capture ‘surplus value produced in other branches of industry’, trading at prices partially delinked from its costs of production. Conversely, when supply exceeds effective social demand, market value is structured by the availability of oil produced under more favourable conditions, which ‘may then sell at, or close to, their value, regardless of their constituting the bulk of commodities. Under such conditions, commodities produced under less favorable conditions may fail to realise any profit and may indeed have to be sold at below their cost price, with negative profits’. The integration of large volumes of unconventional hydrocarbon production into world energy supplies, with significantly higher production costs than conventional oil, has created increased volatility in oil markets, as prices rapidly escalate and fall as effective demand shifts.

The long-term financial viability of tar sands operations thus remains uncertain. As the IEA has noted, the downturn in commodity prices in 2016 led to declining global investment in the fossil fuel sector. This pattern of disinvestment has been particularly acute in Canada, where capital investment in the oil and gas industry fell from over $80 billion in 2014 to about $38 billion in 2016. Within the Athabasca tar sands, rather than making further investments in new productive facilities, companies have shifted to focus on mergers

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92 Labban 2010, p. 27.
93 Ibid.
94 Ibid.
95 Sherwin, Henrion and Azevedo 2018.
97 PetroLMI 2019, p. 5.
and acquisitions. While capital investments have stagnated since 2016, merger and acquisition activity in the Canadian oil and gas sector hit a ten-year high at $132 billion in 2017, as foreign capital divested itself of projects and the dominant Canadian tar-sands producers consolidated control of the industry.\(^{98}\) Five companies – Suncor, Canadian Natural Resources Limited, Cenovus, Imperial Oil, and Husky – now control 79.3% of the productive capacity of the tar sands and 90% of the bitumen-upgrading capacity.\(^{99}\) As Labban explains, ‘the centralization of capital becomes necessary for its survival, especially in periods of slow economic growth and crises of overaccumulation’.\(^{100}\) Consolidation of the industry allows companies to limit production, realise economies of scale, and eliminate duplicate jobs. Mergers and acquisitions reduce labour demand. As summarised by the Canadian Petroleum Labour Market Information Agency (PetroLMI), consolidation enables ‘the industry to produce more oil and gas with less investment and fewer workers’.\(^{101}\)

Within these processes, the capacity of the Alberta government is relatively limited. Despite provincial jurisdiction over public lands and underlying title to natural resources, the government remains reliant on extractive capital investments to valorise resources and thereby transform legal rights over resources into lucrative sources of rent.\(^{102}\) The government has the capacity to raise the value of the resource on the market through withholding resources from production, using mechanisms such as production controls – as the provincial government did after Western Canadian Select (wcs) prices dropped to $5.97 per barrel in 2018. However, the state faces a rentier’s dilemma. The government possesses the ability to modify the conditions of extraction – through, for instance, royalty regimes, tax policies, and environmental protections – and can thereby affect the benefits or externalities associated with production. However, if the conditions it sets are not amenable to extractive capital, divestment may follow, leading to an overall loss of revenue.

As the oil and gas sector remains a major source of revenue and economic activity in Alberta, and to a lesser extent Canada, the government fiscally and economically depends on continuing extraction. Drawing on long-standing critiques of the dependence of the Canadian economy on staple exports, a number of commentators have criticised economic reliance on hydrocarbons as leaving the nation vulnerable to commodity price volatility.\(^{103}\) To encourage investment and thus realise the value of hydrocarbons, the provincial and

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\(^{98}\) Deveau 2017.


\(^{100}\) Labban 2010, p. 38.

\(^{101}\) PetroLMI 2019, p. 3.

\(^{102}\) Labban 2010, p. 41.

federal governments reduced the costs of production through low royalty rates, introduced tax policies favourable to industry, and streamlined environmental assessments.\textsuperscript{104} However, as commodity prices fell, investment declined and has not returned. Changes of government policy, while modifying the profitability of operations at the margins, will not resolve the crisis of hydrocarbon overproduction for unconventional reserves that retain a high production cost.

Ultimately, capital investment is driven by broader economic forces. Prior to the collapse in commodity prices in late 2014, oil prices were significantly higher. From June 2009 until November 2014, the price of \textit{wcs} remained between a low of $55.44 and a high of $90.97 per barrel, since then it has not traded for more than $53.25 per barrel and has frequently been worth half that.\textsuperscript{105} This steep decline in the value of oil, resulting from global overproduction, has greater impacts on the viability of tar sands operations than state policy. The global emergence of other unconventional reserves, such as shale in the United States, with lower costs of production than the tar sands, has further transformed the fossil economy.

The immense financial clout of capital contours the terrain of tar sands governance, as the state has limited capacity to drive production. As transnational capital has increasingly divested of the tar sands, Canadian companies have become increasingly dominant in regional production. These companies have a high degree of reliance on state subsidies and support to maintain financial viability; however, the state still remains beholden to their control over production. This greatly limits the influence of environmental groups and Indigenous peoples within Alberta where production is centred. But it is ultimately the relative scarcity or overabundance of hydrocarbons that structures accumulation opportunities and crisis dynamics within fossil capitalism and determines the extent to which bitumen from the tar sands can be profitably extracted. The viability of tar sands operations is particularly threatened by the relationship between oil production and the climate crisis. In particular, oil prices have been depressed by producers, fearing the effects of new climate-change policies on the industry, seeking to maximise production prior to the imposition of regulatory constraints.

\textbf{The Climate Crisis}

The emerging climate crisis gives the lie to the notion of the sustainability of fossil fuels as the energetic foundation of global capitalism. The use of

\textsuperscript{104} MacNeil 2014a; Zalik 2015; Adkin (ed.) 2016; Peyton and Franks 2016.
\textsuperscript{105} Government of Alberta 2021a.
hydrocarbons to supply energy is the single most significant source of global CO₂ emissions. The *Fifth Assessment Report* of the Intergovernmental Panel on Climate Change (IPCC) found that CO₂ emissions from fossil fuel combustion and industrial processes contributed about 78% to the total [greenhouse gas] emission increase between 1970 and 2010.\(^\text{106}\) Noting that levels of atmospheric CO₂ that have accumulated since the industrial revolution ‘are unprecedented in at least the last 800,000 years’, the IPCC asserted that they ‘are extremely likely to have been the dominant cause of the observed warming since the mid-20th century’.\(^\text{107}\) Since 1970, the IPCC noted the carbon crisis was accelerating as ‘cumulative CO₂ emissions from fossil fuel combustion, cement production and flaring have tripled’.\(^\text{108}\) Unconventional tar-sands production has become a particular target for climatic concern because of the increased carbon intensity associated with the higher energy requirements to extract bitumen and upgrade it into synthetic crude oil.

The climate crisis makes it increasingly likely that a significant portion of global hydrocarbon reserves must be left in the ground and never valorised as commodities. There is thus a geo-economics of oil, in which producing countries push to maximise extraction and ensure the realisation of the value of their resources. While limiting production increases prices, it also increases the likelihood that a particular reserve will remain buried. Controlling the world’s third largest remaining reserve of hydrocarbons, Alberta has an economic interest in maximising extraction to ensure the province is able to exploit its resources. However, as other producing states also maximise production, the high relative production costs of the tar sands leave producers there at a competitive disadvantage.

Emergent shifts in the effective social demand for oil exhibit troubling signs for producers in the Athabasca tar sands. Addressing the climate crisis requires controlling fossil fuel consumption. Following a capitalist logic, the dominant approach to addressing climate change has been the adoption of mechanisms to incorporate the costs of burning hydrocarbons into energy markets; as the IPCC argues, making meaningful ‘reductions in emissions would require large changes in investment patterns’.\(^\text{109}\) There are nascent signs that the economy is beginning to decarbonise, articulating modes of capitalist production independent of fossil fuels. In 2015, for the first time, more renewable power-generation capacity was added than fossil fuel.\(^\text{110}\) In November 2016, the Paris

Agreement on climate change took effect, in which 194 countries committed to reduce greenhouse gas emissions. Data began to indicate the once ‘very predictable relationship between rising economic activity, growth in energy demand and energy-related carbon dioxide (CO₂) emissions’ was delinking.¹¹¹ Global energy-related CO₂ emissions remained flat from 2014 to 2016 (although they rose again by 1.6% in 2017).¹¹² The IEA projects continued growth in oil demand under current policies, but suggests that ‘determined policy interventions to address climate change [could] lead to a peak in global oil demand around 2020’.¹¹³ The IPCC predicts with high confidence that policies to mitigate the effects of the climate crisis ‘could devalue fossil fuel assets and reduce revenues for fossil fuel exporters’.¹¹⁴

The long-term fixing of huge capital investments in tar sands production leaves firms vulnerable to changing economic conditions. Since 2005, tar sands projects have taken between four to ten years following their approval to ramp-up to full production.¹¹⁵ In contrast, shale oil production in the United States operates under a shorter investment cycle and producers can respond relatively quickly to changing economic conditions. This leaves Athabasca tar sands producers particularly vulnerable to getting caught in conditions of low effective social demand, where they fail to realise any profit. Due to the delay in bringing tar sands operations into production, the tar sands are actually still in a period of expansion, as ‘investments made prior to the oil price drop [will continue to] lead to substantial growth’.¹¹⁶ Without additional transportation infrastructure, this will lead to another regional crisis of overproduction as new operations move into production and overwhelm the regional pipeline capacity. Thus, although the financial viability of tar sands operations remains uncertain, the capital already fixed in tar sands investments almost certainly requires investments in pipelines for a chance to realise its value. However, changing global energy markets raise the potential that the industry could continue to struggle with negative profits even with infrastructural improvements.

Alongside formal economic processes, popular political resistance represents a parallel but distinct threat to the viability of pipelines. Wherever tar sands pipelines have been proposed in North America, they have become targets of opposition from environmental activists, as well as people with local land rights that are threatened by the introduction of new pipeline

¹¹¹ Ibid.
infrastructure.\textsuperscript{117} The politics and inspiration for these responses varies, from the protection of existing agricultural property rights to radical breaks with the ecological logic of capital transforming the socio-natural world into commodities. However, these movements are a fundamental threat to the capacity to construct pipelines, as protests and dissent have the capacity to extend project construction timelines and cause cost overruns that disrupt the financial viability of infrastructure developments.

In Canada, this dynamic has historically placed organised industrial labour in opposition to environmental and Indigenous movements.\textsuperscript{118} Indeed, vilification of environmental and Indigenous movements as a threat to the working class has been central to conservative political organising in Alberta and Canada, serving to advance the interests of capital. However, technological transformations in the tar sands are increasingly rendering labour redundant and opening opportunities for new political alliances.

**The Issue of Automation**

Automation has not been widely discussed within the critical literature around fossil capitalism, although scholars have noted the labour-displacing effects of technological change.\textsuperscript{119} Indeed, Timothy Mitchell argues that original investments in developing oil reserves in the late nineteenth and early twentieth century were motivated by a desire to displace the power of organised labour, which had developed around labour-intensive coal mining and transportation operations.\textsuperscript{120} A uniquely dense and fluid energy source, oil could be extracted and shipped with far less labour, enabling a much greater concentration of economic and political power. As the technological subjugation of labour across industries relied on cheap energy, the rise of the new oil economy created new forms of dependence on oil.\textsuperscript{121} However, economic dependence does yield economic security. As capital continually invests in labour-saving technologies, there is a continual reduction of the number of workers needed to maintain or even expand production. Moreover, new digital technologies are shifting jobs away from the hinterlands to high-tech centres. As rural communities are rendered superfluous to the needs of capital, rural populations that were once

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\textsuperscript{117} Haluza-DeLay and Carter 2014; Klein 2014; Bradshaw 2015; Bosworth 2019.
\textsuperscript{118} Mills and McCreary 2021.
\textsuperscript{119} Pierce, Lawhon and McCreary 2019.
\textsuperscript{120} Mitchell 2011.
\textsuperscript{121} Christie 1980.
the strongest political allies of industry may begin to shift allegiances, opening new possibilities for change.

The massive investments in oil and particularly unconventional bitumen production created new hinterland populations of industrial workers dependent on fossil capitalism. As Pineault notes, the geography of oil production constructs a regional class of labourers whose livelihood depends on the continual expansion of extractive industries, and thus 'become objective allies of the extractive capitalist class'. Examining the politics of rural oil-dependent communities, Emily Eaton and Simon Enoch argue that the subjective identification of oil-producing regions with industry prevents criticism of the environmental impacts of development. Thus, fossil-capitalist development trajectories get locked in by the social infrastructure that enables the reproduction of everyday life in resource hinterlands. In such contexts, conservative politicians are able to advance the interests of extractive capital in the name of the public interest.

However, the interests of capital and those of workers remain in tension. Not only does industry extract surplus value from labour, but individual operators continually invest in technological innovations to increase productivity and thereby 'capture a larger share of the total surplus value'. This leads to a continual increase in the amount invested in fixed capital, and corresponding decrease in the portion of money spent on labour. As Labban explains, in competition with other producers, operators are 'compelled to cut down costs by replacing living labor with constant capital'. Companies thus continually make technological investments to expand production. As labour becomes ever more productive, the same number of workers can produce more. However, this exacerbates tendencies towards overproduction, leading to contradictory tendencies to restore profitability through making further innovations to enhance productivity as well as inducing artificial scarcity. If there is not effective demand for increased production, the expanded productivity results in job losses.

In the Athabasca tar sands, following the price collapse in 2014, companies sought to reduce costs through investments in labour-saving technologies. Following the layoffs associated with the price collapse, there have been massive increases in labour productivity in the tar sands. This has enabled tar sands operators to increase production without increasing employment in periods of recovery. From 2014 to 2018, employment in the Canadian oil and gas sector has

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122 Pineault 2018, p. 144.
123 Eaton and Enoch 2018.
124 Peyton and Franks 2016; Carter 2018.
declined from 226,500 to 185,800.\textsuperscript{127} Prior to the pandemic, tar-sands employment projections for 2020 anticipated the workforce to contract by 5\%, or roughly 1,400 jobs, while production was simultaneously expected to climb by an additional 5\%, or 1.48 thousand barrels per day.\textsuperscript{128} Obviously, both employment and production fell due to the Coronavirus outbreak, but looking beyond this, there has been a major transition in oil-exploration and production-labour regimes, as automation reduces the required workforce. For instance, remote well-site monitoring systems have ‘cut routine site visits by as much as 50\%’.\textsuperscript{129} The use of drones for equipment inspection and surveying, as well as the evolution of autonomous gas-detection robotics, reduces the need for many site supervisors and monitors. The introduction of autonomous heavy haulers by Suncor will further reduce the need for hundreds of human drivers, an innovation certain to be quickly duplicated by competitors.\textsuperscript{130}

In addition to decreasing the number of workers needed in the oil and gas sector, innovations are changing the necessary work skills and geography of oil work. As described by labour market analysts, ‘[t]he adoption of data analytics, cloud technology, wearable electronics, machine learning, blockchain and other technologies is creating new occupations and transforming existing roles’.\textsuperscript{131} Automation is eroding ‘traditional occupations in drilling, completing and equipping new wells’,\textsuperscript{132} while ‘demand is growing for big data architects, automation technicians and information technology project managers’.\textsuperscript{133} Existing oil and gas workers are increasingly a mismatch for ‘the skills the industry is looking for’.\textsuperscript{134} The introduction of new technologies has increased the subcontracting to new third-party IT providers, displacing traditional oil and gas service companies. Moreover, many of these new automated systems ‘run oil-field facilities remotely from offices hundreds of kilometres away’.\textsuperscript{135} Hinterland hydrocarbon workers are being replaced by urban IT experts. Moreover, with the increasing digitisation of operations even field workers are required to have computer skills.

There is thus a contradictory tendency within contemporary fossil capitalism to render its most supportive constituency superfluous. As Joan Robinson is famously credited with saying, ‘the only thing worse than being exploited

\begin{thebibliography}{9}
\bibitem{127} PetroLMI 2019, p. 6.
\bibitem{128} PetroLMI 2019, p. 20.
\bibitem{129} PetroLMI 2019, p. 15.
\bibitem{130} Jaremko 2018.
\bibitem{131} PetroLMI 2019, p. 18.
\bibitem{132} PetroLMI 2019, p. 12.
\bibitem{133} PetroLMI 2019, p. 19.
\bibitem{134} PetroLMI 2019, p. 37.
\bibitem{135} PetroLMI 2019, p. 18.
\end{thebibliography}
under capitalism is not being exploited under capitalism’. Abandoned by fossil capital, rural communities will no longer be bonded to the oil and gas industry for their livelihoods. While it is difficult to discern where the political loyalties of the abject former worker will go, it seems certain the contemporary moment presents tremendous possibilities for political realignments.

However, in order to build a political coalition capable of overthrowing the authority of fossil capital in Alberta it is necessary to address the forces of automation rendering an increasing population surplus to the needs of capital. The environmental movement has long been critical of technology; however, it has focused on civilisational critique rather than criticism of capitalism. As a result, it has often idealised the moral purity of a life of arduous labour without machines. This, of course, has limited appeal. Rather than fighting against technology per se, we must challenge technological relations under capitalism.\footnote{\textsuperscript{136} Huber 2017.} The issue is not automation per se, but the private ownership and control of technology for the enrichment of an elite few.\footnote{\textsuperscript{137} Srnicek and Williams 2016.}

Conclusion

Through this article I have sought to develop a case study of the tensions of fossil capitalism in the Alberta tar sands. As stated at the outset, the goal of diagnostic analysis of a political-economic situation, more than mere description, must be to inform tactical and strategic interventions. This is particularly vital in relation to understanding and intervening within fossil capitalism. Much of the critical analysis of the climate crisis focuses on the problem of fossil-fuels consumption and its catastrophic impacts on the planet. Certainly, addressing the climate crisis is one of the most daunting tasks of the present and future and the use of fossil fuels remains central to this problem. However, addressing this crisis requires attending to capitalist relations within the sites of production of fossil fuels as a commodity.

Through an analysis of the different processes shaping tar sands production, I have sought to highlight the critical importance of understanding the political moment geographically. Interrogating how different processes, operating at multiple scales, thread through a particular place helps locate the dynamics and possibilities of political struggle. While long histories of capitalist development and its contestations shape the present, these processes unfold unevenly over space and analysis needs to be attentive to how geography structures the terrain of political struggle. Historical-materialist analysis
must address not only the historical evolution of capitalist processes, but also how they are materially embodied in the world. Such analysis remains crucial to understanding the spaces of contingency where effective political interventions can transform the world.\textsuperscript{138}

In this article, I have sought to call attention to the political economy of extraction in the Athabasca tar sands, the world’s largest bitumen deposit. Political regimes in Alberta and Canada have been actively promoting the extraction of the tar sands, one of the most carbon-intensive sources of fossil fuels in the world. The environmental movement has rightly targeted pipeline infrastructure developments where local governments have less interest in tar sands production as a way to limit access to market for tar-sands producers. After purchasing the Trans Mountain project in 2018 for $4.5 billion, the Canadian government now faces a major decision over whether to further invest public money in pipeline development. Fighting to prevent the investment of further public money in pipeline infrastructure must remain a central struggle for the environmental movement.

However, the strategic evasion of Alberta and working-class concerns in Canadian environmental organising has limited its impact. Conservative political elites, particularly in Alberta, have been able to effectively mobilise against the strategy of restricting market access for tar sands producers as undermining the provincial economy. After the last Alberta election, the newly-elected conservative premier voiced ‘a deep frustration in this province, a sense that we have contributed massively to the rest of Canada, but that everywhere we turn we are being blocked in and pinned down’.\textsuperscript{139} He excoriated environmentalists as ‘foreign funded special interests who have been leading a campaign of economic sabotage against this great province’ and blamed them for stripping the public of ‘money that could build schools and hospitals’. These frames are, of course, incredibly disingenuous, as the conservatives have cut resource rents to improve the profitability of industry and dismantled public services. However, conservatives have been incredibly successful at channelling working-class economic grievances into regional populist movements built on resentment to outsiders.\textsuperscript{140}

To effectively counter the rise of an increasingly xenophobic nationalism, it remains vital to fight for the working class and against capital. Focusing on questions of consumption, the environmental movement has long positioned itself against the concerns of poor and working-class communities. Much political momentum has been absorbed by projects to internalise the

\textsuperscript{138} Massey 2005.
\textsuperscript{139} Kenney 2019.
\textsuperscript{140} Cusset 2018.
environmental impacts into the market through mechanisms to price carbon. These initiatives have limited political resonance beyond a liberal elite as they transfer the cost of transition directly onto the public. To engage the majority of the population, environmental organising must recognise that substantial public investment is a necessary component for a just transition that meets the needs of the majority of the population.\footnote{Klein 2019; Stephens 2020.} To do so, we must redirect the anger of communities that feel abandoned towards those who profit from usurping public resources. The liberal politics of consensus-building and moderation is obviously insufficient to this task. Instead, it is necessary to proliferate sites of conflict and militantly challenge capital. One line of fight involves stopping the government from investing further public money in pipeline development or tar-sands industry subsidies, which encourage tar sands expansion and limit the funds immediately available to transition to a greener economy.

Moreover, the increased automation of the tar sands is undermining the capacity for industry to offer employment opportunities to Indigenous communities. Declining overall employment in the oil and gas sector raises significant questions about the durability of industry–Indigenous partnerships. Industry–Indigenous partnerships prioritise Indigenous participation in employment and opportunities for Indigenous companies over traditional subsistence economies. However, technological changes continually increase labour productivity and thus the scale of development, leading to lower employment and profit rates as well as intensifying impacts on traditional subsistence economies. Thus, the conflict between traditional and industrial economies worsens, as the returns for Indigenous communities partnering in development decline. The resurgence of Indigenous legal frameworks has also undermined the stability of industry–Indigenous partnerships. As Indigenous communities recentre Indigenous modes of conducting lawful relations, community members are increasingly questioning the normativity of settler conceptualisations of the land as a resource commodity.\footnote{McCreary 2016.} Thus, the contradiction between the commodification of land and Indigenous frameworks for relating to the land as kin will remain an enduring challenge to the future of hydrocarbon development. Indigenous resistance strips the patina of consensuality from capitalist exchange, exposing the violent underpinning of commodity relations in ongoing processes of dispossession.

The technological capacity of society has increased to the point of making much human labour unnecessary, rendering ever larger populations disposable. However, it has also enabled the possibility of transitioning directly towards what Marx describes as ‘a higher phase of communist society’ where

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141 Klein 2019; Stephens 2020.
142 McCreary 2016.
‘all the springs of common wealth flow more abundantly’.\(^{143}\) Collectivising the productive forces of society to ensure that everyone has everything they need, with an abundance of leisure, is increasingly feasible. Conversely, capital will not be troubled by the slow death of ‘exposed and vulnerable populations and massive habitat destruction … precisely because much of the world’s population has become redundant and disposable anyway’.\(^{144}\) The urgent need now, especially in the regional economies currently dependent on hydrocarbon extraction, is to articulate new visions to secure universal access to a basic livelihood and basic services, addressing the needs of a population increasingly subject to abandonment. Fighting to secure universal well-being may be an essential precondition to effectively countering the exclusionary populist narratives that block a transition beyond fossil capitalism to a more just society.

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\(^{143}\) Marx 1989, p. 87.

\(^{144}\) Harvey 2014, p. 249.


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