

The Networked Infrastructure of Fossil Capitalism: Implications of the New Pipeline Debates for Environmental Justice in Canada

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Article abstract

A read of the critical geography literature on the concept of “networked infrastructures” generates two arguments in relation to the environmental justice implications of the new pipeline debates. First, the proposed coast-to-coast pipeline is likely to exacerbate existing environmental inequities in Canada. Conceiving of the crude oil in a pipeline as a material flow of commodified nature demonstrates that, at the end of the pipe, inputs of labour, technology and capital are required to convert the crude into useable forms of energy. This leads to a serious engagement with the communities at the ends of the proposed pipes. Here, I illustrate the type of analysis that is required with a preliminary examination of the expected environmental health impacts from increased refinery emissions in Sarnia, Montréal and Saint John. Second, the notion that pipelines, despite their vital effects, are fixed and durable installations of built infrastructure—lending a marked inertia to the routes they cement—produces intergenerational equity concerns in relation to fossil capitalism. These concerns are brought powerfully to the fore by activists under the banner of Idle No More. In fact, it is this growing indigenous resistance movement centered on lands and resources that best illustrates the obvious contradiction: the permanence of the pipelines on the landscape, once built, underscores the gravity of the choices we are weighing, just as the active resistance of indigenous people across the county reveals the inherent instability of the networked infrastructure.

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ABSTRACT

A read of the critical geography literature on the concept of “networked infrastructures” generates two arguments in relation to the environmental justice implications of the new pipeline debates. First, the proposed coast-to-coast pipeline is likely to exacerbate existing environmental inequities in Canada. Conceiving of the crude oil in a pipeline as a material flow of commodified nature demonstrates that, at the end of the pipe, inputs of labour, technology and capital are required to convert the crude into useable forms of energy.

RÉSUMÉ

Une lecture de la littérature critiquant les réseaux d’infrastructures de gaz donne naissance à deux arguments relatifs aux implications de la justice environnementale dans le débat du nouveau pipeline. Premièrement, le pipeline proposé « d’un océan à l’autre » risque d’accentuer les inégalités environnementales déjà existantes au Canada. Le simple fait de percevoir le pétrole brut circulant dans un pipeline comme une version fluide et pratique de la nature nécessite à lui seul de la main-d’œuvre, de la technologie et des capitaux

* Associate Professor, Osgoode Hall Law School, York University, Toronto, Ontario. The author wishes to thank two anonymous reviewers for useful critiques and suggestions. Excellent research assistance was provided by Jesse-Ross Cohen and Sarah Colgrove. The author benefitted from opportunities to test the argument in presentations of earlier versions of this paper at the University of Ottawa conference on Environmental Justice and Human Rights in November 2012, and the faculty research seminar at Osgoode Hall Law School in January 2013.

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importants, apports nécessaires à la transformation des ressources naturelles brutes en des formes d'énergie utilisables. Cela requiert un engagement sérieux avec les communautés concernées aux extrémités desdits pipelines. J'illustrerai ici le type d'analyses requis dans l'examen préliminaire des impacts environnementaux sur la santé auxquels on peut s'attendre en raison de l'augmentation des émissions des raffineries de Sarnia, Montréal et Saint John. Deuxièmement, le fait que les pipelines, en dépit de leur effet vital, constituent des installations fixes et durables, engendre des préoccupations en matière d'équité intergénérationnelle, de capitalisme et de combustibles fossiles. Ce sont ces inquiétudes que les tenants du mouvement « Idle No More » présentent. En fait, la résistance autochtone croissante face au développement des terres et des ressources illustre le mieux la contradiction évidente que, une fois construits, la permanence des pipelines dans le paysage souligne la gravité des choix

que nous soupesons. Cette même résistance active un peu partout au pays révèle également l'instabilité inhérente au réseau d'infrastructures.

Key-words: *Environmental justice, pipelines, networked infrastructure, pollution, indigenous peoples, inter-generational equity.*

Mots-clés : *Justice environnementale, pipelines, réseau d'infrastructures, pollution, peuples autochtones, équité intergénérationnelle.*

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INTRODUCTION

Late last year Suncor Energy announced plans to spend \$55 million to prepare its Montréal refinery to receive western crude.¹ Local politicians welcomed the announcement, as did the union representing Suncor's organized workers, a local of the Communications, Energy and Paperworkers Union (CEP). The CEP, which also represents many workers in the contested tar sands region of Alberta, has been boxed into adopting the nationalist strategy of fighting to keep oil industry jobs in Canada by invoking the goal of "Canadian energy security."² Thus, it joins the chorus of voices now calling for increased bitumen upgrading and refining capacity in Canada, and a coast-to-coast system of crude oil pipelines.³

This paper argues that building a coast-to-coast pipeline to deliver western tar sands crude to eastern refineries will cement our reliance on fossil fuels in a way that is dismissive of the rights and well-being of future generations at the same time that it exacerbates existing environmental injustice in Canada. I employ the critical geography literature on "networked infrastructures" to demonstrate how specific major infrastructure decisions, such as the decision to build a pipeline and the specific route chosen, have distributive consequences. These distributive consequences include not only economic benefits, such as the provision of jobs or resource

1. Suncor Energy, News Release, "Suncor Energy Announces 2013 Capital Spending Plan and Production Outlook" (3 December 2012) online: Suncor Energy <<http://www.suncor.com/en/newsroom/2418.aspx?id=1700109>>. (Note that all online references were accessed 6 June 2013).

2. Communications, Energy and Paperworkers Union of Canada, *Energy Security*, online: CEP <<http://www.cep.ca/en/cep-action/campaigns/energy-security>>.

3. Joel Davison Harden, "Pondering Powershift 2012: What's Up With Canada's Blue-Green Alliance?", *Our Times, Canada's Independent Labour Magazine* (7 November 2012) online: Our Times <http://ourtimes.ca/Between_Times/printer_242.php>: Advocates for an east-west pipeline say that oil mined from the Athabasca tar sands should be refined in Canada and distributed across the country, not "ripped and shipped" (largely to the US) as it is under current practices. The issue is framed as a matter of Canada's national energy security, and an effort to promote "good, family-supporting jobs." To that end, the case is for better use of current pipelines, or the expedited construction of new ones. Even David Suzuki has been heard bemoaning the fact that "in Canada, we continue being 'hewers of wood and drawers of water,' as we ship raw logs and raw bitumen elsewhere." David Suzuki, "What if Mother Nature Had Rights? She Does in Ecuador", *The Globe and Mail* (9 January 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

revenues, which have dominated the new energy debate in Canada, but also environmental health costs. The air pollution associated with the refining of fossil fuels, and its devastating impacts on local communities downstream, has thus far not factored into the debate, despite the crucial environmental justice considerations fueling the growing opposition to the current pipeline proposals.⁴

Pipelines distribute pollution. The ultimate end of a crude oil pipeline must be a refinery; the refinery will produce emissions of toxic air contaminants harmful for downstream communities. Thus, the routes we choose for the pipelines have consequences for the spatial organization of environmental inequities in Canada. And while some of these inequities are inherent in fossil capitalism, such as the climate consequences, in other ways the choice of route is crucial—it carries heavy costs for particular places and peoples.⁵

The National Energy Board (NEB) approved in July 2012 Enbridge's application to reverse the flow of oil over a portion of its "Line 9" pipeline between Sarnia and Montréal in a project known as "Phase I." It was opposed by the Aamjiwnaang First Nation, who fear the heavier western crudes will lead to more, and more deadly, air emissions from the Sarnia-area refineries that circle their reserve; it was also opposed by the Haudenosaunee Confederacy, who fear that a spill of diluted bitumen on their traditional territories would poison sacred lands and waters. "Phase II," Enbridge's application to reverse the remainder of the Line 9 pipeline, bringing western crudes through to Montréal, is now before the NEB and its implications are becoming clear, with Montréal's Suncor refinery putting eastern Canada on notice that

4. I have made this argument recently with specific reference to the impacts on Sarnia, Ontario and the Aamjiwnaang First Nation. In several places, this article draws on that previous work: Dayna Nadine Scott, "Situating Sarnia: 'Unimagined Communities' in the New National Energy Debate" (2013) 25 *J Envtl L & Prac* 81 [Scott, "Situating Sarnia"].

5. As this paper was going to print, the devastating rail disaster in Lac-Mégantic, Que. occurred, dramatically changing, probably permanently, the way Canadians think about transporting oil, and driving home the notion that the choice of route can bring serious consequences for particular people and places. See e.g., Les Perreux, "After Lac-Mégantic: To the End of the Line", *The Globe and Mail* (27 July 2013) F1.

it intends to begin refining western crude. Eventually, the proponents of a coast-to-coast pipeline insist, a new pipeline joining Montréal to Saint John could complete the picture, and allow the full sharing of the fruits of the tar sands across the country. It is, according to the proponents, “a win-win” proposition.⁶

In this paper, I assess the costs of the coast-to-coast pipeline and how they are likely to be shared across the country. Conceptually, we can expect environmental health impacts on downstream communities at the end of the pipe, whether it ends in the US Gulf Coast (as per the Keystone XL plan), Montréal or Saint John (as per the Line 9 reversal), or whether it is instead the “end of the pipe” in a metaphorical sense, meaning a port unloading tar sands crude from a tanker loaded in Kitimat, BC and headed for super-refineries in India or China (as per the Northern Gateway proposal). I focus on the everyday, chronic pollution that inevitably comes with the refining of dirty oil; leaving for another day the increased greenhouse gas (GHG) emissions tied to the extraction activities in the tar sands region. I conclude that the decision to build a coast-to-coast pipeline will not only have broad consequences for the entire country and for future generations, as it cements our commitments to fossil capitalism and constrains our abilities to choose a different route, physically, and a different energy path altogether, but it also will bring significant environmental health impacts for people in particular places and social contexts.

The argument is developed in four parts. In Part I, I review very briefly the theoretical orientation of the critical geography literature in networked infrastructures. In Part II, I outline the major pipeline proposals that drive the contemporary debates around the emerging national energy strategy in Canada to set the context for a consideration of the distributive consequences of a coast-to-coast pipeline. In Part III, I focus on the expected costs and benefits to the communities

6. Frank McKenna, former Premier of New Brunswick wrote in a June 2012 op-ed in *The Globe and Mail* that a “pipeline from coast to coast . . . would be an extraordinary catalyst for economic growth and a powerful symbol of unity.” Frank McKenna, “Let’s Build a Canadian Oil Pipeline from Coast to Coast”, *The Globe and Mail* (18 June 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

that are likely to host the affected refineries—Sarnia, Montréal and Saint John—should Enbridge’s Line 9 pipeline be reversed to allow tar sands crude to reach the East Coast. The conclusions are tentative, as much remains uncertain, but the analysis highlights the types of questions raised on an environmental justice analysis. In Part IV, I return to the insights from the networked infrastructure literature to conclude that the coast-to-coast pipeline, because of its “high inertia,” will have lasting, long-term consequences for particular places, raising intergenerational equity concerns. The stability of the infrastructure network should not be overstated, however: the pipelines, even once built, will remain vulnerable to disruption as opposition to the federal government’s energy vision gains momentum.

I. PIPELINES AS NETWORKED INFRASTRUCTURE

At the most basic level, the global cities literature conceptualizes global cities, like Toronto and Chicago, as consisting of a central core and a marginalized periphery. Increasingly though, more attention is being paid in critical geography and urban political ecology to the relationships of interdependence between the core and periphery.⁷ Often, those interconnections are studied by focusing on “networked infrastructures” conceived in terms of “metabolism.”⁸ In other words, the “ecologies” of political ecology are not confined to “natural” ecosystem dynamics, but include complex systems of interconnection and exchange in social, economic and built environments.⁹

7. Saskia Sassen, “Cities Are at the Center of our Environmental Future”, online: (2009) 2:3 SAPIENS at paras 2-5 <<http://sapiens.revues.org/948>>.

8. Roger Keil & Douglas Young, “In-Between Canada: The Emergence of the New Urban Middle” in Douglas Young, Patricia Burke Wood & Roger Keil, eds, *In-Between Infrastructure: Urban Connectivity in an Age of Vulnerability* (Kelowna, BC: Praxis (e)Press, 2011) 1 at 12. For a brief history of the term “networked infrastructures,” which comes from social studies on technology, see Jochen Monstadt, “Conceptualizing the Political Ecology of Urban Infrastructures: Insights from Technology and Urban Studies” (2009) 41 *Pion Journals, Environment & Planning A* 1924 at 1927.

9. Keil & Young, *supra* note 8.

The dynamics conceived as “metabolic processes” materialize in water, sewer and energy networks. They are “piped, connected, reticulated” in a series of “(often invisible) articulations.”¹⁰ The networked infrastructure, accordingly, “mediates” or “metabolizes” the resource flows.¹¹ Energy infrastructure decisions, such as the decision to build a coast-to-coast system of crude oil pipelines, create complex systems of interconnection and exchange amongst natural, social, economic and built environments.¹² In essence, this literature adopts a conception of the oil that travels in the pipelines as constituting “material flows of commodified nature, labour power, technology, capital investment, and social relations.”¹³

It is a conception that invokes the dynamism of living systems, and yet, at the same time, the literature emphasizes that built infrastructure, particularly energy pipelines, are fixed, durable, physical structures that determine the routes of resource flows over time. To build a pipeline is to create “path dependence” in a literal sense: as Monstadt says, there is no “*tabula rasa* upon which new infrastructure systems can be freely constructed.”¹⁴ In fact, they are subject to a high inertia.¹⁵ The interests cemented by the choice of the pipeline’s route also drive the socio-economics, institutions and structures that regulate resource flows.¹⁶ The principles by which we have regulated these flows, in turn, are changing over time, and have not escaped the influence of the broader privatization, deregulation and commercialization trends of the past three decades.¹⁷

10. *Ibid* at 6.

11. Monstadt, *supra* note 8 at 1937; Erik Swyngedouw, “Metabolic Urbanization: The Making of Cyborg Cities” in Nik Heynen, Maria Kaika & Erik Swyngedouw, eds, *In the Nature of Cities: Urban Political Ecology and the Politics of Urban Metabolism* (New York: Routledge, 2006) 20 at 27.

12. Keil & Young, *supra* note 8.

13. Maria Kaika, “Landscapes of Energy: Hydropower from Techno-Natures to Retro-Natures” (2009) 2 *Harvard New Geographies* 103 [Kaika, “Landscapes”].

14. Monstadt, *supra* note 8 at 1928.

15. Susan Leigh Star, “The Ethnography of Infrastructure” (1999) 43:3 *American Behavioral Scientist* 377 at 382.

16. Monstadt, *supra* note 8 at 1934.

17. G Bruce Doern, “Canadian Energy Policy and the Struggle for Sustainable Development: Political-Economic Context” in G Bruce Doern, ed, *Canadian Energy Policy and the Struggle for Sustainable Development* (Toronto, Ont: University of Toronto Press, 2005) 3. Monstadt questions whether these trends have produced a

The conception of oil as a material flow of commodified nature flies in the face of the logic of fossil capitalism, under which accumulation and growth are seen as released from nature's limitations. Elmar Altvater has shown that there is a basic congruence between the physical properties of fossil fuels and the "socioeconomic and political logics of capitalist development."¹⁸ Timothy Mitchell also emphasizes the importance of paying attention to the material qualities of oil itself.¹⁹ Oil flows. This means, in Altvater's analysis, that the "patterns of space and place" can change freely.²⁰ But his assertion that the location of energy resources is no longer driving the location of industry because "it is simple to transport energy resources to any place in the world,"²¹ is in many respects belied by the current situation in Canada. Not only does nature exert some resistance—the landscape, the terrain, that lies between the bitumen, *in situ*, and the proposed west coast terminus in Kitimat, BC is foreboding—but the political resistance of indigenous peoples to the proposed Northern Gateway pipeline that would take it there, for example, leads most commentators to admit that in this case the "transport of energy resources" is anything but "simple." Still, Altvater's basic point holds: a key aspect of fossil capitalism is the flexibility that fossil energies provide in regard to the temporal distribution and spatial location of consumption.²²

A central insight of this literature that is relevant for the question of a coast-to-coast pipeline in Canada is that natural resource economies can become spatially locked into a specific configuration of infrastructure because of the inflexibility

new opacity in infrastructure markets, as governance increasingly takes place at international and supranational scales. See Monstadt, *supra* note 8 at 1938. See also Alastair R Lucas, "The New Environmental Law" in Alastair R Lucas, William A Tilleman & Elaine Lois Hughes, eds, *Environmental Law and Policy*, 3d ed (Toronto, Ont: Emond Montgomery Publications, 2003) 163.

18. Elmar Altvater, "The Social Formation of Capitalism, Fossil Energy, and Oil-Imperialism", *Centre for Civil Society*, Colloquium on the Economy, Society and Nature, 2006, 1 at 4.

19. Timothy Mitchell, "Carbon Democracy" (2009) 38:3 *Economy and Society* 399 at 422.

20. Altvater, *supra* note 18 at 4.

21. *Ibid.*

22. *Ibid.*

of the invested capital.²³ The pipeline, as noted, is a fixed, durable physical structure. The routes chosen are enduring and they shape the patterns of production and consumption that develop around them. In the case of a crude oil pipeline, this dynamic tends to exacerbate the sense of irreversibility of the established infrastructure network, as further resources are sunk into technologies of fossil fuel extraction, refining and export.²⁴

In thinking about crude oil pipelines as networked infrastructure, the notion of connectivity is crucial. Those of us living in cities benefit tremendously from this elaborate system of largely hidden interconnections, and we, to a certain degree, are sheltered from its environmental costs.²⁵ The price we pay for this connectivity, as a society, is borne elsewhere. On the periphery. In Part III, I aim to illuminate the various communities downstream, those who will live and breathe with the consequences of our choices about routes for crude oil pipelines.

The costs become clear when we return to the idea of crude oil as a material flow of commodified nature. At the end of the pipe, we need inputs of labour power, technology and capital to convert the crude into useable forms of energy.

23. David Harvey, *The Limits to Capital*, 2nd ed (New York: Verso Press, 1999). Similarly, as Anna Zalik notes, the “technology-intensive industrial enclave” that surrounds “the mining of hydrocarbon-derived energy” renders it “stuck in place” (Anna Zalik, “Protest-as-Violence in Oil Fields: The Contested Representation of Profiteering in Two Extractive Sites” in Shelly Feldman, Charles Geisler & Gayatri A Menon, eds, *Accumulating Insecurity: Violence and Dispossession in the Making of Everyday Life* (Athens, GA: University of Georgia Press, 2011) 261 at 263).

24. Harris Ali, “The Political Economy of Environmental Inequity: The Social Distribution of Risk as an Environmental Injustice” in Julian Agyeman, Peter Cole, Patricia O’Riley & Randolph Haluza-De Lay, eds, *Speaking for Ourselves: Environmental Justice in Canada* (Vancouver, BC: University of British Columbia Press, 2009) 97 at 98. Ali notes the pioneering work on the Canadian political economy of Harold Innis, who developed the “staples theory” through which Canadians came to define our role as the “hewers of wood and drawers of water.” Harold Adams Innis, *The Cod Fisheries: The History of an International Economy* (Toronto, Ont: University of Toronto Press, 1954). David McNally’s critique complicated the picture by revealing how Innis’ staples theory treats commodities as if they are “simple things,” rather than reflections of relations between people. David McNally, “Staple Theory as Commodity Fetishism: Marx, Innis and Canadian Political Economy” (1981) 6 *Studies in Political Economy* 35.

25. Keil & Young, *supra* note 8 at 12.

Eventually, that crude will encounter a refinery, whether that happens in Canada or elsewhere. As I have argued previously, “it is not just crude oil, or diluted bitumen, that flows along a pipeline’s route. Air pollution tags along too, and it is emitted at the point we choose to locate the refineries.”²⁶ Those refineries are associated with a whole host of adverse environmental health impacts for communities downstream, including elevated rates of leukemia and other cancers, asthma and respiratory illness, and reproductive disorders.²⁷ It is in this respect that the pipeline’s route determines the distributive consequences. The pipeline *delivers* environmental inequities, emphasizing a crucial insight of the critical geography literature: “[t]he material realm is not separate, hard, literally ‘concrete,’ but relational, in process and alive.”²⁸

II. PIPE DREAMS: VISIONS FOR EXPANDING THE CRUDE OIL INFRASTRUCTURE NETWORK IN CANADA

In Canada, fossil capitalism has proceeded, since the last “great pipeline debates” of the 1950s, 60s and 70s, according to a basic export orientation rooted in the first free trade agreement with the United States (US) in 1988.²⁹ Beginning in the early 1990s, a national task force on oil sands strategies instituted significant federal tax measures that have been used to support fossil fuel extraction in the West.³⁰ This has been coupled with federal support for international

26. Scott, “Situating Sarnia”, *supra* note 4.

27. These downstream communities are often referred to as “fenceline communities.” For more, see a recent series of reports on the health risks in these communities at *Chemical Contamination in Fenceline Communities* (June 2012) online: The Collaborative on Health and the Environment <<http://www.healthandenvironment.org/fenceline>>.

28. Gary Bridge & Sophie Watson, “Introducing Materialities” in Gary Bridge & Sophie Watson, eds, *The Blackwell City Reader*, 2d ed (Oxford, UK: Wiley-Blackwell, 2010) 5 at 7.

29. Mark S Winfield, “‘Dirty Oil,’ ‘Responsible Resource Development’ and the Prospects for a National Sustainable Energy Sustainability in Canada” (2013) 25 *J Envtl L & Prac* 19.

30. For more detail, see Heather McLeod-Kilmurray & Gavin Smith, “Unsustainable Development in Canada: Environmental Assessment, Cost-Benefit Analysis, and Environmental Justice in the Tar Sands” (2010) 21 *J Envtl L & Prac* 65 at 98.

investment in the oil sands, continuing to the present day. As Mark Winfield has demonstrated, however, there are some *new* elements to the contemporary modes of fossil capitalism. These include the backtracking from climate change mitigation measures, including the withdrawal of constraints on fossil fuel emissions that were in place under Canada's commitments to the Kyoto Protocol; the significant "streamlining" of environmental assessment regimes under the *Canadian Environmental Assessment Act* and the *Fisheries Act*; and the search for markets beyond the US.³¹ This search for new markets intensified in 2012 with the International Energy Agency's finding that the US, as a result of the unexpected "unlocking" of tight oil and shale gas deposits, would become a top oil producer by the end of the decade and could eventually achieve energy self-sufficiency.³²

The return of the great pipeline debate has defined Canadian politics over the past two years. It has consumed us—crowding newspaper editorial and op-ed pages across the political spectrum, shaping leadership races, defining premiers meetings, re-igniting indigenous resistance movements, and dividing unions. US President Obama's impending decision on the Keystone XL pipeline is widely judged to be a call that will define his Presidency; the editorial board of one of

31. Winfield, *supra* note 29; *Canadian Environmental Assessment Act*, 2012, SC 2012, c 19, s 27(2) as amended by *Jobs, Growth and Long-Term Prosperity Act*, SC 2012, c 19, s 52 [*Jobs Act*]. *Fisheries Act*, RSC 1985, c F-14, s 35.1, as amended by the *Jobs Act* ss 142(2)–(4). The minister was also given new power to draft regulations excluding any Canadian waters from the application of s 35 (and others) under s 149(5) of the *Jobs Act*, which added an enabling provision at s 43(4) of the *Fisheries Act*.

32. Canadian Association of Petroleum Producers, *Facts of Oil Sands* (Calgary, Alta: Upstream Dialogue, 2013) at 17 [CAPP, "Facts"]. World Energy Outlook, Exec Summary at 1, online: IEA <<http://www.iea.org/publications/freepublications/publication/English.pdf>> [IEA, "Outlook"]. It is also argued that this country's economic development path has become increasingly dependent on oil and gas at the same time as corporate lobbyists from those sectors have managed to secure increasing public policy influence. Daniel Cayley-Daoust & Richard Girard, *Big Oil's Oily Grasp* (Ottawa, Ont: Polaris Institute, 2012), online: Polaris Institute <<http://polarisinstitute.org/files>>. On the basis of data provided by the Office of the Commissioner for Lobbying in Canada, the Polaris Institute concludes: "Some of the biggest companies in the world are using well oiled lobby machinery to directly manipulate policy making in Canada" at 2.

Canada's national newspapers waited precisely one day after his re-election in 2012 to call on Obama to approve the project.³³ In the 2012 federal budget, the Harper Conservatives made pipelines a major plank of their "responsible resource development" agenda, introducing dramatic changes to the environmental assessment regime in Canada in order to shorten the timeframes by which big energy projects could be approved.³⁴ The leaders of the major political parties fell into line one by one, supporting the movement of oil from Alberta towards the eastern provinces, in broad "nation-building" rhetoric.³⁵

The tenor of the debate changed instantly on July 6, 2013 when a train carrying 73 rail cars of crude oil derailed and exploded in the small Quebec town of Lac-Mégantic, resulting in a horrific loss of life and devastating the downtown of the community. Within days, the disaster was being deployed as an argument in favour of pipeline expansion and the expedited approval of the Keystone XL.³⁶ This sparked a fierce debate in the national media as to the inherent risks of moving crude by pipelines versus rail, and spilled over into questions about whether Canada's energy infrastructure can realistically handle the volume of oil generated by the expansion in the tar sands.³⁷

It is hard to imagine, at the time of writing, that a pipeline proposal could go under the political radar in Canada. But the literature on networked infrastructures emphasizes

33. To follow the developments, see the reporting in *The Globe and Mail*, in particular: Nathan Vanderklippe, Shawn McCarthy, Campbell Clark & Eric Reguly, online: *The Globe and Mail* <<http://www.theglobeandmail.com>> [Vanderklippe et al].

34. *Jobs Act*, *supra* note 31.

35. Bill Curry & Shawn McCarthy, "NDP's Mulcair Throws Support Behind West-to-East Oil Pipeline", *The Globe and Mail* (28 September 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

36. Diana Furchtgott-Roth, "Quebec Tragedy Reminds Us Pipelines Are Safest Way to Transport Oil", *The Globe and Mail* (8 July 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>; Editorial, "For Lack of Pipelines, The Risks of Rail", *The Globe and Mail* (8 July 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

37. Dayna Nadine Scott, "Lac-Mégantic Disaster Shows Canada Needs A National Oil-Transport Plan", *The Globe and Mail* (10 July 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

that once built, a pipeline literally vanishes underground.³⁸ Once buried, the critical social relationships and power mechanisms that are scripted in and enacted through its flows become blurred.³⁹ In this part, I set out a picture of crude oil infrastructure in Canada and introduce the various pipeline proposals currently being contemplated, setting the backdrop for the consideration of their environmental justice implications in Part III.

A. THE CURRENT NATIONAL CRUDE OIL INFRASTRUCTURE PICTURE

Enbridge built the first major piece of Canadian oil infrastructure, the Interprovincial Pipeline, in the 1950s to transport crude oil from Edmonton east, traversing the northern US states towards Sarnia.⁴⁰ In 1976, it was extended to Montréal.⁴¹ Today, this complex system of mainline and branch lines transports about 2.5 million barrels of crude oil every day.⁴² Enbridge's Line 9, the portion between Sarnia and Montréal and the subject of current contestation, was reversed in the 1990s when imported light crude became more economical for Sarnia's refineries than western Canadian crude, allowing Line 9 to flow westwards into Sarnia.⁴³ Three other major routes are now in operation: the Trans Mountain Pipeline takes crude and refined products from Edmonton to Vancouver, the Kinder Morgan Express transports crude oil from Alberta to the US Midwest, and the TransCanada

38. For a powerful example, see Kaika, "Landscapes", *supra* note 13.

39. *Ibid.*

40. Robert D Bott, *Evolution of Canada's Oil and Gas Industry* (Calgary, Alta: Canadian Centre for Energy Information, 2004) at 40.

41. Natural Resources Canada, "The Atlas of Canada, 6th ed — Pipeline Infrastructure (2006)", online: Natural Resources Canada <http://atlas.nrcan.gc.ca/data/english/maps/energy/pipeline_infrastructure_2006_map.pdf>. [Natural Resources Canada].

42. Enbridge Inc, "Liquids Pipeline" (2012), online: Enbridge <<http://www.enbridge.com>>.

43. Enbridge, "Line 9 Reversal Phase I Project Overview" (2012), online: Enbridge <<http://www.enbridge.com/ECRAI/Line9ReversalProject>>.

Keystone pipeline connects to the US Midwest and on to Cushing, Oklahoma.⁴⁴

The sense of urgency to the contemporary pipeline debates is driven by the asserted need for “outlets” for hydrocarbons derived from Alberta’s controversial tar sands region. The tar sands underlie a huge swath of boreal forest in northern Alberta, with the most extraction taking place upstream of the Athabasca River delta.⁴⁵ The rapid expansion of bitumen extraction from this region has created a glut of North American crude said to be stranded inland.⁴⁶ The inability of tar sands producers to get this oil to “new markets” via pipelines to the “tidewater,” where it could be loaded onto tankers for export, means that western Canadian crudes are selling at a deep discount in relation to world oil price benchmarks. It is very clear that it is pipeline capacity that currently presents the main brake on extraction activities in the tar sands.⁴⁷ “This fact motivates not only the proponents of the projects, but also their foes: increased pipeline capacity means more tar sands extraction, more greenhouse gas emissions, and more climate change.”⁴⁸

44. Natural Resources Canada, *supra* note 41. A proposed five billion expansion to the Kinder Morgan Trans Mountain pipeline, meant to rival or replace Enbridge’s Northern Gateway proposal, was announced in 2012 and is still on the table. David Ebner & Justine Hunter, “US Company Plans Billion-Dollar Expansion of Trans Mountain Pipeline”, *The Globe and Mail* (12 April 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>. See also Wood Mackenzie Inc, *A Net-back Impact Analysis of West Coast Export Capacity* (December 2011) at 6-7 online: CEAAA-ACEE <<http://www.ceaaa-acee.gc.ca/050/documents/54588/54588E.pdf>>.

45. Government of Alberta, *Alberta’s Oil Sands Fact Sheet* (Government of Alberta, 2013) at 1 [Government of Alberta, *Alberta’s Oil*]; GIS Services, *Alberta’s Leased Oil Sands Area* (Government of Alberta, 2013).

46. It is often claimed that plans for billions of dollars worth of new projects proposed in the coming decade will be shelved if pipeline companies cannot find a way to get oil to markets. See e.g. Todd Hirsch, “Coming Down the Pipe(line) in 2012”, online: (2012) 33:2 Policy Options 16 <<http://www.irpp.org>>.

47. Nathan Vanderklippe, “Canadian Crude Discount Squeezes Oil Patch”, *The Globe and Mail* (6 March 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>. For a more positive spin, see Donald Barry, who argues that a shortage of pipeline capacity would slow the pace of oil sands development, allowing industry to focus on achieving greater operational efficiencies, and allowing government time to strengthen regulations. More time, according to Barry, might also allow Alberta’s bitumen upgrading and refining capacity to catch up with oil sands production, creating more jobs in province and adding value to oil sands exports. Donald Barry, “Why Keystone Failed and How to Fix It” (2012) 33:2 Policy Options 40 at 42.

48. Scott, “Situating Sarnia”, *supra* note 4 at 89.

Until recently, the moniker “dirty oil” was the opposition’s favoured tactic,⁴⁹ and it’s easy to see why:

[t]he operation in Alberta’s tar sands has been analogized to putting a tablespoon of molasses into your sandbox in the summer, letting it soak down deep into the clay, and then trying to get it back in January.⁵⁰

Both the extraction process and the refining process are much more difficult, energy intensive and harmful to the environment, than is the case for conventional oil.⁵¹

The production of one barrel of crude from bitumen generates three times as many greenhouse gas emissions as conventional oil, mainly because it takes so much natural gas to power up enough heat to effectively melt the molasses out of the sand and clay.⁵²

It consumes three barrels of fresh water for every barrel of oil it produces, fills enormous tailings lakes with the toxic left-overs.⁵³

49. Indigenous opposition is now increasingly framed in the language of “free, prior and informed consent.”

50. Scott, “Situating Sarnia”, *supra* note 4 at 89. Journalist Andrew Nikiforuk calls the tar sands “Alberta’s Magic Sandbox.” Andrew Nikiforuk, “The Devil’s Tears: Ezra Levant Buries the Truth in Alberta’s Magic Sandbox”, online: (2011) 37:3 Alt J <<http://www.alternativesjournal.ca/devils-tears>>.

51. Natural Resources Defense Council, Western Resources Advocates & Pembina Institute, *Driving It Home: Choosing the Right Path for Fueling North America’s Transportation Future* (New York: National Resources Defense Council, 2007) at 3. See also Pembina Institute, *Understanding the Impacts of Oilsands Production: Background* (Drayton Valley, Alta: Pembina, 2013) and Jennifer Grant & Marc Huot, *Clearing the Air on Oilsands Emissions: The Facts About Greenhouse Gas Pollution from Oilsands Development* (Drayton Valley, Alta: Pembina, 2012) (on GHG emissions).

52. Scott, “Situating Sarnia”, *supra* note 4 at 89.

53. Dan Woyntonowicz, Chris Severson-Baker & Marlo Reynolds, *Oil Sands Fever: The Environmental Implications of Canada’s Oil Sands Rush* (Drayton Valley, Alta: Pembina Institute, 2005) at 29. An estimated 11 million litres of toxic tailings water seeps out of tailings lakes each day (Royal Society of Canada Expert Panel, *Environmental and Health Impacts of Canada’s Oil Sands* (Ottawa, Ont: 2010) at 123). A further impact of extraction in the tar sands is the problem of petroleum coke, or “petcoke,” which is the black, tar-like by-product of the initial refining process need to release the oil. Piles of the substance are growing near refineries processing tar sands crude, Ian Austen, “A Black Mound of Canadian Oil Waste Is Rising Over Detroit”, *New York Times* (17 May 2013) online: *The New York Times* <<http://www.nytimes.com/>>.

But instead of slowing production to take account of these environmental impacts, all indications are that the federal and Alberta governments intend to plow ahead. According to resource economist André Plourde, current tar sands production of approximately 1.7 million barrels per day is projected to double by 2020, and could reach 4 million barrels per day by 2025.⁵⁴ The trouble is that most Canadian refineries are not currently capable of processing the bitumen and heavy crude produced in the tar sands operations.⁵⁵ For this reason, much of it has been sent to the US Gulf Coast for refining,⁵⁶ although this situation is changing rapidly.⁵⁷ As mentioned, there is increasing panic in the oil sector over the so-called bottleneck in the pipeline system that interferes

54. “We can’t increase production in the oilsands by two million barrels a day, give or take, without finding places to transport it,” Plourde said . . . “Something has got to happen . . . You have to find places to sell that oil and you’ve got to find ways of getting it there.” Jason Fekete, “Canada’s Need for More Pipeline Capacity a ‘Real Concern’ Says Natural Resources Minister”, *Calgary Herald* (4 January 2013) online: *Calgary Herald* <<http://www.calgaryherald.com>>. See also National Energy Board, *Canada’s Energy Future: Energy Supply and Demand Projections to 2035* (Calgary, Alta: NEB, 2011).

55. MC Moore et al, “Catching the Brass Ring: Oil Market Potential Diversification for Canada” (2011) 4:16 SPP Research Papers, University of Calgary at 9. Also, while 58% of tar sands crude was upgraded in Alberta in 2010, this number is likely to decline as production increases dramatically in the coming years. Department of Energy, Alberta, “Talk About Refining and Upgrading in Alberta” (January 2012), online: Alberta Energy <<http://www.energy.alberta.ca>> [Alberta, “Talk about Refining”]. Even today, Canada’s extraction of oil sands crude far outstrips its ability to upgrade it, let alone refine it. Canadian Association of Petroleum Producers, *Crude Oil: Forecast, Markets & Pipelines* (Calgary, Alta: CAPP, 2011) at 10. In 2011-2012, approximately 22% of bitumen was processed within Alberta, about 16% was processed elsewhere in Canada and virtually all of the remainder was sent to the US (Alberta Ministry of Energy, *Energy Minister’s Annual Report 2011-2012* (Edmonton, Alta: Department of Energy, 2012) at 14).

56. A total of 56 out of 167 refineries in the US (148) and Canada (19) combined are located in the US Gulf Coast. These refineries are suited to receive the “heavy” tar sands crude by virtue of their experience processing heavy crudes from Venezuela and the Persian Gulf. See Morey Burnham, *Tracking Tar Sands Crudes* (Washington, DC: Earthworks, 2010) at 4-5. See also Government of Alberta, *Alberta’s Oil*, *supra* note 45.

57. See e.g. Alberta, “Talk about Refining”, *supra* note 55 and Nathan Vanderlippe, “Suncor Writes Off \$1.5-Billion as Upgrader Fortunes Fade”, *The Globe and Mail* (6 February 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

with the ability of tar sands producers to get their product to market and to sell it at a good price.⁵⁸ The landlocked Canadian oil, known as Western Canadian Select, has been trading at a substantial discount to world benchmarks for much of the past year, costing producers up to \$50 million a day.⁵⁹ This got the attention of political leaders as well, as the price spread means lower resource revenues; Alberta alone claims to have foregone up to \$8.5 million a day in royalties, over \$3 billion a year.⁶⁰

B. SEARCHING FOR AN OUTLET / RACE TO THE TIDEWATER

In the quest for a necessary outlet for Canadian crude, there are at least three major options currently being contemplated (see Figure 1).⁶¹ For the purpose of this paper, which is to examine the environmental justice implications of a coast-to-coast pipeline, I review the first two proposals only briefly, in order to set the context. They are the Keystone XL, TransCanada's attempt to expand capacity stretching south through the US Midwest and on to the Gulf coast, and the Northern Gateway, Enbridge's attempt to move Alberta crude to the BC coast for export to Asia. The third option, re-configuring existing pipelines to allow western heavy crudes to reach the East Coast, occupies most of the focus.

58. The epicentre of this glut, as far as Canadian crude is concerned, is the American oil crossroads of Cushing, Oklahoma. See also Scott Hagggett, "Analysis: Canada's 'Cushing Moment': A Northern Pipeline Crisis Looms", *Reuters* (Calgary, Alta) (29 March 2012) online: *Reuters* <<http://www.reuters.com>>.

59. Nathan Vanderklippe, "Oil Price Gap Costs Producers \$50-Million a Day", *The Globe and Mail* (12 March 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

60. Fekete, *supra* note 54.

61. Access to eastern Canada refineries is one objective, but some analysts argue that export "must be part of the mix" as well. Otherwise, the two large refineries on the East Coast (Irving in NB, and Korea National Oil's facility in Nfld and Labr.) would be placed in an unacceptably good negotiating position, according to insiders. Carrie Tait & Nathan Vanderklippe, "TransCanada Eyes an East Coast Export Alternative", *The Globe and Mail* (3 October 2012) B5.

Figure 1. Map of overall national crude oil picture with established and proposed pipelines marked



C. THE ROUTE TO THE SOUTH: KEYSTONE XL

TransCanada's proposed Keystone XL pipeline will expand capacity for Alberta crude into the American Midwest and allow it to escape the bottleneck at Cushing to reach the large cluster of refineries in Louisiana and the Texas gulf coast. Canadian portions of the line have cleared regulatory approvals,⁶² but it has yet to receive Obama's

62. Governor General in Council, "PC Number: 2010-0489", (22 April 2010) online: Privy Council Office <<http://www.pco-bcp.gc.ca>>.

support.⁶³ Republicans argue that the project will generate jobs, and help the US move to a more stable and secure energy future by reducing dependence on oil producers from what they see as unfriendly political regimes.⁶⁴ Canadian state-sponsored lobbying campaigns have played to this rhetoric, seeking to re-brand tar sands crude as “ethical oil.”⁶⁵ Critics suggest that Keystone XL will raise gasoline prices,⁶⁶ increase the emission of greenhouse gases,⁶⁷ create the risk of spills

63. Timothy Gardner (Reuters), “Keystone XL Decision May Not Come Until Later in the Year”, *The Huffington Post* (10 May 2013), US Official Says online: *Huffington Post* <<http://www.huffingtonpost.com>>; Shawn McCarthy & Paul Koring, “The Keystone Team’s Target Audience”, *The Globe and Mail* (14 May 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

64. Christopher Helman, “Romney’s Billionaire Energy Advisor Lays Out His Vision for Energy Independence”, *Forbes.com* (21 March 2012) online: *Forbes* <<http://www.forbes.com>>.

65. The ethical oil campaign, led online at <<http://www.ethicaloil.com>>, was founded by a Conservative Staffer recently promoted to the Prime Minister’s Office. Campbell Clark, “Tory Staffer Who Left Hill to Plug ‘Ethical’ Oil Lands Job in Harper’s Office”, *The Globe and Mail* (14 November 2011) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>. See also charges that the Harper government itself is acting as a “lobbyist” for big oil in the dispute over the European Fuel Quality Directive: *Dirty Oil Diplomacy: The Canadian Government’s Global Push to Sell the Tar Sands* (Climate Action Network Canada, 2012). Former US presidential candidate Al Gore objected to this rhetoric recently. Ivan Semeniuk, “No Such Thing as Ethical Oil,” Al Gore Tells Toronto Audience”, *The Globe and Mail* (7 May 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com/>>. As this article went to print, the Canadian government launched a new advertising campaign aimed at US “opinion-makers and decision-makers” promoting Canada as a stable and friendly energy supplier. The website, called “Go with Canada,” is aimed at influencing Obama’s decision on the Keystone XL pipeline: Shawn McCarthy & Paul Koring, “Inside Canada’s Keystone Campaign”, *The Globe and Mail* (14 May 2013) A10-11.

66. As economist Robyn Allen explains (speaking specifically of the Northern Gateway, but the logic is the same): much of the profit expected by pipeline companies is “attributable to the higher prices Canadian producers expect to capture, every year . . . because the pipeline is built. Since these prices are realized on every barrel of oil produced, not just on barrels exported, the price increase is borne by Canadian refiners and directly passed onto consumers and business.” See also: Lorne Stockman, *Tar Sands Oil Means High Gas Prices* (Research Note, Corporate Ethics International, 2010).

67. Public Works and Government Services Canada, GHG Emissions (Ottawa, Ont: Natural Resources Canada, 2012).

over critical aquifers,⁶⁸ and pose a risk to pipeline safety.⁶⁹ Environmentalists argue that the transport of diluted bitumen through pipelines is a risky and largely untested proposition, although the purported greater risk of rupture posed by diluted bitumen is now hotly contested.⁷⁰

President Obama's initial rejection of the Keystone XL application early in 2012 was attributed to the fact that the Congress-imposed deadline did not allow for a full environmental assessment.⁷¹ He invited TransCanada to propose a new route, and in March 2012 allowed construction to begin on the southern portion of the Keystone XL—from Cushing Oklahoma through to the Texas refineries, with an expedited approval process to help clear the bottleneck in capacity.⁷² In September 2012, TransCanada re-applied for a building permit, proposing a new route to bypass the ecologically sensitive sandhills of Nebraska, and state officials there now support the pipeline.⁷³ In March 2013, the US Department of

68. John Stansbury, *Analysis of Frequency, Magnitude and Consequence of Worst-Case Spills from the Proposed Keystone XL Pipeline* (University of Nebraska Water Center, 2011) at 17.

69. *Ibid* at 36. Bill McKibben's 350.org has been credited with organizing much of the resistance in the US. Resistance has also been organized at: "Tar Sands Action" *Tar Sands Action* (2012) online: <<http://www.tarsandsaction.org>>. McKibben has been called the "hero and spiritual leader of the crusade to stop keystone." Margaret Wentz, "With Keystone, It's Harvard vs. the Heartland", *The Globe and Mail* (21 January 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

70. Anthony Swift et al, *Tar Sands Pipelines Safety Risks* (New York, NY: Natural Resources Defense Council, National Wildlife Federation, Pipeline Safety Trust, and Sierra Club, 2011). For example, 60% of those living near the spill of Dil-bit into the Kalamazoo River in July 2010 experienced symptoms consistent with acute exposure to chemicals like benzene. Martha Stanbury, *Acute Health Effects of the Enbridge Oil Spill* (Lansing, MI: Michigan Department of Community Health, 2010). A study discounting the greater risk of rupture was released in 2013 by the National Research Council in the US. Committee for a Study of Pipeline Transportation of Diluted Bitumen; Transportation Research Board; Board on Energy and Environmental Systems; Board on Chemical Sciences and Technology; National Research Council, 2013, online: <<http://www.crcc.unh.edu/publications/NAS%20Dilbit%20Pipeline%20Report%20June%202013%5B1%5D.pdf>>.

71. Vanderklippe et al, *supra* note 33.

72. Megan Slack, "Expanding Our Oil and Gas Pipeline Infrastructure" *The White House* (22 March 2012) online: The White House Washington <<http://www.whitehouse.gov/>>.

73. Letter from Dave Heineman, Governor of Nebraska, to President Barack Obama and Secretary of State Hillary Rodham Clinton (22 January 2013), at State of Nebraska Office of the Governor, News Release "Governor Approves Pipeline Route"

State published its draft Environmental Impact Statement,⁷⁴ which drew criticism from many camps, including the US Environmental Protection Agency (EPA), for its conclusion that the pipeline will not have any net adverse environmental effects.⁷⁵ Once the State Department determines whether the proposed pipeline would “serve the national interest” and issues its recommendation, President Obama must take whether to issue the permit.⁷⁶

D. THE ROUTE WEST: NORTHERN GATEWAY

In the wake of Obama’s refusal to rubber-stamp an approval he had once called a “complete no-brainer,”⁷⁷ Prime

(22 January 2013) online: Governor of Nebraska <<http://www.governor.nebraska.gov/news>>. These aquifers exist in the “Sandhills” region of Nebraska. The Sandhills are especially permeable soil, meaning that bitumen spilled upon them would inevitably and fully leak into the water tables below. Opposition to the previous plan put forth by TransCanada centered on this potentiality. See Shawn McCarthy, “TransCanada Revises Keystone Route”, *The Globe and Mail* (5 September 2012) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

74. US Department of State, *Draft Supplemental Environmental Impact Statement* (1 March 2013) online: US Department of State Keystone XL Pipeline Project <<http://keystonepipeline-xl.state.gov/draftseis/index.htm>>.

75. The EPA questioned specifically: (1) low estimates of life-cycle GHG emissions from the tar sands, (2) the finding that the Keystone XL would not impact development of the tar sands, (3) the lack of specific commitments to improve technology, (4) underestimation of the impacts of oil spills, (5) the adequacy of the public feedback period for prevention measures, (6) the emergency-response conditions, (7) the monitoring of VOCs and heavy metals in the water table in the event of a spill, and (8) the lack of comparisons with alternative routes. Letter from Cynthia Giles, United States Environmental Protection Agency, to Jose W Fernandez & Dr Kerri-Ann Jones, United States Environmental Protection Agency (22 April 2013), at EPA National Environmental Policy Act, “EPA Comment Letter: Department of State’s Draft Supplemental EIS for the Keystone XL Project (April 22, 2013)” online: EPA <<http://www.epa.gov/compliance/nepa/>>.

76. See US Department of State, *New Keystone XL Pipeline Application*, online: US Department of State Keystone XL Pipeline Project <<http://www.keystone-pipeline-xl.state.gov/>>. This State Department criterion is set out in a presidential document issued by former President George W Bush. US, *Issuance of Permits with Respect to Certain Energy-Related Facilities and Land Transportation Crossings on the International Boundaries of the United States* (Executive Order 13337) (Washington, DC: US Government Printing Office, 2004) at 25299.

77. Shawn McCarthy, “Keystone Pipeline Approval ‘Complete No-Brainer,’ Harper Says”, *The Globe and Mail* (26 September 2011) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

Minister Harper touted the need for Canada to look past its main energy customer and seek an outlet to Asia.⁷⁸ Again, the “diversification of markets” justification for new pipelines became even more pronounced as 2012 progressed, fuelled by the International Energy Agency’s unexpected finding that the US is fast becoming a top oil producer, and may eventually achieve energy self-sufficiency.⁷⁹ The answer, at least initially, was Enbridge’s proposed Northern Gateway project. According to the plan currently before a Joint Review Panel of the National Energy Board, the Northern Gateway would connect Alberta’s tar sands with a northern BC marine terminal sited in Kitimat.⁸⁰ From there, 225 tankers annually would transport the crude across the Pacific for refining in Asia.⁸¹

The Northern Gateway proposal has encountered what is now widely viewed as insurmountable opposition in British Columbia.⁸² Environmentalists are fiercely opposed, rejecting the idea of tankers off the pristine coast, and opposing the chosen route which traverses sensitive mountainous terrain including the Great Bear Rainforest.⁸³ BC Premier Christy Clark has opposed the pipeline plans in their current form,

78. “Harper Looks to Asian Energy Markets After Keystone Delay — Politics”, *CBC News* (14 November 2011) online: *CBC News* <<http://www.cbc.ca/>>.

79. IEA, “Outlook”, *supra* note 32.

80. Canadian Environmental Assessment Agency, “Application” CEEA (5 July 2010) online: Enbridge Northern Gateway Project <<http://gatewaypanel.review-examen.gc.ca/>>.

81. Nathan Lemphers, *Pipeline to Nowhere? Uncertainty and Unanswered Questions About the Enbridge Northern Gateway Pipeline* (Drayton Valley, Alta: Pembina Institute 2010).

82. Carrie Tait & Nathan Vanderklippe, “First Nations Dig in Against Enbridge Pipeline”, *The Globe and Mail* (13 May 2011) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>; Gary Mason, “In BC, Northern Gateway Has Poisoned the Well”, *The Globe and Mail* (22 March 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

83. Anthony Swift et al, *Pipeline and Tanker Trouble: The Impact to British Columbia’s Communities, Rivers, and Pacific Coastline from Tar Sands Oil Transport* (Calgary, Alta: Pembina Institute, 2011); Mike Hudema, “One Keystone Pipeline Down, One Gateway Pipeline to Go”, *Greenpeace Canada* (18 January 2012) online: Greenpeace <<http://www.greenpeace.org>>. Anthony Swift & National Resources Defense Council, “Testimony to the House of Representative’s Committee on Science, Space, and Technology’s Joint Energy and Environment Subcommittee, Entitled ‘Keystone XL Pipeline, Examination of Scientific and Environmental Issues’” (7 May 2013) online: Committee on Space, Science, and Technology <<http://democrats.science.house.gov/>>.

with a high profile demand for more resource revenues to flow to her province.⁸⁴ BC First Nations are adamant that the pipeline will not be allowed to cross their lands and waters.⁸⁵ At least half of the proposed route would pass over unceded territory in BC, raising the likely prospect of lengthy constitutional claims, injunctions and direct action by indigenous resistance movements.⁸⁶ The hearings are ongoing, with the Joint Review Panel's report and recommendations due to be submitted to the federal government before the end of the year.⁸⁷

84. "BC NDP Call on Liberals to State Pipeline Stance", *CBC News* (4 May 2013) online: *CBC News* <<http://www.cbc.ca/>>. Opposition leader Adrian Dix, who initially indicated that he would wait for the results of the Joint Review Panel hearings before taking a position, released an election platform in April that expressed unequivocal opposition to the Northern Gateway pipeline.

85. In particular, see the Coastal First Nations Declaration, an indigenous law declaration signed by coastal and island nations of BC, and the Save the Fraser Declaration, an indigenous law declaration initially signed by 61 First Nations in the Fraser River watershed. *Coastal First Nations Declaration* (2010), online: Coastal First Nations <<http://www.coastalfirstnations.ca/>> [*Coastal First Nation Declaration*]; *Save the Fraser Declaration* (2010), online: Save the Fraser <<http://www.savethefraser.ca/>> [CFN, "Declaration"].

86. At a rally on October 22, 2012 in BC, Grand Chief Stewart Phillip of the Union of BC Indian Chiefs told the crowd that Indigenous peoples stand shoulder to shoulder against the pipelines. "We will fight this insanity through the joint review panel, in the courts of this country and, if necessary, at the barricades on the land itself," (Roger Annis, "A Movement Against Tar Sands Oil, Pipelines and Tankers Is on the Rise in Canada", *The Bullet* (2 November 2012) online: *The Bullet* <<http://www.socialistproject.ca/bullet/720.php>>; Gordon Christie, "Indigenous Governance, Canadian Law, and the Proposed Northern Gateway Pipeline" (2013) 25 *J Envtl L & Prac* 189; Nancy MacDonald, "Crack in the Northern Gateway Pipe Dream", *Macleans* (20 January 2012) online: *Macleans's* <<http://www2.macleans.ca/>>.

87. On April 12, 2013 the Joint Review Panel released a list of 199 possible conditions that could be imposed, for public comment, including: (a) \$950 million in liability coverage for oil spills, \$100,000 of which must be available within 10 business days of a spill for immediate cleanup efforts (the rest could be in insurance claims), (b) rigorous pipeline inspections every 2 years to check for leaks, (c) special tugboats to accompany tankers out of Kitimat harbour, (d) an environmental impact monitoring plan, and (e) plans for monitoring and restoring species at risk, such as caribou: Enbridge Northern Gateway Project Joint Review Panel, "Collection of Potential Conditions," being attachment B to letter from Sheri Young, "Secretary to the Joint Review Panel, to Northern Gateway Pipelines Inc" (12 April 2013), online: National Energy Board <<http://gatewaypanel.review-examen.gc.ca/>>. "I take it as a sign that the [National Energy Board] is getting the message that people are really concerned about this pipeline," said Ben West, of ForestEthics Advocacy ("Northern Gateway Panel Releases 199 Pipeline Conditions", *CBC News* (12 April, 2013) online: *CBC News* <<http://www.cbc.ca/news/canada/british-columbia/story/2013/04/12/bc-northern-gateway-conditions.html>>).

Now, as it was 150 years ago in the US, the pipeline construction business is literally a “race to the sea.”⁸⁸ And the game is changing constantly.

Big oil — as a category — in fact obscures the extent to which different energy interests are actively jockeying for position, seeking to get out front, and to secure certain routes and preferential contracts in advance of their competitors.⁸⁹

An example of this is playing out on the East Coast— between rumoured plans by Portland Pipe line Inc to bring western crudes into the US through Montréal, and plans by TransCanada to convert a natural gas pipeline to crude oil.⁹⁰ Both of these initiatives could compete with Enbridge’s “Plan B,” the third major outlet being pursued.

E. THE ROUTE EAST: THE LINE 9 REVERSAL

The prospect of bitumen travelling east by pipeline is highly contested, and is shaping up to become a defining political issue in the coming years.⁹¹ Proponents highlight the need to extract more economic benefits and jobs from the tar sands, leading to proposals for upgrading bitumen in Canada rather

88. Ron Chernow, *Titan: The Life of John D. Rockefeller, Sr.*, 2d ed (Toronto, Ont: Random House, 2004) at 206.

89. Scott, “Situating Sarnia”, *supra* note 4 at 93.

90. Colin Nickerson, “Portland Pipeline at Center of Fierce Fight in Maine”, *The Boston Globe* (21 April 2013) online: *The Boston Globe* <<http://www.bostonglobe.com>>; TransCanada, News Release, “TransCanada Launches Binding Open Season for Eastern Oil Pipeline” (2 April 2013) online: TransCanada <<http://www.transcanada.com>>. TransCanada’s “Energy East” proposal gained traction over the spring of 2013, with solid interest from shippers, and solid support from provincial leaders, Jeff Lewis, “TransCanada’s Energy East Pipeline Closer to Reality as Shippers Back Project”, *Financial Post* (26 July 2013) online: *Financial Post* <<http://opinion.financialpost.com/>>.

91. See the op-ed by former Ontario Premier: Mike Harris, “Turn Line 9 Around, FP Comment”, *Financial Post* (6 December 2012) online: *Financial Post* <<http://opinion.financialpost.com/2012/12/05/mike-harris-turn-line-9-around/>> asserting that the “Attempts to Throttle Pipelines Will Cripple Canada.” Environmental groups such as Environmental Defence and local civil society organizations such as chapters of the Council of Canadians and Hamilton Line 9 have denounced the climate impact of tar sands crude regardless of where it is refined, and have campaigned to keep it out of Eastern Canada. See also Thomas Homer-Dixon, “The Tar Sands Disaster”, *The New York Times* (31 March 2013) online: *The New York Times* <<http://www.nytimes.com/>>.

than shipping it directly abroad.⁹² High-profile commentators like former New Brunswick premier Frank McKenna are calling for a pipeline from “coast-to-coast,” noting that while securing West Coast access to markets for tar sands crude is proving difficult, East Coast access is “particularly promising.”⁹³ In a press release announcing the CEP’s participation in anti-pipeline demonstrations staged in Victoria in October 2012, National President Dave Coles was quoted as stating:

We cannot continue to build new pipelines just to export raw bitumen overseas while leaving our own communities with no jobs or means to prosper . . . We believe that Canada needs to focus on jobs that treat crude oil here in this country instead of rushing to grow our unrefined oil export capacity.⁹⁴

Refining western crudes in eastern Canada would mark a significant change from the present situation. According

92. Eric Reguly, “Why Keystone XL Is a Mistake”, *The Globe and Mail Report on Business* (29 December 2011) online: *The Globe and Mail* <<http://www.theglobeandmail.com/report-on-business/rob-magazine/why-keystone-xl-is-a-mistake/article4248271/>>, arguing that jobs and value are being exported to the US. The CEP, however, which has come out against the plans to ship oil sands crude overseas through the Keystone XL and Northern Gateway projects and supports a transition to greener jobs, supports the Line 9 reversal, which potentially keeps the refining process within the country. See Max Paris, “Reverse Enbridge Oil Pipeline, Urge Suncor, Union”, *CBC News* (2 February 2012) online: *CBC News* <<http://www.cbc.ca/>>.

93. McKenna, *supra* note 6. Similarly, former Bank of Canada Governor David Dodge stated: “You’ve got to get the stuff to market. And I guess I keep thinking that the really interesting thing is BC and the Indians are going to make it difficult to go across the mountains. Bring it east, right?” Mr. Dodge told the *Globe*, saying he believes hundreds of millions of barrels of bitumen could be upgraded daily in central and Atlantic Canadian cities (Josh Wingrove & Jeremy Torbin, “Former Bank of Canada Governor Breaks Rank with Successor Over Consumer Debt”, *The Globe and Mail* (18 June 2012) online: *The Globe and Mail* <<http://m.theglobeandmail.com/news/national/former-bank-of-canada-governor-breaks-rank-with-successor-over-consumer-debt/article4104081/?service=mobile>>). Most recently, NDP leader Thomas Mulcair threw his support behind the plan in a speech to the Canadian Club of Toronto on September 28, 2012: “Let me be clear, New Democrats support recent proposals to increase West-East pipeline capacity. This is an initiative, led by industry that will pay economic dividends for every region of our country: new markets for producers in the West, high-paying value-added jobs and lower energy prices in the East” online: NDP <<http://www.ndp.ca/news/building-balanced-21st-century-economy>>.

94. Communications, Energy, and Paperworkers Union of Canada, Press Release, “CEP Leaders to Participate in Defend our Coast Action in Victoria” (22 October 2012) online: CEP <<http://www.cep.ca/>>.

to Statistics Canada data, in Atlantic Canada in 2011, refineries relied exclusively on imported light crudes. No western Canadian crude was refined in Atlantic Canada, none of the crude processed was received by pipeline and none was bitumen.⁹⁵ In Quebec in 2011, only a very small proportion of crude processed was from western sources, although about half was received by pipeline; no bitumen was received. The situation in Sarnia is a little different. Again, according to Statistics Canada, close to all of the crude oil refined in Sarnia is received by pipeline.⁹⁶ About 84% already comes from the western provinces, with the remainder, until very recently, coming though Line 9 via Montréal, from ports in Maine unloading tankers originating overseas.⁹⁷ Most of the crude oil is derived from conventional sources, but at least 20% of the “feedstock” received in 2011 was in the form of crude bitumen or oil derived from upgrading bitumen.⁹⁸ This proportion is increasing and is forecasted to be as high as 80% by 2015.⁹⁹

Sarnia’s Suncor facility is likely to be one of the key destinations for bitumen and its derivatives from Alberta. In 2004, the company began a billion-dollar project to increase the amount of oil sands crude that it could upgrade, and in a 2007 statement, Suncor boasted about its aim to eventually enable the Sarnia refinery to process up to

95. Statistics Canada, *The Supply and Disposition of Refined Petroleum Products in Canada*, cat no 45-004-X (Ottawa, Ont: StatCan, April 2012) at 30 (Table 3-1. Supply and disposition of petroleum products, Atlantic provinces — Refinery supply of crude oil, feedstock charged and total refined petroleum products), online: Statistics Canada <<http://www.statcan.gc.ca/pub/45-004-x/45-004-x2012004-eng.pdf>> [Statistics Canada, *The Supply and Disposition*, 2012].

96. *Ibid* at 49 (Table 5-1. Supply and disposition of petroleum products, Ontario — Refinery supply of crude oil, feedstock charged and total refined petroleum products).

97. This is up from roughly 60% in 2007. Statistics Canada, *The Supply and Disposition of Refined Petroleum Products in Canada*, cat no 45-004-X (Ottawa, Ont: Statcan, December 2007) online: Statistics Canada <<http://www.statcan.gc.ca/pub/45-004-x/45-004-x2007012-eng.pdf>>.

98. Statistics Canada, *The Supply and Disposition*, 2012, *supra* note 95.

99. National Energy Board, *Canada Oil Sands Opportunities and Challenges to 2015: An Update — An Energy Market Assessment — June 2006*, cat no NE23-116/2006E (Calgary, Alta: National Energy Board, 2006) online: NEB <<http://www.neb-one.gc.ca/clf-nsi/rnrgynfmntn/nrgyrprt/lsnd/pprntnsndchllngs20152006/pprntnsndchllngs20152006-eng.pdf>>.

40,000 barrels of oil sands crude per day.¹⁰⁰ Plans were shelved in 2008 in the wake of the global “economic downturn,” but the prospects for increased refining of tar sands crude in eastern Canada are now again strong.¹⁰¹ Long-time Sarnia Mayor Mike Bradley delivered a speech shortly after Obama’s rejection of the Keystone XL that gave rise to a headline claiming, “Sarnia vying for Keystone oil.”¹⁰²

Figure 2. Proposed routes for western crudes to come east



The lynchpin in Enbridge’s plan for a coast-to-coast pipeline is the reversal of its Line 9, the portion of the Interprovincial running between Montréal and Sarnia. As will become

100. Suncor Energy, *News Release* (2007) on file with author.

101. McKenna, *supra* note 6. Describing the downturn’s effect on investments in oil-related infrastructure, see Wood Mackenzie Inc, *supra* note 44 at 5.

102. Tyler Kula, “Sarnia Vying for Keystone Oil”, *Sarnia Observer* (17 January 2012) online: theobserver.ca <<http://www.theobserver.ca/2012/01/17/sarnia-vying-for-keystone-oil>>.

clear, the virtue of this plan, from the perspective of its proponents, is that most of the pipe is already in place: its “re-purposing” would “allow western crude to be brought all the way to Quebec, supplying a number of refineries along the way.”¹⁰³ From Montréal, existing pipelines could carry oil to the tidal waters of Portland, Maine, opening access to overseas markets,¹⁰⁴ and with the addition of a new pipeline joining Quebec to Saint John, New Brunswick’s Irving refinery could be supplied (see Figure 2).¹⁰⁵

Enbridge received regulatory approval from the NEB in July 2012 to re-reverse the flow of the portion of Line 9 that connects the terminal at Sarnia and the station in North Westover, near Hamilton.¹⁰⁶ This project was referred to as the Line 9 reversal “Phase I,” and was justified on the basis that one customer, Imperial Oil, required access to western crudes for its Nanticoke refinery.¹⁰⁷ The NEB treated it as a stand-alone project, over the objections of intervenors, even though Enbridge had already stated publicly its intention to seek permission from the NEB to reverse the remainder of

103. McKenna, *supra* note 6. This is also the case for TransCanada’s Energy East proposal, now its main competitor.

104. Jeffrey Jones, “Green Groups Seek Wider Review of Enbridge Project”, *Reuters* (26 August 2011) online: *Reuters* <<http://www.reuters.com>>.

105. *Ibid.*

106. Letter from the National Energy Board to Ms. Chantal Robert, Supervisor of Regulatory Affairs, Enbridge Pipelines Inc., National Energy Board (27 July 2012) online: National Energy Board <<http://www.neb-one.gc.ca>> “Decision Letter”.

107. Letter from Imperial Oil Limited to Ms. Anne-Marie Erickson, National Energy Board/Secretary, National Energy Board (20 September 2011) online: National Energy Board <<http://www.neb-one.gc.ca>>. This concern is sometimes referred to by Enbridge as “the business demands of shippers.” See Enbridge Pipelines Inc, “Application Pursuant to Section 58 of the NEB Act”, National Energy Board (8 August 2011) online: National Energy Board <<https://www.neb-one.gc.ca>>. “Phase I,” however, when combined with the later application for “Phase II,” amounts basically to Enbridge’s later abandoned “Trailbreaker” proposal from 2008 to facilitate the flow of western heavy crudes all the way to Montréal, and eventually onto oil tankers bound for the Gulf of Mexico through Portland, Maine. Enbridge Pipelines Inc (“Enbridge”) Line 9 Reversal Phase I Project, Application under Section 58 of the *National Energy Board Act* (“NEB Act”), File OF-Fac-Oil-E101-2011-01 01, Enbridge Response to National Energy Board Information Request No. 1, online: National Energy Board <https://www.neb-one.gc.ca/11-eng/livelink.exe/fetch/2000/90464/90552/92263/706191/706437/739010/A2G0L1_-_Enbridge_Response_to_NEB_Information_Request_No._1?nodeid=739014&vernum=0>.

Line 9's flow before the hearing on Phase I was even concluded.¹⁰⁸ In the next part, I consider the environmental justice implications of the Line 9 reversal plans by examining the expected costs and benefits associated with it for particular places and peoples.

III. THE BENEFITS AND RISKS OF A COAST-TO-COAST PIPELINE IN CANADA

The environmental justice movement is focused on fairness in the distribution of environmental benefits and burdens, and in the processes that determine those distributions.¹⁰⁹ That is, it is concerned with both the "fair treatment" and the "meaningful involvement" of poor, racialized and indigenous communities in environmental policy and natural resource development decisions that have typically resulted in those communities bearing more than their "fair share" of environmental harms.¹¹⁰ In Canada, as elsewhere, aboriginal communities in particular bear a disproportionate burden.¹¹¹ Lands have been contaminated, and traditional ways have been disrupted by industrial activity.¹¹² Mainstream policy discussions prompted by the emerging *Idle No More* movement only now incorporate the insight that resource wealth

108. Enbridge, *Line 9B Reversal and Line 9 Capacity Expansion Project*, online: Enbridge <<http://www.enbridge.com/ECRAI/Line9BReversalProject.aspx>>.

109. See e.g. Gordon Walker, "Beyond Distribution and Proximity: Exploring the Multiple Spatialities of Environmental Justice" (2009) 41:4 *Antipode* 614.

110. The US Environmental Protection Agency defines Environmental Justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation and enforcement of environmental laws, regulations, and policies." EPA, *Environmental Justice*, online: US Environmental Protection Agency <<http://www.epa.gov/>>.

111. Julian Agyeman, Peter Cole, Randolph Haluza-DeLay & Pat O'Riley, eds, "Introduction" in *Speaking for Ourselves: Environmental Justice in Canada* (Vancouver, BC: UBC Press, 2009) at 12. See also Andil Gosine & Cheryl Teelucksingh, *Environmental Justice and Racism in Canada: An Introduction* (Toronto, Ont: Emond Montgomery, 2008); Winona LaDuke, *All Our Relations: Native Struggles for Land and Life* (Cambridge, MA: South End Press, 1999).

112. See e.g., Elizabeth Hoover et al, "Indigenous Peoples of North America: Environmental Exposures and Reproductive Justice" (2012) 120:12 *Environ Health Perspect* 1645. Well-known examples in Canada include the struggles at Grassy Narrows/White Dog First Nation, Akwesasne, Aamjiwnaang First Nation, Lubicon Lake Indian Nation, and Deline, NWT, amongst many others.

and aboriginal lands go hand-in-hand in this country,¹¹³ emphasizing finally that the reserves, treaty lands and unceded territories of indigenous communities contain much of the fossil fuel wealth at issue in the national energy debates.¹¹⁴ As Lloyd Axworthy and Wab Kinew note:

The federal government estimates that there are natural resource projects worth \$500-billion to be developed in the next decade. Our Constitution directs that we have a duty to consult the indigenous people in whose backyards those resources lie.¹¹⁵

Employing an environmental justice lens requires attention to the sharing of costs and benefits associated with environmental policy and natural resource development decisions. “In interrogating systemic questions of power and ownership relating to who profits from and exerts exploitative control over lands, resources, economic capital and social labour,” this method of analysis also strives to “take account of how these exploitative relationships shape peoples’ everyday physical realities . . .”¹¹⁶ Each of the different configurations of energy infrastructure embedded in the competing pipeline proposals entails a different calculus of costs and benefits for different communities at the end of the pipe. It is in this sense that the routes we decide upon matter. In this part, I illustrate the type of analysis that is required by focusing on three communities at the ends of the pipe: Sarnia and the Aamjiwnaang

113. Prime Minister Harper stated: “We do have, for the first time in our history, economic development on a large scale occurring near where many aboriginal people live. We have a shortage of labour and lots of opportunity, and we want to make sure that those opportunities are available for aboriginal people and prosperity is available for them as we move forward.” *The Canadian Press*, “Theresa Spence Drops Out of Meeting with Harper Due To GG’s Absence”, *The Huffington Post* (9 January 2013) online: *Huffington Post* <<http://www.huffingtonpost.ca/>>.

114. James Anaya, *Report of the Special Rapporteur on the Rights of Indigenous Peoples, Extractive Industries Operating Within or Near Indigenous Territories*, UNHR 18th Sess, UN Doc A/HRC/18/35 (2011) online: United Nations Human Rights <http://www.ohchr.org/Documents/Issues/IPeoples/SR/A-HRC-18-35_en.pdf>.

115. Lloyd Axworthy & Wab Kinew, “Canada’s Future: Let’s Be Divided No More”, *The Globe and Mail* (11 January 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

116. Scott, “Situating Sarnia”, *supra* note 4 at 111. See also Gosine & Teelucksingh, *supra* note 111.

First Nation; Montréal's East End, and Champlain Heights, Saint John.

A. SARNIA AND THE AAMJIWNNANG FIRST NATION¹¹⁷

The Aamjiwnaang First Nation, located downwind of Sarnia's Chemical Valley, intervened in the NEB hearing on Phase I of the proposed Line 9 reversal. The submission stated that the Band was primarily concerned that reversing the flow along Line 9 would worsen air pollution and environmental health problems in the community. Reversing the direction of Line 9 cuts off Sarnia's supply of light imported crude from the east, meaning refineries there will become increasingly reliant on emissions-heavy fuels, such as tar sands crude. Roughly 15% of the feedstock refined in Sarnia, until very recently, originated in eastern ports. This will be replaced by western sources at the same time that the proportion of western crudes stemming from the tar sands is rising dramatically. The people living downstream of these refineries, the Aamjiwnaang First Nation community, fear that more, and more deadly, air pollution will result, and they also fear that a spill of diluted bitumen, similar to what happened in the Kalamazoo River, Michigan in 2010, will contaminate the water and soils of their traditional territory.¹¹⁸

An affidavit filed in the NEB proceeding by Chief Chris Plain of Aamjiwnaang First Nation stated that the Band was concerned that reversing the flow of Line 9 would "change the type of oil" processed in Sarnia-area refineries.¹¹⁹ Specifically, he noted the concern that "more medium and heavy crude oils from western Canada . . . may increase the amount of

117. This section of the paper summarizes findings made in more detail in Scott, "Situating Sarnia", *supra* note 4.

118. Tara Jeffrey, "Aamjiwnaang Based Group Concerned About Enbridge Plan", *Sarnia Observer* (10 December 2012) online: [theobserver.ca](http://www.theobserver.ca/) <<http://www.theobserver.ca/>>. For details on the massive oil spill, and Enbridge's likely clean-up cost, see Kelly Cryderman, "Enbridge Cleanup May Cost \$1-billion, Company Warns", *The Globe and Mail* (20 March 2013) online: *The Globe and Mail* <<http://theglobeandmail.com/>>.

119. Affidavit of Chris Plain, Evidence of Aamjiwnaang First Nation, Enbridge Pipelines Inc ("Enbridge") Line 9 Reversal Phase I Project, Application under Section 58 of the *National Energy Board Act* ("NEB Act") online: National Energy Board <<http://www.neb-one.gc.ca/>>.

air pollution and toxic air contaminants that are emitted, released or discharged from the facilities into the airshed.”¹²⁰ Sarnia already shoulders a very heavy burden in terms of toxic air emissions, which means that any increase to cumulative emissions to the airshed is significant, and this is well-documented.¹²¹

The significance of the fact that the Line 9 is an existing pipeline became immediately clear in the NEB decision on the Phase I application. The NEB limited the “scope” of the project to a narrow, technical assessment of the environmental effects of changing the direction of the pipeline.¹²² Despite the fact that the NEB had a broad mandate to assess both bio-physical elements (air and water quality or fish habitat), and socio-economic effects (traditional land and resource uses or human health impacts), the Panel characterized the project very narrowly, essentially evaluating the impact of “. . . infrastructure additions and modifications (related to pumps, piping, valves, [etc.] at four existing fenced and graveled sites.”¹²³

The Aamjiwnaang First Nation was not the only intervenor to object. In a petition that was organized by the non-governmental organization Environmental Defense, over a hundred people expressed concern that “the project will lead

120. *Ibid* at 22. Chief Plain’s concern was based on Enbridge’s own response to an information request that Aamjiwnaang First Nation filed as part of the hearing procedure. Enbridge stated that “the total supply of heavy crude oil from western Canada will increase from 1,504,000 to 3,094,000 [barrels per day] from 2011 to 2021.” Exhibit “G,” Enbridge’s response to NEB Information Request #1 (21 October 2011).

121. Toxic releases in Sarnia exceed 5 million kilograms of emissions every year, “more than the NPRI releases from the entire provinces of Manitoba, New Brunswick or Saskatchewan and greater than any other community in Ontario.” See Elaine MacDonald & Sarah Rang, *Exposing Canada’s Chemical Valley: An Investigation of Cumulative Air Pollution Emissions in the Sarnia, Ontario Area* (Toronto, Ont: Ecojustice Canada, 2007) at 5 and the figures. Imperial Oil Limited, Shell Canada Limited, and Suncor Energy Inc each operate refineries there and Nova Chemicals Ltd is petrochemical operation that produces distillate.

122. For more detail, see Scott, “Situating Sarnia”, *supra* note 4, Part III.

123. Appendix I to National Energy Board (NEB) Letter Decision OH-005-2011, Environmental Assessment Report, Pursuant to the *National Energy Board Act*, Line 9 Reversal Phase I Project (EA Report Summary).

to an increase in the amount of tar sands oil used in Ontario, which creates more greenhouse gas emissions than conventional oil and creates more air and water pollution when refined.”¹²⁴ In the end, however, the NEB’s ruling on the scope of the project precluded both the assessment of “downstream” effects, like the predicted increases to the air pollution load in Sarnia, as well as any consideration of “upstream effects” such as possible increases to GHG emissions that would flow from expansion of the tar sands operations. That this was the case on “Phase I,” as will become clear, is highly significant in light of the legislative changes that followed. The reversal of this portion of Line 9 is enough to cut off the supply of light crudes to refineries in Sarnia: the toxic air emissions will now begin to rise as the proportion of tar sands crudes in the pipelines flowing from the west increases. This would have been true even without the reversal in place, of course, but the Line 9 plan is likely to exacerbate and expedite the problem for the Aamjiwnaang community. Phase I on its own, though, would not have threatened the airsheds of east-end Montréal or Saint John with the prospect of refining tar sands crude.

B. MONTRÉAL’S EAST-END

Montréal’s east-end refineries at one time provided a potent example of environmental health harms facing disadvantaged communities in Canada. The east-end neighborhoods house an elevated proportion of francophone people of lower socioeconomic status.¹²⁵ The area is known to be populated by clusters of residents of Italian heritage and neighborhoods

124. Environmental Defence, *Signed Petition for Line 9 Reversal Phase I Project* (2011).

125. City of Montréal, *Atlas sociodémographique de l’agglomération de Montréal — Recensement de 2011*, online: Montréal <http://ville.montreal.qc.ca/portal/page?_pageid=6897,100925572&_dad=portal&_schema=PORTAL>; Damaris Rose & Amy Twigge-Molecey, “A City-Region Growing Apart? Taking Stock of Income Disparity in Greater Montréal, 1970-2005” (Toronto, Ont: University of Toronto, Cities Centre, Research Paper 222, 2013) online: University of Toronto <<http://www.citiescentre.utoronto.ca/publications.htm>>.

dominated by the Haitian immigrant community.¹²⁶ In 2009, a study was published in *Environmental Health Perspectives* demonstrating that short-term episodes of increased air pollutant exposures from refinery stack emissions were associated with a higher number of asthma episodes in children that live nearby.¹²⁷ The study was said to fit into a larger body of knowledge about the health effects associated with the emissions from the two prominent refineries, Shell and Suncor, dominating the east end skyline.¹²⁸ In the residential communities located adjacent to this industrial complex, annual rates of hospitalizations for respiratory health problems among children 2-4 years of age were approximately 25% higher than expected.¹²⁹

Since these studies were completed, however, one of the major refineries in the east-end, the Shell refinery, closed its doors putting 500 employees out of work. Air quality will have undoubtedly improved. But, now that Suncor has announced plans to spend \$55 million to prepare its Montréal refinery to receive western crude, those air quality gains appear to be in jeopardy. Evidence is emerging that refining heavier crudes derived from bitumen can worsen already serious environmental health risks to nearby communities.¹³⁰

126. Ville de Montréal, Division des affaires économiques et institutionnelles, Direction du développement économique et urbain & Service de la mise en valeur du territoire et du patrimoine, *Portraits démographiques: répartition spatiale des immigrants dans la RMR de Montréal* (Montréal, Que: City of Montréal, March 2010) at 3-4, online: Montréal <http://ville.montreal.qc.ca/pls/portal/docs/page/mtl_stats_fr/media/documents/05_LA%20R%C9PARTITION%20SPATIALE%20DES%20IMMIGRANTS.pdf>.

127. Audrey Smargiassi et al, "Risk of Asthmatic Episodes in Children Exposed to Sulfur Dioxide Stack Emissions from a Refinery Point Source in Montréal, Canada" (2009) 117:4 *Environ Health Perspect* 653.

128. *Ibid.*

129. Kosatsky et al, *Évaluation de l'excès de maladies respiratoires dans les secteurs de Pointe-aux-Trembles/Montréal-Est et Mercier-Est/Anjou: une analyse des données sanitaires et environnementales* (Montréal, Que: Régie régionale de la santé et des services sociaux de Montréal-Centre, Direction de la santé publique, 2004). The comparator group used was Montréal Island children overall; the study period was 1996 to 2004.

130. Greg Karras, "Combustion Emissions from Refining Lower Quality Oil: What Is the Global Warming Potential?" (2010) 44:24 *Environ Sci Technol* 9584. Karras has extended this analysis to address the question of local health impacts affecting communities surrounding refineries in his work with Communities for

The processing of tar sands crudes will produce air emissions with significantly greater amounts of sulfur dioxide, nitrogen oxide, hydrogen sulfide, mercury, cadmium, and lead.¹³¹ These contaminants have been linked to increased rates of cancer, heart disease, reproductive disorders, and respiratory diseases.¹³²

According to the mainstream dialogue, however, “[b]ringing lower-priced Canadian feedstock to Eastern refineries has several important benefits to local and provincial economies.”¹³³ Noting that the Montréal Shell refinery succumbed to intense global competitive pressures in 2010, Mike Harris, former Premier of Ontario argued in the *Financial Post* that:

By improving the competitiveness of the remaining refineries in [Montréal], the risk of further closures is reduced, 1,100 refinery jobs are protected, and many more indirect jobs in Quebec’s petrochemicals and plastics industries are made more secure.¹³⁴

Similarly, a recent economic-impact study prepared for Enbridge predicts substantial benefits of reversing Line 9, including “savings” for the refinery as lower-priced western feedstock will increase its profitability, adding billions to

a Better Environment. Still, good data on the associated environmental health impacts of a change in feedstock to existing refineries are sparse and slow in coming. Industry admits that the sulphur content is higher for bitumen, but argues that desulphurization equipment can be installed to mitigate (Lynne Peeples, “Keystone XL Oil Refineries Would Produce ‘Extra Dose’ of Pollution, Activist Warns”, *Huffington Post* (6 May 2013) online: *Huffington Post*, US <http://www.huffingtonpost.com/2013/05/06/keystone-xl-oil-refineries-pollution_n_3223339.html>.

131. *Ibid.*

132. Richard T Burnett, Sabis Cakmak & Jeffrey R Brook, “The Effect of the Urban Ambient Air Pollution Mix on Daily Mortality Rates in 11 Canadian Cities” (1998) 89:3 *Can J Public Health* 152; J Kaldor et al, “Statistical Association Between Cancer Incidence and Major-Cause Mortality, and Estimated Residential Exposure to Air Emissions from Petroleum and Chemical Plants” (1984) 54 *Environ Health Perspect* 319; Marilena Kampa & Elias Castanas, “Human Health Effects of Air Pollution” (2008) 151:2 *Envtl Pollution* 362.

133. Harris, *supra* note 91.

134. *Ibid.*

provincial and federal coffers.¹³⁵ Both Ontario and Quebec, it is argued, will benefit in direct and indirect employment. Former Premier Harris also mentions Ontario's petrochemical cluster in Sarnia, claiming that it operates at a "costly disadvantage" due to its reliance on "higher-priced offshore oil."¹³⁶ Since the "petrochemical value chain supports vital spinoff manufacturing in Ontario, including automotive parts, rubber-based products, extruded plastics, secondary and specialty chemicals, insulation and synthetics," all the manufacturing jobs that are so vital to the provincial economy, according to Harris, are threatened without a conduit for tar sands crude to move east.

C. SAINT JOHN'S CHAMPLAIN HEIGHTS

The crude is not expected to end its journey in Montréal, however. Natural Resources Minister Joe Oliver has reported that: "The end point of the pipeline system would likely be the Irving Oil refinery in Saint John, NB—the largest refinery in the country."¹³⁷ But the big, privately-held Irving refinery is not presently equipped to deal with raw bitumen, and would require the addition of a coker to process it into synthetic crude oil.¹³⁸ Nonetheless, it is clear that Irving Oil Corp is currently moving more than 90,000 barrels a day of crude from Alberta and North Dakota by rail to its Saint John refinery, and that it plans to increase those shipments.¹³⁹ Tar sands producer Cenovus is known to be one of Irving's

135. *Ibid.* Also, a National Bank economist was quoted as follows: "If Alberta's oil came east instead of going south, the profits would flow to Canadian refineries instead of going American refineries." In the same article, however, it is noted that this "would not necessarily translate into cheaper prices at the pump" for Quebecers. Sophie Cousineau, "Billions Projected in Savings if Quebec Refiners Switch to Alberta Oil", *The Globe and Mail* (21 February 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>.

136. *Ibid.*

137. Fekete, *supra* note 54.

138. *Ibid.* "McKenna Says Irving Could Refine Western Crude: Build Pipeline to Saint John", *CBC News* (New Brunswick) (11 January 2012) online: *CBC News* <<http://www.cbc.ca>>.

139. "[T]he closely held company's transportation plans are private," Rebecca Penty, "Irving Refinery Said to Get 90,000 Barrels a Day by Rail", *Bloomberg.com* (26 December 2012) online: *Bloomberg.com* <<http://www.bloomberg.com/>>.

suppliers that is currently sending product by rail to Irving in increasing volumes, although for now those shipments consists of conventional medium light western crudes.¹⁴⁰

Air quality has been an issue around the Irving refinery for many years.¹⁴¹ In particular, a 2008 Department of Energy report of results from air monitoring in the adjacent working class neighborhood known as Champlain Heights raised “grave concern,” according to a local activist.¹⁴² The report indicated that one air quality monitoring station in Champlain Heights demonstrated that high levels of benzene are being released. Benzene emissions are well-known to go hand-in-hand with petroleum refining.¹⁴³ As it is a proven non-threshold carcinogen (meaning even very low levels of exposures are known to cause adverse health effects), and is linked to the incidence of leukemia, there are no allowable concentration levels for benzene set at the provincial level.¹⁴⁴ Some other jurisdictions, including the UK and Sweden, do set limits for the concentrations of benzene in ambient air at 1.5 ppb (parts per billion). According to the report, the levels of benzene recorded at the Champlain Heights station fall below those levels on an annual average, but there were incidents where levels exceeded those levels in a 24-hour period, with one reading of 2.34 ppb.¹⁴⁵ As a volatile hydrocarbon, benzene

140. “Cenovus Energy Inc plans to increase its rail shipments to 10,000 barrels per day this year to avoid a pipeline bottleneck that’s hurting Western Canadian oil prices,” Dan Healing, “Cenovus Ups Rail Shipments; Move Aims to Avoid Pipeline Congestion”, *Calgary Herald* (9 January 2013) E4.

141. “Air Quality Report Raises Alarms in Saint John, Environment Minister Said There Were ‘Abnormalities’ in the Report”, *CBC News* (New Brunswick) (4 June 2010) online: *CBC News* <<http://www.cbc.ca/news/new-brunswick/story/2010/06/03/nb-air-quality-report.html>>.

142. 2006 Census data published by Statistics Canada indicates that the general area’s median income in 2005 was \$21,357, whereas Saint John overall had a median income of almost \$25,000. Statistics Canada, *Census Tract Profile for 0001.01 (CT), Saint John (CMA/310) and New Brunswick (2006)*, cat 92-597-XWE, online: Statistics Canada <<http://www.statcan.gc.ca>>.

143. Canadian Council of Ministers of the Environment, *Canada-Wide Standard for Benzene, 2010 Final Report* (Winnipeg, Man: Canadian Council of Ministers of the Environment, 2012) at 4 (Figure 1) online: CCME <http://www.ccme.ca/assets/pdf/2010_benzene_rpt_final_e.pdf>. The most significant sources, however, are vehicle emissions, wood combustion for home heating, and natural gas dehydrators.

144. *Ibid* at 1.

145. *Supra* note 141.

is notoriously present in “fugitive” emissions from refineries,¹⁴⁶ and has been released accidentally in several high profile spills or leaks in Sarnia’s Chemical Valley as well.¹⁴⁷

The example of benzene emissions provides a point of departure for considering what kind of regulatory framework could take account of these types of impacts from refining operations. In 1995, city officials in Montréal asked local refineries and petrochemical plants to implement voluntary measures to reduce their benzene emissions, and suggested compliance with a code of practice that had been developed by the Canadian Council of Ministers of the Environment (CCME).¹⁴⁸ Meeting this code would exceed the requirements of applicable municipal and provincial environmental regulations that were in place at the time. The Petro-Canada refinery implemented this code through a series of emissions controls, process changes, and installations of new equipment. The combined impact of the measures taken was reported to have decreased atmospheric emissions of benzene by about 85% and volatile organic chemicals (VOCs) in general by nearly 88% between 1995 and 2003.¹⁴⁹ In 2001, the CCME code of practice for refineries was incorporated into

146. Allan K Chambers et al, “Direct Measurement of Fugitive Emissions of Hydrocarbons from a Refinery” (2008) 58:8 J Air Waste Manag Assoc 1047.

147. See e.g. Jack Poirier, “Sarnia Issues Warning after Benzene Vapor Leak at Plant”, *Times Herald* (15 March 2008) online: *Times Herald* <<http://www.thetimesherald.com>>. An earlier spill resulted in a fine of \$550,000 against Nova Chemical in Sarnia for “discharging or causing or permitting the discharge of a contaminant, namely benzene, into the natural environment that caused or was likely to have caused an adverse effect.” (Prosecution Disposition Report, (Trial)) for *R v Nova Chemicals* (Ont J), Sarnia IEB file # 4602-6H3R67 (16 January 2008). For more detail on these incidents and their effect on the Aamjiwnaang community, see Dayna Nadine Scott, “Confronting Chronic Pollution: A Socio-Legal Analysis of Risk and Precaution” (2008) 46:2 Osgoode Hall LJ 293 [Scott, “Confronting Pollution”].

148. Government of Canada, Environment Canada, “Case Study: Petro-Canada Montréal Refinery” (2010-09-07), online: Environment Canada <<http://www.ec.gc.ca/energie-energy/default.asp?lang=En&n=38178FDB-1>>. See also National Task Force on the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks for CCME, *Environmental Code of Practice for the Measurement and Control of Fugitive VOC Emissions from Equipment Leaks* (Winnipeg, Man: Canadian Council of Ministers of the Environment, 1993) online: CCME <http://www.ccme.ca/assets/pdf/pn_1106_e.pdf>.

149. *Ibid.* Marbek Resource Consultants & AMEC E & C Services, *Benchmarking Regulatory Regimes of Petroleum Refineries — Final Report*, prepared for the Canadian Council of Ministers of the Environment (7 May 2003) online: CCME <http://www.ccme.ca/assets/pdf/marбек_bnchmrk_rept_sum.pdf>.

the City of Montréal's new environmental by-law.¹⁵⁰ In addition to limiting benzene emissions by imposing strict controls and mitigation measures to come into effect once leaks are detected, By-law 90 imposed more stringent standards for sulphur dioxide.

What this example demonstrates is that effective mitigation strategies exist. If indeed there were a deliberative framework in Canada for meaningfully considering the benefits and risks associated with bringing tar sands crude east—for weighing the trade-offs—there would be an opportunity for communities to demand improved regulatory standards in exchange for the increased risks of living downstream.¹⁵¹ As Bob Gibson has made abundantly clear, where trade-offs are necessary, they should be made according to established principles and transparent processes.¹⁵²

D. DISTRIBUTING THE COSTS AND BENEFITS OF EXPANSION IN THE TAR SANDS

Outside of the economic debates, the *distributional* question—the issue of the sharing of the costs and benefits of expansion in the tar sands, particularly the costs—has not yet been explored. The vocal opponents of tar sands expansion talk primarily about the risk of a spill of bitumen, and the expected increases in GHG emissions contributing to

150. City of Montréal, By-law 90-6, By-law amending By-law 90, as already amended, pertaining to air purification (22 August 2001).

151. It should be noted that I am not putting forward an argument in this paper about how the costs and benefits *should* be weighed, if an appropriate deliberative venue were to emerge. One of the anonymous reviewers for this article astutely noted that not only pollution, of course, is distributed by these pipelines, but hydrocarbons that will eventually become concentrated energy required for the basic tasks of social reproduction are also delivered. I do not address here how these difficult trade-offs should be made, but simply put forward the case that a critical factor in that calculus has been largely absent from the debate. As Heather McLeod-Kilmurray and Gavin Smith argue, a “full accounting of the costs and benefits of all aspects of a project, including short and long-term effects, can help to identify trade-offs and also the distribution of benefits and burdens” (*supra* note 30 at 67).

152. Robert B Gibson, *Sustainability-Based Assessment Criteria and Associated Frameworks for Evaluations and Decisions: Theory, Practice and Implications for the Mackenzie Gas Project Review* (A report prepared for the Joint Review Panel for the Mackenzie Gas Project) (26 January 2006) online: <<http://ssrn.com/abstract=1663015>>.

climate change.¹⁵³ Renowned climate scientist James Hansen famously called the tar sands “game over for the climate.”¹⁵⁴ According to the prevailing view, “the tar sands constitute ‘dirty oil’ because of the tailings ponds, the unbelievable scale of the landscape change and water use, but chiefly, because of climate change.”¹⁵⁵

Climate change is a global issue, and undeniably legitimates the participation of actors across the world in our own energy policy development, particularly those that will be disproportionately harmed as the effects of climate change intensify.¹⁵⁶ But the expansion of the tar sands will also have very specific localized effects. The everyday, chronic pollution that inevitably comes with the refining of dirty oil has deadly consequences separate from the GHG emissions tied to the extraction of tar sands crude. And the environmental justice questions—the assessment of the risks and benefits, and which people and communities will bear them—are distinct. The preceding analysis is intended as a preliminary, cursory look at some of the distributional questions that need to be probed. The analysis demonstrates that the risks and costs to be borne by the “downwinders” in Aamjiwnaang did not factor in the calculus that gave rise to the decision to approve the Line 9 reversal by the NEB on Phase I. On the question of how the costs and benefits of a coast-to-coast line are likely to be shared, much is still very uncertain, and more data are needed to fully understand what the costs are likely to be.

A separate question arises with respect to how those costs and risks are likely to be weighed in the NEB deliberations on Phase II of the Line 9 reversal application. Given the legislative changes that came on the heels of the Phase I ruling, it is safe to predict that the upstream and downstream

153. Woynillowicz et al, *supra* note 53.

154. James Hansen, “Game Over for the Climate”, *The New York Times* (9 May 2012) online: *The New York Times* <<http://www.nytimes.com/>>.

155. As of January 2013, only 0.2% of the land base affected by tar sands extraction has been certified as reclaimed (Pembina Institute, *supra* note 51 at 2).

156. See e.g. Benjamin J Richardson et al, eds, *Climate Law and Developing Countries: Legal and Policy Challenges for the World Economy* (Cheltenham, UK: Edward Elgar, 2009) at 1; Nicholas Stern, *The Economics of Climate Change* (“The Stern Review”) (Cambridge, UK: Cambridge University Press, 2007) at 92–93.

effects are unlikely to be allowed to seep into the NEB process. This became more obvious as the NEB released a new set of procedures to govern public participation in the hearings in April 2013.¹⁵⁷ The newly introduced changes can be traced to the federal omnibus budget legislation, Bill C-38, passed in June 2012.¹⁵⁸ The newly introduced changes seem to be designed to limit public participation in exactly the type of scenario that confronted the NEB on the “Phase I” application, and was already a contentious political issue arising out of the NEB hearings on the Northern Gateway proposal in BC.¹⁵⁹ That is to say, the changes explicitly seek to exclude participants seeking to bring in “upstream” or “downstream” impacts of pipeline development.

In contrast to the prior system, participants now have to show that they are “directly affected” by the project proposal,¹⁶⁰ and only factors “directly” related to the project will be considered in the review.¹⁶¹ Members of affected communities would need to apply for and be granted participation rights by the Board in order for their views to be considered in the hearing. The NEB “must hear from any person who, in the Board’s opinion, is directly affected by the granting or refusing of a project,” and “may choose to hear from any person who . . . has relevant information or expertise.”¹⁶² Further, to be successful in the “Application to Participate,”

157. The legislative authority for these changes had been introduced in the federal omnibus budget legislation, Bill C-38, passed in June 2012. See, National Energy Board, “Application to Participate Form” online: National Energy Board <https://www.neb-one.gc.ca/ll-eng/livelink.exe/fetch/2000/90464/90552/92263/790736/890819/918701/941089/A5-3-_Application_to_Participate_Form_-_A3G6L3_.pdf?nodeid=941615&vernum=0>.

158. See *Jobs Act*, *supra* note 31.

159. National Energy Board, “Order of Appearances — Northern Gateway Project-OH-004-2011” online: National Energy Board <<http://www.neb-one.gc.ca>>. The Joint Review Panel was heard by 35 intervenors and government’s participants.

160. *National Energy Board Act*, RSC 1985, c N-7, s 55.2 as amended by *Jobs, Growth and Long-Term Prosperity Act*, SC 2012, c 19, s 83.

161. *Ibid*, s 58.16(2) as amended by s 85(1).

162. See letter from Sheri Young, Secretary of the Board, to Enbridge Pipelines Inc, at “Procedural Update No. 1 — List of Issues and Application to Participate Form Hearing Order OH-002-2013 Line 9B Reversal and Line 9 Capacity Expansion Project Enbridge Pipelines Inc”, online: National Energy Board <<https://www.neb-one.gc.ca>>.

affected community members will need to demonstrate that their “interest” in the proceeding, or the “information or expertise” that they seek to contribute, “is relevant to the List of Issues.”¹⁶³ The List of Issues states:

The Board will not consider the environmental and socio-economic effects associated with upstream activities, the development of oil sands, or the downstream use of the oil transported by the pipeline.¹⁶⁴

To conclude, it is clear that the NEB will not only dismiss these impacts (as it did on Phase I), it will now, under the new legislative structure, be authorized to prevent them from being aired.

The local environmental justice impacts of tar sands extraction, however, while they may not factor into the NEB process, are increasingly being brought into the debate by indigenous voices under a new brand of resistance in Canada.¹⁶⁵ As an example, Haudenosaunee activists disrupted the NEB hearings into the “Phase I” Line 9 reversal application, claiming that as members of local Six Nations communities they had a right to free, prior and informed consent in relation to pipeline plans.¹⁶⁶ They were not heard, and their concerns were not addressed by the Board,¹⁶⁷ but their actions have inspired further opposition to the pipelines both

163. *Ibid.*

164. *Ibid* at 4.

165. As Gordon Christie demonstrates with the example of the Yinka Dene alliance, coalitions of native communities are increasingly basing their opposition to resource extraction projects on indigenous law, a distinct form of legal and political authority not grounded in claims for recognition by the Canadian state, *supra* note 86. They are staking claims of territorial sovereignty, incompatible with Canadian law. For an interesting discussion of how impositions on indigenous territorial authority are presumed to be offset by economic opportunities, such as investments, service contracts and job training or employment opportunities, see Tyler McCreary & Richard Milligan, “Pipelines, Permits, and Protests: Carrier Sekani Encounters with the Enbridge Northern Gateway Project”, *Cultural Geographies* (forthcoming in 2014).

166. Jenny Yuen, “Pipeline Protesters Arrive in Toronto to Rally Outside Enbridge Meeting”, *Toronto Sun* (8 May 2012) online: *Toronto Sun* <<http://www.torontosun.com>>.

167. Scott, “Situating Sarnia”, *supra* note 4.

within and outside of official channels.¹⁶⁸ As an example, Vanessa Gray of Aamjiwnaang First Nation, has joined a national speaking tour and helped to organized several events in her community that demonstrate opposition to both the Line 9 reversal plans and the ongoing extraction in the tar sands generally.¹⁶⁹ She states:

To add any tar sands infrastructure is to add insult to injury. Instead of expanding industry in flagrant disregard of Indigenous sovereignty and environmental health, we need to be halting such development, and reducing the infrastructure used to support it.¹⁷⁰

In the fourth and final part, I explore the conclusions that flow from the notion that oil infrastructure, particularly pipelines, cement certain routes over time, possessing in Susan Leigh-Star's words a "high inertia." But I conclude the

168. Parallel struggles of communities are taking place in the Athabasca delta, downstream of the tar sands extractive sites. For example, the Athabasca Chipewyan First Nation has struggled for years to have their voices heard on the question of the downstream impact of the extraction operations in the tar sands. A constitutional challenge to Shell Canada's Jackpine oil sands mine expansion, an operation that it says would disturb 12,719 ha of land and destroy 21 kilometres of the cultural significant Muskeg River, filed in 2012 was recently denied. See "Northern Alberta Band Challenge Jackpine Oilsands Proposal", *CBC News* (2 October 2012) online: *CBC News North* <<http://www.cbc.ca/news/canada/north/story/2012/10/02/edmonton-jackpine-constitutional-challenge.html>>. The Band had hoped to demonstrate the severe adverse impacts on their Treaty 8 rights due to tar sands development in northern Alberta. (*Athabasca Chipewyan First Nation v Alberta (Minister of Energy)*, 2011 ABCA 29). Similarly, most environmental justice activists will be aware of the case of Fort Chipewyan and the Mikisew Cree First Nation, an aboriginal band downstream of the tar sands located north of Lake Athabasca and in the Peace-Athabasca delta, where a contested cancer claim was made by a concerned local family physician in 2010. Josh Wingrove, "Oil-Sands Report Criticizes All Stakeholders", *The Globe and Mail* (15 December 2010) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>; Elizabeth Withey, "'Just Do the Right Thing by Fort Chip': Physician", *Edmonton Journal* (9 March 2009) online: *Edmonton Journal* <<http://edmontonjournal.com>>.

169. Vanessa Gray, "She Speaks: Indigenous Women Speak Out Against the Tar Sands" (A speakers' series is being organized in Coast Salish Territories (Vancouver) and in Ontario in 2012); Bibo Poynter, "Idle No More: Canada's Indigenous 'Occupy' Movement", *Christian Science Monitor* (10 January 2013) online: *Christian Science Monitor* <<http://www.csmonitor.com>>; "Environmental First Nations Activists Protest at Sarnia Oilsands Meeting", *CTV News* (21 May 2013) online: *CTV News* <<http://www.ctvnews.ca>>.

170. Zel, "Aamjiwnaang/Sarnia Line 9", *Gathering* online: (2013) 52:4 *The Peak* 19 <<http://guelphpeak.org/vol52/2013/04/aamjiwnaangsarnia-line-9-gathering/>>.

section with the argument that the stability of these networks should not be assumed: the pipelines, even once built, will remain vulnerable to disruption as opposition to the federal government's energy vision gains momentum.

IV. INERTIA AND MOMENTUM

The critical geography literature emphasizes the importance of scale in measuring the distribution of environmental harms.¹⁷¹ Analyses at different geographic scales produce different results in term of environmental inequities; similarly, different measures or levels of resolution may highlight "different axes of inequality" with race or class being prominent in some cases, and indigeneity or gender at others:

. . . the notion of environmental injustice juxtaposes, on the one hand, localized experiences of exposure to industrial toxins with, on the other, a recognition that broader social and political processes may be responsible for the spatial patterns of exposure to environmental hazards which are disproportionately experienced by particular vulnerable populations.¹⁷²

The problem that each of these communities "downstream" of the tar sands now faces—yet another increase in emissions from a neighboring facility, with a more deadly toxic load—originates in "political and economic relationships which were organized at far broader scales than the [community] itself, scales well beyond their control."¹⁷³

Work on global cities, following Saskia Sassen, turns our attention to the "diverse terrains and domains" onto which cities "project their effects and from which they meet their needs."¹⁷⁴ She says a city's "demand for resources can entail a geography of extraction and processing that spans the globe,

171. Hilda E Kurtz, "The Politics of Environmental Justice as a Politics of Scale" in Andrew Herod & Melissa W Wright, eds, *Geographies of Power: Placing Scale* (Oxford, UK: Blackwell, 2002) 249.

172. *Ibid* at 253, citing David Harvey, *Justice, Nature and the Geography of Difference* (Cambridge, MA: Blackwell, 1996).

173. *Ibid* at 258. Eric Swyngedouw, "Excluding the Other: The Production of Scale and Scaled Politics" in Roger Lee & Jane Wills, eds, *Geographies of Economies* (London, UK: Arnold, 1997) 167.

174. Sassen, *supra* note 7 at para 2.

although it does so in the form of a collection of confined, individual sites.”¹⁷⁵ Similarly, in the new pipeline debates, it is by looking at what is happening at specific sites that we begin to understand what is at stake in the bigger picture. The “ecological hinterland” for our petroleum products and our plastics includes the people and the formerly wild spaces of the Athabasca Delta downstream of the tar sands, it has for a century included the people of Aamjiwnaang First Nation downwind of Sarnia’s Chemical Valley, and it may soon include the communities of east-end Montréal, Champlain Heights, Saint John, and across the over-burdened US gulf coast; if “tidewater” is reached, that hinterland will also include communities in China or India.¹⁷⁶

As Roger Keil and others have argued, “spaces that are hyperconnected, fast and expensive” need “spaces that are not connected, slow, and cheap.”¹⁷⁷ As urbanites in Toronto and Chicago, we need the Aamjiwnaang First Nation—where, in what Coutard calls an “infrastructural by-pass,”¹⁷⁸ complex networked infrastructure zigzags around and under residents, bringing jet fuel directly from Shell Sarnia to Toronto’s Pearson Airport in a line that passes under the Aamjiwnaang reserve, even as some activists struggle at times to organize global support for their resistance using a dial-up Internet connection.

A. THE “HIGH INERTIA” OF BUILT INFRASTRUCTURE: ENDURING AND INEQUITABLE

What becomes clear, in considering the current energy infrastructure debates, is that specific industrial actors benefit

175. *Ibid* at para 27.

176. For more on the Asian market and capacity to refine heavy tar sands crude, see: Wright Mansell Research Ltd, *Public Interest Benefits of the Enbridge Northern Gateway Pipeline Project* (Calgary, Alta: March 2010) at 12–23. For a discussion of the EPA’s concerns about the environmental justice implications of the Keystone XL, see Matthew Tresaugue, “EPA Questions Plan for Canada–Texas Pipeline: Agency Calling for a Closer Look at Its Impact on Minorities, Poor”, *Houston Chronicle* (16 August 2010) online: Chron.com <<http://www.chron.com/story.mpl/metropolitan/7154758.html>>.

177. Keil & Young, *supra* note 8 at 13.

178. Olivier Coutard, “Placing Splintering Urbanism: Introduction” (2008) 39:6 *Geoforum* 1815.

from efforts to “fix space” in immovable physical infrastructures of transport, like pipelines, because it helps them to cement their interests and their advantages over competitors across time. “Reaching tide water,” as Natural Resources Minister Joe Oliver has stated, is also a government imperative: “We absolutely must be able to transport the resources to tidewater, and to do that, we need the infrastructure built.”¹⁷⁹ In the neoliberal language of contemporary economists, what is being sought is “security of demand,”¹⁸⁰ which in this example means geographic expansion to new and emerging energy markets in Asia.

The recourse to consumption in distant lands brings to mind the notion of global environmental justice. As noted by Julian Ageyman and JoAnn Carmin:

The increasing distance between those who benefit from and those who must contend with the environmental, health, economic, and social impacts of remote demand is intertwined with the rise of spatial inequities due to global economic, social and political institutions.¹⁸¹

The complex relationship between the spatial inequities and the global economic and political institutions is reflected in the fact that Enbridge CEO Pat Daniel was in China with the Prime Minister in February of last year.¹⁸² The rhetoric coming out of that meeting was that Canada could contribute to development in Asia, by “power[ing] their economies for years to come.”¹⁸³ But, of course, it was noted that “there will also be the need for enormous new energy

179. Jason Fekete, “Canada’s Need for More Pipeline Capacity a ‘Real Concern,’ Says Natural Resources Minister”, *O.Canada.com* (3 January 2013) online: *O.Canada.com* <<http://o.canada.com>>.

180. Kevin Lynch & Kathy Sendall, “Diversifying to Asia: Canada’s Energy Opportunity”, online (2012) 33:8 Policy Options 14 <<http://www.irpp.org>>.

181. JoAnn Carmin & Julian Agyeman, “Introduction: Environmental Injustice Beyond Borders” in JoAnn Carmin & Julian Agyeman, eds, *Environmental Inequalities Beyond Borders: Local Perspectives on Global Injustices* (Cambridge, MA: MIT Press, 2011) 1 at 7.

182. Gustavo Vieira, “PM to China: Wanna Buy Some Oil?”, *Maclean’s* (10 February 2012) online: *Maclean’s* <<http://www2.macleans.ca/2012/02/10/pm-to-china-wanna-buy-some-oil>>.

183. Lynch & Sendall, *supra* note 180.

transportation infrastructure to reach and serve new global energy consumers.”¹⁸⁴

The strategic jockeying for position by industry players that now characterizes the energy sector makes it clear that the category of “big oil” sometimes employed in these debates needs to be disaggregated to account adequately for the degree to which specific industrial actors stand to gain and lose from particular spatial configurations of privately-owned infrastructure. Pipelines are known to create natural monopolies because of their high up-front investment costs in combination with a low marginal cost per unit of energy transported.¹⁸⁵ Users of the pipeline are required to make commitments that can justify the development cost, tying the users and the suppliers into long-term contractual relationships, or “interlocking alliances,” that insulate them from outside competition.¹⁸⁶ The result is a strong “first-in-place” advantage: the fixed nature of the pipeline infrastructure locks in value that accrues to particular players over periods of time, but their competitors will always be seeking another fix more to their own strategic benefit.¹⁸⁷ Each new configuration is enduring, with real consequences for people in particular places, but is also ultimately unstable. The significant economies of scale associated with pipeline throughput that is concentrated into a single large pipeline, for example, invites opportunities for resistance associated with its potential disruption.

In the current context, the drive of industry actors to achieve a spatial configuration that cements their own interests can only serve to retrench the infrastructure of fossil capitalism. Each pipelines’ profitability will depend on an expansionary pattern in the global flows of crude oil. “If the flows fail to materialize, then the fixed capital stands to be devalued and lost.”¹⁸⁸ Accordingly, once the pipelines are in place, their existence requires expansion in the tar sands to

184. *Ibid* at 44.

185. Jeff D Makhholm, *The Political Economy of Pipelines: A Century of Comparative Institutional Development* (Chicago, IL: University of Chicago Press, 2012).

186. *Ibid* at 2.

187. *Ibid*.

188. Harvey, *supra* note 23 at 29.

justify the sunk costs, and contributes to the sense of inevitability that surrounds contemporary energy debates.

It is this retrenching of the infrastructure of fossil capitalism that gives rise to intergenerational equity concerns. Intergenerational equity, at minimum, is said to impose an obligation to consider the impact of our decision-making today on the needs and well-being of future generations.¹⁸⁹ Much has been written about how the costs of inaction on climate change are imposed on future generations. Much less is known about the intergenerational effects of refining heavier crudes on a local population. Certainly there is research into the possible “epigenetic effects” of chronic exposures to many of the toxins that we expect will increase in concentration in the air. In Aamjiwnaang, where the environmental health effects of living beside a major petrochemical cluster have been well documented, and include a skewed birth ratio tied to endocrine disrupting pollution, the “generational” aspects of the pollution are accepted, if not understood.¹⁹⁰ But since the existence of the infrastructure itself, the coast-to-coast pipeline—once achieved—fuels expansion in the tar sands, the intergenerational effects of the pipeline cannot be limited to the environmental health impacts downstream of the refining, nor to climate change, but must also include the generational and reproductive health impacts of tar sands extraction on communities in the Athabasca delta.¹⁹¹

189. The concept of intergenerational equity as a legal framework is attributed to Edith Brown Weiss, *In Fairness to Future Generations: International Law, Common Patrimony, and Intergenerational Equity* (Tokyo, Japan: United Nations University, 1989). See also Neil H Buchanan, “What Do We Owe Future Generations?” (2009) 77:5-6 *Geo Wash L Rev* 1237; Axel Gosseries & Lukas H Meyer, eds, *Intergenerational Justice* (Oxford, UK: Oxford University Press, 2009).

190. Scott, “Situating Sarnia”, *supra* note 4.

191. See Nathalie Chalifour, “Bringing Justice to Environmental Assessment: An Examination of the Kearl Oil Sands Joint Review Panel and the Health Concerns of the Community of Fort Chipewyan” (2010) 21 *J Env'tl L & Prac* 32. There is also research emerging on the interconnections between “environmental justice and reproductive justice.” For example, in 2010 the International Indigenous Women’s Environmental and Reproductive Health Symposium produced a “Declaration for Health, Life and Defense of Our Lands, Rights and Future Generations,” which was accepted at the 10th session of the UN Permanent Forum on Indigenous Issues. The declaration recommended that international UN bodies focus attention and collect information from Indigenous Peoples on the links between environmental contamination and reproductive health and justice. A reproductive justice framework takes

It should be unsurprising, then, that opposition to tar sands pipelines is now often expressed as demands for intergenerational justice, principally voiced by indigenous peoples.¹⁹² For example, Eriel Deranger of the Athabasca Chipewyan First Nation stated recently:

Our community and our leadership at ACFN are taking the steps to slow down development in Northern Alberta in order to ensure our rights and lands are protected now and into the future . . . As Denesuline people, it is our responsibility to protect our lands, our rights and all that mother earth provides for our people.¹⁹³

Similarly, Mikisew Chief Steve Courtoreille, speaking about his community's frustration with the federal government's responsible resource development agenda, stated: "This is going to affect our future, affect the future of all of Canada."¹⁹⁴ The Yinka Dene Alliance, including the Nadleh Whut'en, Nak'azdli, Takla Lake, Saik'uz, and Wet'suwet'en First Nations across northern British Columbia who have banned the Enbridge Northern Gateway pipeline from their territories, declare that they are acting in accordance with

into consideration the way in which pollution or contamination might affect a community's ability to reproduce future generations. Individuals must have the right and ability to reproduce in culturally appropriate ways: "for many Indigenous communities to reproduce culturally informed citizens requires a clean environment" (Hoover et al, *supra* note 112).

192. As another example, at the Fort McMurray "walk around the tar sands" organized by Keepers of the Athabasca in August 2012, which drew more than 250 First Nations people and allies, Roland Woodward of the Fort McMurray Metis stated: "This walk creates strength and unity among the people who have to live with the destructive impacts of tar sands. Together, we are more empowered to ensure a clean and healthy world for future generations." Athabasca Chipewyan First Nation, Press Release, "Tar Sands Healing Walk" (4 August 2012) online: Athabasca Chipewyan First Nation and the Tar Sands <<http://acfnchallenge.wordpress.com/category/tarsands/>>.

193. Athabasca Chipewyan First Nation, Press Release, "Athabasca Chipewyan First Nation Files Constitutional Challenge to Shell Oil Canada's Tar Sands Expansion Application" (1 October 2012) online: Athabasca Chipewyan First Nation and the Tar Sands <<http://acfnchallenge.wordpress.com/category/tarsands/>>.

194. "Alberta First Nations Take Government to Court over Budget Bills", *CTV News* (8 January 2013) online: *CTV News* <<http://www.ctvnews.ca/canada/alberta-first-nations-take-government-to-court-over-budget-bills-1.1105125#ixzz2HzH3DTGW>>.

“responsibilities to [them]selves, [their] ancestors, [their] descendents” and state that they will “not tolerate this great threat to . . . all future generations.”¹⁹⁵ Similarly, an Indigenous law declaration of 2010 signed by 9 coastal and island nations in British Columbia states unequivocal opposition to pipelines and tankers, noting a “solemn and sacred duty to our ancestors to pass our territories and our cultures to the following generations in good order.”¹⁹⁶ Vanessa Gray, organizer with the Aamjiwnaang Green Teens, stated after touring the tar sands in August 2012: “They’re going to ruin the future for our children and our children’s children if they continue just to destroy what we have.”¹⁹⁷

These concerns clearly arise from the sense that we are making choices today that will entail far reaching and lasting consequences. The routes put in place by pipelines are enduring, but they are also unstable, as the Line 9 example clearly shows. Line 9 was reversed from its original west-to-east direction, and it is poised to be reversed again. There is perhaps more flexibility in the built infrastructure, specifically for pipelines, than initially meets the eye. There will be end-arounds and temporary solutions to counteract the current crisis in the tar sands: the use of rail to move crudes stranded by the lack of outlets is an obvious example.¹⁹⁸ Prior to the Lac-Mégantic disaster, shipment volumes of crude by

195. CFN, “Declaration”, *supra* note 85.

196. *Coastal First Nations Declaration*, *supra* note 85. The declaration is signed by The Council of the Haida Nation, Skidegate Band Council, Old Masset Village, Gitga’at First Nation, Metlakatla First Nation, Haisla Nation, Kitasoo Band Council, Heiltsuk Nation, and Wuikinuxv Nation. The language resonates with Edith Brown Weiss’ articulations of intergenerational equity, in which she conceives if the present generation of humans as both “beneficiaries of a planetary legacy passed down from the past and as trustees of the planetary legacy for future generations” (Lynda M Collins, “Revisiting the Doctrine of Intergenerational Equity in Global Environmental Governance” (2007) 30 Dal LJ 79 at 93).

197. Paul Morden, “Youth Appalled by Oil Sands”, *Sarnia Observer* (13 August 2012) online: [theobserver.ca](http://www.theobserver.ca) <<http://www.theobserver.ca>>.

198. The use of barges has also been proposed: MEG and Valero are beginning to explore this possibility for moving crude (Dan Murtaugh & Barbara Powell, “Valero Looking at Rail, Barges to Ship Canadian Crude to Gulf”, *Bloomberg* (29 January 2013) online: *Bloomberg* <<http://www.bloomberg.com>>). In regards to rail, it was believed that the benefits included “lower capital investment, access to a wider variety of markets, and less scrutiny than pipeline projects” (Guy Dixon & Kelly Cryderman, “CN Tries Out Liquefied Natural Gas to Power Locomotives”, *The Globe and Mail* (14 May 2013) online: *The Globe and Mail* <<http://www.theglobeandmail.com>>).

rail were projected to double this year.¹⁹⁹ In fact, the rush to move oil onto rail cars was described as a “giddy procession of profit,”²⁰⁰ despite the fact that it was also known to be highly risky: as pipelines were getting caught up in the public concerns around environmental impacts, the rail cars were thought to be side-stepping this obstacle even as they presented a higher incidence of spills than pipelines.²⁰¹ There is another way we can consider the infrastructure of fossil capitalism to be both enduring and unstable. Both the pipelines and the railways are now vulnerable to the mounting opposition and resistance to the responsible resource development agenda that is gaining momentum in Canada.

B. THE SUDDEN VULNERABILITY OF THE INFRASTRUCTURE OF FOSSIL CAPITALISM

The political instability introduced by the spotlight on the risks of transporting crude oil that inevitably shone in the wake of the Lac-Mégantic rail disaster is layered onto a growing opposition that had been building in the months preceding it. The *Idle No More* movement sprang into the mainstream in December 2012 as indigenous people across the country grew impatient with the federal government’s increasingly aggressive legislative agenda. Surging momentum as the holiday season approached generated spontaneous actions across the country by Aboriginal activists seeking to demonstrate solidarity with the hunger strike of Chief Teresa Spence of Attawapiskat and with the general sense of unease brought on by the government’s latest omnibus budget legislation.²⁰² Blockades of bridges,

199. Ben Lefebvre, “US Refiners Turn to Rail to Tap Canadian Oil”, *The Wall Street Journal* (11 March 2013) online: *The Wall Street Journal* <<http://online.wsj.com>>.

200. Nathan Vanderklippe, “With Pipelines Under Attack, Railways Lading Race to Move Oil”, *The Globe and Mail* (18 January 2012) R1 online: *The Globe and Mail* <<http://www.theglobeandmail.com>>. Pipelines are still, of course, preferred as they are recognized as the most cost-effective and efficient method of transporting oil. See CAPP, “Facts”, *supra* note 32 at 5.

201. *Ibid.*

202. Bill C-45, the second omnibus budget bill, exceeds 450 pages, and changes 44 federal laws. Amongst the most concerning changes for First Nations is the removal of fish habitat protections and the dramatic reductions to the number of lakes and rivers where federal environmental assessment is required.

highways, and rail lines added a sense of unpredictability to the movement which more commonly consisted of flash mobs of round dancers and drummers in public spaces. Early in 2013, several actors identifying with the movement articulated a strategy of explicitly targeting critical infrastructure, and tied those actions to opposition to the federal government's responsible resource development agenda.²⁰³ One such action, for example, included a threat to shut down Highway 63, between Fort McMurray and Edmonton—the lifeblood of the tar sands.²⁰⁴

Highlighting the centrality of networked infrastructure to the contemporary debates, and the sudden vulnerability of the infrastructure of fossil capitalism, is the blockade of the CN Rail line over the Aamjiwnaang First Nation reserve by Band members and their supporters. The CN Rail blockade in Aamjiwnaang began on December 21, 2012 and extended for 13 days.²⁰⁵ The strategy was effective:

The rail line services a number of large companies operating in Chemical Valley and CN transports an average of 450 cars worth of cargo daily, seven days a week. Some of the materials

203. See e.g. Erin Anderssen, Gloris Galloway & Kelly Cryderman, "First Nations Protests Take Aim at Oil Sands: Critics Mute Criticism of Ottawa While Alberta Chief Warns of Action on Road to Fort McMurray", *The Globe and Mail* (13 January 2013) A1. Chief Allan Adam of the Athabasca Chipewyan First Nation is quoted as saying that "local resentment" will fuel a blockade of Highway 63 "if things don't change," noting that local indigenous people "are tired of . . . [Ottawa's] unending push to weaken the country's environmental laws" and that health effects related to the tar sands continue to be a concern.

204. *Ibid.*

205. Alexander Knight, "Aamjiwnaang Activists Hit Chemical Valley Right Where it Hurts", *Poor Man's Media* (3 January 2013) online: *Poor Man's Media* <<http://www.poormansmedia.ca/articles/20130101.html>>. On December 24th, CN obtained a court injunction, but despite this Sarnia Mayor Mike Bradley and Police Chief Phil Nelson were reluctant to use force to shut down the blockade, fearing it would harm relations between the City of Sarnia and Aamjiwnaang First Nation. Three days later on December 27th, the temporary injunction was extended indefinitely by the Ontario Superior Court in Toronto, and the weight of the economic impact began to settle on the Band. A community meeting was held in Aamjiwnaang on December 30th after which official Band support for the continuation of the blockade was withdrawn. On January 2nd, CN returned to court to request that blockade spokesperson Ron Plain and Sarnia Police Chief Phil Nelson be charged with contempt for failing to adhere to the court injunction. Later that evening, after a community feast and ceremony, the blockade came down.

transported through Aamjiwnaang are plastics, ethylene, polyethylene, butane, propane, ammonium nitrate, nitric acid, methanol, raw materials and numerous other types of chemical, industrial freight heavily tied to the petrochemical industry.²⁰⁶

Within days, petrochemical manufacturing plants in Sarnia were starved for inputs—and the Canadian Propane Association was warning of fuel shortages for home heating in eastern Canada.²⁰⁷

The Aamjiwnaang First Nation, on the periphery, is not sheltered from the environmental costs of the production of energy products, plastics and resins. As mentioned, Aamjiwnaang is literally surrounded by refineries and petrochemical plants, and the pollution released into the atmosphere has had a serious impact on the health of residents.²⁰⁸ The point of re-counting the blockade is this: grassroots indigenous resistance to the federal government's "responsible resource development" agenda, whether under the banner of *Idle No More* or not, is likely to intensify and manifest in direct action by those disenfranchised by the emerging energy vision for Canada. Those actions are likely to expose the vulnerability of the infrastructure of fossil capitalism. Over the coming months and years, we can expect the growing momentum of the indigenous struggle for greater control over the resources and lands of their traditional territories to shape the flows of commodified nature between core and periphery, and across regions of this country.²⁰⁹

206. *Ibid.*

207. Aaron Clark, "First Nations Rail Blockade Disrupts Propane Shipments", *Financial Post* (28 December 2012) online: *Financial Post* <http://business.financialpost.com/2012/12/28/first-nations-rail-blockade-disrupts-propane-shipments/?_isa=974e-cbb4199b-c/22>.

208. MacDonald & Rang, *supra* note 121; Sarah M Wiebe, *An Anatomy of Place: Ecological Citizenship in Canada's Chemical Valley* (Ph.D. Dissertation, University of Ottawa, Department of Political Science (expected 2013)) [unpublished]; Scott, "Confronting Pollution", *supra* note 147.

209. A parallel is made here between the role of class struggle in shaping capital flows in space, as is demonstrated by Harvey in David Harvey, "The Urban Process Under Capitalism: A Framework for Analysis" (1978) 2:1-4 *International Journal of Urban and Regional Research* 101.

CONCLUSION

In the metabolic analysis of scholars of networked infrastructures, the petrochemical complexes that accompany the “end of the (pipe) line” are living systems in which physical processes convert raw materials (crude oil and bitumen) and energy, plus labour, into essential commodities (gasoline, chemicals, resins and plastic) and into wastes (chiefly, air pollution). It is a “process whereby an input of nature, technology, capital and human labour gives an output in the form of commodities.”²¹⁰ The use and production of nature is “conceptualized as a highly contested process involving complex power relations, economic transactions and importantly, distributive impacts.”²¹¹ In other words, it is not just value that drains out of the pipe that will empty into the US gulf, Kitimat, BC or Saint John, NB, it is also pollution. “That pollution harms not just individual health, but it erodes family ties and community relationships, it creates community-wide stress that debilitates neighborhoods—emotionally, culturally, economically—and politically.”²¹² The extraction and upgrading of bitumen in Alberta, the transfer of crude oil by pipe, and its subsequent transformation through the application of technology and the addition of human labour, whether it happens in Sarnia, Montréal or Saint John, imposes real, material costs on the communities downstream.

A coast-to-coast pipeline, in the context of fossil capitalism, means a pipeline route that entails enduring consequences for the places and spaces it flows into. The pipeline will also retrench the infrastructure of fossil capitalism such that it will impact future generations in their ability, literally, to choose a different energy path. Timothy Luke calls on us to see the increasingly privatized ecology of infrastructure

210. Maria Kaika, *City of Flows: Modernity, Nature, and the City* (New York, NY: Routledge, 2004) at 7.

211. Monstadt, *supra* note 8 at 1933.

212. Robert RM Verchick, “In a Greener Voice: Feminist Theory and Environmental Justice” (1996) 19 *Harv Women’s LJ* 23 at 84.

supporting global cities as a high public ecology.²¹³ He urges us to “re-politicize, re-socialize, and re-localize” it by zeroing in on local struggles.²¹⁴ The national energy debate needs an infusion of this type of energy: meaningful consideration of local impacts, of costs and benefits and their distribution.

213. Timothy W Luke, “Global Cities Vs. ‘Global Cities’: Rethinking Contemporary Urbanism as Public Ecology” (2003) 70 *Studies in Political Economy* 11 at 16.

214. *Ibid.*