

9-2022

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Source Publication:

Natarajan, U., & Dehm, J. (Eds.). (2022). *Locating Nature: Making and Unmaking International Law*. Cambridge: Cambridge University Press. doi:10.1017/9781108667289

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Smith, Adrian A. and Scott, Dayna Nadine, "Law, Labour and Landscape in a Just Transition" (2022). *Articles & Book Chapters*. 3095.

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Law, Labour and Landscape in a Just Transition

ADRIAN A. SMITH AND DAYNA NADINE SCOTT

Harvesting the Sun is a profitable cash crop, with no labour and no maintenance.¹

[L]andscape is both a work and an erasure of work. It is therefore a social relation of labour, even as it is something that is laboured over.²

9.1 Introduction

As interest in decarbonising the global economy deepens, there is growing scrutiny of the justice and equity considerations embedded within attempts to overcome fossil fuel dependence.³ Given widespread recognition of the glaring injustices that flow from the disproportionate impacts on marginalised peoples of climate change itself, the calls for decarbonisation carry with them mounting pressure for an equitable distribution of any resulting loss, displacement and privation.⁴

* Excellent research assistance provided by Osgoode Hall Law School juris doctorate students Christian Laidlaw, Rachel Zurov and Davis Tessema.

¹ Public testimony provided by R. and L. Cuthill on the Strathcona Energy Group solar development project in Kawartha Lakes, Ontario. (Hardcopy on file with authors).

² D. Mitchell, *The Lie of the Land: Migrant Workers and the California Landscape* (Minneapolis: University of Minnesota Press, 1996), p. 6.

³ See for example R. Heffron and D. McCauley, 'What is the "just transition"?' (2018) 88 *Geoforum* 74; K. Jenkins, B. Sovacool and D. McCauley, 'Humanizing sociotechnical transitions through energy justice: An ethical framework for global transformative change' (2018) 117 *Energy Policy* 66; M. Jefferson, 'Renewable and low carbon technologies policy' 123 (2018) *Energy Policy* 367; N. Jones, 'A scarcity of rare metals is hindering green technologies', *Yale Environment* 360, 18 November 2013.

⁴ See for example C. Church and A. Crawford, 'Green conflict minerals: The fuels of conflict in the transition to a low-carbon economy' (2018) *International Institute for Sustainable Development* 1, 2–3, 37, 39; United Nations Department of Economic and Social Affairs, *United Nations Sustainable Development Knowledge Platform Goal 16*, <https://sdgs.un.org/goals/goal16>; B. Sen, *Solar Energy Is an Equity Issue*, Institute for Policy Studies, 27 April 2017.

Unsurprisingly then, in Canada as elsewhere, justice concerns have engulfed the rollout and scaling up of renewable energy generation, especially in relation to wind turbine and solar panel technologies.⁵ The contestation often centres around competing demands on, and visions for the future of, agricultural landscapes.

In this chapter, we explore these questions by examining justifications offered for and against the siting of ground-mounted solar photovoltaic technologies on agricultural lands in southern Ontario. The aim is to critically situate these debates in relation to the idea of a ‘just transition’.⁶ Invoked within local, national and international policy and regulatory spheres, ‘just transition’ promises to attend to the distributional effects and disproportionate impacts of decarbonisation on workers and communities.⁷ A just transition entails a ‘host of strategies to transition whole communities to build thriving economies that provide dignified, productive and ecologically sustainable livelihoods; democratic governance and ecological resilience’.⁸

Arguments both for and against solar energy developments, we contend, hinge on specific and narrow understandings of work and labour in the making and maintenance of landscapes. The ‘culture of progress, productivity, and political economy’ that supports these narrow understandings remains, according to Povinelli, ‘unassailable’.⁹ Not

⁵ K. Shaw, S. D. Hill, A. D. Boyd, L. Monk, J. Reid and E. F. Einsiedel, ‘Conflicted or constructive? Exploring community responses to new energy developments in Canada’ (2015) 8 *Energy Research and Social Science* 41; B. K. Sovacool, ‘Exploring and contextualizing public opposition to renewable electricity in the United States’ (2009) 1 *Sustainability* 702; P. Kuitenbrouwer, ‘Solar flares: How renewable energy is raising hackles in rural Ontario – and across Canada’, *Financial Post*, 7 August 2015.

⁶ L. Temper, M. Walter, I. Rodriguez, A. Kothari and E. Turhan, ‘A perspective on radical transformations to sustainability: Resistances, movements and alternatives’ (2018) 13 *Sustainability Science* 747; United Nations Research Institute for Social Development, *Mapping Just Transition(s) to a Low-Carbon World* (Geneva: UNRISD, 2018).

⁷ Initially developed within the international labour movement, the idea of a just transition turns on a principled claim about the need to equitably distribute the costs of shifting away from fossil fuel reliance. Others have pointed out, however, that it is not only workers who have made their livelihoods in the fossil fuel industry that have a ‘justice’ claim in relation to climate change: We must also consider what we owe to those who can least afford to pay for more higher energy costs, and to those who have and will continue to suffer the most from climate change’s impacts. D. Saxe, ‘10 principles for the transition to a green economy’, *Corporate Knights*, 17 September 2019.

⁸ Climate Justice Alliance, *Just Transition: A Framework for Change*, <https://climatejusticealliance.org/just-transition/>.

⁹ E. Povinelli, ‘Do rocks listen? The cultural politics of apprehending Australian aboriginal labor’ (1995) 97(3) *American Anthropologist* 505, 505.

surprisingly, 'the cultural frameworks subtending political economy . . . were long ago transmuted into neutral, natural and objective fact', in no small part through the work of international law.¹⁰ The body of modern international law, as Chimni notes, takes 'the alienation of human beings from nature' as a given.¹¹ A premise of this chapter is that law continues to structure the exclusion of labour in renewable energy landscapes, just as it has long structured that exclusion in extractivist landscapes. Thus, even as the modalities of energy generation change, the relationship between labour and land – the imagination of landscapes – is still shaped through the same stubborn and recalcitrant legal relations. Drawing on Anghie's formative text *Imperialism, Sovereignty and the Making of International Law*,¹² we contend that the force and mark of international law on the landscape has not been one of linear, humanitarian progress, but one borne of histories of enslavement and captivity or unfreedom and the ongoing dispossession and denial of Indigenous lifeways.

Fervent opposition has been mounted against solar farms based on arable land and food justice concerns.¹³ While a range of conceptual approaches have been developed to frame this opposition, the generalised claim of a 'right to landscape' is perhaps the most prevalent, if not the most compelling.¹⁴ But the landscapes imagined in interventions against solar projects are remarkably void of workers. Similarly, enthusiasm for renewable energy is sometimes based on, as articulated in the epigraph, the perceived absence of a need for work and labour in the new, green economy. In the imagery of a post-carbon economy, people in communities are often imagined as freed from the demands of work, at least as

¹⁰ Ibid.

¹¹ B. S. Chimni, 'The past, present and future of international law: A critical third world approach' (2007) 8(2) *Melbourne Journal of International Law* 499.

¹² A. Anghie, *Imperialism, Sovereignty and the Making of International Law* (Cambridge: Cambridge University Press, 2004).

¹³ R. Wheeler, 'Reconciling windfarms with rural place identity: Exploring residents' attitudes to existing sites' (2017) 57:1 *Sociologia Ruralis* 110.

¹⁴ We conclude that this resistance, contrary to typical framings which dismiss it as NIMBYism, has resonances with broader claims about environmental justice and may signal larger structural shifts. We discuss this in D. Scott and A. Smith, 'Sacrifice zones in the green energy economy: Toward an environmental justice framework' (2017) 62 *McGill Law Journal* 861. In addition to the landscape construct, which is deployed in a range of ways, geographer Stewart Fast identifies other key interdisciplinary concepts used to examine social responses to renewables, including place, distance decay and territory. See S. Fast, 'Social acceptance of renewable energy: Trends, concepts, and geographies' (2013) 7:12 *Geography Compass* 853.

they manifest for many workers today in the form of long hours at little pay, requiring crushing fossil-fuelled commutes.

Even the most progressive accounts of the transition, those organised around the idea of a Green New Deal, envision a future in which people work less and have more time for recreation. Where labour *is* a part of the vision, it usually entails creating millions of good, high-wage jobs through a green jobs plan. While we broadly embrace the politics of the Green New Deal, we believe it is a failure of our collective imaginations to envision the future of work and labour only in terms of ‘jobs’ and the capitalist wage economy, rather than as a set of practices that can connect people to land and landscapes.

Situating the contestation within critical theorising on landscape, we mobilise geographer Mitchell’s labour theory of landscape as an articulation of the role of work and labour in shaping landscape, asking not ‘Whose Landscape?’ but ‘Landscape for Whom?’¹⁵ Like Carton, we turn to Mitchell’s work to critically appreciate the socio-spatial dimensions of landscape in capitalist relations.¹⁶ This includes recognition of the ongoing contribution of workers, migrant (and other) farm workers to the making and maintenance of agricultural landscapes, and to a range of other workers in the social lifecycle of renewable energy developments.

Further, and more profoundly, we find that the right to landscape claims also serve to maintain and validate narrow, conventional visions of who can hold political and legal authority over the landscape. For ‘just transition’ to intensify the forcefulness of its intervention, it must take on board trenchant critiques related to work, labour and authority within fossil capitalism and the settler colonial relation. Here again, we can see law’s influence ‘underpinning and ordering these relations, both domestically and internationally’, in Pahuja’s words.¹⁷ This legal foundation both reflects and simultaneously produces the same shallow notions of who can hold political and legal authority. In the end, we find that the erasure of workers’ material contributions underwrites the claims of settler authority over agricultural lands and life found within both the opposition to and support for renewable energy developments.

¹⁵ D. Mitchell, *Lie of the Land*, p. 6.

¹⁶ W. Carton, ‘Dancing to the rhythms of the fossil fuel landscape: Landscape inertia and the temporal limits to market-based climate policy’ (2017) 49:1 *Antipode* 43.

¹⁷ R. Buchanan and S. Pahuja, ‘Legal imperialism: Empire’s invisible hand?’, in P. Pasavant and J. Dean (eds.), *Empire’s New Clothes: Reading Hardt and Negri* (Abingdon: Routledge, 2003).

9.2 Harvesting the Sun and the Competition for Agricultural Lands

The global energy renaissance is said to be well underway with solar, wind and hydro now advanced as critical renewable sources through which contemporary capitalist economies can pursue decarbonisation. The story in southern Ontario is generally reflective of the global trend.¹⁸ The province is held out as a major node within an emergent ‘green’ national economy.¹⁹ However, the need for large surface areas for ground-mounted solar panel technologies has meant that the push for renewable energy development runs up against competing land uses, with agriculture being the prevailing prior use. With Ontario’s estimated need for lands repurposed for renewables said to range between 0.5 and 8.5 per cent,²⁰ rural areas are gaining attention as a site of economic and political struggle. These land use pressures have pitted the production of agro-food against the generation of renewable energy.²¹

The process of ‘harvesting the sun’ is indispensable to both horticultural science and solar energy generation.²² It follows from human reliance upon photosynthesis which, in transforming energy from

¹⁸ C. Croonenbroeck and J. Lowitzsch, ‘From fossil to renewable energy sources’, in J. Lowitzsch (eds.), *Energy Transition* (London: Palgrave Macmillan, 2019).

¹⁹ R. Blackwell, ‘Solar power surging to forefront of Canadian energy’, *The Globe and Mail*, 26 July 2014; R. Blackwell, ‘Going green: Does Ontario’s energy shift have the power to sustain itself?’, *The Globe and Mail*, 10 July 2015.

²⁰ K. Calvert, ‘Measuring and modelling the land-use intensity and land requirements of utility-scale photovoltaic systems in the Canadian province of Ontario’ (2018) 62:2 *The Canadian Geographer* 188. The estimate is contingent on several factors, including a generous rollout of rooftop solar panels.

²¹ This has produced pressure to ensure policy and regulatory regimes address the encroachment of solar energy production on arable land. In other contexts, though not well articulated in Canada, proposals aim at co-development of land units, what some have taken to calling agrivoltaics, for both solar energy generation as well as for agri-food usage. See for example C. Dupraz, H. Marrou, G. Talbot, L. Dufour, A. Nogier and Y. Ferard, ‘Combining solar photovoltaic panels and food crops for optimising land use: Towards new agrivoltaic schemes’ (2011) 36:10 *Renewable Energy* 2725; H. Dinesh and J. M. Pearce, ‘The potential of agrivoltaic systems’ (2016) 54 *Renewable and Sustainable Energy Reviews* 299. Others call for consideration of the conversion of degraded land or ‘arable land currently used for crops with known health hazards’, namely tobacco. R. Krishnan and J. Pearce, ‘Economic impact of substituting solar photovoltaic electric production for tobacco farming’ (2018) 72 *Land Use Policy* 503.

²² As Darrin Qualman reminds us, the sun is essential to fossil energy as well – a type of energy that is the result of millions of years of solar capture. Tidal, geothermal, coal, oil and gas all ultimately derive their energy from the sun, with nuclear energy being the only source that does not derive its energy from the sun. D. Qualman, *Civilization Critical: Energy, Food, Nature, and the Future* (Halifax: Fernwood, 2019)

sunlight into chemical energy, is essential to the cultivation of crops for food.²³ The process also propels the production of renewable energy as solar voltaic cells convert the sun's energy for large-scale generation of electricity. In their current incarnations, agro-food cultivation and solar electricity generation both depend on the availability of wide expanses of rural land.²⁴ As land-indebted endeavours of an analogous kind, they are seemingly placed in an uneasy relationship, which has culminated in charged local disputes. While the siting of large-scale, non-renewable and renewable energy developments has spawned considerable controversy in a variety of contexts in recent decades,²⁵ the challenge has been especially acute when involving the conversion of 'agricultural' land to 'non-agricultural' purposes.²⁶

Over a relatively short span of time, roughly from 2006 to 2014, Ontario saw the introduction of about seventy large ground-level solar projects covering vast tracts of land.²⁷ Proponents raved about the uncontroversial nature of solar generation, but in fact, plenty of controversy ensued.²⁸ Broadly stated, we identify two types of interventions typically made in conflicts over the use of agricultural lands for large-scale solar energy generation. The first are campaigns *in support* of repurposing agricultural lands for solar energy. A version of this intervention posits a 'labour-and-maintenance free' justification for pursuing renewable energy projects. This was pitched specifically at the perceived

²³ E. Hewett, I. Warrington and C. H. Hale, 'Harvesting the Sun: A profile of world horticulture' (2012) 14 *Scripta Horticultura*. While there are differences between horticulture and agriculture, namely that the former deals with plant cultivation and the latter with plant cultivation and animal husbandry, we have opted not to delineate between the two.

²⁴ P. McMichael, *The Global Restructuring of Agro-Food Systems* (Ithaca, NY: Cornell University Press, 1994).

²⁵ G. Walker, 'Energy, land use and renewables: A changing agenda' (1995) 12:1 *Land Use Policy* 3.

²⁶ The pressures of agricultural land conversion are indicative of shifts and trends in urban development in recent decades in Canada and elsewhere. The incentives for repurposing agricultural land for non-agricultural use are persistent and seemingly deepening. See for example Report of the Standing Senate Committee on Agriculture and Forestry, *A Growing Concern: How to Keep Farmland in the Hands of Canadian Farmers*, Canada, March 2018; E. N. Elkind, 'Harvesting clean energy: How California can deploy large-scale renewable energy projects on appropriate farmland', *Center for Law, Energy and the Environment*, October 2011.

²⁷ Blackwell, 'Solar power surging to forefront of Canadian energy'.

²⁸ *Ibid.*

interests of farmers.²⁹ Through the on-farm siting of ground-mounted solar panels, farmers derive economic benefits in the form of income generation and substitution as well as electricity cost reductions.³⁰ In Ontario, this was dependent on a provincial feed-in tariff regime that provided above-market rates for renewable electricity fed back to the grid.³¹ Farmers turned to the hosting of solar energy as a supplement or substitute to income derived from conventional agricultural activities.³² For some agro-food growers, then, solar can be seen as one of a number of available adaption or 'survival strategies', the most significant of which were previously provided through 'labour supply supports', namely the provisioning of migrant farm workers.³³

The second set of interventions are campaigns mounted by local residents *against* proposed solar panel installations based on arable land and food justice concerns. This opposition is often grounded in a generalised 'right to landscape' claim.³⁴

Residents mobilising 'right to landscape' claims are typically defending a set of aesthetic values and articulating a connection to, and an affection

²⁹ A. G. Tech, 'Exploring the Potential of Solar Power Technology in Canadian Farms', *Dairy and A. G. Tech NOW* (10 November 2017).

³⁰ The specific details of the agreements signed by growers with renewable energy companies are not widely known in the Canadian context. For a look outside of Canada, see for example B. Frantál and A. Prousek, 'It's not right, but we do it. Exploring why and how Czech farmers become renewable energy producers' (2016) 87 *Biomass and Bioenergy* 26.

³¹ The Green Energy Act, 2009, SO 2009, c 12, ss 5, 11. While the Large Renewable Procurement program was cancelled in 2016, the FIT and microFIT programs remain in place. See Ontario Ministry of Energy, 'Ontario suspends large renewable energy procurement', Government of Ontario Newsroom, 27 September 2016. See also Independent Electricity Service Operator, *Feed-in Tariff Program*, 19 December 2016.

³² Ontario Federation of Agriculture, *Small Solar*, 28 August 2019.

³³ Our argument is not necessarily one of a direct substitution of renewable energy generation income for labour supply supports through temporary labour migration. But there is a sense that there are limited options on offer for agro-food growers in contemporary farming. Nor, in this latter respect, is it that we seek to provide cover for growers' reliance on the highly troubling practices and relations of temporary migration. M. Burt and R. Meyer-Robinson, *Sowing the Seeds of Growth: Temporary Foreign Workers in Agriculture* (Ottawa: The Conference Board of Canada, 2016). In the face of a supposedly declining agricultural labouring stock, temporary labour migration produces a necessary and disposable labour force. Added to this are ongoing concerns about poor or ineffectual farm income, loan and other supports.

³⁴ Residents also mounted campaigns against wind turbines based on suspected health effects. Scott and Smith, 'Sacrifice zones in the green energy economy', 861.

for, the landscape, often seen as ‘theirs by right’.³⁵ Certain academic accounts mirror these arguments. Jefferson, writing in the context of contemporary Britain, bemoans the ‘visually intrusive’ nature of renewable energy structures which ‘look out of place and undermine the beauty of our rural landscapes’, displacing farming and ‘hijack[ing] a rural environment’.³⁶ His concern is that ‘rural landscapes [are] being swamped and visually destroyed’.³⁷ Calling for ‘stricter’ constraints on the siting of renewable energy developments, Jefferson argues that ‘[a] sustainable future requires us to preserve scenic values and protect . . . rural landscapes’.³⁸

When these claims were made in southwestern Ontario, they were often characterised as not-in-my-backyard syndrome, or NIMBYism, and were discredited, downplayed or disregarded, especially by

³⁵ D. Mitchell, *Lie of the Land*, p. 264. It is possible to locate these articulations within transnational mobilisations in support of the emerging idea of a ‘right to landscape’. Various European Conventions over the past two decades have demonstrated growing concern for landscape degradation and a desire for the safeguard of landscapes. In these accounts, landscape pertains to ‘the expression of the relationship between people and environment’ with a recognition of ‘landscape [as] a common good’ and ‘the right to the landscape [as] a human necessity’. But, as mentioned, there has been very little work on this kind of doctrinal approach to the ‘right to landscape’ situated within wider concerns about ‘just transition’ and global environmental or climate justice. European Landscape Convention, 20 October 2000, CETS 176. See also S. Egoz, J. Makhzoumi and G. Pungetti (eds.), *The Right to Landscape: Contesting Landscape and Human Rights* (Farnham: Ashgate, 2011).

³⁶ M. Jefferson, ‘Safeguarding rural landscapes in the new era of energy transition to a low carbon future’ (2018) 37 *Energy Research and Social Science* 191; D. Apostol, J. Palmer, M. Pasqualetti, R. Smardon and R. Sullivan, *The Renewable Energy Landscape: Preserving Scenic Values in our Sustainable Future* (London: Routledge, 2016); M. Pasqualetti, ‘Reading the changing energy landscape’, in S. Stemke and A. Dobbelsteen (eds.), *Sustainable Energy Landscapes* (Boca Raton: CRC Press, 2012), p. 11.

³⁷ ‘They cannot, of course, be banned altogether. But their positioning has to be carefully considered and severely rationed, taking into account visual intrusion and optimal location for their efficacy’: *Ibid.*, 193.

³⁸ Jefferson also objects to the use of the term ‘farm’ in relation to wind and solar projects. He contends: ‘Onshore wind turbines are more appropriately termed “wind energy developments” (as are offshore ones); solar panels stretching across agricultural land better termed “solar mirrors” or “ground-mounted solar PV”. Seeking to hijack a rural environment by use of the word “farm” should be opposed. Visual or acoustic intrusions on the rural landscape should not be disguised by using a term which suggests merging with the landscape – the reality is that this rarely occurs.’ *Ibid.*, 192. Jefferson, in lamenting the prominence of ‘the cultural landscape’ in academic accounts of renewable energy generation, provides something of a contrasting perspective to our own.

renewable energy enthusiasts.³⁹ Elsewhere, we have argued that critical scholars should, while not necessarily validating this kind of opposition, interrogate the way in which these claims are received, with the aim of developing a robust analysis of the distribution of benefits and burdens associated with particular renewable energy projects.⁴⁰ Our approach is based on the belief that the global economy of renewable energy has its own distributional effects or ‘sacrifice zones’. As Shaw and collaborators contend, ‘resistance is heightened when communities are asked to relinquish certain landscape values or uses – to make sacrifices – in the absence of an institutional infrastructure that they are confident will protect their interests and values over the long term’.⁴¹ We agree, and believe the contention can be broadened and extended. Here, with a view to ‘just transition’ and in the context of growing interest in a Green New Deal, we consider the place of work and labour in the justifications for and against renewables, arguing that the erasure of labour as constitutive of the landscape is undermining our collective ability to imagine new relationalities to and with landscapes. Further, we assert that the right to landscape claim works not just in an attempt to ‘preserve’ a given landscape, but also in many cases as an assertion of authority over it.⁴²

Our discussion turns to address the justifications offered both for and against renewables, demonstrating how each tends towards the erasure of work and labour on the solar landscape.

9.3 Labour Erasure in Solar Landscapes

As described above, arguments in favour of solar projects on farmland often invoke the idea that solar energy is a passive and profitable ‘cash

³⁹ R. Ferguson and L. Ferenc, ‘McGuinty vows to stop wind-farm NIMBYs’, *Toronto Star*, 11 February 2009.

⁴⁰ Our aim is to attend to those effects as they emerge, with a focus on social dynamics. We posit that ‘labour’ is a crucial if under-explored dimension of these dynamics, and our aim is to consider how racialisation and gender function within class relations of settler capitalism.

⁴¹ Shaw et al, ‘*Conflicted or constructive?*’, 41, 42.

⁴² Whereas other interventions call for reform of land use and spatial planning regulation as a way of addressing oppositional claims and mitigating the land-use impacts of renewable energy projects, our interest is not in developing institutional infrastructure to solidify support for renewable energy projects. For a discussion on the limits of the prevailing renewable energy legal regime in Ontario, see D. McRobert, J. Tennent-Riddell and C. Walker, ‘Ontario’s Green Economy and Green Energy Act: Why a well-intentioned law is mired in controversy and opposed by rural communities’ (2016) 7 *Renewable Energy Law and Policy Review* 91.

crop' that can generate benefits for landowners without the need for inputs of labour or maintenance. While work and labour are often seen as 'unnecessary' to the generation of energy from renewables, as Altvater demonstrates, it is considerably more complicated than this.

[S]olar energy flows, which power all processes of life on earth (plants, animals and human beings), come in the form of solar radiation (light and heat) without the need for any energy input by living beings on earth. However, energy inputs are required for the transformation of solar radiation into useful energy for humankind. The role of agriculture is a telling example. Energy – i.e. the efforts of the farmer and his [sic] family and workers . . . – is invested to obtain a higher return from the energy contained in plants and livestock.⁴³

Thus, while the job-creation potential of solar energy is hotly contested, with interested parties spouting positions on all sides, it is clear that the investment of labour in generating electricity from solar energy occurs in a multitude of ways and under challenging conditions.⁴⁴ First, there is the manufacture of solar panels themselves and associated battery storage capabilities. This requires inputs of precious and rare Earth metals, such as cadmium, indium, gallium and silver, as well as selenium and tellurium among other metalloids, and incorporates fused quartz or silica, aluminium and copper.⁴⁵ The World Bank estimated that demand for some of the minerals required for solar panels – including copper, iron, lead, molybdenum, nickel and zinc – would increase by as much as 300 per cent over the next few decades if the international community endeavours to keep the average global temperature increase within

⁴³ E. Altvater, 'The social and natural environment of fossil capitalism' (2007) 43 *Socialist Register* 37.

⁴⁴ 'It's just not that labor-intensive', said Howard Axelrod, an engineer and economist quoted in *The New York Times* in 2011. The article also mentions that SolarWorld, a large producer of solar cells, was bragging to its investors that its labour expenses constituted less than 10 per cent of its costs. In other settings, those same companies tout the job-creation potential of their projects as they come under attack from more conventional energy producers. M. Wald, 'Solar power industry falls short of hopes in job creation', *The New York Times*, 25 October 2011.

⁴⁵ K. MacLeod and B. Gómez, 'Solar photovoltaic and energy storage in the electric grid' (2017) *Levin Sources* 1, 7; Church and Crawford, 'Green conflict minerals', pp. 2–3, 37, 39. Solar photovoltaic technology increases the need for energy storage units, both in the form of individual batteries for private use and on a large scale in electrical grids. This leads to demand for the minerals in lithium-ion batteries such as aluminium, cobalt, iron, lead, lithium, manganese, nickel and graphite. See Clean Energy Canada, *Mining for Clean Energy*, June 2017.

2 degrees Celsius.⁴⁶ Aluminium, copper and certain other materials can be obtained through scrap metal recycling,⁴⁷ but most others are obtained through mining.⁴⁸ The extraction of nickel, as an example, has been linked to violence and forced displacement in Guatemala.⁴⁹ Further, some rare Earths mines have been called ‘sites of exploitation’ due to incidents of child labour in the Global South.⁵⁰

Each of the recycling, mining and refining processes require labour and make demands on workers that can threaten their health and safety. In fact, significant occupational exposures to toxics are associated with the production of photovoltaic panels. Whether handling a hazardous substance like cadmium, subjecting quartz to high heat in a furnace, or carrying out a range of other tasks in the manufacturing process, workers face risks to their health and wellbeing in the production of solar panel technologies.⁵¹ There are also real concerns about the durability of renewable energy infrastructure and solar panel lifespans, which produce the need for labour to handle their eventual disposal. In fact, as is now becoming well-known, there are whole landscapes and many poor people’s livelihoods in the Global South devoted to the processing of technological wastes from the ‘green’ Global North.⁵²

As Malm argues, ‘labour is the praxis by which the physical organisation of humans remains intact’.⁵³ Where nature ‘formulates the most basic corporeal needs’ of humans – those things we generate energy for,

⁴⁶ D. L. P. Arrobas, K. L. Hund, M. S. McCormick, J. Ningthoujam and J. R. Drexhage, *The Growing Role of Minerals and Metals for a Low-Carbon Future* (Washington, DC: World Bank, 2017).

⁴⁷ MacLeod and Gómez note the challenge of mislabelling scrap recycling to avoid scrutiny about production conditions as well as the continuing need for mining even as recycling rates increase due to increased demand for key materials. Macleod and Gomez, ‘Solar photovoltaic and energy storage in the electric grid’, 9, 12.

⁴⁸ Temper et al., ‘A perspective on radical transformations to sustainability’, p. 747.

⁴⁹ A. Kassam, ‘Guatemalan women take on Canada’s mining giants over “horrible human rights abuses”’, *The Guardian*, 13 December 2017.

⁵⁰ Z. Sclinger, ‘Apple wants to try to “stop mining the Earth altogether” to make your iPhone’, *Quartz*, 20 April 2017.

⁵¹ S. Takeda, A. R. Keeley, S. Sakurai, S. Managi and C. B. Norris, ‘Are renewables as friendly to humans as to the environment? A social life cycle assessment of renewable electricity’ (2019) 11(5) *Sustainability* 1370.

⁵² K. Wang, J. Qian and L. Liu, ‘Understanding environmental pollutions of informal e-waste clustering in global south via multi-scalar regulatory frameworks: A case study of Guiyu Town, China’ (2020) 17 *International Journal of Environmental Research and Public Health* 2802.

⁵³ A. Malm, *The Progress of This Storm: Nature and Society in a Warming World* (London: Verso, 2018), p. 159.

for instance to quell hunger or shivering – the ‘general form for meeting them and staying alive is, of course, labour’.⁵⁴ In Marx’s conception, ‘all production is an appropriation of nature on the part of an individual within and through a specific form of society’.⁵⁵ The workers’ relation to nature is therefore ‘mediated through her relations to other humans’, as Malm puts it.⁵⁶ But the form of those relations is ‘nowhere carved in stone’.

An ‘essential legal relation’ that structures how humans labour in contemporary settler capitalism is that of private property.⁵⁷ If property is indeed essential in settler capitalist societies, it owes its importance to international law. It is useful here to appreciate the colonial basis of international law and state sovereignty. From the sixteenth century onwards, as per Anghie’s incisive intervention, the colonial encounter provides the genesis for the emergent legal order and its enforcement of the civilised–uncivilised dichotomy.⁵⁸ To this, we would add that at the centre of the colonial encounter is the ‘appropriation’ of worker, land and resources. Neocleous invites us to see that Marx’s primitive accumulation, understood as ‘the use of force and violence in separating people from a means of subsistence other than the wage’, is itself an indispensable and ongoing feature of international law.⁵⁹ A point of departure then relates to the role of law in disembodiment of labour and in alienating labour from land. In this way, as Neocleous remarks, ‘to think of international law as fundamental to the dispossession of peoples and to the accumulation of capital that lies at the heart of colonisation is to help us better grasp international law’s centrality to the global violence of capital’.⁶⁰

When applied to antagonisms over agricultural land use, as we argue below, it becomes apparent that enthusiasm for renewable energy is indebted to, not separate and apart from, prevailing modes of settler

⁵⁴ Ibid.

⁵⁵ K. Marx, *The Grundrisse* (New York: Harper and Row, 1971), pp. 485–98.

⁵⁶ Malm, *Progress of This Storm*, p. 160.

⁵⁷ A. Stone, ‘The place of law in the Marxian structure–superstructure archetype’ (1985) 19:1 *Law and Society Review* 39. See also L. Godden, ‘Grounding law as cultural memory: A proper account of property and native title in Australian law’ (2003) 19 *The Australian Feminist Law Journal* 61.

⁵⁸ Anghie, *Imperialism, Sovereignty and the Making of International Law*.

⁵⁹ M. Neocleous, ‘International law as primitive accumulation; or, the secret of systematic colonization’ (2012) 23 *European Journal of International Law* 941.

⁶⁰ Ibid.

capitalism. In Section 9.4, we detail the way that notions of white propertied citizenship further structure the erasure of labour in the solar landscape. Thus, it is not only in the discourse of proponents of solar energy projects in southwestern Ontario that we find an erasure of labour on the landscape, it is also in the discourse of those opposed to renewables on the agricultural landscape. In Section 9.4, we detail how the 'right to landscape' claims differentially obfuscate the labour and contributions of migrant farm workers.

9.4 Labour Makes Landscapes

Consideration of the social justice dimensions of landscape is well established within critical geography. Rejecting the understanding of landscape as a 'naively given section of reality', critical geographers have focused on landscape's encoding of social relations, practices and histories 'driven by real people and their efforts'.⁶¹ In this way, 'landscape is infused with layers of historical and social meaning that help to comprise its distinction and associations'.⁶² But, as Mitchell and Breitbach ask, '[w]hich social relations make landscape's forms?'⁶³

Here, we identify how 'right to landscape' claims tend to obfuscate agro-food work and labour practices as well as relations. Mitchell's labour theory of landscape directs us to consider the role of work and labour in shaping or producing landscape.⁶⁴ Extending beyond mere consideration of 'alignments of technology and social practice', the approach as we apply it treats work and labour as, to borrow Amin's words, 'inseparable from the scientific and technological knowledge proper to the period and from the natural (ecological) circumstances in which it takes place'.⁶⁵ Through this lens, we see how 'labour, class and production, and with

⁶¹ D. Mitchell and C. Breitbach, *Cultural Landscape: A Critical Introduction* (New Jersey: Wiley-Blackwell, 2013), p. 211.

⁶² *Ibid.*, p. 210.

⁶³ *Ibid.*, p. 211.

⁶⁴ D. Mitchell, 'New axioms for reading the landscape: paying attention to political economy and social justice', in J. Wescoat Jr. and D. Johnston (eds.), *Political Economies of Landscape Change* (Dordrecht: Springer, 2008), p. 20; A. Gough and D. Valisena, 'From Factories in the Field to activist scholar: Don Mitchell reflects on intellectual practice and the state of the university today' (2018) 29 *Capitalism Nature Socialism* 51; D. Mitchell, 'A relational approach to landscape and urbanism: The view from an exclusive suburb' (2017) 42 *Landscape Research* 277.

⁶⁵ S. Amin, *Three Essays on Marx's Value Theory* (New York: Monthly Review Press, 2013), p. 12.

this ‘exploitation and struggle’, continually make and remake landscapes.⁶⁶ Claims surrounding the loss of landscape value – while they may purport to be simply about aesthetics – as Mitchell has demonstrated in the agricultural fields of twentieth-century California, actually function in profoundly exclusionary ways.⁶⁷ Further, in line with how international legal norms have served to disembodify labour from land, law separates people from ‘the environment’ and economy from ecology. The starkly disembodied claims of those residents appealing to a ‘right to landscape’ typically invoke a romanticised version of harvesting and agricultural life that produces labour in racialised and gendered terms.

In southwestern Ontario, a core dimension of the residents’ landscape claims turned on the perceived aesthetic impact of renewable energy projects. In the words of one resident,

[Solar farms are] hideous. [The solar companies] are not doing anything to buffer them visually. And people are asking, ‘what are you doing to our beautiful county?’ No, we’re not going to stand for this. And to a lesser extent there’s that same feeling with regard to industrial wind turbines. They’re a blight on the landscape – that’s how people feel.⁶⁸

As the resident continued,

It’s that people down here – what we see with respect to our landscape – find the solar installations really ugly and intrusive. Like I said, they go in, and they just totally scarify a gigantic piece of land and they dig up all the topsoil and they put down all this gravel and then they throw down these black panels and they all have a giant fence around them with razor wire on the top. We have beautiful countryside down here ... [so] there’s resistance to that.⁶⁹

But what does the invocation of a particular aesthetic attachment do? As Lee Godden suggests, ‘[t]he vision of property as empty or idealised “space” resonates with the ideal of modern western law’.⁷⁰ For Godden, referencing settler colonialism of Australia,

... law reads a particular cultural record into the Australian continent through its distributive function: its power to allocate, to exclude, to include within the physical landscape, to create boundaries and divisions

⁶⁶ Mitchell and Breitbach, *Cultural Landscape*, p. 248.

⁶⁷ Mitchell, *Lie of the Land*, p. 28.

⁶⁸ Scott and Smith, ‘Sacrifice zones in the green energy economy’, 37.

⁶⁹ *Ibid.*, 38.

⁷⁰ Godden, ‘Grounding law as cultural memory’, 67.

and places of belonging . . . If law, rather than abstract right, 'is a dogmatic reconstruction of the material, if it is emblematic in taking hold of and in instituting life', then what it has instituted and largely continues to institute is the 'world that is ours'.⁷¹

Here, we argue that it emboldens an entitlement grounded in whiteness and propertied citizenship. It invokes the mythology of the 'family farm', deeply ingrained into a sense of national belonging in Canada as a white society. But in contemporary southwestern Ontario, where farm work is increasingly undertaken by workers from the Caribbean, Mexico, the Philippines and elsewhere who enter Canada under the temporary labour migration regime, these claims incorporate the differential inclusion of racialised labouring bodies on the land.⁷² In this specific part of Ontario, in fact, land use conflicts involving racialised migrant farmworkers have exposed residents' willingness to employ 'well-worn, racist colonial tropes' to secure their propertied interests.⁷³ In one recent example, in order to block a housing development for migrant farmworkers situated close to the farms, these residents mobilised to ensure that their 'lovely little hamlet' remained 'small and peaceful'.⁷⁴ In other words, residents seem to yearn for a right to a landscape that all but marginalises or excludes racialised bodies.⁷⁵

This is notwithstanding the centrality of migrant farmworkers to the continued functioning of agricultural production in the current model of temporary migration. The central importance of migrant labour to the harvesting of crops is widely declared by growers throughout Ontario's agro-food sector. 'Without international farm workers', according to the

⁷¹ *Ibid.*, 80.

⁷² Migrant labour is a categorical distinction deployed to mediate claims to scarce resources and to produce the very idea of scarcity.

⁷³ A. Smith, 'The bunk house rules: A materialist approach to legal consciousness in the context of migrant workers' housing in Ontario' (2015) 52 *Osgoode Hall Law Journal* 863, 890.

⁷⁴ *Ibid.*, 891.

⁷⁵ Drawing on interesting articulations in the emerging interdisciplinary literature on the notion of 'foodscapes', we highlight here the socio-spatial manifestations of health and wellbeing that engage the 'wider relations between people and their environments that resonate in the cultures and practices surrounding food'. That is, as critiques foregrounding Indigenous food sovereignty have highlighted, we must be careful not to treat food just as a 'resource for sustenance (and social reproduction and individual expression) as many might understand it in western contexts dominated by cultures of whiteness'. Specifically, we must always keep in mind the 'interweaving of people, place and well-being'. See R. Panelli and G. Tupa, 'Beyond foodscapes: Considering geographies of Indigenous well-being' (2009) 15 *Health and Place* 455.

Canadian Horticultural Council, 'there would be no Canadian fruit and vegetable production'.⁷⁶ It is reasonable to expect that the deployment of migrant labour in Ontario agro-food cultivation will continue into the foreseeable future, as studies reliably identify a significant shortage in non-migrant agricultural labour.⁷⁷

Just as Mitchell found in California, the 'right to landscape' claims in Ontario invite the erasure of the material contributions of migrant farmworkers. What we see then is that temporary labour migration is crucial to the work of making agricultural landscapes, but landscape claims fail to work for those categorised as migrant labour. Migrant labour remains captive or unfree labour in the anti-renewable energy imaginary. A right to landscape conveys notions of belonging authorised by whiteness, private property and national citizenship; not just to the detriment of the racialised labouring bodies so central to agro-food production, but in fact as a way of reproducing the racialised violence of capitalist accumulation.

Ultimately, 'spatially unjust landscape processes' are bolstered through naturalisation of landscape value.⁷⁸ In absencing agricultural labouring bodies, their socio-spatial practices, and their relations and struggles, landscape claims shift focus away from the inequity of land use in line with the extractivist devaluation of human labour that is inherent in the transnational legal regimes of temporary labour migration. These claims seemingly appropriate labour power all the while enforcing a racialised logic of domination.⁷⁹ In this respect, as Mitchell astutely puts it, 'landscape is both a work and an erasure of work. It is therefore a social relation of labour, even as it is something that is laboured over'.⁸⁰

⁷⁶ Canadian Horticultural Council, *Heartbeat: A Celebration of International Farm Workers*, March 2019, www.hortcouncil.ca/en/heartbeat/; Greenhouse Canada, 'Documentary celebrates migrant workers in Canada', *Greenhouse Canada*, 28 May 2019: "It's only with the help of international farm workers that Canadian agriculture stands a chance", says the Canadian Horticultural Council.

⁷⁷ But for general critiques, see I. Angus and S. Butler, *Too Many People? Population, Immigration, and the Environmental Crisis* (Chicago: Haymarket, 2011); J. Hultgren, *Border Walls Gone Green: Nature and Anti-Immigrant Politics in America* (Minneapolis, MN: University of Minnesota Press, 2015).

⁷⁸ Setten and Brown reference the need for 'spatial sensitivity' in evaluating landscape claims. G. Setten and K. M. Brown, 'Landscape and Social Justice', in P. Howard, I. Thompson, E. Waterton and M. Atha (eds.), *The Routledge Companion to Landscape Studies* (New York: Routledge, 2013), pp. 243, 245, 248.

⁷⁹ Mitchell, *Lie of the Land*, p. 28.

⁸⁰ *Ibid.*, p. 6. We begin to see how, as Herod put it in a slight reframing of Marx, 'workers make their own geographies but not under the conditions of their own choosing'. A.

Finally, and further, articulated affections for agricultural landscapes not only lack an accounting of industrial agriculture's massive ecological impacts, including the clearing of forests and poisoning of waters, but also of the social structures of private property and enclosure emergent within settler colonial dispossession. Here, though space precludes us from pursuing the idea, we encourage a reckoning with the full complexity of agriculture as a mode of settler dispossession anchored around its erasure of field-labouring bodies, from contemporary migrant workers to indentured and enslaved workers who produced the value in colonial commodities.

9.5 Landscape, Authority and Settler Presence

In this section, we link concerns about the use of arable land in solar energy projects with the hidden labour relations of renewable development, situated within fossil capitalism in contemporary settler colonial Canada. In addition to erasing work and labour, 'right to landscape' claims also tend to obfuscate social relations in ways related to the imperatives of what Veracini terms the 'the settler colonial present'.⁸¹ The push for renewables might also be seen as reflective of settler demands and priorities that ultimately result in the continuing displacement and dispossession of Indigenous communities from lands and livelihoods.⁸² As opponents of solar projects mobilise attachments to rural landscapes, we see expression of particular conceptions of agricultural land use forged on fossil capitalism, and settler colonial notions of belonging and authority. In this respect, the labour-free notion of harvesting the sun also relies upon a claim to legitimate authority in the settler colonial present.⁸³

In a certain respect, while we are not unsympathetic to the sense of loss expressed by certain rural residents, the contextualisation of the claims within settler colonial relations should produce a different stance from

Herod, 'Geography of Labour', in *Oxford Bibliographies* (Oxford: Oxford University Press, 2014).

⁸¹ L. Veracini, *The Settler Colonial Present* (London: Palgrave Macmillan, 2015).

⁸² We have argued that reducing greenhouse gas emissions is now a critical settler-state imperative producing a 'voracious appetite for resources and land' that is inherent not only in fossil extractivism, but in the green energy economy as well. Scott and Smith, 'Sacrifice zones in the green energy economy'.

⁸³ A. Roy, 'Paradigms of propertied citizenship. Transnational techniques of analysis' (2003) 38 *Urban Affairs Review* 463.

critical environmental justice scholars. It is clear that the pressing settler-colonial imperative of erasing and denying Indigenous jurisdiction continues to play a major role in structuring prevailing patterns of land use, access and control in a variety of contexts. Examples from across Canada in recent years illustrate the way in which Indigenous claims to land and livelihood – such as those mobilised by the Treaty 8 Nations opposed to a massive new hydroelectric dam proposed for Alberta known as the ‘Site C’ dam, or those of the Labrador Land Defenders opposed to the Muskrat Falls dam on their territories – are systematically ignored. Both projects were billed as ‘clean’ energy initiatives and aggressively pursued by settler governments over the clear objections of Indigenous peoples’ collective claims for the preservation of a landscape that sustains their people. These decisions effect not merely an undermining of an ecology upon which life is lived, but of the working relations required for living. Prevailing patterns of land use, access and control, therefore, constitute both the means and the ends of settler law – as the mechanism by which the fragile power is perpetuated, but also the end-goals of domination over nature and the ‘other’.

Settler colonialism has meant that Indigenous peoples are dispossessed ‘based partly on the belief that they had not sufficiently extracted themselves from or productively engaged their environment’.⁸⁴ As Povinelli explains, colonial legal theorists believed that Indigenous peoples

did not own the land through which they moved because nothing had been added and because the human subject who could not ‘add to’ and ‘transform’ the land had yet to be formed; the land remained empty (*terra nullius*) of people, or more precisely, ‘unoccupied’ (as against *occupation*) by fully human subjects and the civil nations they were able to create.⁸⁵

And while some colonial legal theorists such as de Vitoria and Grotius are said to have argued against these conclusions to a certain extent, they still did so ‘within a theoretical framework ... built upon western concepts of what happens when humans act in the natural world’.⁸⁶ Even today, as Povinelli astutely notes, we often rely on ‘Western notions of human intentionality, subjectivity, and production embedded in the very legal discourses [we] seek to oppose’.⁸⁷ It is perhaps unsurprising,

⁸⁴ Povinelli, ‘Do rocks listen?’, 506.

⁸⁵ *Ibid.*, 507.

⁸⁶ *Ibid.*

⁸⁷ *Ibid.*

then, that we see these tensions rising to the surface in the debates over renewable energy and the just transition.

Returning to the central example of settler claims of a ‘right to landscape’ in southwestern Ontario, we can see that they constitute an undermining of a range of livelihoods of Indigenous peoples and communities alongside the erasure of the exertions of migrant farm workers, themselves displaced from lands, livelihoods and connections to landscapes elsewhere.⁸⁸ Indigenous peoples and migrant workers alike are alienated from dominant conceptions of community and culture and, ultimately, belonging; they are, in Mitchell’s terms, ‘read out’ of the landscape. Not only are racialised bodies and the efforts of migrant workers anomalous within the dominant visions of rural space and futurities, but Indigenous sovereignties are as well. The settler imperative to displace and dispossess Indigenous peoples from lands and livelihoods produces the ‘big’ lie of the land upon which all other lies are carried out.⁸⁹

9.6 Fossil Capitalism’s Enduring Energy Landscapes

There is, of course, a rich and lengthy history of contestations over land use throughout the sordid saga of global capitalist development. The large-scale forces of displacement and dispossession that were set in motion several centuries ago and cleared the way for capitalist accumulation on a global scale persist in contemporary affairs.⁹⁰ These persistent forces remain necessary to the ‘transformation of natural riches into economic wealth’ and, as demonstrated in agricultural land use disputes, support the continuation of fossil capitalism.⁹¹ Fossil energy

⁸⁸ Indigenous children forced into residential schools were also forced to labour without wages on nearby farms (in the case of boys) and as domestics (in the case of girls). B. Schissel and T. Wotherspoon, *The Legacy of School for Aboriginal People: Education, Oppression, and Emancipation* (Don Mills: Oxford University Press, 2003).

⁸⁹ A. Smith, ‘Toward a critique of political economy of “sociolegality” in settler capitalist Canada’, in M. Thomas, L. F. Vosko and O. Lyubchenko (eds.), *Change and Continuity: Canadian Political Economy in the New Millennium* (Montreal: McGill-Queen’s Press, 2019).

⁹⁰ Neocleous, ‘International law as primitive accumulation’.

⁹¹ Some have discussed ‘carbon colonialism’: see S. Batel and P. Devine-Wright, ‘Energy colonialism and the role of the global in local responses to new energy infrastructures in the UK: A critical and exploratory empirical analysis’ (2016) 49 *Antipode* 3.

enjoys certain path dependencies in capitalist accumulation.⁹² The effects are evident in its ‘omnipresent hardware’, including its ‘oil wells and coal mines to road networks, harbours, airports, power stations, manufacturing facilities and the landscapes of industrial agriculture’, as well as electricity and other infrastructure anchored in place from national grids and high-voltage power lines to pipelines.⁹³ The effects are also found in prevailing regulatory regimes, such as land-use planning.⁹⁴ All told, fossil capitalism produces particular, spatially-fixed energy landscapes which possess a ‘marked inertia’ in economic and political terms.⁹⁵

This understanding complicates attempts to fashion agricultural land use antagonisms according to the binaries of ‘food’ versus ‘fuel’, and even ‘fossil’ versus ‘green’. This is because the prevailing agro-food system and emergent renewable energy developments are indebted to, and remain dependent upon, fossil capital.⁹⁶ Fossil fuels, such as petroleum, serve as a key energy input in production, transportation and consumption of

⁹² G. C. Unruh, ‘Understanding carbon lock-in’ (2000) 28 *Energy Policy* 817; D. Carrington, ‘Fossil fuels subsidized by \$10m a minute, says IMF’, *The Guardian*, 18 May 2015; N. Beuret, ‘Counting carbon: Calculative activism and slippery infrastructure’ (2017) 49 *Antipode* 1164: ‘This paper investigates how the problem of climate change is constructed as a global object of political action and how it functions to render politics into a matter of calculative action, one that seeks – but fails – to take hold of a slippery carbon infrastructure’.

⁹³ D. Scott, ‘The networked infrastructure of fossil capitalism: Implications of the new pipeline debates for environmental justice in Canada’ (2013) 43 *Revue générale de droit* 11; É. Pineault, ‘The capitalist pressure to extract, an ecological and political economy of extreme oil in Canada’ (2018) 99 *Studies in Political Economy* 130; A. V. Carter and A. Zalik, ‘Fossil capitalism and the rentier state: Toward a political ecology of Alberta’s oil economy’, in L. E. Adkin (ed.), *First World Petro-Politics: The Political Ecology and Governance of Alberta* (Toronto: University of Toronto Press, 2016), p. 52.

⁹⁴ B. Dunn, ‘Preserving agricultural land for local food production: Policies from other places as a guide to land use planning for Ontario’ (2013) *Canadian Environmental Law Association* 1.

⁹⁵ Scott, ‘Networked infrastructure of fossil capitalism’; Carton, ‘Dancing to the rhythms of the fossil fuel landscape’, 46; Pasqualetti, ‘Reading the changing energy landscape’; G. Bridge, S. Bouzarovski, M. Bradshaw and N. Eyre, ‘Geographies of energy transition: Space, place and the low-carbon economy’ (2013) 53 *Energy Policy* 331.

⁹⁶ As Altwater puts it, ‘[I]n contrast to solar radiation, which changes its intensity between day and night and with the rhythms of the seasons, fossil energy can be used 24 hours a day and 365 days a year with constant intensity, allowing the organization of production processes independently of social time schedules, biological and other natural rhythms’. But as he further explains, ‘One of the main advantages of fossil energy for capitalist accumulation is the congruence of its physical properties with the socioeconomic and political logics of capitalist development. In comparison with other energy sources fossil energy fulfils almost perfectly the requirements of the capitalist process of accumulation. It fits into capitalism’s societal relation to nature’: Altwater, ‘The social and natural

both agro-food and solar panel energy, and in the latter respect in the transmission of electricity through networks.⁹⁷ The point in recognising carbon indebtedness is not to downplay the real differences in the rhythms and social and environmental effects of non-renewable and renewable energy production.⁹⁸ In an important respect, however, fossil commodification is infused within the production of the solar energy commodity – thus making the prospects of a renewable energy economy problematically beholden to the fossil economy. We might think of this as petrification of a different kind, and it produces a complex and pivotal disaggregation challenge for a just transition.⁹⁹

Attentiveness to the distributional effects of renewable energy generation requires coming to grips with settler capitalism. The settler capitalist ‘lie of the land’ is not of mere omission, but in fact of layered displacements of the centrality of work, labour and livelihoods. Any potential exhibited in a just transition framework will be realised only

environment of fossil capitalism’, 41. See also H. Wilhite, *The Political Economy of Low Carbon Transformation: Breaking the Habits of Capitalism* (London: Routledge, 2016).

⁹⁷ We might also include here consideration of the extractivist dimensions of renewable energy, including the sourcing of minerals: see E. Dominish, N. Florin and S. Teske, *Responsible Minerals Sourcing for Renewable Energy* (Sydney: Institute for Sustainable Futures, 2019).

⁹⁸ There are rhythmic differences in modes of energy generation. Some have made much about the congruent nature of fossil fuel production to capitalist development. But the rhythms of fossil fuel production did not arrive ready-made; they were forged and re-forged through socio-technological processes and relations – and perhaps never fully quieted. The particular rhythms of fossil fuel-based energy generation developed to support capitalist value arithmetic; namely the commodification of labour and nature, and have fuelled the ‘terrifying new math’ of the warming condition – increase in global temperature below 2 degrees Celsius, gigatons of carbon dioxide that could be released into the atmosphere before surpassing that temperature mark, and gigatons of fossil fuel awaiting burning. The arithmetical analysis of capitalism’s biorhythms is proof of the disastrous effects of human action on the planet. B. McKibben, ‘Global Warming’s Terrifying New Math’, *Rolling Stone*, 19 July 2012.

⁹⁹ Graham’s investigation of the relationship between the carbon extractive sector in Canada and renewable energy generation is telling. A dimension of this relates to the ‘shapeshifting’ nature of capital, in this respect through the fusion of oil with renewable energy capital – as a strategic move in which “old villains” of the carbon economy have fused and emerged as the “new heroes” of the green economy’. The strategy, while seemingly calling forth ‘deference’ and ‘affirmation’, underwrites land-use conflict and ‘successive weakening of regulation’: N. Graham, ‘Canadian fossil capitalism, corporate strategy, and post-carbon futures’ (2019) 56 *Canadian Review of Sociology* 224. See also B. Garvey, E. A. Souza, M. R. Mendonça, C. V. dos Santos and F. V. P. Virginio, ‘The mythical shapeshifting of capital and petrification of labour: Deepening conflict on the agrofuel frontier’ (2019) 51 *Antipode* 1185.

as the settler colonial dimensions of fossil capitalism are contested. The challenge, then, is to consider the layered histories, patterns and relations of living on the land, not only in specific places, but globally.¹⁰⁰

We posit that work and labour provide crucial if under-explored dimensions of the social relations of renewable energy development in settler capitalist Canada. Exploring conflicts over solar energy and agricultural landscapes in the Global North, we have put forward an account in which work and labour (including that performed in the North by workers from the Global South) represent embodied practices of working and living on the land. These everyday socio-spatial practices implicate ordinary people in the making of landscapes and continuing relations of settler capitalism, shaping how ‘we’ live together on the land, including who belongs and who gets to decide.

9.7 Conclusion

The year 2020 came on the heels of what Naomi Klein called a ‘cascade of large and militant climate mobilisations’.¹⁰¹ Klein argued that, in pursuing a just transition, ‘we can create hundreds of millions of good jobs around the world, invest in the most systematically excluded communities and nations . . . [and] instill a sense of collective, higher purpose – a set of concrete goals that we are all working toward together’.¹⁰² And yet, the climate crisis, the transition to a post-carbon economy – and even the COVID-19 pandemic – seem to be dividing us more and more.

In considering the right to landscape claims and accompanying perceptions of agricultural land use and life that have characterised the controversies over solar installations in southern Ontario, we conclude here that arguments both in favour and opposed to new solar power projects tend to erase work and labour as they bolster settler authority

¹⁰⁰ In this respect, we must consider the generation of renewable energy within wider disparities, including ‘the global effects of first-world consumption’. M. Ryle and K. Soper, ‘Introduction: the ecology of labour’ (2016) 20 *Green Letters* 119. Indeed, ‘solar and wind energy industries are highly transnationalised and already inserted into global patterns of accumulation’. J. Harris, ‘Going green to stay in the black: transnational capitalism and renewable energy’ (2010) 52 *Race and Class* 62.

¹⁰¹ N. Klein, ‘The green new deal: A fight for our lives’, *New York Review*, 17 September 2019.

¹⁰² *Ibid.*

and undermine Indigenous jurisdiction.¹⁰³ Both accounts circulate around presumed authority over agricultural landscapes, sidestepping consideration of work, labour and livelihood, fossil capitalism and the settler colonial relation. Where is the scope for 'labour' action and subjectivity differently perceived?

As a response, it is clear that we must reject 'modest re-arrangements in modes of regulating and governing technology and social systems which shift technology and regulation in lower carbon directions' whenever those re-arrangements fail to disrupt the prevailing distributions of economic and political power.¹⁰⁴ We return our attention to 'issues of scale, control, sovereignty and democracy' because 'sustainability transformation must be defined not only by changes in resource use, i.e. a shift from fossil to renewables, but also in how they are governed'.¹⁰⁵ A 'just transition' must be a deeper transformation that confronts the authority to decide 'landscapes for whom'?¹⁰⁶

¹⁰³ The matter of land back is not merely a matter of justice, rights or 'reconciliation'; Indigenous jurisdiction can indeed help mitigate the loss of biodiversity and climate crisis: S. Pasternak and H. King, *Land Back: A Yellowhead Institute Red Paper*, Yellowhead Institute, October 2019, p. 64.

¹⁰⁴ P. Newell, 'Trasformismo or transformation? The global political economy of energy transitions' (2017) 26 *Review of International Political Economy* 5. See also A. Stirling, 'Transforming power: Social science and the politics of energy choices' (2014) 1 *Energy Research and Social Sciences* 83.

¹⁰⁵ A. Scheidel, L. Temper, F. Demaria and J. Martínez-Alier, 'Ecological distribution conflicts as forces for sustainability: An overview and conceptual framework' (2018) 13 *Sustainability Science* 585, 594.

¹⁰⁶ *Ibid.*

