

## Tar Sands, Extreme Energy and the Future of the Climate Movement

– Brian Tokar

Efforts by TransCanada and Enbridge to transport increasing quantities of tar sands bitumen across North America emerged at a crucial juncture in the evolution of North American movements to confront the global climate crisis. For activists in both the US and Canada, the further development of the Alberta tar sands represented an unusually clear convergence of environmental and social justice concerns, and significantly heightened the promise that today's actions can help halt the destabilization of the climate. Campaigns to stop the tar sands pipelines have highlighted the wider significance of an array of local organizing efforts and re-ignited hopes for a more unified movement for climate justice. Perhaps most remarkably, organizing around the tar sands has helped reverse a trend toward increasing despair among climate activists that had emerged following the diplomatic failure of the 2009 Copenhagen climate conference.

Public actions for the climate had reached an initial peak in 2009, as large numbers of people demonstrated their hopes for a positive outcome to the UN climate negotiations in Copenhagen in December of that year. In the United States, large environmental NGOs launched a series of outreach efforts and public actions aimed at convincing the Obama administration to play a constructive role in Copenhagen. The group 350.org, launched by author Bill McKibben and several of his former students from Middlebury College, held the first in a series of coordinated worldwide demonstrations, aimed at dramatizing the need to reduce atmospheric carbon dioxide to a concentration of 350 parts per million. A flawed, but politically significant climate bill – establishing a “cap-and-trade” carbon market to nominally reduce greenhouse emissions – passed the US House of Representatives and a counterpart bill was being drafted by prominent Senators.

Additionally, a loose alliance of grassroots groups – many of which were highly critical of the proposed cap-and-trade legislation – mounted a series of demonstrations across the US and Canada highlighting a justice-centered approach to the climate crisis, focused on the widely disparate impacts of global climate disruptions on communities marginalized by factors of race and class. North American activists took the first steps toward forging a homegrown movement inspired by the global outlook of “climate justice” that was beginning to unite a disparate but politically significant alliance of civil society movements from around the world. These included Indigenous and other land-based peoples from the global South, inner city environmental justice activists in North America, and explicitly anti-capitalist formations, mainly European, that had emerged from mobilizations challenging global institutions such as the World Trade Organization, NATO, and the annual G8 summits.<sup>1</sup>

By the middle of 2010, however, many of these efforts had reached a point of impasse. The Copenhagen conference only produced a three page “accord,” urging countries to submit voluntary pledges to reduce their emissions, and the US delegation had played a central role in promoting this inadequate substitute for binding emissions reductions.<sup>2</sup> The climate debate in the US Senate was aborted as soon as it became clear that even the most extravagant corporate exemptions and giveaways would not break the political deadlock around “cap-and-trade.”<sup>3</sup> 350 continued to organize numerous simultaneous symbolic events each year, but had not yet articulated a strategy for challenging the fossil fuel interests mainly responsible for rising emissions. And the fledgling North American Mobilization for Climate Justice ceased to operate once it was apparent that various community groups struggling with the daily impacts of political and economic marginalization lacked the capacity – and perhaps the inclination – to help lead a unified

national effort. On a global scale, the development of a comprehensive climate justice movement after Copenhagen “remained something more of a potential than a reality,” in the words of two prominent European activists.<sup>4</sup>

In the shadow of these political and organizational disappointments, proposals for new tar sands pipelines soon shattered North American activists’ temporary malaise and rekindled a sense of urgency and outrage. The tar sands issue drove thousands of people back into action, and began to reawaken the potential for a more unified and more assertive climate movement, driven in part by a new wave of corporate assaults on the integrity of ecosystems and human communities all across the continent.

By early 2013, thousands of people had demonstrated in Washington, DC against the proposed tar sands pipelines – including 1200 people arrested for civil disobedience in front of the White House – and plans were underway for the largest Washington climate rally so far. At least two dozen towns in Vermont and others across the region were on record against the “Eastern Access” option, which would pump tar sands bitumen out of Montreal and across northern New England to be shipped out of Portland, Maine. Indigenous opposition to the proposed “Northern Gateway” pipeline in British Columbia helped galvanize a nationwide popular uprising of First Nations peoples across Canada. And an improbable alliance of conservative landowners and autonomous direct actionists had dramatically escalated the movement to halt the construction of TransCanada’s Keystone XL pipeline through Kansas, Oklahoma and Texas. That pipeline had even become an issue in the 2012 US presidential campaign, with Republican Willard “Mitt” Romney proclaiming that if elected, his very first act as president would be to approve the section of the Keystone XL that would cross the Canada-US border.

## **Extreme Energy**

Central to all these developments was the growing continent-wide movement to stop further development of the tar sands. Activists across the continent are drawn to the tar sands issue for a variety of reasons. First and foremost are the uniquely severe climate consequences. Mining and extracting oil from the tar sands releases 3 - 4.5 times as much carbon dioxide into the atmosphere as conventional oil extraction, and the eminent climatologist James Hansen estimates that Alberta’s tar sands contain as much as 240 gigatons of carbon, enough to raise the atmospheric CO<sub>2</sub> concentration by an additional 120 parts per million.<sup>5</sup> A close second is the destruction of the land, waterways and livelihoods of First Nations peoples in the Athabaskan region of Alberta, the focus of inspiring efforts of Indigenous nations throughout Western Canada to challenge new extraction and pipeline developments.

Another factor, perhaps less directly apparent but of profound economic and political significance, is the understanding that the tar sands are one central aspect of a larger trend toward “extreme energy” development throughout North America. As author Michael Klare, a long-time analyst of energy geopolitics, points out, most current efforts to tap new sources of oil and gas require energy companies “to drill in extreme temperatures or extreme weather, or use extreme pressures, or operate under extreme danger – or some combination of all of these.”<sup>6</sup> With readily accessible sources of oil and gas reaching their limits worldwide, industry projections for the future of fossil fuels are increasingly tied to so called “unconventional” sources, such as tar sands, shale gas, and oil drilled from miles beneath the oceans, including the far reaches of the Arctic.

Now that oil prices are hovering in the vicinity of \$80-100 per barrel, technologies such as hydrofracturing (also known as fracking), horizontal drilling, deepwater drilling, and oil extraction from tar sands – once seen as hypothetically possible but economically prohibitive – have become central to the fossil fuel industry’s plans for the future. Each of these has profound implications for the people and ecosystems affected by new energy developments, and each has sparked determined opposition by

frontline communities. Just as the scale of destruction in Alberta today provides an important lens on one possible future for energy in North America and worldwide, the breadth of organizing efforts to halt tar sands development helps us envision the potential for a renewed climate justice movement.

A few short years ago, many climate activists and advocates for local self reliance looked to the arrival of “peak oil” as a reason for confidence that the fossil fuel era might end before reaching its maximum impact on the climate. Now, however, an unexpected North American energy boom threatens to extend the Age of Oil far past the point of total destabilization of the climate system. With known worldwide fossil fuel reserves already containing at least five times as much CO<sub>2</sub> as can be burned without exceeding the long-term carbon budget projected by climate scientists, it is clear why James Hansen has described the further development of the tar sands as a “game over” scenario for the earth’s climate system.<sup>7</sup>

The current oil boom, which is entirely driven by “extreme energy” technologies, has made the United States a net exporter of refined petroleum for the first time in at least 6 decades. Not only has the US begun exporting oil to Canada, but so many Gulf of Mexico refineries have retooled their facilities to accommodate tar sands bitumen and other sources of heavy oil, that much of the light crude unearthed by hydrofracking and horizontal drilling operations could end up being exported. North Dakota alone is currently producing 85 per cent as much oil – of significantly higher quality – as the volume of material that would be piped from Canada by the Keystone XL.<sup>8</sup> Further, prices for natural gas have plunged to near-record lows due to the massive increase in gas supplies from the Marcellus Shale in the east and several other major shale basins across the US. Not only has this discouraged US utilities from investing in new coal and nuclear power plants, as the sheer quantity of fracked gas overturns the typical economics of the electric power industry, but it could threaten continuing investments in solar and wind-powered generation as well.<sup>9</sup>

## **Resisting Extreme Energy**

Over the past couple of years, campaigns to resist new “extreme energy” developments have arisen all across the US and Canada. The movement to resist the continued exploitation of the tar sands is one primary source of inspiration. Another is the movement in the coal mining regions of southern Appalachia to resist the most extreme form of strip mining for coal, whereby some 500 mountaintops have literally been blasted away to reveal the coal seams below.

As the practice of “mountaintop removal” coal mining has expanded over the past decade, the region has experienced an unprecedented alliance between long-time local residents – many from families that have worked in the coal mines for generations – and youthful forest activists from across the country. Organizations such as Coal River Mountain Watch, Rising Tide, Climate Ground Zero and Mountain Justice Summer have transcended long standing cultural, political and even religious divides and brought hundreds of new activists into coal mining regions of West Virginia and neighboring states for summer action camps, days-long marches, and other creative actions.<sup>10</sup> The coal campaigns have helped revive the tactic of long-term tree-sits, pioneered by Earth First activists in Oregon and Northern California, and more recently adopted, with some new twists, by those seeking to block the construction of the Keystone XL pipeline in Texas and Oklahoma.<sup>11</sup> A national campaign launched by the Sierra Club has helped halt the construction of at least 174 new coal-fired power plants, and activists in the US Northwest are working to stop the construction of several proposed new coal export terminals.<sup>12</sup>

People in rural areas of Pennsylvania and New York State have been organizing to challenge the practice of fracking for shale gas, which has expanded rapidly throughout the Marcellus Shale region. For many years, representatives of gas drilling companies were able to pressure individual landowners into signing leases with little public awareness of the consequences of gas fracking. But as drilling rigs have sprouted

through parts of the region, and reports of severe water and land contamination have spread, the resistance has begun to assume the character of a growing regional movement.<sup>13</sup> In New York, efforts to protect drinking water supplies for major cities led to a temporary moratorium on fracking, and the issue has brought thousands of people to demonstrate at the state capitol in Albany to demand a complete ban. In 2012, the Vermont legislature approved a ban on fracking, an idea that activists hope to extend throughout the region.

Fracking and horizontal drilling for oil and gas have also provoked increasing opposition in many Western US states. People in Utah, Colorado and central California have challenged the opening of previously protected public lands for drilling, and one campaign successfully delayed plans to auction off leases to drill for gas on more than 20,000 acres in Colorado. The federal Bureau of Land Management withdrew plans to drill in several environmentally sensitive areas in Colorado following protests, including locations near Dinosaur National Monument and Mesa Verde National Park.<sup>14</sup> Inupiat communities in Alaska have been in the forefront of opposition to oil drilling in newly navigable, but uniquely hazardous Arctic waters, and environmentalists across the continent breathed a sigh of relief when Shell Oil withdrew its damaged drilling vessels from Alaskan waters in early 2013.<sup>15</sup>

First Nations communities have also been in the forefront of challenging plans to expand uranium mining in the US Southwest and across Canada. With an estimated 70 per cent of world uranium supplies located underneath Indigenous lands, many communities are still experiencing health effects from radiation released during the first uranium boom of the 1970s and have vowed not to let it happen again. There are reportedly over a thousand abandoned uranium mines on native lands in the American Southwest, where several communities faced epidemics of cancer following the earlier wave of mining.<sup>16</sup> In Canada, plans to expand uranium mining have united opponents from Cree, Dene, Inuit and other First Nations, from Quebec all the way to Nunavut in the far north.<sup>17</sup>

It remains to be seen whether these efforts contain the seeds of a more unified opposition to extreme energy projects throughout North America. Each struggle has its distinctive qualities and unique challenges, and all of the legal, political and personal issues faced by these campaigners can make it difficult to focus on broader alliance-building efforts. But it is clear that their stories are already having an essential catalytic effect on the broader climate movement, whose centers of gravity are often more urban and historically removed from the day-to-day realities of crucial resource-centered struggles.

## **Looking Forward**

In an illuminating 2008 paper, political scientist John M. Meyer highlighted the chronic divide between traditionally paternalistic approaches to environmental issues – mobilizing expert knowledge to intervene to prevent harm – and a more populist outlook that is rooted in the experiences of those most affected by various forms of pollution.<sup>18</sup> Conventional climate discourses, with their emphasis on atmospheric modeling, the sensitivity of future climates to varying levels of greenhouse gas emissions, and relatively distant effects – whether in space or in time – tend to weigh toward the paternalist side of the spectrum. In contrast, many past environmental successes were firmly rooted in particular local experiences of air and water contamination, for example, which ultimately shaped state and national policies. The most effective campaigns for environmental justice rely on scientific analyses of various environmental hazards – as well as of the disproportionate exposures that are experienced as a function of race and class – but they are fundamentally populist in their campaign structures and organizing methods.

The emergence of struggles against extreme new energy developments throughout North America raises the potential for a transformed climate movement that similarly reaches beyond this divide. Climate discourses that are wholly science- and policy-centered can raise the specter of elitism and are often more

readily defused in the public media by those who deny the reality of human-caused climate disruptions. In contrast, movements of people on the frontlines of extreme energy development give voice to the immediate human consequences of those corporate practices that most threaten the climate. Just as earlier climate justice campaigns highlighted the voices of people around the world whose lives have been catastrophically altered by climate change, current movements help sustain a focus on the direct human consequences of new energy developments.

People everywhere are now seeing their lives upturned by extreme weather events, such as droughts, wildfires, floods and more intense coastal storms. While marginalized communities continue to experience the most severe impacts, nearly everyone can now identify ways in which their lives are impacted by climate change. In northern California, home of some of the most determined and inspired alliance-building work with environmental justice communities during the lead-up to Copenhagen, organizers have proposed a strategy of “finding your frontline” – *i.e.*, highlighting the ways we are each personally affected as a means for aligning our activism with those who are impacted the most. Reaching beyond traditional, sometimes paternalistic modes of alliance building, they are striving to create relationships of mutual aid that challenge barriers of power, privilege and trust, and strategically align climate activists’ world views with those of the most heavily affected communities.<sup>19</sup> Oakland’s Movement Generation and other groups behind this approach challenge all who identify with climate justice to reach past their established organizing models and personal comfort zones to raise their solidarity work to an entirely new level.

A further dilemma still remains, however. While approaches mainly rooted in local organizing are central to movement building, how can they help curtail excess greenhouse pollution and prevent a slide into extreme global climate chaos? It may be too soon to tell, but we do know from the early history of the environmental movement that the most successful policy interventions are rarely orchestrated entirely from above. In the US, the federal government only began to consider meaningful environmental regulations in the early 1970s after states and municipalities began to implement far-reaching programs of environmental monitoring and enforcement, and an unprecedented wave of environmental lawsuits challenged business as usual. It was only at that point, reported *Fortune* magazine on the eve of the first Earth Day in 1970, that elite business interests “strongly desire[d] the federal government to step in, set the standards, regulate all activities pertaining to the environment, and help finance the job with tax incentives.”<sup>20</sup>

Indeed the environmental regulations that are now frequently denounced as “bad for business” were once viewed in elite circles as a way to allay public concerns while offering corporations a menu of uniform and relatively predictable environmental rules. Two scholarly analyses of the failure of US climate legislation during the first Obama administration correctly placed much of the blame on the alliance between business-friendly environmentalists and polluting corporations that crafted the first wave of “cap-and-trade” legislation.<sup>21</sup> Perhaps more adequate climate policies, like the first generation of anti-pollution rules, will emerge in response to local and regional campaigns that directly challenge corporate practices, rather than through a false compromise that largely neglects the interests of those who are most threatened by environmental hazards.

Of course a successful social movement cannot be wholly defined by what it opposes. While people are coming forward in solidarity with communities impacted by extreme weather and extreme energy developments, the movement is still a long way from convincing most North Americans of the depth of social transformation that is needed to prevent climate chaos. A variety of studies suggest that reductions in greenhouse pollution on the order of 2-3 per cent per year or more are necessary to avoid irreversible climate tipping points.<sup>22</sup> While energy use has been successfully decoupled from economic growth for limited periods of time, especially in the aftermath of the 1970s Arab oil embargo, it is highly unlikely

that a successful climate mitigation strategy will be compatible with the levels of growth that are generally associated with economic “prosperity” and rising employment.<sup>23</sup>

This remains a significant obstacle to engaging those who remain wedded to the economics of growth. While promising proposals for “green jobs,” a Green New Deal, and a just transition away from fossil fuels have been advanced by labor, business and environmental groups alike, it is increasingly doubtful that we can reduce carbon dioxide emissions quickly enough without more fundamentally overturning the capitalist growth paradigm. It is also increasingly apparent that fears of impending crisis and catastrophe can serve to increase many people’s resistance to fundamental change. Indeed, a timely book by four west coast authors shows how predictions of impending catastrophe throughout history have tended to derail the political left, empower right wing scapegoating and militarism, and generally limit the potential of progressive social movements.<sup>24</sup>

During the first large wave of activism against nuclear power in North America, many activists merged an uncompromising call for “No Nukes” with a long-range vision of an entirely new social order, rooted in decentralized, solar-powered communities empowered to decide both their energy future and their political future. Not only did that movement help end the 1970s wave of nuclear power development, but it developed a continent-wide network of decentralized, grassroots antinuclear alliances, committed to nonviolent direct action, bottom-up forms of internal organization, and a sophisticated understanding of the relationship between technological and social changes. The movement also helped facilitate the first significant wave of solar energy development, which was only derailed by the sudden withdrawal of public funds for renewable energy at the beginning of the Reagan administration in the US.

Similarly, today’s climate activists need to find ways to dramatize the positive, even utopian, potentialities for a post-petroleum, post-suburban world. We know that the technical means exist, but also that private investors have expressed relatively little enthusiasm for renewable energy, despite numerous studies demonstrating its economic advantages.<sup>25</sup> We can’t deny the potentially dire consequences of a chaotic, out of control climate regime, but it is also clear that today’s movements will not be able to prevent a worst-case scenario unless we can also demonstrate a compelling vision of an enhanced quality of life, not dominated by competition and consumerism, that may be possible in a world of declining energy consumption.

Ernst Bloch, the eminent mid-20th century chronicler of the utopian tradition, authored an exhaustive and free-ranging 3-volume work, *The Principle of Hope*, which takes readers on an epic journey through Western history’s myriad expressions of the urge to transform society. Bloch explores the role of folktales, the arts and literature, along with political and social activists’ perennial search for a better world. “Fraudulent hope is one of the greatest malefactors, even enervators of the human race,” he wrote, while “concretely genuine hope its most dedicated benefactor.”<sup>26</sup> As we further our strategies to raise climate awareness, resist extreme energy, forge new alliances, and challenge the inordinate political influence of the fossil fuel industry, the future of the climate movement may also depend on how well we can embody a genuinely hopeful vision for the future.

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## Notes

<sup>1</sup> For a more detailed review of the emergence of climate justice, see Brian Tokar, *Toward Climate Justice: Perspectives on the Climate Crisis and Social Change* (Porsgrunn, Norway: New Compass Press, 2010), and Brian Tokar, “Movements for Climate Justice,” in M. Dietz & H. Garrelts, eds., *Handbook of the Climate Movement* (New York: Routledge International Handbooks Series, 2013).

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- <sup>2</sup> An analysis of the US strategy in Copenhagen appears in Tokar, *Toward Climate Justice*, chapter 3; an influential defense of the shift toward voluntary emissions reductions in Copenhagen is Michael A. Levi, “Copenhagen’s Inconvenient Truth: How to Salvage the Climate Conference,” *Foreign Affairs*, 88, 5 (September/October 2009), pp. 92–104.
- <sup>3</sup> See Tokar, *Toward Climate Justice*, chapter 2; for an “insider” account of the US Senate negotiations on the climate bill, see Ryan Lizza, “As the World Burns: How the Senate and the White House missed their best chance to deal with climate change,” *The New Yorker*, October 11, 2010.
- <sup>4</sup> Nicola Bullard & Tadzio Mueller, “Beyond the ‘Green Economy’: System change, not climate change?” *Development* 55, 1 (2012), p. 57.
- <sup>5</sup> James Hansen, “Game Over for the Climate,” *New York Times*, May 9, 2012; US Department of Energy data, cited in Nathan Lemphers, “The climate implications of the proposed Keystone XL oilsands pipeline” (Calgary: Pembina Institute, 2013).
- <sup>6</sup> Michael T. Klare, “The New ‘Golden Age of Oil’ That Wasn’t,” at [http://www.tomdispatch.com/blog/175601/klare\\_the\\_new\\_golden\\_age\\_of\\_oil\\_that\\_wasn](http://www.tomdispatch.com/blog/175601/klare_the_new_golden_age_of_oil_that_wasn).
- <sup>7</sup> Hansen, “Game Over for the Climate;” Carbon Tracker Initiative, “Unburnable Carbon – Are the world’s financial markets carrying a carbon bubble?” at <http://www.carbontracker.org/wp-content/uploads/downloads/2012/08/Unburnable-Carbon-Full1.pdf>.
- <sup>8</sup> Elizabeth Douglass, “Need for Keystone XL Shrinking as Industry Looks to Export U.S. Crude Oil,” *InsideClimate News*, October 25, 2012.
- <sup>9</sup> Peter Schwartz, “Abundant Natural Gas and Oil Are Putting the Kibosh on Clean Energy,” at [http://www.wired.com/business/2012/08/mf\\_naturalgas/all](http://www.wired.com/business/2012/08/mf_naturalgas/all).
- <sup>10</sup> For an in-depth profile of many of these campaigns, see Tricia Shapiro, *Mountain Justice* (Oakland: AK Press, 2010).
- <sup>11</sup> For frequent updates, see <http://www.tarsandsblockade.org>.
- <sup>12</sup> Mark Hertsgaard, “Climate Activists Put the Heat on Obama,” *The Nation*, February 18, 2013.
- <sup>13</sup> Tom Wilber, *Under the Surface: Fracking, Fortunes and the Fate of the Marcellus Shale* (Ithaca, N.Y. : Cornell University Press, 2012).
- <sup>14</sup> Jack Healy, “Colorado: Contested Gas Leases Are Delayed,” *New York Times*, February 7, 2013; “Colorado Communities Take On Fight Against Energy Land Leases,” *New York Times*, February 3, 2013.
- <sup>15</sup> Subhankar Banerjee, “Shell Game in the Arctic,” at [http://www.tomdispatch.com/post/175577/subhankar\\_banerjee\\_arctic\\_shell\\_game](http://www.tomdispatch.com/post/175577/subhankar_banerjee_arctic_shell_game); Clifford Krauss, “Shell Vessels Sidelined, Imperiling Arctic Plans,” *New York Times*, February 11, 2013.
- <sup>16</sup> Winona LaDuke, “Navajos ban uranium mining,” at [http://www.earthisland.org/journal/index.php/eij/article/navajos\\_ban\\_uranium\\_mining](http://www.earthisland.org/journal/index.php/eij/article/navajos_ban_uranium_mining).
- <sup>17</sup> Mining Watch Canada, “Uranium Hype Hits Indigenous Opposition Globally, Provokes Conflict in the North,” at <http://www.miningwatch.ca/uranium-hype-hits-indigenous-opposition-globally-provokes-conflict-north>; Ramsey Hart, “Indigenous Rights and Mining – Recent Developments, Opportunities and Challenges,” at <http://www.miningwatch.ca/article/indigenous-rights-and-mining-recent-developments-opportunities-and-challenges>.
- <sup>18</sup> John M. Meyer, “Populism, paternalism and the state of environmentalism in the US,” *Environmental Politics*, 17, 2 (2008).
- <sup>19</sup> Hilary Moore and Joshua Kahn Russell, *Organizing Cools the Planet: Tools and Reflections to Navigate the Climate Crisis* (Oakland: PM Press, 2011).

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<sup>20</sup> Robert S. Diamond, “What Business Thinks: The Fortune 500 Yankelovich Survey,” *Fortune*, February 1970, p. 119.

<sup>21</sup> Theda Skocpol, “Naming the Problem: What It Will Take to Counter Extremism and Engage Americans in the Fight against Global Warming,” Cambridge: Harvard University, January 2013; Petra Bartosiewicz & Marissa Miley, “The Too Polite Revolution: Why the Recent Campaign to Pass Comprehensive Climate Legislation in the United States Failed,” New York: Columbia University, 2013, both available from <http://www.scholarsstrategynetwork.org/node/2815>.

<sup>22</sup> Kevin Anderson, “Climate change going beyond dangerous: Brutal numbers and tenuous hope,” *Development Dialogue 61* (Uppsala: Dag Hammarskjold Foundation, 2012).

<sup>23</sup> Fred Magdoff has demonstrated that since World War II, unemployment in the US has only reliably fallen during years of greater than 5 percent growth. See Fred Magdoff and John Bellamy Foster, *What Every Environmentalist Needs to Know about Capitalism* (New York: Monthly Review Press, 2011), pp. 57-58.

<sup>24</sup> Sasha Lilley, et al., *Catastrophism: The Apocalyptic Politics of Collapse and Rebirth* (Oakland: PM Press, 2012).

<sup>25</sup> Since the 1980s, Amory Lovins and his colleagues at Colorado’s Rocky Mountain Institute have documented the economic benefits and low relative cost of large investments in energy efficiency and renewables, but only some US businesses have followed their recommendations. See, for example, Amory Lovins, et al., *Winning the Oil Endgame: Innovation for Profits, Jobs, and Security* (Snowmass, CO: Rocky Mountain Institute, 2005). One study showed that businesses demand a two-year payback for significant efficiency investments: reported in Matthew L. Wald, “Efficiency, Not Just Alternatives, Is Promoted as an Energy Saver,” *New York Times*, May 29, 2007. Another in-depth feasibility study is Mark Z. Jacobson and Mark A. Delucchi, “Providing all global energy with wind, water, and solar power, Part I: Technologies, energy resources, quantities and areas of infrastructure, and materials,” and “Part II: Reliability, system and transmission costs, and policies,” *Energy Policy 39* (2011) pp. 1154–1169, 1170–1190.

<sup>26</sup> Ernst Bloch, *The Principle of Hope* Volume 1 (Cambridge: MIT Press, 1995), p. 5.