I Call Them Watermelons

Noel Anderson

"I call them watermelons!" declares a newscaster. "Green on the outside but on the inside… deep communist red." "The environmental movement is… the modern home of the… communist movement in America," another broadcaster warns.[1] Through the late 20th century, a concerted effort was made to tie environmentalism with communism and brand it an assault on free capitalist enterprise.

While establishment media still paints legislation like the Green New Deal as "socialist," or even "communist," in reality, much of the environmental movement has actually shifted *towards* relying on economic forces to enact change. Analysts from across the political spectrum tell us that technological innovation will create a bright future and solve climate change. With the help of green tech, they promise, we can make environmentalism not only the *right* choice but also the economically *rational* choice. Quoting Bloomberg, "capitalism caused climate change; it must also be the solution."[2]

The truth is far more bleak. In reality, the market-based tech solutions to climate change are the real watermelons, even more so than any environmental legislation of the 70s and 80s. But it's not the deep red of communism that lurks beneath the green facade, it's the blood-red of capitalist exploitation, colonialist resource extraction, environmental destruction and human rights violations.

The Urgent Need for Change

In 2015 the Paris Climate Accord set a goal of limiting average global warming to less than 1.5°C in order to avoid some of the worst outcomes of climate change.[3] However, the most recent report by the Intergovernmental Panel on Climate Change (IPCC) projected that under most scenarios, global temperatures will break 1.5° Celsius between 2030 and 2050.[4] Currently, we are at approximately 1.2° Celsius of warming. Technological development will be crucial if we are to stand a chance of meeting the 1.5° Celsius goal, the report said. We must make major investments in the development of sustainable energy and maybe even carbon capture technology, the report continued.

Given this urgency, technological solutions can be appealing. They seem to solve climate change while also ushering in a new era of futurism. In addition, if we can enlist technology and market forces, we will not be forced to rely on governments — which seem incapable of meaningful action — to protect the environment. Using renewable energy, electric vehicles, carbon capture technology and other green tech offers the promise that we can address climate change without fundamentally altering the way we live and consume.

It's an enticing offer, but technology and market forces are not the magic bullet solution they might seem to be. Green tech, while theoretically beneficial, does little to address rising temperatures

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[1] *Merchants of Doubt*, directed by Robert Kenner (Participant Media, August 30, 2014), minute 28.

[2] David Flicking, "Capitalism Caused Climate Change; It Must Also Be the Solution," Bloomberg, October 14, 2020, https://www.bloomberg.com/opinion/articles/2020-10-14/capitalism-caused-climate-change-it-must-also-be-the-solution.

[3] Alan Buis, "A Degree of Concern: Why Global Temperatures Matter." Climate Change: Vital Signs of the Planet: NASA's Global Climate Change Website, NASA, last updated October 20, 2021, https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter.

[4] IPCC, 2018: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. In Press.

because it operates in our capitalist society, where profit reigns supreme. In the name of profit, most of the environmental benefits of green tech are stripped away. Green tech is directed towards capitalist accumulation and increased exploitation rather than towards the benefit of society and the restoration and conservation of our natural environment.

Co-opted Carbon

When discussing technological solutions to climate change, carbon capture utilization and sequestration, or CCUS, is often of central interest. CCUS allows for the removal of carbon dioxide from the air, either directly from the atmosphere or from the smokestacks of power plants. The captured carbon is then either *utilized* in industrial processes or *sequestered* in natural geological reservoirs beneath the ground: the hope is that it will stay there. CCUS technology has seen growing support and is often touted as an avenue for going carbon neutral or *even* carbon negative, without having to fundamentally change our energy production or levels of consumption. It sounds promising, but CCUS is still a speculative technology and it's unclear if direct carbon capture is scalable to a substantial size.[5] And, except for its current use on smokestacks, CCUS is prohibitively expensive.

To address the high cost of CCUS, advocates promote the idea that carbon utilization will pay for itself. Some even speculate that "[p]ulling CO2 out of the air and using it could be a trillion-dollar business."[6] The idea is that if there is enough demand for CO2, it will become economically profitable to pull CO2 out of the air and global warming will no longer be a problem. As it turns out, there *is* an industry in need of CO2: oil.

A recent article by Scientific American asks, *Can Oil Companies Save the World from Global Warming?* The article describes how oil companies in the US are becoming part of the solution to climate change: they are purchasing large amounts of CO2. This is great news for carbon capture technology. But what is the purchased CO2 used for? The oil companies are pumping it into old wells to increase pressure so they can extract *more* oil. The process is a type of Enhanced Oil Recovery (EOR), a class of drilling methods that allow oil companies to access oil that would otherwise be unattainable. The article seems almost unaware of the irony of using carbon capture technology to obtain more oil.

The environmental benefits of EOR are questionable at best. "We frankly believe that probably 99-plus percent of [the CO2] we purchase and put [in the ground] remains [there]," claimed an industry spokesperson when speaking about the process. However, the oil industry also acknowledges that two thirds of the CO2 comes straight back out of the well with the new oil. As for the other third, it's unclear what happens to it. It might stay in the ground, and it might not. Some researchers have suggested that the gas may even leak up through old, unplugged oil wells.[7] But currently, no one knows. The science is still out.

Only one fourth of the CO2 used in EOR is produced using carbon capture technology because it is expensive. Naturally occurring CO2 makes up the other three fourths. This CO2 is extracted from naturally existing subterranean deposits — deposits that were previously *not* contributing to climate change. The overall effect of this process is to release more CO2 into the atmosphere, by tapping into new deposits of CO2 *and* extracting more oil from old wells.[8] Relying on statements from oil industry spokespeople, Scientific American portrays this form of enhanced oil recovery as a positive development

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[5] "Direct Air Capture." IEA, Paris, 2020, https://www.iea.org/reports/direct-air-capture.

[6] David Roberts, "Pulling CO2 out of the Air and Using It Could Be a Trillion-Dollar Business," Vox, September 4, 2019, https://www.vox.com/energy-and-environment/2019/9/4/20829431/climate-change-carbon-capture-utilization-sequestration-ccu-ccs.

[7] David Biello, "Can Oil Companies Save the World from Global Warming?" Scientific American, April 19, 2016, https://www.scientificamerican.com/article/can-oil-companies-save-the-world-from-global-warming/.

[8] Biello.

that could reduce greenhouse gas emissions. But even if 100% of the CO2 was produced using carbon capture technology and stayed in the ground, the emissions from the new oil alone would still outweigh the captured CO2, according to data from the EPA. The overall effect is to release more CO2 into the atmosphere, by allowing oil companies to pump out even more oil.

While this example of market forces co-opting green technology is telling, the results are often far darker. Nowhere is the corrupting nature of capitalism's invisible hand clearer than in the battery and electric car industry.

Lethal Lithium: The Real Cost of Batteries

The development of lithium ion batteries in 1991 revolutionized our ability to store power. Batteries power our smartphones, computers and speakers, and many people believe that lithium ion batteries will pave the way to a sustainable future through electric cars. Batteries can also be used to store energy from intermittent renewables like wind and solar for later use. But the focus on environmental benefits often overlooks the darker environmental and human costs of battery production. Consumers in developed countries can ignore these costs because they are paid for far away — by some of the poorest countries in the world.

As the name implies, lithium is a crucial component in the creation of lithium ion batteries as well as other electronics. To meet the growing global demand for lithium, in South America "[l]arge areas are licensed to transnational mining companies" and fenced in. "[D]rilling derricks, evaporation pools, work and living buildings as well as access roads are constructed." "Thereby, ancestral ways of living are increasingly limited." This is threatening traditional ways of life in many regions. In addition, tourism — a major source of income for many of the affected countries — is negatively impacted "through the loss of the desired aesthetic value: As a result of lithium mining the image of an 'untouched' and 'pristine' landscape is increasingly destroyed."[9]

The process of lithium mining is heavily water intensive. But lithium deposits are often found in arid environments. In Chile and Argentina, which hold half the world's lithium beneath their salt flats, lithium mining is already directly impacting indigenous communities. In this arid environment, local communities make do with limited access to water to grow crops. But now they are forced to contend with mining operations for access to communal water and land. In 2019 mining operations used 65% of the region's groundwater.[10] According to the UN Conference on Trade and Development (UNCTAD), multiple communities have already had to abandon ancestral land due to water shortages caused by mining operations.[11]

In addition to lithium, a crucial component in the cathodes of lithium ion batteries is cobalt. Almost 20kg of the rare metal are required per 100 kilowatt hour battery pack. (This is approximately the size of an electric vehicle battery.[12]) Cobalt is found in other electronic components as well. The growing demand for cobalt has had negative consequences for many of the countries in which it is mined. More than half (60%) of the global cobalt supply comes from the Democratic Republic of Congo (DRC). And according to a report on battery materials by the UNCTAD, 20% of cobalt from the DRC is produced in highly dangerous Artisanal mines.

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[9] Felix Dorn, "The Myth of Resilience: Externalizations in the Case of Lithium Mining in Latin America," Universität Kassel, Forschungen, 2019, doi:10.17170/kobra-20190307291, https://kobra.uni-kassel.de/bitstream/handle/123456789/11123/asl_online_F1_2019.pdf?sequence=1&isAllowed=y#page=7.

[10] "Commodities at a Glance: Special Issue on Strategic Battery Raw Materials," United Nations Conference on Trade and Development, UN, 2020, https://doi.org/10.18356/9ba5e76c-en.

[11] Ibid.

[12] "Reducing Reliance on Cobalt for Lithium-Ion Batteries," Energy.gov, Vehicle Technologies Office, April 6, 2021, https://www.energy.gov/eere/vehicles/articles/reducing-reliance-cobalt-lithium-ion-batteries.

Artisanal mines are small, often unofficial, mining operations. The work is perilous and miners are exposed to toxic metals with little or no access to safety equipment. Tunnel collapses are common. Even with the risks, many still choose to work in the mines: few professions pay as well as mining in the DRC.[13] One *creuseur* (artisanal miner), told The New Yorker, "[when you're poor you are] obliged to do what you can to make ends meet." This need to survive outweighs any fear about the dangers of mining. "To be scared, you must first have means," the miner said.[14]

The mines also employ child labor. Children as young as four are often tasked with picking up stones and collecting ore in the mines.[15] According to the UN report, "40,000 children are estimated to be working in extremely dangerous conditions."[16] These children provide the cobalt used in our phones, tablets, computers, headphones, batteries and electric vehicles.

In 2019 a suit was brought against Apple, Google, Tesla, Microsoft and others, alleging that the tech companies had "specific knowledge" of child labor in their supply chains.[17] In a company report, Tesla defended its use of cobalt saying, "Because Tesla recognizes the higher risks of human rights issues within cobalt supply chains, particularly for child labor in the [DRC], we have made a significant effort to establish processes to remove these risks from our supply chain."[18] But as one mining analyst said, "It's not entirely clear whether you can operate a responsible mine inside the DRC or not. I genuinely do not know whether you can."[19]

In response to the humanitarian concerns around cobalt mining, many companies have begun pledging to reduce their use of cobalt or to source it ethically. In June 2018 and again in September 2020, Tesla announced intentions to remove *all* cobalt from its batteries.[20] However, the announcements provided no timeline and gave no information on how cobalt would be replaced in their batteries. At the same time (June 2020) Tesla also announced a long-term contract with Anglo-Swiss mining corporation Glencore to secure up to 6,000 tons of cobalt each year from Glencore's copper-cobalt mines in the DRC.[21] Tesla's promise to stop using cobalt seems to have been aimed at generating positive press rather than creating material change.

The problems with Artisanal mines are well known. Artisanal mines are highly scrutinized for human rights abuses. But the large multinational mining corporations (like Glencore) are a far greater problem — and they go largely unmentioned. While Artisanal mining operations are small and lack almost any institutional influence, multinational corporations are large, powerful and can bring the might of entire governments to bear in support of their exploitation. These multinational mining corporations will claim land (concessions) for their mining operations, displacing whole populations from ancestral land.[22] Private military contractors are often hired to prevent locals from "stealing" the minerals. The

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[13] Aaron Ross, "Send in the Troops: Congo Raises the Stakes on Illegal Mining," Reuters, July 17, 2019, https://www.reuters.com/article/us-congo-mining-insight-idUSKCN1UC0BS.
[14] Nicolas Niarchos, "The Dark Side of Congo's Cobalt Rush," The New Yorker, May 24, 2021, https://www.newyorker.com/magazine/2021/05/31/the-dark-side-of-congos-cobalt-rush.
[15] Niarchos.
[16] "Commodities at a Glance: Special Issue on Strategic Battery Raw Materials," United Nations Conference on Trade and Development, UN, 2020, https://doi.org/10.18356/9ba5e76c-en.
[17] "Top Tech Firms Sued over DR Congo Cobalt Mining Deaths," BBC News, December 16, 2019, https://www.bbc.com/news/world-africa-50812616.
[18] "2019 Impact Report," Tesla, Accessed October 22, 2021, https://www.tesla.com/impact-report/2019.
[19] Ross.
[20] Angela Chen, "Elon Musk Wants Cobalt out of His Batteries — Here's Why That's a Challenge," The Verge, June 21, 2018, https://www.theverge.com/2018/6/21/17488626/elon-musk-cobalt-electric-vehicle-battery-science.
[21] Sam Shead, "Tesla Plans to Use Glencore Cobalt in New Gigafactories," CNBC, June 16, 2020, https://www.cnbc.com/2020/06/16/tesla-glencore-cobalt-gigafactory.html.
[22] Ross.

mining companies then extract the natural resources, leaving the local population with little to nothing. All in the name of profit.

In 2016, under pressure from Glencore as well as Chinese mining companies, the DRC deployed troops evicting 20,000 native artisanal miners from sites claimed by the multinationals. The soldiers torched dozens of homes belonging to local miners and farmers and ransacked a school.[23] Glencore officials stated that they never asked for troops to be deployed. But as a DRC general stated, "[The mines] are strategic interests… If the investors complain... the government will take measures to deploy the army, if it decides the police cannot handle it." A mining consultant, who asked to go unnamed, told Reuters, "Displacing [artisanal miners] is like whack-a-mole. What [the corporations and military] will end up doing is just brutalizing the miners in order to make them too afraid to come back."

Bolivia has large lithium reserves, and there is speculation that demand for lithium contributed to the coup against the socialist president of Bolivia Evo Morales. During the 2019 presidential election, the Organization of American States (OAS) — which has a long history of supporting US foreign and business interests [24] — accused President Morales' administration of widespread election fraud. A right wing coalition then "push[ed] Mr. Morales from power with military support."[25] The claims of election fraud have subsequently been discredited by numerous academic studies, including some by the Center for Economic and Policy Research.[26] [27] [28] The interim government which took power after the coup was more favorable to international mining operations than the previous socialist administration. Speaking about the coop in a tweet (since deleted), Elon Musk stated, "We will coup whoever we want! Deal with it."[29] [30] Evidence of US and OAS involvement in the coup against President Morales has continued to come to light.[31] [32] There have been calls within the US Senate for an investigation.[33] Bolivia's far right interim government suspended democracy for a year. When elections were finally held, Morales'

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[23] Ross.
[24] Peter J. Meyer, "Organization of American States: Background and Issues for Congress," Congressional Research Service, March 14, 2018, https://sgp.fas.org/crs/row/R42639.pdf.
[25] Anatoly Kurmanaev and María Silvia Trigo, "A Bitter Election. Accusations of Fraud. And Now Second Thoughts," The New York Times, June 7, 2020, https://www.nytimes.com/2020/06/07/world/americas/bolivia-election-evo-morales.html.
[26] Nicolás Idrobo, Dorothy Kronick, and Francisco Rodríguez, "Do Shifts in Late-Counted Votes Signal Fraud? Evidence From Bolivia," University of Pennsylvania, September 30, 2020, Available at SSRN: https://ssrn.com/abstract=3621475 or http://dx.doi.org/10.2139/ssrn.3621475.
[27] Jack R. Williams and John Curiel, "Analysis of the 2019 Bolivia Election," Center for Economic and Policy Research, February 27, 2020, https://www.cepr.net/report/analysis-of-the-2019-bolivia-election/.
[28] David Rosnick, "The Ends Don't Justify the Means," Center for Economic and Policy Research, May 27, 2020, https://cepr.net/report/the-ends-dont-justify-the-means/.
[29] "Elon Musk Confesses to Lithium Coup in Bolivia," Telesur English, 25 July 2020, https://www.telesurenglish.net//news/elon-musk-confesses-to-lithium-coup-in-bolivia-20200725-0010.html.
[30] Max Blumenthal (@MaxBlumenthal), "'Renewable' energy kingpin Elon Musk practically takes credit for the Bolivian lithium coup just months after planning a meeting with Bolsonaro ahead of a Tesla factory in lithium rich Brazil," Twitter, July 25, 2020, https://twitter.com/MaxBlumenthal/status/1286888989832744960.
[31] Leonardo Flores, "How the OAS and US Just Helped Overthrow Another Government," Common Dreams, November 13, 2019, https://www.commondreams.org/views/2019/11/13/how-oas-and-us-just-helped-overthrow-another-government.
[32] Laura Carlsen, "The Organization of American States Is Eroding Faith in Democracy," Common Dreams, Foreign Policy In Focus, March 6, 2020, https://www.commondreams.org/views/2020/03/06/organization-american-states-eroding-faith-democracy.
[33] "US Members of Congress Call for Investigation of OAS Role in Destroying Bolivian Democracy," Center for Economic and Policy Research, September 4, 2020, https://cepr.net/press-release/us-members-of-congress-call-for-investigation-of-oas-role-in-destroying-bolivian-democracy/.

Movement Toward Socialism party (MAS) won in a landslide and several individuals involved in the coup have now been arrested.[34] While this is encouraging, the obvious threat of a second coup makes it unclear to what extent MAS will be able to continue implementing policies that truly protect their population.

The idea of galvanizing our transition to green energy with cheap batteries might seem promising at first glance. But batteries are cheap largely because of brutal human rights violations and colonial resource extraction which profits multinational corporations at the expense of indigenous communities and the environment. This is what happens when the incentive for profit is allowed to govern the treatment of humans and the environment.

So should we stop using batteries, give up on tech and abandon electric cars? No, but we should acknowledge and prevent the adverse impacts that beneficial technology can have when it is used to make profit rather than benefit society. We must ensure that the regions from which raw materials are extracted benefit from the wealth that is created. And we must stop multinational corporations from plundering the resources of entire nations.

Electric Vehicles: A Dangerous Distraction

The transportation sector *is* a major emitter of CO2. According to the EPA, it accounts for 29%, nearly a third, of the total greenhouse gas emissions in the US.[35] We have to address these emissions. Electric vehicles, or EVs, are often portrayed as the solution: if EVs are cheap, and cool, everyone will want one and climate change will be solved! It is easy to see why this belief is so appealing. EV technology seems to offer the possibility that we won't have to change the western travel addiction. We won't have to drive less or fly less; we will just power our travel with clean electricity. But even the promotion of EVs is a capitalist co-option: a fake solution for a very real problem. As Naomi Klein said at a conference on sustainable energy transition earlier this year, “everybody having an electric car is not an actual solution.”[36]

This might seem like a strange statement. Why shouldn't we be investing in electric vehicles? Well, we should be. But we should not be investing in *privately-owned* electric cars. Why? First, private vehicles are less efficient than public transit. Second, we do not have the resources for everyone to have an electric car. The limiting factor is lithium.

In a report for institutional clients, UBS, one of the world's leading investment banks, projected that, if the electric vehicle market grows as expected, lithium demand will far out strip supply sometime in the late 2020s. Even more worryingly, when researchers at Lappeenranta-Lahti University of Technology (LLUT) in Finland and the University of Augsburg Germany, analyzed 18 possible scenarios for lithium supply over the next century, they found that global lithium supplies will run out as early as 2040 and no later than the end of the century.[37] In all scenarios, we will run out of lithium by 2100. “The sustainability of the long-term supply of lithium… and consequently maintaining the energy transition at high levels of electrification… in the transport sector, is at risk,” said Solomon Asfaw, a postdoctoral researcher at LLUT and co-author of the study.[38]

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[34] Cindy Forster, “Last Week’s Bolivian Elections Showed the Right Is Up to Its Old Antidemocratic Tricks,” Jacobin, March 16, 2021, https://jacobinmag.com/2021/03/bolivia-elections-right-wing-salvador-romero.

[35] “Fast Facts on Transportation Greenhouse Gas Emissions,” epa.gov, US EPA, Last updated July 8, 2021, https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions.

[36]“Naomi Klein: Stop Greenwashing the Sustainability Transition,” YouTube, ISEE & Degrowth Conference 2021, minute 12, https://www.youtube.com/watch?v=5-IpOjVOxls.

[37] Peter Greim, A.A. Solomon, and Christian Breyer, “Assessment of lithium criticality in the global energy transition and addressing policy gaps in transportation,” *Nature Communications* 11, no. 4570 (2020), https://doi.org/10.1038/s41467-020-18402-y.

[38] Marian Willuhn,“How Long Will the Lithium Supply Last?” PV Magazine International, September 15, 2020, https://www.pv-magazine.com/2020/09/15/how-long-will-the-lithium-supply-last/.

So with limited resources, we should be focusing on a fair allocation of the resources we *do* have. We should be investing in buses, in commuter rail, in freight trains, and in electric trucking: these are the things society *as a whole* needs.[39] [40]

Public transit is already more efficient than private vehicles. If we directed electric vehicle technology towards "greening" public transit rather than towards creating luxury sports cars for the wealthy, the benefits could be large. Researchers in 2020 found that if the public transit buses in Curitiba, a city in Brazil, were transitioned to electric, the "overall CO2 emissions reduction potential was... 81% and 90%" considering best and worst cases respectively., "using electric buses fueled by the national electric matrix"[41] Investing in passenger rail has also been shown to greatly reduce carbon emissions.[42] We have known how to make passenger trains and trolleys electric for decades. Trains, unlike cars, do not require batteries; you simply put a wire along the track. So why do private electric vehicles get so much media attention as the solution to climate change while the benefits of expanded public transit go largely unmentioned? Because selling private electric vehicles has the potential to make car companies and shareholders a lot of money, while investing in large scale public transit does not.

Of course, trains can not reach everywhere and in certain rural areas buses may actually be less efficient than *small* electric cars. But these circumstances are limited. And large-scale public transportation systems *can* function in rural areas; just think of the school bus.

So when dreams of electric supercars and autonomous electric taxis distract from *real* solutions like efficient public transit, they become simply another profit making scheme and not a solution to climate change.

Electric vehicle technology has the potential to be extremely beneficial, but only if used for the public good.[43] Currently, we are subsidizing electric car companies to the tune of billions of dollars.[44] This is money that should be spent on low carbon public transit. To transition the transportation sector we must demand more and better public transit. We should not be applauding and subsidizing ultrarich billionaires as they create luxury electric sports cars for the wealthy.

More Energy, More Consumption

It's commonly believed that the development of cheap renewables like wind and solar will naturally replace dirty fossil fuels. But even with the growth of low carbon energy production, global CO2 emissions have continued to rise unabated.[45] One of the reasons is that cheap renewable energy does *not* actually replace fossil fuels.

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[39] Alexandre Milovanoff, "The Myth of Electric Cars: Why We Also Need to Focus on Buses and Trains," The Conversation, October 21, 2020, http://theconversation.com/the-myth-of-electric-cars-why-we-also-need-to-focus-on-buses-and-trains-147827.

[40] Cameron Roberts, "There Aren't Enough Batteries to Electrify All Cars — Focus on Trucks and Buses Instead," The Conversation, July 30, 2020, http://theconversation.com/there-arent-enough-batteries-to-electrify-all-cars-focus-on-trucks-and-buses-instead-142545.

[41] Silva Pereira et al."AN ENERGY TRANSITION ANALYSIS FOR A PUBLIC TRANSIT BUS SYSTEM," *Theoretical and Empirical Researches in Urban Management* 16, no. 3 (2021): 53–72, https://www.jstor.org/stable/27035546.

[42] Liang Nie and ZhongXiang Zhang, "Is High-Speed Rail Green?: Evidence from a Quasi-Natural Experiment in China," Fondazione Eni Enrico Mattei (FEEM), 2021, http://www.jstor.org/stable/resrep35934.

[43] Alexandre Milovanoff, I.D. Posen, and H.L. MacLean, "Electrification of light-duty vehicle fleet alone will not meet mitigation targets," *Nat. Clim. Chang.* 10, 1102–1107 (2020), https://doi.org/10.1038/s41558-020-00921-7

[44] "Understanding Federal Tax Credits for Electric Cars," Capital One, September 6, 2018, https://www.capitalone.com/bank/money-management/ways-to-save/electric-car-tax-credit/.

[45] A. J. Jarvis, D. T. Leedal, and C. N. Hewitt, "Climate-Society Feedbacks and the Avoidance of Dangerous Climate Change," *Nature Climate Change* 2, no. 9 (September 2012): 668–71, https://doi.org/10.1038/nclimate1586.

Research suggests that rather than replacing fossil fuels, renewables simply add to the total available energy. And the economy grows to consume both the old fossil fuels as well as the new renewable sources of energy. Historically this is how new energy sources have been incorporated into the economy. As Duncan Clark, a researcher at the UCL Energy Institute writes,

> "The [invention of the] steam engine enabled [humans] to drain coal mines [of water from flooding], providing access to more coal that could power more steam engines capable of extracting yet more coal. That led to better technologies and materials that eventually helped ramp up production of oil as well. But oil didn't displace coal, it helped us mine it more effectively and stimulated more technologies that raised energy demand overall. So coal use kept rising too – and oil use in turn kept increasing as cleaner gas, nuclear and hydro came on stream, helping power the digital age, which unlocked more advanced technologies capable of opening up harder-to-reach fossil-fuel reserves."[46]

More energy drives the development of new technologies, which in turn require more energy — and the cycle continues.

According to an analysis by the corporate research firm Wood Mackenzie, even in the most optimistic models, fossil fuels will make up close to 77% of total energy production long term.[47] "Fossil fuel use will not disappear any time soon," stated David Brown, senior analyst at Wood Mackenzie.[48] In a recent paper appearing in the Journal of Economic Perspectives, researchers projected that, without major interventions, the world economy will likely burn all the oil and natural gas that can be extracted.[49] The reason? Oil and gas are cheap. The global energy demand will only grow as developing countries continue to develop and developed countries continue to increase consumption. Fossil fuels will play a major role in meeting the growing energy demand.[50] In addition, *not* extracting easily accessible oil and gas would mean many trillions of dollars of lost profit for oil and gas companies. As arctic ice sheets melt and advancements in EOR and related technology continue to be made, the fossil fuel that is considered *easy to access* will only increase.

The problem is not just oil companies. It is also governments that have been bought off by oil companies. Rather than reducing our use of fossil fuels, over the next two decades, governments plan to burn twice as much fossil fuel as would be required to limit warming to 1.5° Celsius, as agreed to at the Paris climate accord.[51] In addition, the US and other governments are continuing to provide massive subsidies. According to the international monetary fund, in 2015 global subsidies for oil and gas

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[46] Duncan Clark, "Why Can't We Quit Fossil Fuels?" The Guardian, April 17, 2013, https://www.theguardian.com/environment/2013/apr/17/why-cant-we-give-up-fossil-fuels.

[47] David Brown, "Energy Research & Consultancy," Wood Mackenzie, October 23, 2018, https://www.woodmac.com/reports/macroeconomics-risks-and-global-trends-carbon-constrained-scenario-2018-navigating-a-challenging-path-to-lower-global-emissions-32846/.

[48] Julia Pyper, "Fossil Fuels Won't Go Away, Even If the Energy Transition Accelerates," Green Tech Media: A Wood Mackenzie Business, December 03, 2018, https://www.greentechmedia.com/articles/read/woodmac-fossil-fuels-wont-go-away-accelerated-energy-transition.

[49] Thomas Covert, Michael Greenstone, and Christopher R. Knittel, "Will We Ever Stop Using Fossil Fuels?" *Journal of Economic Perspectives* 30, no. 1 (2016):117-38, DOI:10.1257/jep.30.1.117. https://www.aeaweb.org/articles?id=10.1257/jep.30.1.117.

[50] Peter Dizikes, "Will We Ever Stop Using Fossil Fuels?" Massachusetts Institute of Technology, February 24, 2016, https://news.mit.edu/2016/carbon-tax-stop-using-fossil-fuels-0224.

[51] "The Production Gap Report 2021," SEI, IISD, ODI, E3G, and UNEP, 2021, http://productiongap.org/2021report.

amounted to $4.7 trillion.[52] In 2020 the subsidies had risen to $5.9 trillion.[53] And these subsidies are projected to continue rising. In 2021, researchers found that US subsidies caused oil profits to increase by 55% to 78% above unsubsidized levels.[54]

There is more oil and natural gas in the ground than we can safely burn.[55] Unless drastic measures are taken to prevent this fuel from being extracted, it will be burnt. It's profitable to do so. So while the future looks bright with the flames of California's forest fires, it does not look particularly rosy for the environment or for the helpless humans who live in this environment.

What is to be done?

For 40 years we have known about climate change, and for 40 years we've done nothing. Much of what we have done has been ineffective or even exacerbated the problem: renewables don't reduce emissions; electric cars are profit-making distractions; batteries destroy communities and the environment; carbon capture is used to extract more oil.

So while economists can put forward arguments and frameworks for how the market can solve climate change, 40 years of inaction make a more compelling case: capitalism will not and cannot address climate change. To do so would require businesses to take responsibility for their externalities — costs that they would not otherwise have to pay. While profit remains the driving force of our society, this will not happen.

To actually address the climate crisis we must stop pretending that it will become “economically rational” to be environmentally sustainable. We must stop pretending that a technological magic bullet will save us at the last moment. Most importantly, we must stop using profit as the governing force that dictates how society’s resources are used. We have polluted our environment so thoroughly that technological and scientific developments will be required to halt the process we have started. But until we use these technologies for societal good rather than to generate profit, we have little hope. We do have the ability to mitigate climate change and avoid its worst human and environmental impacts, but until we address the underlying economic factors that govern society, any attempt to “solve” climate change and avoid a disaster is doomed to fail.

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[52] David Coady et al. “Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates,” IMF, May 2, 2019, https://www.imf.org/en/Publications/WP/Issues/2019/05/02/Global-Fossil-Fuel-Subsidies-Remain-Large-An-Update-Based-on-Country-Level-Estimates-46509.

[53] Ian Parry, Simon Black and Nate Vernon, “Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies,” IMF, September 24, 2021, https://www.imf.org/en/Publications/WP/Issues/2021/09/23/Still-Not-Getting-Energy-Prices-Right-A-Global-and-Country-Update-of-Fossil-Fuel-Subsidies-466004.

[54] Achakulwisut, Ploy, Peter Erickson, and Doug Koplow. “Effect of Subsidies and Regulatory Exemptions on 2020–2030 Oil and Gas Production and Profits in the United States,” *Environmental Research Letters* 16, no. 8 (July 2021): 084023, https://doi.org/10.1088/1748-9326/ac0a10.

[55] Bill McKibben, “Global Warming’s Terrifying New Math,” Rolling Stone, July 19, 2012, https://www.rollingstone.com/politics/politics-news/global-warmings-terrifying-new-math-188550/.

Bibliography

Achakulwisut, Ploy, Peter Erickson, and Doug Koplow. “Effect of Subsidies and Regulatory Exemptions on 2020–2030 Oil and Gas Production and Profits in the United States.” *Environmental Research Letters* 16, no. 8 (July 2021): 084023. https://doi.org/10.1088/1748-9326/ac0a10.

Biello, David. “Can Oil Companies Save the World from Global Warming?” Scientific American, April 19, 2016. https://www.scientificamerican.com/article/can-oil-companies-save-the-world-from-global-warming/.

Blumenthal, Max, (@MaxBlumenthal) “‘Renewable’ energy kingpin Elon Musk practically takes credit for the Bolivian lithium coup just months after planning a meeting with Bolsonaro ahead of a Tesla factory in lithium rich Brazil.” Twitter, July 25, 2020. https://twitter.com/MaxBlumenthal/status/1286888989832744960.

Brown, David. “Energy Research & Consultancy.” Wood Mackenzie, October 23, 2018. https://www.woodmac.com/reports/macroeconomics-risks-and-global-trends-carbon-constrained-scenario-2018-navigating-a-challenging-path-to-lower-global-emissions-32846/.

Buis, Alan. “A Degree of Concern: Why Global Temperatures Matter.” Climate Change: Vital Signs of the Planet: NASA's Global Climate Change Website. NASA, last updated October 20, 2021. https://climate.nasa.gov/news/2865/a-degree-of-concern-why-global-temperatures-matter.

Carlsen, Laura. “The Organization of American States Is Eroding Faith in Democracy.” Common Dreams. Foreign Policy In Focus, March 6, 2020. https://www.commondreams.org/views/2020/03/06/organization-american-states-eroding-faith-democracy.

Chen, Angela. “Elon Musk Wants Cobalt out of His Batteries — Here’s Why That’s a Challenge.” The Verge, June 21, 2018. https://www.theverge.com/2018/6/21/17488626/elon-musk-cobalt-electric-vehicle-battery-science.

Clark, Duncan. “Why Can’t We Quit Fossil Fuels?” The Guardian, April 17, 2013. https://www.theguardian.com/environment/2013/apr/17/why-cant-we-give-up-fossil-fuels.

Coady, David, Ian Parry, Nghia-Piotr Le, Baoping Shang. “Global Fossil Fuel Subsidies Remain Large: An Update Based on Country-Level Estimates.” IMF, May 2, 2019. https://www.imf.org/en/Publications/WP/Issues/2019/05/02/Global-Fossil-Fuel-Subsidies-Remain-Large-An-Update-Based-on-Country-Level-Estimates-46509.

“Commodities at a Glance: Special Issue on Strategic Battery Raw Materials.” United Nations Conference on Trade and Development. UN, 2020. https://doi.org/10.18356/9ba5e76c-en.

Covert. Thomas, Michael Greenstone, and Christopher R. Knittel. "Will We Ever Stop Using Fossil Fuels?" *Journal of Economic Perspectives* 30, no. 1 (2016):117-38, DOI:10.1257/jep.30.1.117. https://www.aeaweb.org/articles?id=10.1257/jep.30.1.117.

“Direct Air Capture.” IEA Paris, 2020. https://www.iea.org/reports/direct-air-capture.

Dizikes, Peter. “Will We Ever Stop Using Fossil Fuels?” Massachusetts Institute of Technology, February 24, 2016. https://news.mit.edu/2016/carbon-tax-stop-using-fossil-fuels-0224.

Dorn, Felix, "The Myth of Resilience: Externalizations in the Case of Lithium Mining in Latin America." Universität Kassel. Forschungen, 2019, doi:10.17170/kobra-20190307291. https://kobra.uni-kassel.de/bitstream/handle/123456789/11123/asl_online_F1_2019.pdf?sequence=1&isAllowed=y#page=7.

"Elon Musk Confesses to Lithium Coup in Bolivia." Telesur English, 25 July 2020. https://www.telesurenglish.net//news/elon-musk-confesses-to-lithium-coup-in-bolivia-20200725-0010.html.

"Fast Facts on Transportation Greenhouse Gas Emissions." epa.gov. US EPA, Last updated July 8, 2021. https://www.epa.gov/greenvehicles/fast-facts-transportation-greenhouse-gas-emissions.

Flicking, David. "Capitalism Caused Climate Change; It Must Also Be the Solution." Bloomberg, October 14, 2020. https://www.bloomberg.com/opinion/articles/2020-10-14/capitalism-caused-climate-change-it-must-also-be-the-solution.

Flores, Leonardo. "How the OAS and US Just Helped Overthrow Another Government." Common Dreams, November 13, 2019. https://www.commondreams.org/views/2019/11/13/how-oas-and-us-just-helped-overthrow-another-government.

Forster, Cindy. "Last Week's Bolivian Elections Showed the Right Is Up to Its Old Antidemocratic Tricks." Jacobin, March 16, 2021. https://jacobinmag.com/2021/03/bolivia-elections-right-wing-salvador-romero.

Greim, Peter, A.A. Solomon, and Christian Breyer. "Assessment of lithium criticality in the global energy transition and addressing policy gaps in transportation." *Nature Communications* 11, no. 4570 (2020). https://doi.org/10.1038/s41467-020-18402-y.

Idrobo, Nicolás, Dorothy Kronick, and Francisco Rodríguez. "Do Shifts in Late-Counted Votes Signal Fraud? University of Pennsylvania, September 30, 2020. Available at SSRN: https://ssrn.com/abstract=3621475 or http://dx.doi.org/10.2139/ssrn.3621475.

IPCC, 2018: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)]. In Press.

Jarvis, A. J., D. T. Leedal, and C. N. Hewitt. "Climate-Society Feedbacks and the Avoidance of Dangerous Climate Change." *Nature Climate Change* 2, no. 9 (September 2012): 668–71. https://doi.org/10.1038/nclimate1586.

Kenner, Robert, director. *Merchants of Doubt*. (Participant Media, August 30, 2014).

Kurmanaev, Anatoly, and María Silvia Trigo. "A Bitter Election. Accusations of Fraud. And Now Second Thoughts." The New York Times, June 7, 2020. https://www.nytimes.com/2020/06/07/world/americas/bolivia-election-evo-morales.html.

McKibben, Bill. "Global Warming's Terrifying New Math." Rolling Stone, July 19, 2012. https://www.rollingstone.com/politics/politics-news/global-warmings-terrifying-new-math-188550/.

Meyer, Peter J. "Organization of American States: Background and Issues for Congress." Congressional Research Service, March 14, 2018. https://sgp.fas.org/crs/row/R42639.pdf.

Milovanoff, Alexandre. “The Myth of Electric Cars: Why We Also Need to Focus on Buses and Trains.” The Conversation, October 21, 2020. http://theconversation.com/the-myth-of-electric-cars-why-we-also-need-to-focus-on-buses-and-trains-147827.

Milovanoff, Alexandre, I.D. Posen, and H.L. MacLean. “Electrification of light-duty vehicle fleet alone will not meet mitigation targets. *Nat. Clim. Chang.* 10, 1102–1107 (2020). https://doi.org/10.1038/s41558-020-00921-7.

“Naomi Klein: Stop Greenwashing the Sustainability Transition.” YouTube. ISEE & Degrowth Conference 2021. minute 12. https://www.youtube.com/watch?v=5-IpOjVOxls.

Niarchos, Nicolas.“The Dark Side of Congo’s Cobalt Rush.” The New Yorker, May 24, 2021. https://www.newyorker.com/magazine/2021/05/31/the-dark-side-of-congos-cobalt-rush.

Nie, Liang, and ZhongXiang Zhang. “Is High-Speed Rail Green?: Evidence from a Quasi-Natural Experiment in China.” Fondazione Eni Enrico Mattei (FEEM), 2021. http://www.jstor.org/stable/resrep35934.

Parry, Ian, Simon Black, and Nate Vernon. “Still Not Getting Energy Prices Right: A Global and Country Update of Fossil Fuel Subsidies.” IMF, September 24, 2021. https://www.imf.org/en/Publications/WP/Issues/2021/09/23/Still-Not-Getting-Energy-Prices-Right-A-Global-and-Country-Update-of-Fossil-Fuel-Subsidies-466004.

Pereira, Silva, Juliano da, Tatiana Maria Cecy Gadda, Eduardo Cesar Amancio, Jair Urbanetz Júnior, Janine Nicolosi Corrêa, and Thiago Carvalho dos Reis Silveira. “AN ENERGY TRANSITION ANALYSIS FOR A PUBLIC TRANSIT BUS SYSTEM.” *Theoretical and Empirical Researches in Urban Management* 16, no. 3 (2021): 53–72. https://www.jstor.org/stable/27035546.

Pyper, Julia. “Fossil Fuels Won’t Go Away, Even If the Energy Transition Accelerates.” Green Tech Media: A Wood Mackenzie Business, December 03, 2018. https://www.greentechmedia.com/articles/read/woodmac-fossil-fuels-wont-go-away-accelerated-energy-transition.

“Reducing Reliance on Cobalt for Lithium-Ion Batteries.” Energy.gov. Vehicle Technologies Office, April 6, 2021. https://www.energy.gov/eere/vehicles/articles/reducing-reliance-cobalt-lithium-ion-batteries.

Roberts, Cameron. “There Aren’t Enough Batteries to Electrify All Cars — Focus on Trucks and Buses Instead.” The Conversation, July 30, 2020. http://theconversation.com/there-arent-enough-batteries-to-electrify-all-cars-focus-on-trucks-and-buses-instead-142545.

Roberts, David. “Pulling CO2 out of the Air and Using It Could Be a Trillion-Dollar Business.” Vox, September 4, 2019. https://www.vox.com/energy-and-environment/2019/9/4/20829431/climate-change-carbon-capture-utilization-sequestration-ccu-ccs.

Rosnick, David Rosnick. “The Ends Don’t Justify the Means.” Center for Economic and Policy Research, May 27, 2020. https://cepr.net/report/the-ends-dont-justify-the-means/.

Ross, Aaron. “Send in the Troops: Congo Raises the Stakes on Illegal Mining.” Reuters, July 17, 2019. https://www.reuters.com/article/us-congo-mining-insight-idUSKCN1UC0BS.

Shead, Sam.“Tesla Plans to Use Glencore Cobalt in New Gigafactories.” CNBC, June 16, 2020. https://www.cnbc.com/2020/06/16/tesla-glencore-cobalt-gigafactory.html.

"The Production Gap Report 2021." SEI, IISD, ODI, E3G, and UNEP, 2021. http://productiongap.org/2021report.

"Top Tech Firms Sued over DR Congo Cobalt Mining Deaths." BBC News, December 16, 2019. https://www.bbc.com/news/world-africa-50812616.

"Understanding Federal Tax Credits for Electric Cars." Capital One, September 6, 2018. https://www.capitalone.com/bank/money-management/ways-to-save/electric-car-tax-credit/.

"US Members of Congress Call for Investigation of OAS Role in Destroying Bolivian Democracy." Center for Economic and Policy Research, September 4, 2020. https://cepr.net/press-release/us-members-of-congress-call-for-investigation-of-oas-role-in-destroying-bolivian-democracy/.

Williams, Jack R. and John Curiel. "Analysis of the 2019 Bolivia Election." Center for Economic and Policy Research, February 27, 2020. https://www.cepr.net/report/analysis-of-the-2019-bolivia-election/.

Willuhn, Marian. "How Long Will the Lithium Supply Last?" PV Magazine International. September 15, 2020. https://www.pv-magazine.com/2020/09/15/how-long-will-the-lithium-supply-last/.

"2019 Impact Report." Tesla. Accessed October 22, 2021. https://www.tesla.com/impact-report/2019.