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When the wolf guards the sheep: confronting the industrial machine through green extractivism in Germany and Mexico

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When the wolf guards the sheep: confronting the industrial machine through green extractivism in Germany and Mexico

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Abstract

Deploying an anarchist political ecology approach, this paper compares coal mining in Germany with wind energy development in Mexico. The paper outlines some principles from green anarchy to develop important values for anarchist political ecology, illuminating neglected issues that highlight the colonial nature of the industrial system responsible for the present state of ecological and climate crisis. After highlighting the normalizing and self-reinforcing nature of industrial systems, we turn to examine RWE's mining operations in the German Rhineland. Here, we discuss the example of RWE's Hambach mine, the world's largest open-cast lignite coal mine that—while strongly resisted—is slowly destroying large parts of the Hambacher Forest every year. This destruction is justified by RWE's deployment of green economic recultivation or 'offsetting' initiatives and legitimized by their corporate social technologies that attempt to marginalize and pacify militant resistance in the area. After delving into RWE's attempts at 'sustainable' mining, we then turn to explore wind energy development in one of the greatest wind energy generations sites in the world, the Isthmus of Tehuantepec region of Oaxaca, Mexico—known locally as Istmo. Regarded as a climate change mitigation strategy, wind energy in the Istmo is having similar impacts to traditional extractive industries, not only in how developers acquire land, but also how local indigenous groups that contest the construction of these operations are repressed. The following section will compare and discuss the similarities, differences and relationships between coal and wind energy extraction. Here, we coin the "renewable energy-extraction nexus" to describe how conventional and so-called renewable energy systems are dependent on each other, collaborate, and together expand and intensify industrial development and socio-ecological degradation in a rush to grab all the vital energies of the earth. We conclude by arguing that the green economy is renewing destruction, not only by 'greening'—thus legitimizing—inherently unsustainable industrial activities but by expanding such activities and relationships at the cost of social health and ecological diversity.

When the wolf guards the sheep: confronting the industrial machine through green extractivism in Germany and Mexico[1]

The time has come to recognize industrialism, modernization, development, and 'progress'—as it is euphemistically known—as the greatest threats faced by the earth and its inhabitants. The interrelated and self-propelling ecological, climate, and economic crises—the outgrowth of evolving processes of patriarchy, slavery, white supremacy, ecocide, and genocide, and a prerequisite for state formation—are manifestations of this threat.[1] While industrial development has not been acknowledged as 'the problem,' governments now recognize mass extinction and climate catastrophe—in a narrower sense—as significant threats to the existing political economic order. They recognize, at least discursively, the need to phase out fossil fuels to satisfy the never-ending thirst for energy to power the capitalist mega-machine[2] and push—together with many environmental campaigners—for a shift towards 'clean' or 'green' energy sources: renewables.

Taking an anarchist political ecology perspective,[3] this paper examines the confluence of what mainstream environmental (justice) activists might call the 'problem'—fossil fuel extraction, particularly coal mining—and the 'solution'—renewable energy such as wind energy. We put forward the notion of the 'renewable energy-extraction nexus' to critique the continued reliance on extractivism and ecosystem exploitation that are fundamental to the renewable energy infrastructure supply chains and to highlight the parallels between renewables and extractive industries via two case studies: coal mining in the German Rhineland and wind energy development on the Mexican Isthmus. Both, we show, are (and continue to be) integral to a new 'green economy' that reinforces statist imaginaries and industrial ideologies that attempt to obscure, invisibilize, and consequently renew socio-ecological destruction.

In the present conversation around climate change mitigation, the coal and wind energy

[1] A shorter version of this paper will be published in the forthcoming book: "Anarchist Political Ecology", Volume III, edited by Simon Springer, Martin Locret, Jennifer Mateer & Maleea Acker, Rowman & Littlefield.

industries are positioned as diametrically opposed and often compete over state subsidies and market shares. Policy makers, corporate decision makers, researchers, policy advisors, and environmental NGOs tend to share the enthusiastic embracement of renewable energy technologies to break with fossil fuel dependence and unsustainable energy production.[4] The necessity of a 'move' to 'clean' renewables, which would magically replace 'dirty' fossil fuels, is taken for granted. The messy political history of so-called energy transition is remains overlooked.[5] Even in environmental justice circles, critiques of renewables are often met with fierce opposition.

On further analysis, however, we argue, industrial-scale and corporate-controlled renewables and fossil fuels are accomplices in the struggle to control, usurp, and transform the vitality of the natural environment. Coal mining and wind energy are constitutive of the trajectory of ecocide and a multiplicity of slaveries emblematic of modernity. We draw on Bram Büscher and Veronica Davidov's 'ecotourism-extraction nexus' that demonstrates how resource extraction and ecotourism are actually co-constructed, share similar logics, and retain multiple forms of collaboration.[6] The renewable energy-extraction nexus extends this concept to renewable energy.

The rise of renewables, we argue—as part of climate change mitigation strategies—is embedded in the hegemonic logic of green capitalism. Ideas of 'sustainable development,' the 'green economy', 'ecosystem services', 'smart agriculture', and 'resilience' have all been positioned to enable the continuation of capitalist development under the name of climate change mitigation, conservation and/or adaptation.[7] The green economy not only attempts to reconcile ecosystem health and capitalist development, but it also offers new natural resource valuations that create new markets and opportunities for expanding economic growth. This entails integrating previously excluded nonhuman natures or, in economic jargon, 'market externalities' into economic logics and accounting practices. The green economy is the economy that now recognizes, includes, and consequently further intensifies the exploitation of 'nature', enmeshing further natural resources into the machinations of economic and financial structures.[8] A notable machination is the discursive transformation of nature into 'ecosystem

services' or 'natural capital', which necessitates the further spread and entrenchment of enclosures, greater ecosystem surveillance, and the cataloging and discursive fabrication of nature as a commodity service to become commensurable and tradable within financial markets.[9] This transformation of flora and fauna into carbon, biodiversity, and other so-called environmental commodities allows the enactment of 'offsetting' logics, which assert that ecological destruction can be compensated with payments towards emission reductions or environmental engineering initiatives to create ecological improvements in new or existing environmental sites.[10] The creation of 'new natures' through restoration activities is often accompanied by large-scale land dispossession to facilitate 'No Net Loss', 'land degradation neutrality' or 'carbon neutrality', and further forms of 'accumulation by restoration'.[11] In short, offsetting is a crucial mechanism that claims to reconcile capitalist development with nature 'conservation', which has become increasingly popular with extractive (and other) industries.

Currently, industrial-scale renewable energy generation relies on—and is co-constructed by—continued hydrocarbon and mineral extraction processes and conventional energy infrastructures. Rather than breaking with the logics, power relations, and processes of fossil fuels, they deepen the existing political economy of energy, processes of dispossession, destructive social and ecological relations, and accumulation. Providing two case studies from different extractive industries, cultural contexts, and countries, we place coal mining in Germany and wind energy development in Mexico side by side to examine key features of the renewable energy-extraction nexus emerging across sites. The studies are built on extensive field research, with field visits and contacts with people in these areas. We draw on participant observation, public events, informal and semi-structured interviews[12] in addition to secondary research material including books, newspaper articles, promotional materials, and blogs.

We begin our paper by first offering some principles from green anarchy to develop important values for an anarchist political ecology critique of the renewable energy-extraction nexus, illuminating neglected issues that highlight the colonial nature of the industrial system responsible for the present state of ecological and climate crisis. After highlighting the

normalizing and self-reinforcing nature of industrial systems, we turn to examine RWE's mining operations in the German Rhineland. We discuss RWE's Hambach mine, the world's largest open-cast lignite coal mine that—while strongly resisted—is slowly destroying large parts of the ancient *Hambacher Forest*. This destruction is justified by RWE's deployment of green economic technologies of governance including nature recultivation and offsetting initiatives[13] and legitimized by their corporate social technologies that attempt to marginalize and pacify militant resistance in the area.[14] After delving into RWE's attempts at 'sustainable mining', we then turn to the largest wind energy (factory) development site in Latin America, the Isthmus of Tehuantepec region of Oaxaca, Mexico—known locally as the *Istmo*. Regarded as a climate change mitigation strategy, wind energy in the *Istmo* has similar impacts to traditional extractive industries, not only in the ways developers acquire land, but in relation to the violence dispensed against local indigenous groups contesting the construction of these projects. The next section will compare and discuss the similarities, differences, and relationships between coal and wind energy extraction. Here, we coin the 'renewable energy-extraction nexus' to describe how conventional and renewable energy systems are dependent on each other, collaborate, and together expand and intensify industrial development and socio-ecological degradation in a rush to grab all the vital energies of the earth. We conclude by arguing that the green economy is renewing destruction, not only by 'greening'—thus legitimizing—inherently unsustainable industrial activities, but by expanding such activities and relationships at the cost of social and ecological diversity and health. Value is extracted from the process of 'greening' itself, while industrial systems continue to exercise 'war by ecological crisis'.

Neither market nor state: sheep against industrial progress

Michel Foucault's genealogy of government locates the root of government in the Christian shepherd-flock analogy: god is the shepherd of 'men', and the shepherd (with 'his' connection to god) is the governor of the flock. In his reading, government becomes the shepherd and the population becomes the flock.[15] The green economy, then, is akin to letting a pack of wolves guard the sheep or, more accurately, letting governments and corporations organize ways

to manage and 'repair' ecologically and socially disastrous life forms that they themselves have organized for so long. What is the goal or the endgame of 'society', the 'state', the 'government?' Instructive is verse 1:28 in *The Book of Genesis*: "Be fruitful and multiply, and fill the earth and subdue it; and have dominion over the fish of the sea and over the birds of the air and over every living thing that moves upon the earth".

Plenty of work has illustrated the violence and hierarchical ordering foundational to the state system, and government as one of its manifestations.[16] This violent ordering is integral to the statist system; the "pervasive, historically contingent organizational logic that valourises and naturalises sovereign, coercive, and hierarchical relationships, within and beyond state spaces".[17] The state system, the capitalist economic system, and the industrial order and ideology that it protects and relies upon are themselves the product of—and reproduce—colonial mindsets and practices, reliant on the exploitation of humans and nonhumans alike. Scholars have long identified the continuities and intricate relationship between capitalism, industrialization, and slavery—and especially plantation slavery as essential to US American capitalism.[18] C. L. R. James and Eric Williams first argued for the recognition of the centrality of slavery to capitalism and 'modernity' over 80 years ago. By showing how Atlantic modernity was constructed through engagement with colonial capitalism in the West Indies, James argued that slavery was a product of Renaissance rationality,[19] while Williams explored the relationship between colonial development and European industrialism to illustrate the contradictions in modernist rationality.[20] Indeed, global capitalist development was fundamentally dependent upon colonial appropriation and exploitation, and "colonial processes are also central to the production of racialized inequalities upon which capitalism is itself structured".[21] Plantations and plantation slavery were key to the development of modern scientific management techniques[22] and profits from slave trade and plantations were a financed Britain's nascent industries,[23] religious institutions, hospitals, railways[24] and more.

Contemporary, or 'new capitalism', according to Sven Beckert, characterized by wage labor and states' unprecedented bureaucratic, infrastructural, and military capacities "had been

enabled by the profits, institutions, networks, technologies, and innovations that emerged from slavery, colonialism, and land expropriation".[25] Capitalism itself, David Graeber famously argued, constitutes a continuation of slavery in a broad sense, as "any form of labor in which one party is effectively coerced".[26] They share the reliance on separation of place of production and social reproduction, the exchange of human powers for money, the requirement of the social death of workers/slaves, the production of 'abstract labor' and the embedding in an 'ideology of freedom'.[27]

Governments and their apparatuses of administrative decentralization—based on multiple systems of oppression such as race, gender, class, and speciesism—drive political stability, industrial 'progress', and organizational expansion.[28] These forces seek constant organizational self-affirmation, guarding their existence and expanding their mentality, relationships, and purpose across the world. This religious drive manifests itself as economic growth, urbanization, and infrastructural development that require constant mining, processing, manufacturing, and consumption of natural resources, both human and nonhuman.[29]

Majid Rahnema[30] and Lorenzo Veracini[31] demonstrate the viral and bacterial qualities of colonization and development that receive little attention or redress, instead provoking cognitive dissonance from those immersed in industrial life—life infected by rhetoric of 'peace', technological enchantment, and ideas of 'progress', economic or otherwise. Organizational stability and qualitative and quantitative growth are the modus operandi of modernity and consumer society. This leads to two foundational insights for anarchist political ecology. The first is explained well by Kirkpatrick Sale,[32] summarizing Murray Bookchin:

> "[S]ocieties that dominate nature also dominate people. Where there is the idea that a massive dam should be built to control a river's flow, there is the idea that people should be enslaved to build it; where there is the belief that a giant metropole may serve itself by despoiling the surrounding countryside and devouring its raw materials, there are castes and hierarchies to ensure that this is accomplished."

Embedded here is Elisée Reclus' realization that *humans are nature* or "nature becoming self-conscious"[33] and Mikhail Bakunin's notion that "every enslavement of men [sic] is at the

same time a limit on my own freedom,"[34] as these notions are applied to nonhuman life and megaprojects from ancient civilization to present. Eco-anarchism, as John Clark reminds us, "is the form of political ecology that situates the political most deeply in Earth history and in the crisis of the Earth".[35] Yet, capitalist development has instilled the exact opposite idea: the more nonhuman and human lives are enslaved and consumed, the greater 'freedom' one is meant to obtain. While the fruits of modern life—cars, planes, computers, microwaves—symbolize this new freedom (for those who can afford them), these liberties are intrinsically enmeshed with military conquest, classical and modern slaveries,[36] and ecocide that have become historically justified,[37] erased, or made seemingly 'irrelevant' in everyday life.[38]

The "natural resource base upon which industrial societies stand is constructed in large part through the use and threatened use of armed violence," Liam Downey and colleagues have argued, and it "quickly becomes apparent that armed violence and the environmental degradation associated with it are intimately woven into the everyday lives of core nation citizens through the purchases they make and the fuels they consume".[39] Furthermore, Tanya Li writes: "When the land is needed but labour is not, the most likely outcome is the expulsion of people from the land,"[40] often by military or other violent forces. This sounds oddly familiar to A.D. Moses' discussion of Jean-Paul Sartre (1968) and the politics and methods of post-World War II genocide where "physical annihilation was checked by the need for indigenous labour," as colonial powers' response "to the inevitable guerrilla resistance was to annihilate part of the population in order to terrorize the rest"[41] into submission to a colonial (producer-consumer) paradigm.[42] This connection between widespread political violence and ecological degradation or the "genocide-ecocide nexus", as Damien Short calls it,[43] plays a fundamental role in the colonial and, by extension, industrial progress that takes on increasingly complicated, yet progressive forms.[44] In sum, the continuation of the present trajectory of industrial development requires increasing methods of strategic violence and ever-more sophisticated forms of participatory $lavery that are deeply intertwined with dependency, addiction, and systemic path dependency.

This leads to the second point: the recognition that both ancient and industrial

civilizations and later forms of state organization, in all of their varieties, are inseparable from colonialism and the colonial model.[45] Explaining the complexities and continuities of colonial genocide, Patrick Wolfe reminds us: "invasion is a structure not an event".[46] It is from this perspective that we assert that industrial development itself is a system of domination, which domesticates humans and nonhumans, assimilates difference, and transforms ecosystems to a point of severe degradation or destruction. The evolution of industrial development has necessitated various political modes of governance and politics—autocracies, oligarchies, and democracies—that always required some form of slavery or exclusion.[47]

Transcending every type of capitalism—Keynesian, command and control, neoliberal, financial and so on—a focus on industrialism[48] allows us to peer into the core of capitalism and its material embodiments—guarding against state and working class romanticism. It is industrialism itself, and its political and culture industries, that manufacture desire, ambitions, and consent,[49] imbue human dependency on, addiction to, and normalization of political, economic, and industrial structures.[50] The normalization of industrialism in everyday life prevents even critical scholars from acknowledging their implicit statists and industrial subjectivities.[51] Such acknowledgment means resituating how we view electricity,[52] sanitation systems,[53] roads,[54] and other industrial infrastructural amenities. It demands analyzing them as systemic techniques of integration and domestication to create and reproduce an intricate, energy-intensive network that justifies, enables, and spreads industrial relations and infrastructure.[55] In short, industrialism constitutes the material practice of conquest, otherwise known as the industrial, social,[56] or genocide machine,[57] which—despite its negative social and ecological consequences—is becoming rebranded as 'sustainable' and 'green', as the study of political ecology has revealed so well.

The remainder of this paper explores how the industrial system continues in the face of ecological, climate, and economic crisis, or how a wolf can become a shepherd in charge of the flock, by investigating the renewable energy-extraction nexus through coal mining in Germany and wind park development in Mexico. We focus specifically on the material heart of the

industrial system, which is extractivism—the mining of the earth and harnessing of wind.

Greening destruction: disciplining and domesticating human and nonhuman nature in and around the Hambach coal mine

Figure 1. Hambach mine. Source: Hubert Perschke[58]

With a size of 85 km^2 or 8,500 ha, the Hambach coal mine (figure 1) is known to be the largest human-made hole in the world.[59] Throughout its lifetime, the open-pit lignite mine that is 'migrating' across the Rhineland has been responsible for the forced displacement of thousands of people, the destruction of one of Europe's most ancient and biodiverse forests (the *Hambacher Forest*), and the release of more greenhouse gas emissions than any other industrial project in Europe.[60] Despite intense resistance against the mine—forest occupations, demonstrations, and sabotage, among others[61]—the social and ecological disaster in and around the mine continues to unfold.[62] The defense of the mine at any cost by police and corporate security forces is embedded in Germany's long tradition of surveillance of resistance, intensifying social control, and increasingly visible authoritarian state structures leading to violent responses to any kind of contestation.[63] Most recently, this can be seen in the violent repression of environmental defenders attempting to stop the construction of a new highway in 2020,[64] as well

as the well-documented state violence against G20 protesters and their long prison sentences in 2017.[65] Both point to the hypocrisy of the image of the German state as both socially and environmentally progressive. The former state-owned electricity provider, coal mine operator, nuclear and renewable energy producer, and self-proclaimed 'energy giant' RWE and its shareholders continue to benefit from political support for ecologically destructive activities like coal mining and their close ties to the political establishment.[66]

The Rhineland thus serves as a great example to illustrate how the ecological crisis is discursively acknowledged and subjected to policy making while extractive interests continue to be protected. The German state reconciles commitments to climate change mitigation by mobilizing green technologies and market-based mechanisms—through promotion of renewables, e-mobility, and carbon pricing—as solutions, while selling new, 'cleaner' coal power stations as contributions to climate protection[67] in an attempt to fragment popular contestation and to ensure public support for mining.

RWE's work to rebrand mining as 'sustainable' is justified by scientific abstractions and calculations that focus on singular aspects of ecosystems—'carbon' and 'biodiversity'—that neglect numerous issues and qualities associated with interventions into ecosystems.[68] Continued extractivism is possible because it lies not only at the heart of industrial production, but at the heart of modernist ideology and the state-system; involving not only the mining of (fossil) resources but also the capturing of hearts and minds of the population. Green extractivism, or green mining, is thus central to the reconciliation of industrial destruction with social and ecological 'sustainability' in the form of the 'green economy'. In the Rhineland, this occurs through a number of mechanisms: firstly, the anchoring of RWE as 'good corporate neighbor' and responsible employer with the best interest of local communities and the wider German public at heart. Secondly, sustainable extractivism is constructed through 'greenwashing' of its operations and supply chains to ease concerns around ecological impacts and human rights violations which go hand-in-hand with the spectacularization[69] and commodification of the mining experience.[70] Thirdly, RWE is able to appear 'progressive' and

'environmentally responsible' through divide-and-conquer strategies to manage resistance against coal mining; from engagement with conservation organizations to the criminalization of and physical violence against forest defenders.

Positioning RWE as responsible corporate neighbor and indispensable partner for the German public involves substantive investments into a 'Public Relations war' to win the hearts and minds of the population,[71] ensuring loyalty to RWE's corporate brand and engineering, and buying consent to its projects. Propaganda "is cheaper than violence, bribery and other possible control techniques"[72] or, in the words of Paul Virilio, "[b]eating an enemy involves not so much capturing as captivating them".[73] Beyond RWE's Public Relations campaigns (through the advertising and marketing industries and associated consultancies), this involves investments into astroturfing (the setup of fake citizens' associations), lobbying efforts in schools, sponsorships of community, police and fire service events, sports clubs and school projects, among many others.[74] These efforts to win over the population extend to investments into new recreational infrastructure including a huge cycling and hiking network, cultural activities, museums, exhibitions, and financial support for stadiums as well as school projects. At the same time, RWE has worked hard to dismiss concerns about "irreparable ecological consequences" raised by government authorities and environmental groups as early as the 1980s.[75] The state's environmental ministry suppressed a study warning of the disastrous ecological impacts of coal mining in the region (including biodiversity loss, ecosystem degradation, and desertification) and doubting RWE's ability to recultivate, and/or mitigate the impact of the mine.[76]

Green-washing activities take place on different levels of operation. Internationally, RWE has been leading efforts to 'improve' coal supply chains through *Bettercoal*, a voluntary initiative that involves mine audits and stakeholder engagement, which serves as convenient opportunity to deflect critique, according to research participants.[77] Domestically, the company promotes its research on sustainable coal, framing its power plants as 'sustainable' due to achieved CO_2 emission reductions, increases in efficiency, as well as carbon offsetting. In its 'innovation center', RWE publicly displays its testing of carbon capture and storages technologies ('CO_2

washing') as 'technology of the future', and 'almost ready for application'. To ensure further local support, RWE set up a recultivation center that is responsible for its nature 'restoration' work, as part of (legally required) compensation measures in the form of enormous environmental-engineering experiments based on the belief in the human capacity to recreate nature.[78] These offsets are meant to compensate for the destruction of species habitat (read nonhuman forest-life) in the *Hambacher Forest*. Compensation measures include the newly restored *Sophienhöhe,*[79] an artificial forested hill that was "built from scratch" by the mine operator, according to RWE research participants. The offset involves careful planning and "scientifically informed" mixing of soils—creating a diversity of ecosystems from more barren, sandy areas featuring 'rare species' to more fertile forest grounds that "require" the continued destruction of the original forest to secure provision of topsoil (according to the company)[80]. Ironically, RWE not only built the largest artificial mountain in Europe, but has simultaneously been financing mountaintop *removal* to mine coal in the United States.[81] The new landscape or "better nature," according to RWE, involves replanting trees and shrubs, establishing artificial bodies of water and "local biodiversity hotspots" that are complete with resettled ant hills, relocated hazel dormouse colonies, and dead tree trunks for breeding habitat. The restoration of *Sophienhöhe* is frequently showcased and has become a destination for regular scientific and touristic excursions and research projects. The creation of this 'better nature' is based on the very same violent processes of classification, quantification, and measuring of life mentioned above—what Camila Moreno and others have called "ecological epistemicide"[82]—ignoring interconnections and social relations to the land and enabling claims of 'net gain' of trees.[83] In effect, *Sophienhöhe* is the outcome of RWE's efforts to make nature commensurable, legible, and controllable; requiring continuous surveillance, monitoring, and 'careful management' including regular fertilizer application for decades after planting these 'new forests'.

Sophienhöhe forms part of the spectacularization and commodification of the mining experience that is manifest in its transformation through "communicative infrastructure" and into "extractive attractions".[84] The *Sophienhöhe* contains 150 km of hiking and cycling trails, an educational nature train for students, numerous visitor points including lookouts, Celtic tree

circles, and a 'giant redwood trail' to spectacularize the visit. Some trails are equipped with information boards containing QR codes to allow visitors to experience 'nature' through their smart phones, and learn about 'the new landscape and its flora and fauna'.[85] Novel technology is thus used to mediate human relationships not only with the fauna and flora around them, but also with their 'creator'—RWE. 'New nature' is heavily pre-structured and policed to prevent engagement beyond Sunday-strolling and dog-walking, signposted, and delineated by shrubs to keep people on the path: "spatial environment[s] saturated with contemporary ideologies of containment and exclusion".[86] Signs, rules, 'natural grids', and fellow visitors prevent exploration beyond the pre-planned trails, turning *Sophienhöhe* into a "highly regulated, predictable and enclosed environment – like city parks positioned to serve as PR".[87]

Sophienhöhe is complemented by the creation of tourism opportunities around the mine, such as viewing platforms complete with commercial opportunities including a bar and a restaurant. Visitors are invited to enjoy the view over the mine from the revealingly named *terra nova* ('New Earth') platform, modeled after a beach resort in anticipation of the planned transformation of the mine into Germany's second biggest lake upon mine closure. "Visitors from near and far are invited to enjoy the view, drinks, food and games, and applaud the 200 plus-meter long diggers, the 'largest mobile machines of the world', invoking fantasies of huge playgrounds where soil is shifted and men have God-like control over both machinery and nature".[88]

Through the creation of 'better nature', its diversity of greening activities, and corporate social responsibility activities, RWE draws in conservation organizations and other potential critics to ensure the smooth functioning of the system.[89] The goal of such corporate engagement is "to isolate the radicals, cultivate the idealists and educate them into becoming realists, then co-opt the realists into agreeing with industry".[90] Conservationists are invited to the RWE recultivation conference, given a stage to present their research on orchids and butterflies, and receive public praise for their work. Local people are sent regular 'neighborhood magazines', in which they can learn about RWE's recultivation work and the unruly and deranged 'radical' forest

defenders. Other community engagement activities include RWE's 'baking cart' that drives across the country handing out baked goods, recipes, RWE material, and energy saving advice. The company was also engaged in a 'Peace Plan' as part of the 'Hambacher Dialogue' where it engaged with 'moderate' protesters, and has undertaken a large-scale acceptance study, *The Power of Participation*, to explore how stakeholder engagement and dialogue can "avoid or reduce resistance" against megaprojects to protect "the future viability of our business".[91]

RWE's sponsorships and multiple strategies to buy and engineer consent create new dependencies while the displacement of entire villages increases social fragmentation and alienation from each other and the land, breaking down social relationships. At the same time, coal mining—and its social and ecological 'costs'—are further normalized through the capturing of hearts and minds of surrounding populations, planting pro-corporate ideologies, industrial desires, and fears of 'de-industrialization', 'blackouts', and 'primitivism'.[92] These are fostered by RWE's Public Relations work, lobbying, and (so-called) Corporate Social Responsibility activities, complemented by its infiltration into decision making bodies at all levels of the German government. "Wherever decisions are taken, you find people who work for RWE or have worked for RWE," according to one local resident—testifying to RWE's role in shaping the physical, political, cultural, and social environments in the Rhineland and beyond. These technologies serve to invisibilize the inherent violence in industrial coal mining (or any large-scale electricity production) as well as the violence against forest defenders and dissidents.[93]

Opposition against the mine has been harshly disciplined, through various forms of (aggressive) policing, public-private security partnerships,[94] surveillance, arrests, and court procedures, subjecting land defenders and residents to ever greater control. More combative resistance against the mine has been met with police and corporate violence involving the increasing criminalization of forest defenders, physical attacks, and threats of rape and death. The German state, of course, is intrinsically tied to fossil fuel interests, large-scale energy projects and infrastructure provision, having to defend such "critical infrastructure" projects at all costs.[95] It is no coincidence then that "protests, vandalism, 'blockades and "lock-ons"' against

resource extraction companies and “large-scale infrastructure” are singled out in Europol terrorism reports,[96] branding anti-capitalist, animal, anarchist, and environmental social movements as “extremist” and “terrorist”.[97] The mine is ‘defended’, however, not only by state/security forces and the media, but also by all those who are captivated by ideas of progress, modernization, and the green economy, having learned to hold dear the comforts gained and the ‘promise’ of good, ‘honest’ mining jobs.

Meanwhile, the world’s largest hole continues to migrate. This ‘hole’ is visible from the four-lane highway that cuts through the landscape, allowing drivers to catch a glance of the moon-like landscape. The solar panels lining the highway, and the enormous windmills around the mine, play into the ‘greener future’ that RWE promotes and markets in concert with the ‘better nature’ and ‘pretty landscapes’ the company claims to produce. The windmills become collaborators in the quest for accumulation and legitimacy, capturing the wind, and feeding into the electric circuits which power the diggers four hundred meters below. They illustrate the spectacular convergence of coal and renewables—the ‘problem’ and the ‘solution’—for the sake of intensified industrial activity, economic growth, and power.

Figure 2. Windmills at the edge of Hambach mine. Source: Andrea Brock

Harnessing people, capturing wind, and subduing rebellion in Oaxaca, Mexico

Figure 3. Wind Park in the North Istmo. Source: Wiki commons

The unique geographical features and positioning of the *Istmo* between the Gulf of Mexico and the Pacific Ocean has triggered a wind rush in the region. It began with the 2003 USAID sponsored report, *Wind Energy Resource Atlas of Oaxaca*,[98] which mapped the "excellent" wind sources in the region that the International Finance Corporation later called "the best wind resources on earth".[99] The coastal *Istmo* can be divided in two sections: the North and the South. Sitting at the base of the Atravesada mountain range, the Northern part of the region is generally regarded as Zapotec (*Binníza*), while the Southern side is predominately Ikoot (Huave) territory. These territories overlap, while the Istmo is home to five different ethnic groups as well as a *mestizo* population.[100]

Since 2004, wind energy development has resulted in the construction of 1,642 wind turbines[101] with twice this number being planned for the region.[102] While the desire for work, social development, and prosperity initially created support for wind projects in the region, many of these benefits remained unfulfilled or only benefited a minority of the population—politicians, their networks, and select land owners.[103] The towns and fishing communities of the 'South' witnessed wind park developments in the Northern region, and as wind projects began spreading

southward, people began organizing to resist them, especially those who valued their semi-subsistence lifestyle intertwined with the land and sea. Resistance and collaboration with the companies took on archetypal qualities in the Istmo.[104] Contestation in the North is focused on exploitative land deals and labor contracts as locals fight for greater incorporation, as well as for individual and collective benefits. This includes unions—who were initially fighting for more wind parks—criticizing wind companies for bringing in technical employees and offering unequal pay between Mexican and Spanish workers. Meanwhile, in the South, the total rejection of wind energy projects largely arose, according to interviews, from the belief that wind companies (and the wider political system) cannot be 'trusted' since they "propagate lies" to take people's land and "damage the sea"—thereby undermining local subsistence. Much has been published on wind energy in this region,[105] but here we highlight its role as an emerging apparatus of industrial control and vital usurpation.

The cries of the 1980s punk band, *Oi Polloi*, "Harness the wind—Harness the waves—We don't need this filthy nuclear waste!" have come to haunt the present. Emerging from the environmental movement as an alternative to coal and nuclear energy production,[106] wind energy, especially its industrial-scale instillation, has been recuperated to renew business as usual. Until today, the environmental movement, leftist and other progressive circles have viewed industrial-scale wind energy as a solution to the climate crisis and a pathway to ecologically sustainable futures. To lay bare the delusions of the green economy and the spell cast by renewable energy (marketing), the reality of wind energy development needs to be analyzed for what it is actually doing in practice—rather than based on technological idealism or ecological modernization theory. This means briefly examining four aspects of wind energy development: the necessity of extractivism for raw materials, local social and ecological impacts, ownership and benefits, and wind power energy consumption.

The resources to create industrial-scale wind energy, firstly, come from mining and dredging of the earth. Comprised of metals (iron, copper, aluminum, nickel, etc.), concrete, plastics, oil, and rare earth minerals (dysprosium, praseodymium neodymium, terbium), so-called

renewable wind energy requires not only traditional extractivism, road infrastructures, and (fossil fuel) transportation, but also the deployment of marketing and security apparatuses to make extraction operations politically feasible.[107] Highlighting this point early on, Eric Bond and Liam Downey recognize not only that increases in technological development can result in rising overall resource use, but that "widespread commercialization of 'green' technologies has the potential to create new, more serious, or at least different environmental and humanitarian problems for less wealthy and less powerful groups".[108] While the ecological and policing cost of mining is well documented,[109] mineral extraction also leaves a daunting shadow over wind and other renewable energy technologies.

A two-megawatt wind turbine uses roughly 150 metric tons of steel for the reinforced concrete foundations, 250 metric tons for the rotor hubs and nacelles and 500 metric tons for the tower.[110] This also includes 3.6 tons of copper per megawatt.[111] Drawing on a World Bank (2017) report,[112] Jason Hickel estimates that to produce an annual output of about 7 terawatts of electricity by 2050 with wind and solar infrastructure will require mining "34 million metrics tons of copper, 40 million tons of lead, 50 million tons of zinc, 162 tons of aluminum, and no less than 4.8 billion tons of iron".[113] This estimate does not take into account fuels necessary for mining, processing, manufacturing, and transporting raw materials and manufactured components. According to Begoña Guezuraga and colleagues, the main contributors of wind energy's CO_2 footprint are steel, concrete and cast iron production, while plastic production constitutes the most energy-intensive process.[114] The production of every ton of steel requires roughly 0.8 tons of coking (metallurgical) coal,[115] in addition to the energy required for steel production. While carbon accounting has surreptitiously justified these processes, the issue of mining and processing rare earth minerals to create wind turbine permanent magnet generators remains publicly neglected.

Baotou (Inner Mongolia) and South East China have historically produced between 85-98% of rare earth metals used in wind turbines, electric cars, smart phones and other technologies.[116] 98% of the heavy rare earth elements used in the EU came from China in

2020.[117] Between 2014 and 2017, according to Kalyeena Makortoff, 80% of US rare-earth imports originated from China, who currently "accounts for about 70% of global production".[118] In a BBC report, the Baotou mining and processing area is described as "hell on Earth," a terrifying dystopic industrial environment filled with pollution and cluttered with factories, pipelines, high-tension wires and artificial lakes filled with "black, barely-liquid, toxic sludge" that "tested at around three times background radiation".[119] The reliance on Chinese resources and consequent fearmongering have recently led to EU and US strategies to diversify supply chains and push new extractive frontiers elsewhere. In response to China stopping a few shipments of rare earth minerals in 2012 in what was soon politically constructed to be a "supply crunch" triggering political panic and new investments across the world, attention was directed towards "strengthening the European rare earth supply chain"[120] and rare earths quickly "became 'strategic', and 'vital' materials crucial to 'security', 'technology', and 'the future'".[121] [2]

Mined through open pit, underground, and in-situ leaching methods,[122] rare earth ore deposits contain "low concentrations [of desired minerals] ranging from 10 to a few hundred parts per million by weight" and, especially in ion-adsorption clay, are "symbiotic or associated with the radioactive elements uranium and thorium".[123] Rare earth mining and processing, Nawshad Haque and colleagues write, tends to be "energy, water and chemical intensive with significant environment risks affecting water discharges (radionuclides, mainly thorium and uranium; heavy metals; acid; fluorides), tailing management and air emissions".[124] While rare earth elements are not actually rare at all, what is rare about them "are the places where it is politically acceptable to mine and process them in a cost-effective manner".[125]

Renewable energy thus involves socially and ecologically destructive mining processes with large amounts of tailings that contain heavy metals, toxic, and radioactive wastes which end up in the air, water, soil, animals and humans. Based on the same World Bank report, Hickel estimates there will be 35-70% increase in neodymium—an essential mineral for wind turbines—

[2] Rare earth minerals and their geological knowledge production, Julie Klinger argues, have always been politically entangled and deeply colonial, imperial, and militaristic. Rare earth elements became key to industrial and military development from the end of the 19th century onwards, and British, Austrian, and German companies quickly came to dominate production, primarily in India and Brazil.

and for grid battery storage over "40 million tons of lithium," which is a "2,700 percent increase over current levels of extraction".[126]

The quantity and intensity of chemicals and toxic materials pouring into ecosystems are difficult to measure, not only because of political, but also epistemic reasons in accounting for full-spectrum environmental impacts. While in theory, Amory Lovins points out, wind turbines could be built without rare earth minerals with geared turbines,[127] in practice this appears not to be the reality for industrial-scale wind parks—especially offshore wind parks and those in areas of extreme wind.[128] Like other industrial enchantments (such as computers and smart technologies), wind farms continue to require extractivism and generate toxic, radioactive, and, later, electronic waste. A "3.1 MW wind turbine created 772 to 1807 tons of landfill waste, 40 to 85 tons of waste sent for incineration and about 7.3 tons of e-waste per unit," explain Benjamin Sovacool and colleagues, who estimate that 1000,000 new wind turbines by 2050 to meet climate change mitigation standards "will result in another 730,000 tons of e-waste".[129] Recycling capacities are low and varying between materials, yet retain roughly a 20% recycling rate,[130] which the EU is currently trying to improve. Raw material extraction and e-waste are absent from much carbon accounting, and thus often invisible in the climate change debates.

Drawing on the experience of the Istmo, the second aspect of wind energy relates to the social and ecological impacts generated by wind turbines, the result of the placement, construction, and operation of wind parks. The *placement* of wind turbines requires locating suitable land and running tests akin to those published in the *Wind Resource Atlas of Oaxaca*. This necessitates not only negotiating the physical geography of hills, trees, bedrock, and ground water, but also the human geography of local political leaders, elites, and landowners in the region. The land contracting is complicated by illegible and contested land relations, such as with *ejidos* and communal land.[131] Securing land in the Istmo requires various mechanisms, creating at times contradictory dynamics including limited or selective consultation and benefit sharing; neglecting economic, cultural and ecological impacts; rolling out wind company propaganda—or Public Relations—to parade ideas of jobs, individual prosperity and collective social development;

and deploying manipulation, intimidation and deception tactics led by middlemen ('coyotes'), to secure land. Once land is secured, *construction* begins with the clearing of trees, bushes, and other plants (including local herbs/medicines) to build roads, wind turbine foundations, and subterranean and above-ground power lines. Digging wind turbine foundations requires holes that are roughly 7-14 meters (32-45 ft.) deep and about 16-21 meters (52-68 ft.) in diameter, depending on the specific geological composition of the land. These holes, as already mentioned, are filled with large amounts of steel and concrete. Notably, foundations are much deeper in areas without bedrock, such as the Lagoon Superior where local fishermen claim that foundations were up to seventy meters deep. In the Istmo, fresh ground water is located one to three meters below the ground and wind turbine foundations with replace this water with steel-reinforced concrete foundations. Once in *operation*, killing of birds and other animals has been documented,[132] along with testimonies of oil leaking into the grazing grass and water wells. Alterations to the water table, the raising of roads, and the constant swirling of the turbines, farmers report, cause extreme drying and flooding of the land. "[E]ven in this weather my tomato has gone dry—really fast. I am not going to be able to farm in the rainy season because of the road they made over there is seventy centimeters higher," explains a farmer, who compares their land with being "inside a pool".[133]

Other impacts have been reported in areas where wind turbines are built close to cities and bodies of water. In towns like La Ventosa, which is nearly enclosed by wind turbines and draped with electrical infrastructure, people report symptoms akin to the "wind turbine syndrome"—headaches, tinnitus, insomnia, hypertension—and other severe illnesses.[134] While this is supported by a range of studies,[135] it requires further investigation. Wind energy development on and/or near the sea, as in the case of the Barra de Santa Teresa (Barra), digging, drilling, and the use of heavy construction machinery have severely impacted aquatic populations that are extremely sensitive to electromagnetic currents and lights.[136] Fishermen reported that aircraft warning lights (some that would even mimic a strobe light) from completed wind parks were pushing the fish farther away into the Lagoon Superior. For fishermen, this meant having to drive elsewhere to fish, which fomented, according to a local human rights

activist, an “inter-ethnic conflict” that was caused by the wind energy projects.[137] Residents from towns recognized locally as collaborating with and benefiting (however contentious and disproportionate) from wind companies are now visiting other towns actively in resistance against the wind projects—and, consequently, without wind parks—to fish, causing fights and conflicts to break out. This happened between. as well as within, towns.[138]

Wind park ownership and local benefits are heavily conditioned by neoliberal structural adjustment policies that favor national and foreign corporate acquisition. Wind parks are incentivized through green economy stimuli (grants and loans) coming from donor countries and private funds. Two funding sources are the Clean Development Fund (CDM), and the World Bank’s Clean Technology and Climate Investment Funds,[139] which are linked to Certified Emission Reductions (CERs) for trading and speculation on the financial market. This connection to the market has been instrumental to the birth of the green economy.[140] Wind companies are thus receiving increasing sums of money from public and private sectors to incentivize investment and profit making from wind park development, which is justified on the grounds of mitigating ecological and climate crises. This investment, however, is managed for profit maximization, turning climate change disaster into a new market opportunity, which becomes apparent when examining the use of wind energy below. Additionally, wind parks are operated by companies investing and working in other industries, such as Gas Natural Fenosa, a Spanish natural gas company that is the majority shareholder in the Bíi Hioxo wind park, which had been the source of immense conflict.[141]

Finally**,** *what is wind energy used for*? Wind parks in the Istmo, based on the 1992 electricity law, are formally registered as ‘self-supply’ (*autoabastecimiento*).[142] Self-supply electricity is generated privately and reserved for the investors or co-owners of wind parks, which are transporting electricity on public infrastructure from the Istmo to Guatemala, Belize, the United States and industrial areas within Mexico. Wind energy thus powers industrial construction companies (e.g. Cementos-Moctezoma, CEMEX), food processing corporations (Grupo Bimbo, Coca Cola), superstores (Walmart, Tiendas Chedrahui), and mining enterprises

(Peñoles, Grupo Mexico) amongst others, rather than being used by the people living surrounded by or near these wind projects. Recently, after nine months of protest and deliberation between companies and local elites, it was agreed that Eólica del Sur would pay for three community wind turbines, finance a community center, and pay 65 million pesos in taxes.[143]

Wind energy is supporting and expanding conventional fossil fuel-based industrial activities, not transitioning away from them. Yet, environmental activists continue to cling onto renewable energy development in hope of creating an ecologically sustainable future. We argue, however, that industrial-scale, corporate-controlled wind energy production is captured by the capitalist grid that sustains and propels industrial growth and degradation, instead of replacing ecologically destructive modes of production and consumption. Investments in wind energy to 'offset' environmental damage continue to renew the images and degrading operations of industrial construction companies, food processing, superstores, and mining companies, which feeds into the myths of "sustainable mining," "green uranium" and 'sustainable development' in general.[144]

Currently, the 'sustainable' possibilities of wind energy have been eliminated by their operational scale, which reflects not only the existing energy-intensive infrastructure of industrial systems, but also capitalist growth imperatives. Marketing and Public Relations campaigns—'green washing'—invisibilize this expansion and distract from the corporate growth and profit maximization imperatives that legally force companies to acquire increasing amounts of energy and natural resources. The latter contradicts and undermines the foundations of renewable energy transitions. Industrial-scale wind energy as we know it, along with its positive marketable vision, could not exist without the brutal and flagrant eradication of entire bioregions via the extraction of iron, copper, coal, and other fossil fuel resources—often in countries of the global South. Wind energy thus not only masks the flagrant destruction of mining metals, oil, and rare earth minerals, reinforcing (neo)colonial trade links, but these ecological damages also remain hidden behind uncritical notions of 'carbon accounting', 'just transitions', and, in some cases, 'climate justice' as there is a lack of critical engagement with renewable energy infrastructure.

Wind energy turbines appear to be a less abrasive imposition, compared with coal mines or power plants, even at times when they surround entire towns (as in La Venta and La Ventosa) and are mixed with farming practices. This image conceals the global commodity chain and lifecycle on which they are dependent. While in theory, wind energy is 'renewable', and thus infinite, this framing hides two important facts. First is the limitation of their sustainability due to the need to replace wind turbines every thirty-to-forty years,[145] and second is the mineral and fossil fuel extractivism that is necessary for large-scale application of wind energy, which requires large amounts of steel, concrete, copper, and rare metals. This is why renewable energy should more accurately be named fossil fuel+.[146]

The present use of renewable energy, wedded to capitalist growth imperatives and powering 'dirty' industries, tears up, dominates, and reconfigures the earth in the image of industrial infrastructure, urbanization, and, likely, 'nature reserves'—a dream long theorized by many enlightenment philosophers.[147] The more people consent to the industrial regime and continue romanticizing renewable technologies, the more this dystopian project advances toward total environmental control.

Rebranding extraction: the renewable energy-extraction nexus

The German Rhineland and the *Istmo* in Mexico are two very different places, but both are experiencing a type of natural resource extraction, sharing experiences and problems in oddly similar ways. A number of notable commonalities and differences between coal and wind energy extraction emerge. The *differences* are fairly obvious: geographic location, cultural context, processes of natural resources extraction—mining (coal) versus capturing (wind)—intensities of extractive violence, and 'greening' activities/processes deployed. The *commonalities* are more interesting to unpack.

Both case studies present large-scale industrial developmental projects, or 'interventions', that directly rely on extractive industries and fossil fuels at different stages of their globalized supply chains including machinery, technologies, and raw materials. People,

villages, and nonhuman habitats were regimented and destroyed to create coal mines and wind turbines. Both necessitate the same industrial infrastructure—transport, electricity, and communication. As such, rather than challenge degrading industrial development and processes of capital accumulation, they secure hierarchical power relationships and corporate control over (human and nonhuman) nature. Both projects disproportionately benefit a political economic elite (shareholders and executives), with financial and ideological support from the public sector and large parts of the 'public'. State support is inherent to extractivism, itself a colonial ideology bound to state power.[148] Indeed, state power itself has historically been—and continues to be—built on processes of extraction (energy production) and associated violence to control ecosystems and populations. Public support is secured through various social (counterinsurgency) technologies to co-opt, manage, and pacify opposition to state-corporate agendas.[149] They involve investing into Public Relations, Corporate Social Responsibility programs, and public-private security partnerships to secure operations in the face of social fragmentation, environmental degradation, and popular protest. Anarchist political ecology remains not only foundational in challenging the myths of (eco-/neo-) liberalism and nation state development, but acknowledges the systemic problems of hierarchy, extreme divisions of labor, and (malicious) competition—rotten relationships—and recognizes the viral and recuperative approaches to manufacturing social consent.

The 'management' of the various social and ecological impacts serves to hide the political and extractive violence inherent in both the Rhineland and the Istmo. The magnitude and implications of extractive violence are immediately clear with coal mining—ancient forests, wetlands, and grasslands full with human and nonhuman life are transformed into giant holes, moon landscapes, and leaching ponds, causing displacement, degradation, and death. Wind energy, at first sight, appears 'clean' in comparison, with shining metal towers and no noticeable emissions, standing above a landscape causing seemingly no disruptions (with the exception of dripping oil and bird corpses surrounding them). The negative ecological impacts are abrasive during the construction phase; strategic and (relatively) limited compared to mining. The problems with wind turbines are often related to scale, quantity, and placement (e.g. distance

from houses and sea life) of turbines, neglect of bird and animal mitigation strategies, as well as energy *usage* and decommissioning. The result is a type of 'slow extractive violence' that is steady and subtle.[150] As discussed above, however, the real extractive violence with wind energy is concealed and exported out of sight and out of mind, not only in relatively isolated rural regions in the Global North, but also in the Global South, which maintains fewer enforced environmental and human rights regulations.[151] By concealing extractive activities needed to construct wind turbines, colonial relations manifest in the export of politically violent and ecologically damaging extractive activities to the Global South. The latter enables greater acceptance and complicity among environmentalist, leftists and other 'progressives' who would (hopefully) otherwise condemn this resource colonialism and unequal ecological exchange.[152] Center-periphery dynamics, with all of their nuance, still lurk in shadows of wind turbines and other renewable technologies.

The natural resource extraction sites in Germany and Mexico are linked through complex greening activities to legitimize operations and impacts. EU legislation requires biodiversity offsets to compensate for the ecological impacts of renewable energy projects on protected habitat. Meanwhile, in the Global South, renewable energy projects constitute offsets in and of themselves. In effect, this further ties nature protection to degradation, and links climate harm through industrial development in the Global North to renewable energy 'interventions' in the South. The latter thus serve to legitimize, and depoliticize, industrial operations in the North. German coal mine operator RWE not only engages in carbon offsetting in the Global North and South, but also provides biodiversity offsets for German construction projects, selling 'eco-points' generated through nature "restoration" to German municipalities.[153] In the case of coal, we see a rebranding of the "old" fossil fuel regime through such offsetting activities and promises of carbon capture and storage, fabricating the idea of 'sustainable coal' based on emission reductions and increases in efficiency.

Alternatively, in the wind energy case we see the marketing of a 'new' renewable energy regime. Yet, in their life cycles, at different (and multiple) points in their supply chains, both the

extraction of coal and the production of wind energy retain a high level of socio-ecological disruption and/or destruction. This situation led Alexander Dunlap to argue that "[a]t best the dichotomy between fossil fuels and renewable energy is surreptitiously misleading and at worst it is a false dichotomy".[154] A comprehensive comparison of the destructive impacts from coal and wind, taking into account entire commodity chains of extractive machinery used in extractive sites, the mining operations themselves (coal, copper, rare earth, etc.), labor, processing of raw materials, transport, operation, decommissioning, and overall life-cycle, is still lacking and needs investigation. Anarchist political ecology helps recognize the various and interrelated oppressions emerging from energy infrastructure, which includes acknowledging the social engineering and marketing of these projects. 'Greening' is being used in both sites to gain legitimacy, pacify dissent, and continue business as usual. This greening represents governmentality or "eco-governmentality;"[155] another weapon, or social technology of governance,[156] in the toolbox of governments, corporations and police-military practitioners—counterinsurgents—to manage rural protest and resistance led by indigenous but also urban people protesting and ready to take action to create systemic change for ecologically just futures.[157]

Both energy technology systems are further linked through the actors and interests behind them. The industrial processing facilities in Asia, Africa, and Latin America associated with and powered by the fossil fuel economy are themselves producing essential components for cars, smart phones, and industrial-scale wind turbines.[158] Fossil fuel and mineral companies such as RWE, Gas Natural Fenosa, Grupo Mexico, or Penoles buy or construct their own wind companies and industrial parks, using this energy to expand their operations or to create consortiums with industrial construction companies, (junk) food processing companies, superstores, and mining companies, depriving local people of their resources. Not only does this resource colonialism retain a center-periphery dynamic in the securing of raw materials, but also in the *operation* and *use* of wind resources. After being exported out of their region, energy is converted and ultimately sold back to local people in form of processed goods (such as plastic), or in the form of infrastructural projects. Meanwhile, in Germany, RWE is investing in wind and solar installations which not only feed into the same grid that is powering coal extraction in the Rhineland, but

communicates ‘sustainability’ and social progress to the population.[159] The Rhineland and the Istmo demonstrate the renewable energy-extraction nexus, which—instead of questioning the destructive trajectory of capitalist industrial progress—merges the ‘normal’ extractive and the ‘green’ economy to reinforce each other to continue feeding industrial expansion both materially and financially.[160] This nexus represents an intimate connection between conventional and renewable energy that not only share the same industrial lineage and technological continuum, but are connected across different sites through the use and extraction of raw materials, companies, and grid networks.

Anarchists know that the state and corporate entities are based on hierarchical ordering and social and ecological degradation, and their organizational existence and/or imperative are inseparable from their destructive behavior—‘green’ or otherwise. Anarchist political ecologists know that de-growth is a necessity and that relationships built on hierarchy, divisions of labor, commodification, and exchange are doomed to redress the system-wide issues and traumas, but instead advance agendas of control through the militarization and marketization of everything, everywhere, and by every means. In the end, whether fossil fuel or wind energy, the industrial machine expands its infrastructural and fiber optic tentacles, violence, and enchantment, as policy makers and the public alike tell themselves that climate change, biodiversity loss, and ecological degradation are being mitigated (and now adapted to), while the production of industrial waste and economic growth continue.

Conclusion

Fossil fuels and renewables continue to be framed as ‘good’ and ‘bad’, ‘clean’ and ‘dirty’, or as ‘the problem’ and ‘the solution’, even by ‘progressives’ and environmental justice activists. Outside popular and media discourses, numerous scholars offer greater specification in types of “renewable” energy generation regimes and the numerous political challenges confronting their participatory and equitable development.[161] Within the literature on energy transitions and renewables, however, there remains a strong blind spot, ignoring the murky reality and rippling

effects behind the raw material supply and processing webs of so-called “renewable” and “fossil fuel+” energy generation technologies.[162] Said differently, the unsavory reality of the renewable energy-extraction nexus remains neglected. In this paper, employing an anarchist political ecology lens to examine the rippling effects of socio-ecological oppression, we argue that this division is surreptitious and dangerous because it makes the degradation inherent in the contemporary ‘green’ industrial system invisible by hiding how it is actually *renewing destruction*. Instead, we argue, fossil fuels and industrial-scale, corporate-controlled renewables constitute two sides of the same coin—inseparable in terms of finance and profits, actors involved, power relationships surrounding and linking these technologies, corporate visions, energy uses, and resulting inequalities. It is these same actors that are involved in both processes, linked not only through complex investment and finance networks and ownership patterns, but also through physical processes, dependencies, and shared supply chains. The alleged ‘sustainability’ of fossil fuel+ systems necessitates the transformation of environments, fauna, flora, and human life, causing physical, cultural, and social disruption, degradation, and destruction. Sustainability, for corporations, governments, and many NGOs, not only refers to financial sustainability, but also to the management of popular dissent and insurrection against the commodification, transformation, and/or destruction of human and nonhuman lives. While “the management of environmentalists is central to environmental management,”[163] the green economy, as a component of the renewable energy-extraction nexus, is also about extracting and deriving value from what environmentalists value the most: the process of so-called ‘greening’ itself. In sum, the sustainability employed by the green economy is about sustaining the arrogant and imbecilic direction of capitalist development, which includes developing green commodities and markets to the detriment of habitats, ecosystems, and the climate.

In this paper, we hope to have redirected critical attention to the roots of the multiple social and ecological crises that are intertwined not (just) in tons of carbon (emissions) and industrial waste, but in issues of power and control. The power and control exerted over ecosystems, animals, and people to enforce a mode of industrial and computational development are causing various forms of environmental degradation, social discontent, and

disease. Let this paper demonstrate that the green economy and its emerging instruments for both ‘old’ and ‘new’ energy systems demonstrate a continuation of ‘war by ecological crisis’ to control both human and nonhuman resources. We hope environmentalists, academics, and others will begin to acknowledge this—with all the difficulties and depths that entails—when confronting and examining the process of techno-industrial development.

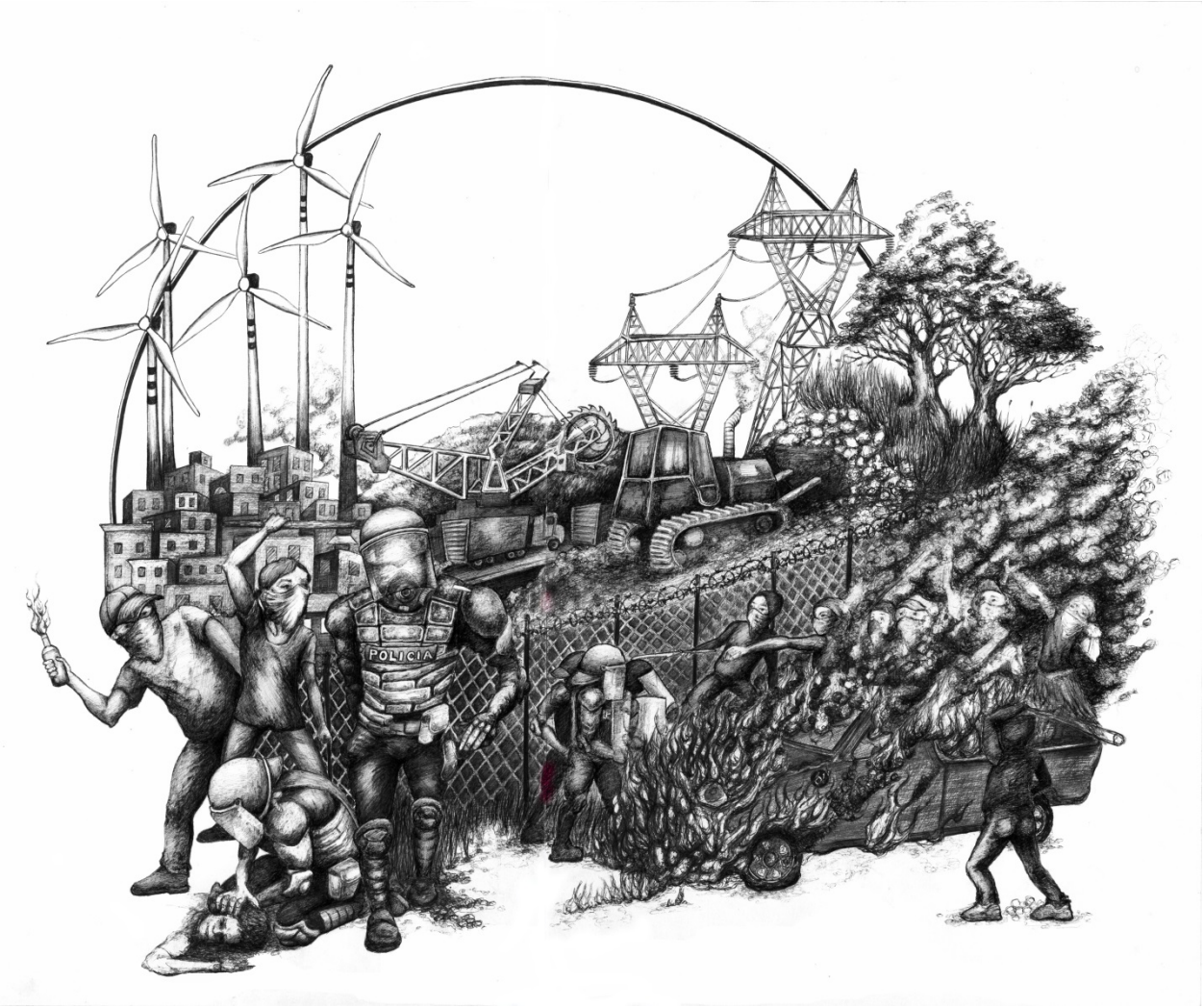

Figure 4. Land Defenders Continue. Art by Riona'O Regan

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