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When the Wolf Guards the Sheep

The Industrial Machine through Green Extractivism in Germany and Mexico

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Rick: I then introduced that life to the wonders of electricity! Which they now generate on a global scale and you know some of it goes to power my engine and charge my phone and stuff.

Morty: You have a whole planet sitting around mak'n power for you? That's slavery!

Rick: It's society . . . They work for each other, Morty. They pay each other. They buy houses. They get married and make children that replace them when they get too old to make power.

Morty: That just sounds like slavery with extra steps.

– *Rick and Morty*, 'The Ricks Must Be Crazy'

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 (Davis & Zannis 1973; Perlman 1985; Moses 2008; Gelderloos 2017; Scott 2017; Öcalan 2013). 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 (Mumford 1967/1970) and push – together with many environmental campaigners – for a shift towards ‘clean’ or ‘green’ energy sources: renewables.

Taking an anarchist political ecology perspective (Brock 2020b; Springer 2022), this chapter 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 industries are positioned as diametrically opposed and often compete over state subsidies and market shares. Policymakers, 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.¹ 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 remains overlooked (Bonneuil 2016; Smil 2016a). 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 (Büscher & Davidov 2013; Brock 2020c). 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 (Dunlap & Fairhead 2014; Hunsberger et al. 2017). 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 non-human 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 (Fairhead et al. 2012; Corson et al. 2013; Dunlap & Fairhead 2014; Dunlap 2019). 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 cataloguing and discursive fabrication of nature as a commodity service to become commensurable and tradable within financial markets (Lohmann 2008; Sullivan 2010, 2013a, 2017; Dunlap 2019). This transformation of flora and fauna into carbon, biodiversity and other so-called environmental commodities allows the enactment of ‘offsetting’ logic, which asserts 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 (Sullivan 2010; Böhm & Dabhi 2009; Brock 2015, 2020c). The creation of ‘new natures’ through restoration activities is often accompanied by a large-scale land dispossession to facilitate ‘No Net Loss’, ‘land degradation neutrality’ or ‘carbon neutrality’, and further forms of ‘accumulation by restoration’ (Huff & Brock 2017; Brock 2020c). 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 interviews² in addition to secondary research material including books, newspaper articles, promotional materials and blogs.

We begin our chapter 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 opencast 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 (Brock 2020c) and legitimized by their corporate social

technologies that attempt to marginalize and pacify militant resistance in the area (Brock & Dunlap 2018). After delving into RWE's attempts at 'sustainable mining', we then turn to the largest wind energy (factory) development 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 (Foucault 2007). 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 (Gorz 1980; Ince & Barrera de la Torre 2016; Scott 1998). This violent ordering is integral to the statist system: the 'pervasive, historically contingent organizational logic that valorises and naturalises sovereign, coercive, and hierarchical relationships, within and beyond state spaces' (Ince & Barrera de la Torre 2016). 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 reproducers of – colonial mindsets and practices reliant on the exploitation of humans and non-humans 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 (Walter 2013). C. L. R. James and Eric Williams first argued for the recognition of the centrality of slavery to capitalism and ‘modernity’ over eighty 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 (James 1938), while Williams explored the relationship between colonial development and European industrialism to illustrate the contradictions in modernist rationality (Williams 1944). 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’ (Bhambra 2020, 14; Rodney 1972/2009). Plantations and plantation slavery were key to the development of modern scientific management techniques (Rosenthal 2016) and profits from slave trade and plantations were a financed Britain’s nascent industries (Williams 1944), religious institutions, hospitals, railways (Karuka 2019) and more.

Contemporary, or ‘new capitalism’, according to Sven Beckert, characterized by wage labour 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’ (Beckert 2014a: n.p.; see also Baptiste 2014; Clegg 2015; Beckert 2014b). 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’ (Graeber 2006, 68–69). 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’ (Graeber 2006, 79).

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 (Dunlap 2014b). 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 non-human (Dunlap & Jakobsen 2020; Springer Volume 1).

Majid Rahnema (1997) and Lorenzo Veracini (2014) 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, which leads to two foundational insights for anarchist political ecology. The first is explained well by Kirkpatrick Sale (1991/1985, 122), 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' (2013/1905, 3) and Mikhail Bakunin's notion that 'every enslavement of men [*sic*] is at the same time a limit on my own freedom' (2005/1871, xi), as these notions are applied to non-human 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' (Clark 2020, 9–14). Yet, capitalist development has instilled the exact opposite idea: the more non-human 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 (Fitzpatrick 2018), and ecocide that have become historically justified,³ erased or made seemingly 'irrelevant' in everyday life (Dunlap 2020).

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' (Downey et al. 2010, 437–438). 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' (Li 2011, 286), often by the military or other violent forces. This sounds oddly familiar to A. D. Moses's discussion of Jean-Paul Sartre (1968) and the politics and methods of post-Second World War 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' (Moses 2002, 24) into submission to a colonial (producer–consumer) paradigm.⁴ This connection between widespread political violence and ecological degradation or the 'genocide–ecocide nexus', as Damien Short (2016) calls it, plays a fundamental role in the colonial and, by extension, industrial progress that takes on increasingly complicated, yet progressive forms (Dunlap 2018; Brock 2020b). In sum, the continuation of the present trajectory of industrial and computational development requires increasing methods of strategic violence and ever-more sophisticated forms of participatory slavery 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 (Dunlap 2014b, 2018; Katsiaficas 2006/1997; Springer 2016). Explaining the complexities and continuities of colonial

genocide, Patrick Wolfe reminds us, ‘invasion is a structure not an event’ (Wolfe 2006, 388). It is from this perspective that we assert that industrial development itself is a system of domination, which domesticates humans and non-humans, 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 (Ellul 1964/1954; Landstreicher n.d.; Gelderloos 2013; Güven 2015).

Transcending every type of capitalism – Keynesian, command control, neoliberal, financial and so on – a focus on industrialism (Brock 2020b) 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 and consent,⁵ imbuing human dependency, addiction and normalization of political, economic and industrial structures (Porter & Kakabadse 2006; Alexander 2008; Paoli 2013/2008). The normalization of industrialism in everyday life prevents even critical scholars from acknowledging their implicit statist and industrial subjectivities (Ince & Barrera de la Torre 2016). Such acknowledgement means resituating how we view electricity (Winther 2008), sanitation systems (Dunlap 2017a), roads (Dalakoglou 2012) and other industrial infrastructural amenities. It demands analysing 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 (Berman 1983; Cullather 2006, 2013/2010). In short, industrialism constitutes the material practice of conquest, otherwise known as the industrial, social (Dunlap 2014a) or genocide machine (Davis & Zannis 1973), which – despite its negative social and ecological consequences – is becoming rebranded as ‘sustainable’ and ‘green’ that the study of political ecology has revealed so well.

The remainder of this chapter explores how the industrial system continues in the face of ecological, climate and economic crisis, or how a cunning 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 at 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 NON-HUMAN NATURE IN AND AROUND THE HAMBACH COAL MINE

With a size of 85 square kilometres or 8,500 hectares, the Hambach coal mine (figure 5.1) is known to be the largest human-made hole in the world (Der Spiegel 1982). Throughout its lifetime, the open-pit lignite mine that is ‘migrating’ across the Rhineland has been responsible for the forced displacement of thousands of



Figure 5.1 Hambach Mine. *Source:* Hubert Perschke (2012).

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 (Brock & Dunlap 2018). Despite intense resistance against the mine – forest occupations, demonstrations and sabotage, among others (Anonymous 2016) – the social and ecological disaster in and around the mine continues to unfold.⁶ The defence 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.⁷ Most recently, this can be seen in the violent repression of environmental defenders attempting to stop the construction of a new highway in 2020 (Brock 2020a) as well as the well-documented state violence against G20 protesters and their long prison sentences in 2017 (NDR 2017).⁸ 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 (Brock & Dunlap 2020).⁹

The Rhineland thus serves as a great example to illustrate how the ecological crisis is discursively acknowledged and subjected to policymaking 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

protection¹⁰ 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 (Brock 2020c). 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: first, the anchoring of RWE as 'good corporate neighbour' and responsible employer with the best interest of local communities and the wider German public at heart. Second, sustainable extractivism is constructed through 'green-washing' of its operations and supply chains to ease concerns around ecological impacts and human rights violations which go hand-in-hand with the spectacularization (Debord 1967) and commodification of the mining experience (Brock 2020c). Third, 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 neighbour and indispensable partner for the German public involves substantive investments into a 'Public Relations war' to win the hearts and minds of the population (McQueen 2015), 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' (Lasswell 1934, 524) or, in the words of Paul Virilio, '[b]eating an enemy involves not so much capturing as captivating them' (Virilio 1995, 14). Beyond RWE's Public Relations campaigns (through the advertising and marketing industries and associated consultancies), this involves investments into astroturfing (the set-up of fake citizens' associations), lobbying efforts in schools, sponsorships of community, police and fire service events, sports clubs and school projects, among many others.¹¹ 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 (Der Spiegel 1982). 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 (ibid.).

Green-washing activities take place on different levels of operation. Internationally, RWE has been leading efforts to 'improve' coal supply chains through *Better-coal*, a voluntary initiative that involves mine audits and stakeholder engagement,

which serves as convenient opportunity to deflect critique, according to research participants (Brock 2018). Domestically, the company promotes its research on sustainable coal – framing its power plants as ‘sustainable’ due to achieved CO₂ emission reductions – and increases in efficiency as well as carbon offsetting. In its ‘innovation centre’, RWE publicly displays its testing of carbon capture and storage technologies (‘CO₂ washing’) as ‘technology of the future’, and ‘almost ready for application’. To ensure further local support, RWE set up a recultivation centre 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 (Brock 2020c). These offsets are meant to compensate for the destruction of species habitat (read non-human forest life) in the *Hambacher Forest*. Compensation measures include the newly restored *Sophienhöhe*,¹² 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). 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 (Hecking 2016). 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 earlier – what Camila Moreno and others have called ‘ecological epistemicide’ (Moreno et al. 2015) – ignoring interconnections and social relations to the land and enabling claims of ‘net gain’ of trees (Brock 2020c).¹³ 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’ (Brock & Dunlap 2018, 40; Brock 2020c). The *Sophienhöhe* contains 150 kilometres 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’ (RWE Power 2016). 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’ (Ferrell 2012, 1688). 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’ (Brock & Dunlap 2018, 41).

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), modelled 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. (Ibid.)

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 (Brock 2018, 2020c). 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’ (Lubbers 1999, n.p.). 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 ‘neighbourhood 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’ (RWE AG 2012).

At the same time, coal-mining – and its social and ecological ‘costs’ – is 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’ (Brock and Dunlap 2020). 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 (Brock and Dunlap 2020, 40 & 44).

Opposition against the mine has been harshly disciplined through various forms of (aggressive) policing, public–private security partnerships (Hissel 2015), 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 (Europol 2016, 8). 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 (Europol 2016, 43), branding anti-capitalist, animal, anarchist and environmental social movements as ‘extremist’ and ‘terrorist’ (ibid.). 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 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. 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



Figure 5.2 Windmills at the Edge of Hambach Mine. *Source:* Andrea Brock.

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 400 metres 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 5.2).

HARNESSING PEOPLE, CAPTURING WIND AND SUBDUING REBELLION IN OAXACA, MEXICO

The unique geographical features and positioning of the *Istmo* between the Gulf of Mexico and the Pacific Ocean have triggered a wind rush in the region (figure 5.3). It began with the 2003 USAID sponsored report, *Wind Energy Resource Atlas of Oaxaca* (Elliott et al. 2003), which mapped the ‘excellent’ wind sources in the region that the International Finance Corporation later called ‘the best wind resources on earth’ (IFC 2014, 1). The coastal *Istmo* can be divided into 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 (Campbell 1993)

Since 2004, wind energy development has resulted in the construction of 1,642 wind turbines (Rivas 2015; Rubí 2016) with twice this number being planned for



Figure 5.3 Wind Park in the North Istmo. Source: Wiki commons.

the region (Briseno 2016). 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 (Dunlap 2017b). 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 (Borras et al. 2012; Hall et al. 2015). Contestation in the North is focused on exploitative land deals and labour 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,¹⁴ 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!’ has come to haunt the present. Emerging from the environmental movement as an alternative to coal and nuclear energy production (Stirling 2015), 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 view 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 analysed 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, first, come from mining and dredging of the Earth. Comprised of metals (iron, copper, aluminium, 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 (Downey et al. 2010; Bonds & Downey 2012). 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” (Bond and Downey 2012, 181). While the ecological and policing

cost of mining is well-documented (Brock & Dunlap 2018/2017; Guezuraga et al. 2012; Veltmeyer 2013; Geenen & Verweijen 2017), mineral extraction also leaves a daunting shadow over wind and other renewable energy technologies.

A two-megawatt wind turbine uses roughly 150 metric tonnes of steel for the reinforced concrete foundations, 250 metric tonnes for the rotor hubs and nacelles and 500 metric tonnes for the tower (Smil 2016b). This also includes 3.6 tonnes of copper per megawatt (Smith 2014). Drawing on a World Bank report (La Porta et al. 2017), 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 metric 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' (2019: n.p.). 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 CO₂ footprint are steel, concrete and cast-iron production, while plastic production constitutes the most energy-intensive process (Guezuraga et al. 2012). The production of every ton of steel requires roughly 0.8 ton of coking (metallurgical) coal,¹⁵ 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 per cent of rare earth metals used in wind turbines, electric cars, smart phones and other technologies (Hongiao 2016). Ninety-eight per cent of the heavy rare earth elements used in the EU came from China in 2020 (European Commission 2020). Between 2014 and 2017, according to Kalyeena Makortoff, 80 per cent of the US rare earth imports originated from China, who currently 'accounts for about 70% of global production' (Makortoff 2019). 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' (Maughan 2015, 1). 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" (Ahonen et al. 2014) and rare earths quickly "became 'strategic', and 'vital' materials crucial to 'security', 'technology', and 'the future'" (Klinger 2018).¹⁶

Mined through open-pit, underground and in-situ leaching methods (Haque et al. 2014), 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' (Yang et al. 2013, 133). Rare earth mining and processing, Nawshad

Haque and colleagues write, tend 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” (Haque et al. 2014, 621). 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’ (Klinger 2015, 574).

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 per cent increase in neodymium – an essential mineral for wind turbines – and for grid battery storage over ‘40 million tons of lithium,’ which is a ‘2,700 percent increase over current levels of extraction (Hickel 2019).

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 (2017) points out, wind turbines could be built without rare earth minerals with geared turbines, 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.¹⁷ 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’ (Sovacool 2020, 1–19). Recycling capacities are low and varying between materials, yet retain roughly a 20 per cent recycling rate (ibid.), 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 negotiating not only 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.¹⁸ 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 the ground power lines. Digging wind turbine foundations requires holes that are roughly 7–14 metres (32–45 ft.) deep and about 16–21 metres (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 fishers claim that foundations were up to 70 metres deep. In the Istmo, fresh ground water is located 1 to 3 metres below the ground and wind turbine foundations which replace this water with steel-reinforced concrete foundations. Once in *operation*, killing of birds and other animals has been documented (Ledec et al. 2012), 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’.¹⁹

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 (Pierpont 2009). While this is supported by a range of studies,²⁰ 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 (Premalatha et al. 2014). 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 fermented, according to a local human rights activist, an ‘inter-ethnic conflict’ that was caused by the wind energy projects.²¹ 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 go fish, causing fights and conflicts to break out. This happened between as well as within towns (Dunlap 2018).

Wind park *ownership and local benefits* are heavily conditioned by neoliberal structural adjustment policies that favour 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 (Dunlap 2014b, 2018/2017), 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.²² 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 in the chapter. 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 Bii Hioxo wind park, which had been the source of immense conflict (Dunlap 2018/2017).²³

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*) (Dunlap 2019). 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) among 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 centre, and pay 65 million pesos in taxes (Contreras 2018).

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.²⁴

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 transition’ 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 (Guezuraga et al. 2012), 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+ (Dunlap n.d.).

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 (Merchant 1983; Romanynshyn 1989; Adams 2014). The more people consent to the industrial regime and continue romanticizing renewable technologies, the more this dystopian project advances towards 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 non-human 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

non-human) 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 (Acosta 2013). 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 (Brock & Dunlap 2018). They involve investing into Public Relations, Corporate Social Responsibility programmes and public–private security partnerships to secure operations in the face of social fragmentation, environmental degradation and popular protest. Anarchist political ecology not only remains foundational in challenging the myths of (eco-/neo) liberalism and nation state development but acknowledges the systemic problems of hierarchy, extreme divisions of labour 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 Isthmo. The magnitude and implications of extractive violence are immediately clear with coal-mining – ancient forests, wetlands and grasslands full with human and non-human 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 (Nixon 2011). As discussed earlier, 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 (Szablowski 2007). 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.²⁵ Centre–periphery dynamics, with all of their nuances, 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 (Hupp 2016; Brock 2020c). 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’ (Dunlap 2017a, 257; see also Kirsch 2010, 2014; Sullican 2013; Brock & Dunlap 2018/2017). 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.), labour, 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’ (Ulloa 2013/2005), another weapon, or social technology of governance (Brock 2018), in the toolbox of governments, corporations and police–military practitioners – counterinsurgents – to manage rural protest and resistance led by indigenous people (Brock and Dunlap 2018; Dunlap 2017a) but also urban people protesting and ready to take action to create systemic change for ecologically just futures.

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 (Maughan 2015; Haque et al. 2014). Fossil fuel and mineral companies such as RWE, Gas Natural Fenosa, Grupo Mexico, or Peñoles 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 centre–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 (Brock 2020c). 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 (Hildyard 2016). 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 behaviour – ‘green’ or otherwise. Anarchist political ecologists know that de-growth is a necessity and that relationships built on hierarchy, divisions of labour, 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 fibre optic tentacles, violence and enchantment, as policymakers 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 (Burke & Stephens 2018; Newell 2019; Naumann & Rudolph 2020; Brock, Sovacool & Hook forthcoming). 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 technologies²⁶. Said differently, the unsavoury reality of the renewable energy–extraction nexus remains neglected. In this chapter, 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+ system 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 non-human lives. While 'the management of environmentalists is central to environmental management' (Levy 1997, 126–147), 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.

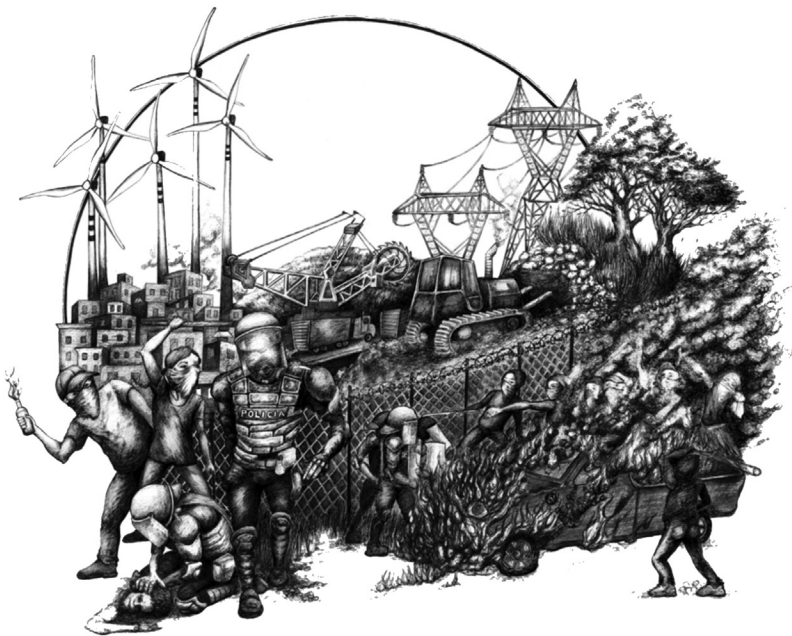


Figure 5.4 Land Defenders Continue. *Source:* Art by Riona'O Regan.

In this chapter, we hope to have redirected critical attention to the roots of the multiple social and ecological crises that are intertwined not (just) in tonnes 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 chapter 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 non-human 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 5.4).

NOTES

1. For examples see Greenpeace n.d.; European Commission 2019; 350.org 2020. For exceptions, see London Mining Network 2019; Sovacool et al., 2020.

2. Fieldwork in Germany included twenty-two semi-structured and countless informal interviews conducted between October 2016 and April 2017, building on long-term involvement with resistance movements against RWE’s mining activities. Research in Mexico is based on 123 recorded semi-structured interviews conducted between December 2014 and May 2015, which also included a commitment to the collective resistance movements in the *Istmo* region.

3. Three archetypes of justifying atrocity: (1) subordination to ‘the higher good’ of the nation, the company; (2) discourses of ‘savages’, ‘racially inferiority’, ‘poverty’ etc.; and (3) positioning ‘us’, the church, state, company, etc., as ‘saving’, ‘helping’, ‘civilizing’ or ‘educating’ them – the ‘Other’.

4. For details of harnessing Indigenous labour in Colombia, see Taussing (1987).

5. See Veblen 2009/1899; Horkheimer & Adorno 2002/1944; Bernays, 1947; Dugger 1989; Herman, & Chomsky 2010/1989.

6. For the continued relevance of Nazi laws around coal-mining, see Michel (2005).

7. For the continued relevance of Nazi laws around coal-mining, see Michel (2005).

8. See https://www.youtube.com/watch?v=SyrCiq_pQuo

9. The company is further involved in the privatization and operation of municipal electricity, gas and water distribution networks, street lighting systems and other local service provision. See RWE Group (2015, 89).

10. Minister president Armin Laschet in Tagesschau.de, Kraftwerk Datteln soll bis 2038 laufen, 30 December 2020. <https://www.tagesschau.de/wirtschaft/unternehmen/uniper-datteln-kohleausstieg-co2-laschet-101.html>

11. For more examples and further analysis see Brock and Dunlap (2018/2017).

12. Other offset measures are the newly created ‘bat-highways’ that are meant to serve as navigating infrastructure for threatened bat species to facilitate their relocation into other pieces of forests.

13. RWE interviews and PR material, for details see Brock and Dunlap (2018/2017).

14. For examples, see Oceransky 2011; Juárez-Hernández & León 2014; Howe & Boyer 2015; Friede et al. 2017.

15. See <https://www.letstalkaboutcoal.co.nz/future-of-coal/making-steel-without-coal/> and Diez et al. (2002).

16. 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 nineteenth century onwards, and British, Austrian and German companies quickly came to dominate production, primarily in India and Brazil. See Klinger 2015 for their political, imperial, colonial and militaristic entanglements.

17. For a detailed and refreshing discussion in the Dutch context see Kiezebrink et al. (2018).

18. The *ejido* emerges from Article 27 of the 1917 Constitution, which provided land for farmers to use but not to buy and sell. After the 1992 alterations to Article 27 and the December 2013 Energy and Utility Act, land was allocated for residential and agricultural use and was governed by local assemblies made up of recognized community members. Article 27 still gave the Mexican state the right to resources underneath the topsoil and to control the land. *Ejidors* in Istmo are different from communal land, land governed by the community. Communal land (social property) is held collectively or shared communally, has no formal land title and does not have the same level of state involvement and control as *ejidos*.

19. Interview, 13 March 2015.

20. See Havas et al. 2011; Chapman 2012; Jeffery et al. 2014; Premalatha et al. 2014.

21. Interview, 21 March 2015.

22. See Dunlap & Fairhead 2014; Hunsberger et al. 2017; Fairhead et al. 2013; Corson et al. 2013; Dunlap 2019; Lohman 2008; Sullican 2010, 2013a, 2017.

23. Interview, 21 March 2015.

24. See Kirsch 2010 2014; Sullivan 2013b; Brock and Dunlap 2018/2017.

25. On unequal ecological exchange, see Hornborg 1998.

26. While the multi-scalar and industry connections of conventional and green extractivist projects require further scrutiny, important recent examples are Selwyn 2020; Hund et al. 2019.

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