

Anthropocene Narratives of Living with Resource Extraction in Africa

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Margaret Waya grew up in the Zambian copper mining city of Mufulira, with the mine and its waste dump as her backyard. For most of her life, she considered the presence of industry unremarkable. When her five-year-old son developed severe bronchitis, which was clearly aggravated by the mine's smoke emissions, her stance changed. She joined the NGO Green and Justice and started actively mobilizing her neighbors to address environmental concerns: "I know the extent of this issue. I can hear and smell it and I sense the pain it causes. I see how much destruction it has brought to my life and environment."¹ Waya's story demonstrates that a single person can live with and against the Anthropocene. Through her mobilization, she is involved in imagining the Anthropocene otherwise.

Resource extraction, which contributes significantly to anthropogenic climate change, in many ways epitomizes our Anthropocene predicament.² From Chile to Germany and Gabon, gigantic mines and oil wells have caused the transformation of landscapes and lifeworlds, in addition to deadly pollution. Studying uranium mines across Africa, the historian Gabrielle Hecht calls their toxicity one of the "foundational categories" of the Anthropocene.³ Geologists corroborate this argument. Jan Zalasiewicz, Colin Waters, and Mark Williams of the Anthropocene Working Group assert that resource extraction industries have "imprint[ed] signals on to the geological record" that will endure indefinitely. Industrial mining and oil drilling are, they contend, anthropogenic activities with "no analogue in the Earth's

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4.6 billion year history.”⁴ Yet, although resource extraction occurs all over the planet, it also has specific local dynamics that need to be accounted for. Experiences of environmental change and the ability to protest (who can protest, in what form, and to what effect) are differentiated and can change over time, as the opening example suggests.⁵

The concept of the Anthropocene derives much of its appeal from how it engages with planetary dynamics. Portraying humans as “a species dependent on other species for its own existence, a part of the general history of life,” the Anthropocene fundamentally challenges distinctions between nature and humans and it invites historians to examine entanglements across space and time.⁶ Dipesh Chakrabarty has, therefore, argued that the Anthropocene requires a different mode of history writing, one that studies the “new universal history of humans” as a species, capable of disturbing the conditions on which human life depends.⁷ The decolonial feminist Françoise Vergès powerfully critiques this view as it presents an “illusion of an organic and undifferentiated universal humanity” without challenging the “inequalities, alienation, and violence” that undergird the Anthropocene’s relations of power and production, rooted in long and unequal histories of colonialism, capitalism, and racialization.⁸

By paying attention to the plural and diverse experiences of living in, with, and against resource extraction in three African localities—mining on the Zambian Copperbelt, legacies of gold mining in Johannesburg, and oil drilling in the Niger Delta—I ask how we can write the Anthropocene differently. African narratives have hardly been central to Anthropocene scholarship. Existing frameworks for studying the Anthropocene, which refer to colonialism and its effects on global environmental inequalities, or to capitalist accumulation by dispossession, offer only partial explanations for widely divergent African experiences.⁹ Because resource extraction is “gendered, racialised and geographically bifurcated,”¹⁰ Antoine Acker, the historian of oil extraction in Brazil, calls for “a different story” of the Anthropocene.¹¹ To highlight what the planetary gaze conceals, we need to examine diverse experiences and perspectives by engaging “local models and expectations everywhere in the world.”¹² I start charting some of these more plural ways in which we can write the Anthropocene from Africa. This includes histories of violence, pollution, and inequality, but also accounts of persistence and resilience as well as possibilities for a future otherwise.

Living with Resource Extraction in Mufulira, Johannesburg, and Port Harcourt

To illustrate the diversity of African experiences with resource extraction, I offer three vignettes. When narrating environmental change around mines and oil wells, government and industry archives are of only limited value. My previous research on the Zambian and Congolese Copperbelt suggested that in an attempt to avoid liability, company and state agents either obscured pollution in their

writings or rendered it technical and apolitical.¹³ To understand how mining and oil communities lived with environmental transformation, I instead draw primarily from oral history and literary analysis. Studying a wide range of literary works, Elizabeth Miller argues that novels and poems can illustrate “what industrial extraction meant, and how it transformed humans’ relation to and perception of the natural world.”¹⁴ Reading African works specifically, Cajetan Iheka adds that literary analysis elucidates and informs ideas about environmental challenges.¹⁵ Oral history deepens and extends this focus on the meanings and values of environmental change by highlighting the perspectives of women and men who did not leave written works behind. While I conducted some of the oral histories quoted here myself, in July and August 2018 in Mufulira, I also rely on published oral history transcripts from other researchers. The vignettes below are merely illustrative, but they do suggest that we need both deeply situated local narratives and multisite analysis to bring out the parallels, differences, and uniqueness of lived experiences in the Anthropocene.

The Zambian mining hub Mufulira is famous for its copper wealth but equally notorious for its pollution. Colonial mineral prospectors—a mix of American, South African, and British nationals—identified the first copper deposits in Mufulira in 1923. The city, nicknamed “the place of abundance,” boasts a mine shaft almost two kilometers deep and has consistently been one of the biggest copper producers in the Zambian industry.¹⁶ Decades of mining have profoundly shaped Mufulira’s landscape and caused irreversible environmental change. The giant slag heap, which the various colonial and postcolonial mining companies have left completely uncovered, is a visible marker of industrial mining. When strong winds sweep through the city in June and July, fine dust and sand containing heavy metals such as arsenic, mercury, and lead blow into people’s houses, enter their lungs, and cover their crops. In an attempt to live with industry, mothers display acts of care, diligently sweeping toxic dust off the window to alleviate their children’s asthma. Yet the environmental issue most discussed by Mufulira’s inhabitants in oral history interviews is sulfur dioxide fumes, referred to as *senta* in *iciBemba*. High concentrations of sulfur dioxide can cause respiratory problems, including bronchitis, asthma, and skin rashes, and can make vegetation wilt. In neighborhoods close to the copper smelter, plants and trees are completely absent because they have been killed by noxious fumes.¹⁷

To British colonizers, the discovery of copper deposits in Mufulira was an opportunity to transform this sparsely populated region into a profitable urban industrial site, generating essential revenue for the colonial state.¹⁸ In order to attract workers who could extract copper, the mining companies, supported by the colonial administration, initially relied on labor migration from rural areas up to five hundred kilometers away from the mines. Yet by the 1940s, mine management realized that a trained and stable workforce would ultimately be more profitable. To

entice workers to relocate permanently to Mufulira, the mines put elaborate paternalistic welfare provisions in place, encompassing free housing, education, medical care, and leisure services. Initiated in the colonial period, this paternalism reached its apex after independence in the 1970s, when the nationalized mining company Zambia Consolidated Copper Mines (ZCCM) instituted what has been referred to as “cradle-to-grave” policies.¹⁹ The otherwise rich government and mining archives seldom refer to issues of environmental change or pollution, despite their blatant and quotidian presence. The rare mentions that do occur reveal that throughout the twentieth century mining companies prioritized production and profit over environmental concerns.²⁰ In the 1980s, for instance, mine officials maintained that “in combatting . . . pollution, the mining industry has to keep in mind its unique role in the national economy.” Mine management stressed their “duty to restrict . . . expenditure on the non-productive, usually costly, means of controlling pollutants so that the nation is not needlessly deprived of essential revenue.”²¹

Notwithstanding archival silencing, Mufulira’s residents showed an acute awareness of the negative environmental effects of mining in oral history interviews. Nathan Mwamba, a retired mine worker and trade unionist, argued that *sentā* had been around for decades:

We used to complain about it, saying that *sentā* was too much. We just used to be told [by mine management] that they have heard our complaints and they would see what they could do about it, but our complaints always just ended there. It also used to affect our crops and destroy them, but we still went ahead and ate them. We used to complain to the trade union about *sentā* but they never bothered much about it.²²

While Mwamba and his fellow mine workers tried to address concerns over pollution through independent trade unions, the nationalized ZCCM dismissed their complaints. Being heavily dependent on mining revenues, even the democratically elected government refrained from antagonizing company interests.²³ Kathbert Nchemba, a former mine captain, explained how these political structures, coupled with company paternalism, played a role in subduing overt protest against the environmental consequences of copper mining: “My father was a mine worker and to me it always seemed like a good job. ZCCM did not just pay us well, they fed us, they educated our children, they ran our hospitals. . . . Yes, there was sometimes pollution, especially underground the dust would be horrible. But it was just part of the job. What could you do about it? If you complained to management, you risked losing your job.”²⁴

Because of the economic and political power of mining companies and their close alliance with colonial and postcolonial governments, it proved difficult to voice grievances about pollution. Whereas Mwamba’s sense of powerlessness translated into knowingly consuming contaminated food, others found ways to live with the

environmental effects of copper mining, even in toxic conditions. In an attempt to deal with damaged ecosystems, mine workers' wives told me that they moved their vegetable patches several kilometers from the smelter to prevent the worst effects of the fumes. Ana Chilufya, a trader, recounted that in the 1970s her entire vegetable garden had wilted. She reasoned that "the mine will not stop producing anytime soon, so it is better for me to move my cabbage."²⁵ Overall, the mining industry in Mufulira caused disease, premature death, and ravaged environments. Although Mufulira's residents lacked the ability to address toxicity's root causes, they did find ways to live with it—albeit in circumstances not of their own choosing. Approaches from decolonial ecology might allow us to better uncover such "arts of living on a damaged planet."²⁶

Like Mufulira, Johannesburg was and continues to be built by mining, as the isiZulu name for the city, *eGoli* (place of gold), reflects. Gold mining moves tons of earth, most of which ends up in dumps scattered throughout the city. The distinguished author Nadine Gordimer captures how "the Witwatersrand created its own landscape out of waste and water brought from underground in the process of deep-level mining."²⁷ Because waste sites crystallize how the environment has historically been understood, I focus on Top Star mine dump in southwest Johannesburg. Between 1889 and 1939 the Ferreira gold mine, one of the city's earliest mining ventures started by the farmer and prospector Ignatius Phillip Ferreira, deposited its mining residues in Top Star. Initially farming land, the area around Top Star became denser with housing as migrants were attracted to neighborhoods such as Turffontein to take advantage of employment opportunities in Johannesburg. The city council hesitated to allow township construction on the dump site in the 1940s and 1950s, because of "the envisaged danger of building on a . . . mine dump, as well as the possibility that the Town Council would be held responsible should any damages take place."²⁸ Instead, the dump was repurposed as a drive-in cinema for whites only from 1961 to 2008, illustrating how waste became normalized and was positively reimagined. In 2008, the five-million-ton dump started to be recycled by a multinational company to recover leftover traces of gold, and the residues were transported as tailings outside of the city. Cinema clientele protested the reprocessing, arguing that Top Star was part of their industrial heritage. The demolition of the drive-in cinema in the 2010s sparked heated debate, prompting former patrons to call in to a popular radio show with nostalgic memories. Yet not one caller talked about the environmental and health implications of living next to Top Star.²⁹

Top Star contains high levels of lead, uranium, and other heavy metals. After years of storage, the waste has turned into a fine sandy consistency which—like the toxic dust of Mufulira—easily spreads, covering porches, windows, and furniture with a thick layer of dust and making water turbid. Airborne particles, soil, and water pollution from the dump site generate health risks for the surrounding residents, including asthma, tuberculosis, cancer, and birth defects.³⁰ Whereas Turffontein

today has a mixed population, those residing around Top Star are predominantly low-income migrants to the area working in informal economies. Some recent arrivals have been relocated to Turffontein by city authorities, following their eviction from other parts of Johannesburg. Housed in shacks with haphazard access to water, electricity, and sanitation, in conditions of economic precarity, and lacking land rights, those residing around Top Star live with pollution out of necessity.³¹

As “one of the last surviving intact sand dumps in Johannesburg,” Top Star is iconic and historically valuable.³² According to the Heritage Scoping Assessment, a report written by an independent consulting firm prior to the demolition of the dump, the site is “part of the cultural and visual characteristic skyline of Johannesburg.”³³ Yet Top Star holds conflicting meanings. Judith Muindisi’s study, based on oral history, found that “communities who live around” mine dumps “do not value them as aesthetically pleasing, but rather see them as a health risk.”³⁴ One interviewee even asked, “How do you appreciate something that poisons you?”³⁵ The controversies about Top Star make the different valuations of mine dumps starkly clear. Whereas the white patrons of the drive-in cinema value the mine dump as a place of cultural heritage, the impoverished African population living directly adjacent to Top Star views the dump in a radically different way, as a source of pollution. Still, their lack of political leverage as a resettled community makes it difficult to address their grievances. The deeply unequal history of apartheid thus still conditions the ability of different individuals to contest the legacies of toxic dumps.³⁶

At first glance, reactions to pollution in the Niger Delta seem to differ considerably from those in Mufulira and Johannesburg. Oil and gas extraction have all but destroyed the Niger Delta’s rich mangroves, once considered a global biodiversity hotspot. Farmers and fishers struggle to get by, although the area was historically a major source of dried fish and palm oil. Innumerable oil spills, gas flaring, dead fish, and barren fields have drawn international attention to the Niger Delta’s “ecocide.”³⁷ In the 1990s, the political activist Ken Saro-Wiwa famously voiced these deep-rooted environmental grievances through nonviolent resistance.³⁸ Following Saro-Wiwa’s execution in 1995, resistance turned violent. Mixing environmental grudges with concerns about minority marginalization within Nigeria’s federal government structure, the Movement for the Emancipation of the Niger Delta has become infamous for its bombing of oil installations and vandalism.³⁹ Some youths, faced with dire prospects, have resorted to illegal activities, oil theft, and artisanal refining, which, paradoxically, risk aggravating environmental damage. Others have organized through NGOs to petition oil multinationals for better environmental regulations, cleanup, and compensation payments. The region is therefore considered an illustrative case of mobilization against oil’s environmental consequences.⁴⁰ The journalist Naomi Klein even argued that the Movement for the Survival of the Ogoni People’s success in forcing Shell out of Ogoniland in 1993 was “one of the most significant achievements of grassroots environmental activism anywhere in the world.”⁴¹

Ecocritical poems powerfully articulate these ecological issues, shedding light on the contested meanings of environmental change and the variety of possible human responses. Tanure Ojaide, for example, comments on how the oil industry robbed the Niger Delta of its wealth and “choked” the population “with poisons,” making the land rebound “with insufferable groans.”⁴² Ojaide’s work highlights important interspecies and ecosystem entanglements: environmental degradation negatively impacted human well-being and enticed various forms of resistance, at times taking violent forms.⁴³ Still, it should be emphasized that in places like Port Harcourt many people did not protest against the oil industry. Instead, they learned to live with pollution, by relying on smaller fish or seeking alternative livelihoods. The political ecologist Modesta Tochukwu Alozie offers the example of Ken, a young man from Bodo village, who has a deep place-based attachment to his natal Niger Delta, notwithstanding its visible environmental damage. He professes liking “the mangrove forests” and “his wife’s soup made with periwinkles and freshly plucked vegetables from their backyard.”⁴⁴ Obari Gomba’s poem “The People of the Broken Land” more negatively suggests that oil drilling has caused such environmental damage that restorative action of any kind has become impossible. The poem’s verses lament how the oil industry has upset the relationship between farming communities and the land. Whereas cassava and yam once grew bountifully in a healthy land,

The land has lost its power
 To the daily fire of extraction.
 The land is too broken to feed its people.
 The people are too broken to heal the land.⁴⁵

To understand why some people in a single locality—a place severely affected by anthropogenic environmental change—protest, while others appear subdued, we need to develop different frameworks for the Anthropocene.⁴⁶

Explaining Anthropocene Differences

Why should we consider these histories of Mufulira, Johannesburg, and Port Harcourt? The literary scholar Cajetan Iheka underscores the importance of inserting African experiences with colonialism and extractive capitalism into accounts of the Anthropocene, as these histories prefigure our current environmental crisis and its future possibilities.⁴⁷ Below, I survey some of the recent theorizations of the Anthropocene that have framed colonialism and capitalism as explanatory devices for historical and contemporary inequalities. On the basis of the three vignettes, I argue that we need more plural and decolonial frameworks to adequately narrate varied ways of living in and with the Anthropocene.

Studies of resource extraction have emphasized how mines, oil wells, and their attendant environmental destruction both built on and intensified colonial inequalities. Indeed, the Witwatersrand gold rush of 1886 greatly expanded colonial

presence and control in Johannesburg. While mining generated windfall profits for British businessmen, it affected African laboring bodies and the newly urbanized environment mainly through waste and diseases such as tuberculosis and cancer.⁴⁸ Similarly, the development of copper mines in Mufulira spurred massive transnational investments in Zambia's mines, enabling the rapid electrification of Europe in the 1930s and 1940s, even as the Copperbelt's population continued to be lit by candles.⁴⁹ In the Niger Delta substantial oil drilling only started in the 1950s, yet it immediately generated translocal forms of petromodernity.⁵⁰ In all these contexts, by extracting resources from a colonial periphery, global capitalism benefited an imperial core. The geographer Kathryn Yusoff aptly underlines the "racialized violences" and "asymmetries of colonial possession (of subjects, land, resources) and indigenous and black dispossession."⁵¹ Over the years, environmental damage—whether in the form of gigantic waste heaps, air pollution, or land left infertile—has been disproportionately concentrated in African localities of resource extraction, as the three vignettes illustrate. These profound inequalities endure into the present through continuous forms of extractivism and complex afterlives. Contemporary sites of resource extraction thus "are a product of, and reinforce, colonial divisions of power, territory, and life."⁵² Besides coloniality, capitalist processes of industrial expansion profoundly impacted environmental change and Anthropocene inequalities.

In twentieth-century Africa, resource extraction has been a crucial driver of capitalism's expansion.⁵³ Capitalist extractive industries have scoured the countryside for fuel, labor power, and timber, effecting widespread pollution and environmental transformation in localities near mines and oil wells. The sociologist Jason Moore argues that the "environment-making revolution" of capitalism is critically "dependent on finding and co-producing Cheap Natures."⁵⁴ This means that some resources, people, and places are valued within capitalist relationships, while others are actively devalued. These inequalities can play out on both global and very local scales, differentiating the Global North from the Global South but also distinguishing Johannesburg's rich gold mine from the adjacent land and people negatively affected by toxic mining waste. The geographers Andreas Malm and Alf Hornborg argue that such "uneven distribution is a condition for the very existence" of capitalism.⁵⁵ Ongoing processes of extractive capitalism reinforce and deepen these inequalities. A case in point is the so-called decarbonization divide.⁵⁶ Whereas Europe's "green transition," with its metal-intensive windmills and solar panels, relies heavily on Zambian copper and Congolese cobalt, today's multinationals deny responsibility for the environmental despoliation of a century of colonial/post-colonial mining, leaving Copperbelt communities struggling to deal with aggravated toxicity. These colonial and capitalist dynamics, as the historian Emma Gattey points out, have enduringly shaped the uneven distribution of the "impacts of climate change and coping mechanisms in the Anthropocene."⁵⁷

As the three vignettes suggest, "the social, cultural, and political experiences" of the Anthropocene differ radically.⁵⁸ Histories of colonialism and

capitalism indeed play a crucial role in shaping Anthropocene experiences in Mufulira, Johannesburg, and Port Harcourt. Yet while all three localities share histories of British colonization, capitalist resource extraction, and lethal pollution, these have elicited widely divergent responses and lived realities in the Anthropocene, ranging from small-scale adaptations in Zambia to racially differentiated reactions in South Africa and protest in Nigeria. In Mufulira, legacies of extractive capitalism and mine company paternalism circumscribed opportunities for protest, whereas in Johannesburg, the history of apartheid caused whites and Black peoples within the same city to experience mining and its toxic effects very differently, also informing their proclivity to protest these effects. In the Niger Delta, by contrast, massive pollution from the oil industry caused protest from the start. Yet there, too, some learned to live with oil extraction's environmental degradation. Colonialism and capitalism created vulnerabilities and inequalities not only between colonizer and colonized, Europe and Africa, but also within localities. While a woman's tomato crop in Mufulira might fail to grow due to sulfur dioxide fumes, her neighborhood petition will carry less political weight than that of a unionized male mine worker incapacitated by silicosis requesting compensation payments from the mine company. The intersectional positionalities of class, gender, race, and political power shape Anthropocene dynamics, influencing "the susceptibilities and potentials of future life."⁵⁹

Resource extraction undeniably causes vulnerabilities, inequalities, and violence, affecting people and ecosystems variously. How can we better narrate what it is like to live on an earth made by these relationships of coloniality and extractive capitalism? Scholars working on decolonial ecologies, including Malcolm Ferdinand, Françoise Vergès, and Kathryn Yusoff, offer useful guidance. They bring together analyses of colonialism, capitalism, and intersectional power relations to show their dynamic and multidirectional interactions with environmental change.⁶⁰ Can writing decolonial histories of living with resource extraction generate "alter-concepts of care and responsibility" that point toward more hopeful futures?⁶¹

Writing the Anthropocene Otherwise

By paying attention to diverse histories, I have asked how we can start to theorize the Anthropocene from African localities of resource extraction. The geographer Farhana Sultana urges us "to make visible and draw attention to knowledges and lived experiences otherwise" and "to emplace theory in concrete struggles that recognize various forms of resistance to domination."⁶² In this light, I have offered stories from Mufulira, Johannesburg, and Port Harcourt, emphasizing multiple forms of living with, in, and against the Anthropocene. In these stories, resistance came in many forms, from petitions and marches to everyday acts of care, such as cleaning a dusty interior. Yet apart from resistance, we should equally be attentive to the varied ways in which people seek to make the Anthropocene habitable, including through "affirmation, repair, and resurgence."⁶³ When and how do people develop place-based attachments to severely damaged environments? Positionality matters greatly

here. Life under South African apartheid or the nationalist Zambian one-party state afforded different political opportunities to effect environmental change. How we write the Anthropocene, therefore, must reflect “an awareness of diverse living realities and multiple publics.”⁶⁴ Studying local African histories and documenting how people coped with the extreme violence and life-threatening environmental transformation of resource extraction might provide us with unique glimpses into the Anthropocene future and its unequal world-making possibilities.

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Notes

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3. Hecht, “Interscalar Vehicles.”
4. Zalasiewicz, Waters, and Williams, “Human Bioturbation,” 4–5.
5. Peša and Ross, “Extractive Industries and the Environment”; Peša, “A Planetary Anthropocene?”
6. Chakrabarty, “Four Theses,” 219.
7. Chakrabarty, “Four Theses,” 221; Chakrabarty, *The Climate of History*.
8. Vergès, “Racial Capitalocene,” 4; Bond, “Contamination in Theory.”
9. Hecht, “Interscalar Vehicles.”
10. Yusoff, “Geologic Life,” 782.
11. Acker, “A Different Story,” 171.
12. Acker, “A Different Story,” 211.
13. Peša, “Mining, Waste, and Environmental Thought.”
14. Miller, *Extraction Ecologies*, 2.
15. Iheka, *Naturalizing Africa*.
16. Peša and Henriët, “Beyond Paternalism”; Peša, “Mining, Waste, and Environmental Thought.”
17. Chansa, “State, Mining Companies, and Communities.”
18. Larmer, *Living for the City*.
19. Peša and Henriët, “Beyond Paternalism.”
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22. Nathan Mwamba, interview with author, July 6, 2018, Mufulira, Zambia.
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24. Kathbert Nchema, interview with author, July 7, 2018, Mufulira, Zambia.
25. Ana Chilufya, interview with author, August 12, 2018, Mufulira, Zambia.
26. Tsing et al., *Arts of Living on a Damaged Planet*.
27. Goldblatt and Gordimer, *On the Mines*.
28. Fourie and van der Walt, "Heritage Scoping Assessment," 27.
29. Muindisi, "Exploring the Preservation of Mine Dumps."
30. Olobatoke and Mathuthu, "Heavy Metal Concentration."
31. Bormman and Cronjé, "Forgotten People of Joburg's Wembley Stadium."
32. Fourie and van der Walt, "Heritage Scoping Assessment," 3.
33. Fourie and van der Walt, "Heritage Scoping Assessment," 36.
34. Muindisi, "Exploring the Preservation of Mine Dumps," 63.
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36. Scott and Barnett, "Something in the Air."
37. Adunbi, *Oil Wealth and Insurgency*.
38. Saro-Wiwa, *Silence Would Be Treason*; Doron and Falola, *Ken Saro-Wiwa*.
39. Okonta, *When Citizens Revolt*.
40. Iwilade, "'Green' or 'Red'?"; Watts, "Resource Curse?"
41. Klein, *This Changes Everything*, 306.
42. Ojaide, *Delta Blues*, 50.
43. Iheka, *Naturalizing Africa*.
44. Alozie, "Niger Delta."
45. Gomba, *Pearls of the Mangrove*, 95.
46. Lora-Wainwright, *Resigned Activism*.
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49. Larmer, *Living for the City*.
50. Appel, Mason, and Watts, *Subterranean Estates*.
51. Yusoff, *A Billion Black Anthropocenes or None*, 30.
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54. Moore, "The Capitalocene, Part 1," 594–95.
55. Malm and Hornborg, "Geology of Mankind?," 64.
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