FREEPORT, THE ENVIRONMENT, AND THE AMUNGME: AN ENVIRONMENTAL HISTORY OF THE FREEPORT MCMORAN COPPER AND GOLD MINE IN PAPUA, INDONESIA

by

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DEDICATION

For Stephanie and Athena, for their undying steady love and support.

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ABSTRACT

The Amungme and Kamoro managed their environments for thousands of years in what is now Papua, Indonesia. In the late 1960s, seeking foreign capital to boost the nation's economy, the president of Indonesia signed a contract with Freeport McMoRan Copper and Gold, which by 1988 began mining one of the world's largest gold mines with almost no environmental regulations in place. Freeport's close relationship to the Suharto regime resulted in the company's ability to evade consequences for environmental and social damage. In the 1990s, NGOs began publicly criticizing the company's substandard environmental and social record, pressuring the company through negative international attention. Freeport hurried to shield its reputation by investing in environmental management plans and addressing the social tensions with the indigenous population. Although many have addressed Freeport's involvement in the abuses leveled on the environment and the indigenous populations in the mining concession, there is yet to be an analysis of this relationship through the lens of environmental justice history. While demonstrating how the political, material, and cultural levels of an environmental analysis aptly describe the relationship between Freeport, the environment, and the indigenous people, this thesis will argue that Freeport's attempts at remediation were simply a veneer to ward off critics against the mining operations; all the while the company's social and environmental records worsened over time. Freeport disrupted the lives of the indigenous people, who nevertheless showed complexity and agency in the face of great change.

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LIST OF ABBREVIATIONS

ARD	Acid Rock Drainage
BAPEDAL	Environmental Impact Management Agency
BPK	Badan Pemeriksaan Keuangan (Supreme Audit Agency, or Audit Board of Indonesia)
CoW	Contract of Work
EMA	Environmental Management Act
Freeport	Freeport McMoRan Copper and Gold, Inc.
ICMM	International Council on Mining and and Metals
LEMASA	Lembaga Masyarakat Adat Amungme (Amungme Traditional Council)
ModADA	Modified Ajkwa Deposition Area
MWH	Montgomery Watson Harza
OBS	Overburden Stockpile
OPIC	Overseas Private Investment Corporation
OPM	Operasi Papua Merdeka (Free Papua Operation)
PAF	Potentially Acid Forming
PTFI	PT Freeport Indonesia
WALHI	Wahana Lingkungan Hidup Indonesia (Indonesia Forum for Environment)

INTRODUCTION

A deep, disfigured star-shaped cavity with shades of yellow and grey bores into the earth in a vast misty valley surrounded by lush, green, jagged peaks reaching over 16,000 feet in elevation. Waterfalls sliding softly down emerald slopes fall gently on the crooked path leading up the mountain. Roads grind their way through the rough shape, weaving an endless maze where enormous trucks make their way to and fro day and night, carrying heavy burdens to high alpine valleys teeming with wildflowers and blue crystal lakes. The trucks dump their loads into the colorful meadows, then haul back to the crater for more. A mill grinds continuously, searching for precious ore. A white-capped monolith watches quietly as the surrounding peaks that were once sacred are laid to waste.

The Amungme people, a Papuan tribe, were the original landholders of the mountain on which the mine sits. They watched as foreigners arrived, built mining infrastructure and a mining town, introduced a cash economy and Western goods into what was once their hunting grounds and sweet potato gardens. In addition to the vast social changes that occurred, the environment was polluted with what will amount to several billion tons of mining waste at the end of the mine's life in 2041. Grey muddy tailings containing heavy metals inundated what was sago forest, a vital food source for the Kamoro, the original Papuan landowners of the lowlands affected by the mining waste. Overburden filled an alpine lake and meadow, and acid rock drainage (ARD)

threatened the water quality of over 100,000 people in the rapidly expanding city of Timika on the coast.

This massive pit in the earth is the Grasberg mine, now owned by Freeport McMoRan Copper and Gold—a mining company based out of Phoenix, Arizona—along with PT Freeport Indonesia (PTFI), subsidiary of the parent company, and PT Inalum, which is owned by the Indonesian government. Freeport McMoRan (Freeport) hesitatingly claimed environmental and social responsibility for the land, water, and indigenous population living within the Contract of Work (CoW) area. As its questionable record in both issues came to light in the 1990s by NGOs and indigenous peoples, it altered its strategies to appear more sustainable. Some scholars, such as Daniel Franks and P.A. Rifai-Hasan, believed this change in course was a true change of heart by the corporation.[1] Others believed Freeport simply greenwashed itself, acting to appear environmentally friendly to deflect critics.[2] The following work will show instead that not only was Freeport's environmental management lacking, but additionally, the plight of the original landowners, the indigenous population, worsened. However, although the Papuan people were excluded from the economy and losing their resources, this thesis will show that they were not simply passive victims of a foreign extractive industry that

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[1] See Daniel Franks, "Consuming Landscapes: Towards a Political Ecology of Resource Appropriation," (PhD diss., Griffith University, 2008), https://doi.org/10.25904/1912/1105 and P.A. Rifai-Hasan, "Development, Power, and the Mining Industry in Papua: A Study of Freeport Indonesia," *Journal of Business Ethics* 89 (2009): 129-43.

[2] Greenwashing is "'the act of misleading consumers regarding the environmental practices of a company or the environmental benefits of a product or service' (Greenpeace, n.d.). The term greenwashing developed as people identified inconsistencies between companies' actual behavior and claims about being green," Tiffany Derville Gallicano, "A Critical Analysis of Greenwashing Claims," *Public Relations Journal* 5, No. 3 (2011): 1. For more on Freeport's efforts to please critics, see Chris Ballard and Glenn Banks, "Between a Rock and a Hard Place: Corporate Strategy at the Freeport Mine in Papua, 2001–2006," in *Working with Nature against Poverty: Development, Resources and the Environment in Eastern Indonesia*, eds. B. Resosudarmo & F. Jotzo (ISEAS–Yusof Ishak Institute, 2009), 147-77.

destroyed their lands. Using audits conducted with the company's own data, reports based on leaked company records, the voices of the original landowners, and the media, I will show how the company greenwashed itself from 1990-2019 and improved the face of its social responsibility to the indigenous people; all the while, its environmental and social record worsened because it did not heed the Indonesian government, international environmentalists, nor the Indigenous groups.

Historiographical Context

In 1967 Freeport Indonesia was the first multinational company to sign a contract with President Suharto to bring capital to the nation. As of 2003, according to Denise Leith, Freeport's Papuan operation was the "largest gold mine and most profitable copper mine on Earth."[3] It, along with the timber, fishing, and oil extraction industries, exploited the rich resources of Papua in the name of development. The mine became a vital asset to Indonesia, serving as the major driver of the economy in Papua and the largest employer in the province by the 2000s. Several scholars noted that Papua's resources were vital to the burgeoning nation's economy and that it could be managed in a way that minimized environmental damage. Ronald Petocz, in his 1989 World Wildlife Fund for Nature handbook on rational resource utilization for the province, made the case that it was entirely possible to continue activities of resource exploitation and conserve the environment in a responsible way.[4] He intended the book to provide a framework for creating a sustainable environment for Papuans while incorporating them into the

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[3] Denise Leith, *The Politics of Power: Freeport in Suharto's Indonesia,* (Honolulu: University of Hawai'i Press, 2003), 3.
[4] Ronald G. Petocz, *Conservation and Development in Irian Jaya: A Strategy for Rational Resource Utilization* (Leiden, Netherlands, E.J. Brill, 1989).

Indonesian economy. Chris Manning and Michael Rumbiak argued in 1991 that more equal allocation of the revenue from mineral and oil exploitation would benefit Papuans, but overall, the tone of their work supported the assimilation of Papuans into Indonesia.[5] Similarly, Timo Kivimäki and Ruben Thorning published a study in 2002 that explored ways to reduce tension between the tense relationship between Papuans and Indonesians, yet expressed more sympathy toward Indonesia.[6]

Other scholars highlighted the problems associated with incorporating Papua into the Indonesian nation. The exploitation of Papua's resources and the influx of migrants from elsewhere in Indonesia—who often benefitted from the mine more than the Amungme—became key to Papuan feelings towards the national government and foreign extractive industries, adding fuel to the resistance movement and increased tension with the Indonesian government. Kees Lagerberg noted in 1979 that Papuans called the exploitation of their resources the "theft of their heritage"[7] and argued that this oppression spurred a national identity among Papuans.[8] Dale Gietzelt ascribed the rise of Papuan nationalism instead to "Indonesianization," which he defined in 1989 as a process based on the marginalization of Papuans and the exploitation of the region's resources.[9] Jim Elmslie demonstrated similar themes as Lagerberg and Gietzelt.[10] He argued that

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[5] Chris Manning and Michael Rumbiak, "Irian Jaya: Economic Change, Migrants, and Indigenous Welfare," in *Unity and Diversity: Regional Economic Development in Indonesia Since 1970,* ed. Hal Hill (Singapore: Oxford University Press, 1991). Irian Jaya is the former name given by President Suharto to the Indonesian province now separated into the provinces of Papua and West Papua.
[6] Timo Kivimäki and Ruben Thorning, "Democratization and Regional Power Sharing in Papua/Irian Jaya," *Asian Survey* 42, no. 4 (2002): 672.
[7] Kees Lagerberg, *West Irian and Jakarta Imperialism*, (New York: St. Martin's Press, 1979), 7.
[8] Lagerberg, *West Irian*, 153.
[9] Dale Gietzelt, "The Indonesianization of West Papua," *Oceania* 59, no. 3 (1989): 202, 201, 217.
[10] Jim Elmslie, *Irian Jaya Under the Gun: Indonesian Economic Development versus West Papuan Nationalism* (Honolulu: University of Hawai'i Press, 2002).

"unless they [Papuans] re-establish political control over their lands and resources, their future is bleak."[11] Elmslie, Lagerberg, and Gietzelt agreed that resource exploitation—and one could add, all the environmental problems that came with it—created a Papuan national identity.[12]

Issues of social and environmental justice also captured the attention of scholars studying the smaller Papuan group of the Amungme. David Hyndman's 1994 book *Ancestral Rain Forests and the Mountain of Gold* brought critical attention to the injustices suffered by the Amungme through its detailed account both of Freeport's destruction of Amungme tribal lands as well as the Amungme's fight to protect their socio-economic way of life.[13]

How Freeport gained such power in Papua stemmed from the company's corrupt relationship with President Suharto. Denise Leith, in *The Politics of Power: Freeport in Suharto's Indonesia* (2003), argued that Freeport, in its close relationship to Suharto, had "become a compliant and valuable asset that, with the company's complicity, was exploited by the president." Yet, according to her, Freeport was not helpless; the company maintained much power and influence. As Leith saw Suharto's regime end and new political uncertainties rise within the province, she stated that Freeport's "inability to quickly adjust to new political realities not only leaves this wealthy company highly vulnerable, but arguably represents the greatest threat to its future."[14]

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[11] Elmslie, *Irian Jaya Under the Gun,* 7.
[12] Ibid., 70.
[13] David Hyndman, *Ancestral Rain Forests and the Mountain of Gold: Indigenous Peoples and Mining in New Guinea* (Boulder: Westview Press, Inc., 1994).
[14] Leith, *Politics of Power*, 4, 15.

Yet, since 2003, Freeport proved its ability to weather the storms of political instability within Papua. Adérito de Jesus Soares claimed that Freeport's "corporate responsibility" was an attempt to appease critics with environmental and social programs.[15] In 2009 Chris Ballard and Glenn Banks further contended that Freeport became stronger than ever because of the corporate strategies they created to ward off critics and remain "under the radar."[16] They also argued that Freeport essentially greenwashed their environmental policies in order to deflect critics.[17]

Not all agreed with the assessment that Freeport's policies were a veneer to ward off environmentalists. Daniel Franks contended that Freeport began to create policies that were mitigating the social and environmental problems.[18] In addition to this view that Freeport had improved its policies, in 2009 P.A. Rifai-Hasan argued that Freeport bettered itself socially and environmentally, concluding that Freeport's record was filled with "mistakes and missed opportunities," yet it was on its way to "correct and refine its policy of its business operation."[19]

Environmentalists tried, many times in vain, to gather scientific information that would raise awareness of the destruction Freeport leveled on the land around the mine. Due to Freeport's contentious social and environmental record, the company made it exceedingly difficult for scientists not connected to the company to access the CoW area at Grasberg and assess the damage to the environment. To circumvent this problem,

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[15] Adérito de Jesus Soares, "The Impact of Corporate Strategy on Community Dynamics: A Case Study of the Freeport Mining Company in West Papua, Indonesia," *International Journal on Minority and Group Rights* 11 (2004): 141.
[16] For more on their argument, see Ballard and Banks, "Between a Rock and a Hard Place," 162, 173.
[17] Ibid., 173.
[18] Franks, "Consuming Landscapes, 260.
[19] Rifai-Hasan, "Development, Power, and the Mining Industry in Papua," 138-9.

David Paull *et al.* and Michael Alonzo *et al.* used remotely sensed data in independent studies on the environmental impact of the Grasberg mine.[20] The studies, published in 2006 and 2016, respectively, implicated destruction of the lowlands due to mining, supporting what environmentalists had been stating about Freeport's environmental record all along.[21]

The Papuans' relationship to Freeport parallels many other Pacific indigenous people's experiences with foreign extractive industries. Many authors admonished non-indigenous people to view indigenous people as fluid rather than being fixed in time with their culture and beliefs. In her study of the single-origin coffee industry in Papua New Guinea, environmental anthropologist Paige West discussed the problematic marketing of the Gimi people as primitive and how this has contributed to dispossession by accumulation through deregulation and neoliberalization. She argued that stereotypes of indigenous people conjure up racist attitudes towards their culture as a reason for their own poverty.[22] West demonstrated the harm that occurs when agency is removed from indigenous people as they are portrayed as static actors in an environment of indigenous and cultural purity. In addition, West showed what kind of misunderstandings can arise when indigenous groups are viewed as permanently culturally and ecologically at one in their environments.[23]

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[20] David Paull, Glenn Banks, Chris Ballard, and David Gillieson, "Monitoring the Environmental Impact of Mining in Remote Locations through Remotely Sensed Data," *Geocarto International* 21, no. 1 (2006): Abstract, 33.
[21] Michael Alonzo, Jamon Van Den Koek, and Nabil Ahmed, "Capturing Coupled Riparian and Coastal Disturbance from Industrial Mining Using Cloud-Resilient Satellite Time Series Analysis," *Scientific Reports* 6, 35129 (2016): 5, https://doi.org/10.1038/srep35129.
[22] Paige West, *From Modern Production to Imagined Primitive: The Social World of Coffee from Papua New Guinea* (Durham: Duke University Press, 2012), 253.
[23] Paige West, *Conservation is Our Government Now: The Politics of Ecology in Papua New Guinea* (Durham: Duke University Press, 2006).

The effects that extractive industries have on the environment and on the cultures and livelihoods of indigenous people in those spaces have the potential to change societies and the environment drastically and permanently. In her book *Sovereign Sugar: Industry and Environment in Hawai'i* (2014), Carol MacLennan argued that significant change was brought about by Hawaiians and Americans prior to the introduction of the sugar industry, but that the industry quickly and permanently scarred the land and altered the socio-political environment and "forever changed the forests, water supply, and human and animal worlds."[24] Yet, despite these changes, ecologies and Hawaiians were not simply victims; nature and humans both had agency.

In 2006, Paul D'Arcy argued against the notion that indigenous Pacific Islanders were "closed cultural systems," and instead contended that for Islanders, historically, the Pacific "was a boundless sea of possibilities and opportunities."[25] Instead of viewing indigenous people and culture as static, it is important to recognize that they are in constant flux, changing cultures and ideas over time. Borrowing Alexander Spoehr's work, he stated that "change is always present in greater or lesser degree in every culture and society…stability lies in orderly change and finds expression in a continuing successful adaptation to habitat and in non-violent shifts in the pattern of social organization."[26]

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[24] Carol A. MacLennan, *Sovereign Sugar: Industry and Environment in Hawai'i* (Honolulu: University of Hawai'i Press, 2014), 4.
[25] Paul D'Arcy, *The People of the Sea: Environment, Identity, and History in Oceania* (Honolulu: University of Hawai'i Press, 2006), 6-7.
[26] Alexander Spoehr, *Saipan: The Ethnology of a War-Devastated Island* (Chicago: Fieldiana: Anthropology 41, Chicago Natural History Museum, February 11, 1954), in D'Arcy, *The People of the Sea,* 170.

Some authors laid the blame of environmental destruction squarely at the feet of market capitalism. Market capitalism is a common way to explicate the destruction brought to indigenous people and their environments by foreign extractive industries. Biologist Carl N. McDaniel and economist M. Gowdy posited that industry and capitalism caused cultural and environmental degradation to the Nauruans and their island.[27] Historically, it was exploited by colonial powers for its phosphate, generating great wealth for the British Phosphate Commissioners. Following independence after WWII, the people of Nauru chose to continue phosphate mining on their island, ultimately leading to the decimation of the environment and the inhabitants' dependence on imported goods for survival. They argued that it was impossible for the Nauruans, having been exposed to Western culture, to resist market capitalism, stating that "deeply ingrained cultural patterns, supported by powerful interest groups worldwide, jeopardize the survival of civilization and much of the biosphere."[28] The authors emphatically stated that Nauru's environmental disaster "exquisitely illuminates the ruinous course of our global market culture."[29]

Marx's theory of primitive accumulation is a common framework for understanding exploitative foreign extractive industries' effects on people groups all over the world. For the capitalist system is "a process that transforms, on the one hand, the social means of subsistence and of production into capital, on the other, the immediate producers into wage labourers. The so-called primitive accumulation, therefore, is

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[27] Carl N McDaniel and John M. Gowdy, *Paradise for Sale: A Parable of Nature* (Berkeley: University of California Press, 2000).
[28] McDaniel and Gowdy, *Paradise for Sale,* 149.
[29] McDaniel and Gowdy, *Paradise for Sale*, 8.

nothing else than the historical process of divorcing the producer from the means of production." In other words, the part of this passage that resonates the most with the cases of foreign extractive industries' impact on indigenous Pacific people is the bottom line of Marx's point about primitive accumulation: "The expropriation of the agricultural producer, of the peasant, from the soil, is the basis of the whole process."[30] It both takes the resources they need to exist, and, in the process, turns them into wage laborers. The coffee industry in Papua New Guinea created a poorer society in the face of neoliberalism and deregulation, the Hawaiians' environment and subsistence living were destroyed, and the people of Nauru were decimated by a market capitalist system. All these cases separated Pacific indigenous populations from their subsistence living in their environments that they had adjusted to suit their needs, and Marx's theory of primitive accumulation describes how capitalism separated the laborers from the land.

However, although many historians argue that capitalism holds the power to destroy environments and therefore livelihoods of people by tearing them from their land, there are limitations to this argument in an environmental history and in the case of the Amungme and the Kamoro. In Marx's discussion on modern industry and agriculture, he expressed concern for the health of the soil as society moved towards capitalist agriculture, but it seems he did so out of concern for the laborer's wealth and means of production: "Capitalist production, therefore, develops technology, and the combining

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[30] Karl Marx, "Chapter 26: The Secret of Primitive Accumulation," in *Capital: A Critique of Political Economy, Volume I, Book One: The Process of Production of Capital,* 1st English ed., transl. Samuel Moore and Edward Aveling, ed. Frederick Engels (Moscow: Progress Publishers, 1887); Marx/Engels Internet Archive (Marxists.org), 1995, 1999, accessed February 10, 2021, https://www.marxists.org/archive/marx/works/1867-c1/ch26.htm.

together of various processes into a social whole, only by sapping the original sources of all wealth — the soil and the labourer."[31] Environmental history certainly sets out to show the effects of humans on the land and vice-versa, and in the case of the Amungme, they were displaced and separated from their land. However, what distinguishes the Amungme's situation from a purely Marxian analysis is that their separation from the land was not simply a case of land seizure, but that this detachment stemmed from the devastating pollution of the land, rendering it useless for their subsistence living. In addition, from an environmental analysis, the land is not just a means of production, but the land matters in and of itself, independently of humans. Furthermore, in many cases, the land is woven together with cultural and spiritual beliefs, such as the Amungme's. While the pollution of the land separated the indigenous population from their means of subsistence and created wage laborers, the land was not purely a means of living, but of sacred value to them. Therefore, Marx's theory of primitive accumulation is in part a fitting analysis, and in part falls short in an environmental perspective.

Beyond the economic and Marxist critiques, we can turn to environmental history and its unique methodological perspective to best understand the effects of Freeport on Papua and indigenous Papuans. The history of the Grasberg mine aptly demonstrates all three levels that comprise the analytical lens of environmental history as identified by J.R. McNeill. The first of these, the material level, focuses on how physical nature—

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[31] Karl Marx, "Chapter 15: "Machinery and Modern Industry," in *Capital.* Furthermore, communist countries have equally destroyed their relationship with the land through control of nature with production and industry. See Robert B. Marks, *China: Its Environment and History* (Lanham: Rowman & Littlefield Publishers, Inc., 2012), and Paul Josephson, "The Costs of the War for the Soviet Union," in *The Long Shadows: A Global Environmental History of the Second World War,* eds. Simo Laakkonen, Richard Tucker, and Timo Vuorisalo (Corvalis: Oregon State University Press, 2017), and Judith Shapiro, *Mao's War Against Nature: Politics and the Environment in Revolutionary China* (New York: Cambridge University Press, 2001).

water, microbes, climate—and human culture have shaped each other over time. At Grasberg, the material level is exemplified both by the direct environmental damage to the land and water around the mine, as well as by the local landscapes' role in the development of the indigenous Amungme and Kamoro culture and economy. McNeill's second level, the political, includes economic developments, social interactions, and policies relating to the environment. The laws and regulations that the Indonesian government requested Freeport to follow are components of the political level. The cultural level, McNeill's third, encompasses ideas about nature, including cultural manifestations of those ideas, such as artistic expression and beliefs about the land.[32] The Amungme and Kamoro held sacred beliefs about nature in their homelands and the degradation of their cultural environment was also a major result of physical damage due to mining. The history of Freeport and the Grasberg mine is a poignant example of how all facets of environmental history are important to a holistic understanding of the complex stage upon which Freeport acted.

The history of Freeport is an important aspect of the broader scholarship on mining, especially from an environmental history perspective. The ways in which historians can look at the case of Freeport's Grasberg mine and the Amungme and Kamoro people groups are demonstrated by scholarship in the environmental history of mining using lenses such as capitalism and industry, social change, consumerism, and environmental justice. In early environmental history scholarship, it was typical for mining historians to focus on conservation and policies. The environmental history of

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[32] J.R. McNeill, "The State of the Field of Environmental History," *Annual Review of Environment and Resources* 35, no. 1 (2010): 346-48.

mining has grown over the years and split into different focuses. For example, historian David Stiller, speaking of policy, argued that mining companies should pay royalties toward environmental cleanup after mines are depleted, but others focus on industrial capitalism or social changes.[33]

Many environmental historians of mining described how capitalism and industrialism created a turning point in the destruction leveled upon the environment.[34] Andrew Isenberg, in arguing that the industry of gold mining and natural resource exploitation brought development to California, described the terrible destruction that hydraulic mining enacted upon the landscape.[35] Bradley Snow demonstrated that modernity brought environmental and health risks to the people of the Coeur D'Alenes through an industrial capitalist form of mining, and assigned a certain agency to the lead that brought so much damage to land and bodies.[36] Kent Curtis considered mining as crucial to the rise of the modern corporation leading from the 1860s Gold Rush through to low-grade copper production and consolidation.[37] As Traci Brynne Voyles noted,

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[33] David Stiller, *Wounding the West: Montana, Mining, and the Environment* (Lincoln: University of Nebraska Press, 2000).

[34] For an overview on the environmental history of mining in North America, see John Robert McNeill and George Vrtis, eds, *Mining North America: An Environmental History since 1522* (Oakland: University of California Press, 2017), and Timothy J. LeCain, *Mass Destruction: The Men and Giant Mines that Wired America and Scarred the Planet* (New Brunswick, New Jersey: Rutgers University Press, 2009); John D. Wirth, *Smelter Smoke in North America: The Politics of Transborder Pollution* (Lawrence, Kansas: University Press of Kansas, 2000); K. Ross Toole, *The Rape of the Great Plains: Northwest America, Cattle and Coal,* 1st ed. (Boston: Little, Brown and Company, 1976); Raymond F. Dasmann, "Environmental Changes Before and After the Gold Rush," in *A Golden State: Mining and Economic Development in Gold Rush California* (Berkeley: University of California Press, 1999); Kathryn Morse, *The Nature of Gold: An Environmental History of the Klondike Gold Rush.* (Seattle: University of Washington Press, 2003).

[35] Andrew C. Isenberg, *Mining California: An Ecological History*, 1st ed., (New York: Hill and Wang, 2005).

[36] Bradley D. Snow, *Living with Lead: An Environmental History of Idaho's Coeur D'Alenes 1885-2011* (Pittsburgh, Pa.: University of Pittsburgh Press, 2017), 7.

[37] Kent A. Curtis, *Gambling on Ore: The Nature of Metal Mining in the United States, 1860-1910* (Boulder: University Press of Colorado, 2013), 208, 207; For more on the industrial-capitalist analysis, see

environmental sociologists' analyses have stated that contemporary industrialism causes a "treadmill of production, in which extraction of raw materials and dumping of material waste are expanding with markets, often exponentially."[38]

According to some historians, mining is directly linked to consumerism.[39] Matthew Evenden argued that a single commodity changed "the boundaries of industrial geography and geopolitics; mobilized distant peoples, places, and environments; and imposed a legacy on postwar production and consumption patterns."[40] Timothy LeCain argued that humans have dangerously separated technology from the natural world by creating mass destruction of the planet and that "it is precisely this disconnect between human product and the environmental source of raw materials—between what we label 'technology' and what we label 'nature'—that needs to be closed if we are to better comprehend the dynamics of the modern world."[41] Corey Ross approached mining from a colonial perspective, or "commodity frontier," arguing that colonizers' cultural views about the colonized landscape led to environmental and economic exploitation.[42] Yet

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McNeill and Vrtis, *Mining North America*, a transnational series of essays with three themes: capitalism, industrialism, and health and environmental justice in North America—making imperialism and industrialization the key components of mining in North America, and Samuel Truett, *Fugitive Landscapes: The Forgotten History of the U.S.-Mexico Borderlands* (New Haven: Yale University Press, 2006).

[38] Traci Brynne Voyles, *Wastelanding: Legacies of Uranium Mining in Navajo Country* (Minneapolis: University of Minnesota Press, 2015), 9.

[39] It is based on similar concepts in economics and world systems analysis, but Matthew Evenden fit it into environmental history, Matthew Evenden, "Aluminum, Commodity Chains, and the Environmental History of the Second World War," *Environmental History* 16, no. 1 (2011): 69-93; LeCain, *Mass Destruction*.

[40] Evenden, "Aluminum," 71.

[41] LeCain, *Mass Destruction,* 9.

[42] Corey Ross, "The Tin Frontier: Mining, Empire, and Environment in Southeast Asia, 1870s-1930s." *Environmental History* 19, no. 3 (2014): 454-479.

consumerism is not just linked to capitalism—it is present in many societies no matter what type of economic framework.[43]

Societies can be changed drastically from mining's effects on the environment—even extracting one ore can change the globe. For example, while emphasizing the darker, destructive side of coal, Barbara Freese gave a comprehensive social history of coal from the dawn of its creation until the rise of industry, arguing to the effect that coal had the ability to "raise up not only our civilization but our very souls. Coal would let us control the external forces of nature, and control our own savage human nature, too," for it was "our species' salvation."[44] In discussing the effects of silver mining's mercury pollution on the environment and bodies in New Spain in the early modern period, John Richards argued that the "expansive dynamism of European early modern capitalist societies, and the shared evolutionary progress in human organization" created a "truly global, interconnected society rapidly knit together," that greatly impacted the environment "of nearly every region in the world."[45] More narrowly, Daviken Studnicki-Gizbert and David Schecter studied the use of fuel wood for silver smelting and refining in New Spain. They contended that the deforestation caused by fuel wood caused a "radical transformation of existing physical and human ecologies across an enormous territory," contributing to soil erosion and "enabling the development of a new colonial agro-ecology based on agriculture and pastoralism."[46] Historian Thomas Andrews coined

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[43] Frank Trentmann, *Empire of Things: How We Became a World of Consumers, from the Fifteenth Century to the Twenty-First.* First U.S. ed. (New York: Harper Collins Publishers, 2016).
[44] Barbara Freese, *Coal: A Human History* (Cambridge, MA: Perseus Publishing, 2003), 11.
[45] John F. Richards, *The Unending Frontier: An Environmental History of the Early Modern World* (Berkeley: University of California Press, Ltd., 2003), 17.
[46] Daviken Studnicki-Gizbert and David Schecter, "The Environmental Dynamics of a Colonial Fuel-Rush: Silver Mining and Deforestation in New Spain, 1522 to 1810." *Environmental History* 15, no. 1 (2010): 97.

the concept of "workscapes" in the context of the Great Colorado Coalfield War in which the underground mining conditions shaped the uprising of the miners, breaking down the divide between culture and nature.[47] Social effects of mining can lead to the search for environmental justice for the people and the environment.

Environmental historians J.R. McNeill and George Vrtis noted that "the quest for health and environmental justice" is still underrepresented in the environmental history of mining.[48] Historian Traci Brynne Voyles borrowed from Sylvia Hood Washington's definition of environmental justice history as "a history undertaken with an eye toward building environmentally and socially just futures." In her work on uranium mining on Diné (Navajo) land, Voyles labelled "wastelanding" as a process in which "the indigenous body in pain is the ultimate symbol of colonial progress and modernity, indigenous land laid to waste is its territorial corollary." The colonizer then sees the land, bodies, "worldviews, epistemology, history, and cultural and religious practices" as "pollutable."[49] Although Voyles's concept describes part of what happened in Papua, it does not represent the situation entirely. She defined wastelanding as a relationship between settler colonialism and environmental racism. It may be true that these two things are happening in Papua; however, it being a contested issue, it is beyond the purview of this thesis to argue that settler colonialism and racism are present in this part of Indonesia.

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[47] Thomas G. Andrews, *Killing for Coal: America's Deadliest Labor War* (Cambridge, Massachusetts: Harvard University Press, 2008), 16, 125.
[48] John Robert McNeill and George Vrtis, "Introduction," in *Mining North America,* 10.
[49] Volyes, *Wastelanding,* ix, 6-11.

In addition to Voyles's work with indigenous people, others explored the relationship between mining, First Nations people, and memory. The 2015 compilation *Mining and Communities in Northern Canada: History, Politics, and Memory* not only explored social and environmental justice, but viewed it through the lens of historical political ecology. The compilation is distinctive as it draws on oral histories of the indigenous populations' experiences, memories, and nostalgia of place and time through the rise and fall of mining operations in their communities.[50] This work also showed indigenous agency as they acted, reacted, and worked in the mines that are now long shut down.

As other environmental historians of mining have shown, capitalism and industry, consumerism, societal change, and environmental justice are each excellent lenses for analyzing the history of mines. Freeport is representative of capitalism and industry, fueled by consumerism. Societies are changed and grown as people are drawn to the mine for employment opportunities. Yet in the face of worsening conditions in their environment, indigenous groups remain complex, changing, and agents of their own actions and reactions as their environment degrades and shifts around them.

Just as the broader field of environmental history has become more consumed with issues of equity and environmental justice, the narrower historiography of Papua (while attentive to issues of colonial inequality, poverty, and political corruption) has paid less heed to the ways in which those structural inequalities are founded on

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[50] Marsha Weisiger, "Happy Cly and the Unhappy History of Uranium Mining on the Navajo Reservation," *Environmental History* 17, no. 1 (2012): 146-59; Arn Keeling and John Sandlos, "Introduction: The Complex Legacy of Mining in Northern Canada," in *Mining Communities in Northern Canada: History, Politics, and Memory,* eds. Arn Keeling and John Sandlos (Calgary, Alberta: University of Calgary Press, 2015), 7.

environmental abuses. In discussing Freeport and how it affected the Amungme and Kamoro, the environment must be included because it affected not only the way that they were acted upon by Freeport and the government, but how they reacted to it in turn.

In what follows are four chapters. The first is the history and geography of the province of Papua, Indonesia. This chapter will give an overview of the biogeography of the island, including flora, fauna, weather, and brief human history. The purpose of this chapter is to provide a background to lay the groundwork for the environmental changes that will be documented in the following chapters.

The second, third, and fourth chapters are laid out according to McNeill's three environmental levels of analysis for environmental history. Environmental history strives to address the tension between humans and the material world. Yet, there is a simpler way to break this down—in McNeill's three levels of analysis, the political, material, and cultural. This thesis will be a study to provide a comprehensive environmental analysis including the three levels**.** They all affect each other, and often environmental historians do not separate them out into the three levels, but it is useful here. The three levels demonstrate how the situation at the Freeport mine is a compilation of each of these distinct levels. And yet as they all affect each other, they are all important factors on their own.

The second chapter is the political chapter and involves the "powers-that-be." They were the most powerful, and they influenced the fates of the material and the cultural. In this chapter, I argue that Freeport maintained its ability to ignore environmental policies regarding the environment because of its powerful position in relation to the government and discuss the government's role in allowing Freeport to

ignore these regulations. The third chapter is the material chapter. The material aspect of the Freeport mine influences the fate of the cultural element. With the company's and environmentalists' data I lay out the evidence that Freeport's environmental record maintained its recklessness with alarming consequences to the environment, while greenwashing its policies to be environmentally friendly. The fourth chapter is the cultural chapter written about the Amungme and the Kamoro people groups. They were seen as an afterthought by the former two, and yet they were very important. In this chapter I describe how the indigenous groups reacted over the course of the mine's opening until the present. I argue that although the socio-economic position deteriorated, they maintained their agency, whether it resulted in protests, cohering or fracturing of the tribe, or stepping in to working with Freeport itself. In all cases, they showed resilience and agency in their reactions to what happened to them. The combination of the political, the material, and the cultural, in that order, is useful to showing the intertwined nature of them all. I conclude with a discussion of what environmental justice means for the Amungme and Kamoro in relation to Freeport's actions or lack thereof.

The following work will show that not only was Freeport's environmental management lacking, but additionally, the plight of the original landowners, the indigenous population, worsened. However, although the Papuan people were excluded from the economy and losing their resources, this thesis will show that they were not simply passive victims of a foreign extractive industry that destroyed their lands.

CHAPTER ONE: HISTORY AND GEOGRAPHY OF PAPUA

The province of Papua is located on the western half of the island of New Guinea, situated in Melanesia just south of the equator and north of Australia.[1] The island is typically described as being shaped like a bird, with its "backbone" a cordillera of peaks over 14,000 feet in elevation that run from west to east into Papua New Guinea. All rivers spring from the mountains either to the north or south and run into vast areas of swampy lowlands that stretch for miles.[2] New Guinea is the biggest tropical island on Earth, and according to three biologists writing in *Nature,* is "home to some of the best-preserved ecosystems on the planet and to intact ecological gradients—from mangroves to tropical alpine grasslands—that are unmatched in the Asia-Pacific region." The island is "a globally recognized centre of biological and cultural diversity."[3] In 2007 Bruce Beehler calculated that the province comprises 416,129 km^2 (160,668 $miles^2$) and "supports the largest tract of old growth tropical forest wilderness remaining in the Asia-Pacific region."[4]

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[1] The province is now divided in two: Papua (consisting of most of the island) and West Papua (which is in the Northwest, in the "Bird's Head"—for it is in the shape of a bird—of the island). For the sake of clarity, "Papua" and "Papuans" will be used for the remainder of this paper. Historically it has had the name(s) of Dutch New Guinea, West New Guinea, Irian Jaya, West Papua, and now West Papua and Papua. There is talk of creating two more provinces as well. Freeport's concession area and the mines are located in Papua.
[2] Bruce M. Beehler, "Introduction to Papua," in *The Ecology of Papua, Part One,* 1st ed., eds. Andrew J. Marshall and Bruce M. Beehler, (North Clarendon, VT: Tuttle Publishing, 2007), location 695, kindle.
[3] R. Cámara-Leret, D.G. Frodin, F. Adema, *et al.* "New Guinea has the world's richest island flora," *Nature* 584 (2020): Abstract, 29 June 2020, https://doi.org/10.1038/s41586-020-2549-5.
[4] Bruce M. Beehler, "Introduction to Papua," in *The Ecology of Papua, Part One*, location 695, kindle.

Before Freeport arrived on the island, New Guinea's environment was one adapted by the human populations that lived there for millennia. The Amungme and Kamoro people groups make up two small tribes within the larger population of approximately 250 tribes in the province of Papua, Indonesia, each with their own language.[5] According to Beehler in *The Ecology of Papua*, "Papua's forest wilderness and diverse marine ecosystems are human-managed natural systems that give the impression of being pristine," with the Papuans having "provided remarkably prudent stewardship of their forest resources."[6]

New Guinea has been inhabited for at least 40,000 years, and some experts suggest human occupation of the island may even extend as far back as 60,000 years.[7] Ethnobotanist Carolyn Cook noted that archaeological records indicate that Papuans occupied the highlands of the island for approximately 30,000 years, with evidence of agriculture dating to 9,000 years ago. Moreover, according to Cook, there is indication that Papuans were using fire to clear for planting 11,000 years ago.[8] Fires, generated naturally or by humans and El Niño droughts, are cyclical and "swidden agriculture has disturbed large swaths of habitat, most of which is now regenerated forest. Much of what appears to be 'virgin rainforest' is, in fact, the product of recent and not-so-recent patch

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[5] Beehler, "Introduction to Papua," *The Ecology of Papua, Part One*, location 872, kindle; "Indonesia: Papua Province," City Population, accessed November 6, 2020, https://www.citypopulation.de/php/indonesia-papua-admin.php; "Indonesia: West Papua Province," City Population, accessed November 6, 2020, https://www.citypopulation.de/php/indonesia-papuabarat-reg-admin.php.

[6] Beehler, "Introduction to Papua," *The Ecology of Papua, Part One,* location 872, kindle.

[7] Ibid., location 872, kindle.

[8] Carolyn D. Cook and Joanna Webster, *Amua-Gaig-E: The Ethnobotany of the Amungme of Papua, Indonesia,* (Ottawa: Canadian Science Publishing, 2016), 3-4.

disturbance."[9] Pigs have been present for 2,000-4,000 years, and the sweet potato, the highlanders' main sustenance, for 200-400 years, which spurred significant population growth.[10]

Many flora and fauna exist in its vast tropical ecosystems, giving sustenance to the indigenous populations. In 2019, a study by ninety-nine plant experts confirmed the existence of 13,634 known vascular plants and 3962 species of trees.[11] There are over 600 recorded species of birds, with 25 of those being Birds of Paradise. There are only approximately 180 species of mammals due to overhunting, 150 species of frogs, two species of crocodiles, sixty-one snakes, 141 lizards, and over 100,000 species of insects. The marine environment is also extremely rich and diverse, providing, in Beehler's estimation, "an important sustainable resource for local communities."[12]

The ecosystems from the lowlands to the highlands vary considerably. In the lowlands, the Kamoro people group survived primarily on sago and fishing. Forests in the swamps comprise alluvial forests with canopies reaching 45 meters (148 feet) in height. On the coast, where the Kamoro lived, mangroves flourish. At elevations over 1,000 meters submontane oak forests abound. Antarctic beeches grow at the midmontane range between 1,500 and 2,500 meters (4,921-8,202 feet). Elfin forests appear at 3,000 meters (9,843 feet), and even higher are "patches of dense thicket-life dwarf forest…interdigitated with open boggy grasslands in the more poorly-drained and frost-prone areas." At the elevation where the Grasberg mine sits, at 4,270 meters (14,010 feet)

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[9] Beehler, "Introduction to Papua," *The Ecology of Papua, Part One,* location 695, 812, kindle.
[10] Cook and Webster, *Amua-Gaig-E*, 4.
[11] Cámara-Leret, *et al.* "New Guinea has the world's richest island flora," 579-80.
[12] Beehler, "Introduction to Papua," *The Ecology of Papua, Part One*, location 847-863, kindle.

and upon the ancient hunting grounds of the Amungme, are "tussock grasslands, rocky areas, low ericaceous thickets, and a variety of tropical alpine herbaceous vegetation."[13]

The weather in Papua is unique, like its ecosystems. The mountains continue to build and simultaneously erode due to heavy rainfall.[14] Papua's climate oscillates between a northwest monsoon and southeast trade winds, alternating between rainier seasons and cool, drier ones. The Amungme live in an area that receives 3,000-5,000 mm (118-197 inches) per year.[15] Beehler noted that the mining town of Tembagapura, where Amungme gardens were once located, receives an astounding 7,500 mm (295 inches) of rain per year, the highest in the province.[16] The Amungme's hamlets are located in valleys that reach 20˚-30˚ Celsius (68˚-86˚ Fahrenheit) during the day, and 13˚-20˚ C (55˚-68˚ F) at night.[17] Weather is even chillier at elevations soaring to 4,500 meters (14,000 feet), near the mine's elevation.[18]

Historically, the Kamoro undoubtedly had more contact and far more change associated with the outside world than the Amungme. People from the Malukus and other "sea peoples" were known to have contact with Papuans as far back as 1000 BCE. The Portuguese sailed to Papua in the 1500s, and after that the Spanish, Dutch, and English made contact. Birds of paradise and turtle shells were common trade items, and explorers such as Alfred Russell Wallace ventured to the island in the 1800s.[19] As a coastal people, it is likely that the Kamoro had contact with Europeans intermittently over a period of

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[13] Ibid., location 825-841, kindle.
[14] Ibid., location 695, 812, kindle.
[15] Cook and Webster, *Amua-Gaig-E*, 3.
[16] Beehler, "Introduction to Papua," *The Ecology of Papua Part One*, location 798.
[17] Cook and Webster, *Amua-Gaig-E,* 3.
[18] Beehler, "Introduction to Papua," *The Ecology of Papua, Part One,* location 798, kindle.
[19] Ibid., location 895, kindle.

four hundred years before the twentieth century. The Amungme, on the other hand, were more isolated, yet they most likely had contact with other highlander groups such as the Damal, Moni, Dem, and the Western Dani. Cook believes that they originated as Damal and split from the group as a result of resource pressures, moving to the valleys they now occupy and changed their name to Amungme.[20] In the twentieth century, the Amungme and the Kamoro both had exposure to European influence such as traders, explorers, missionaries, and the government before Freeport arrived.[21]

The Amungme were isolated far longer than the Kamoro, developing their society in the mountains. Their economy was far different than any modern economic system. Traditionally, the "Amungme practice pig husbandry and horticulture as their means of subsistence, and bride price exchange as their traditional economic system...they organize their territory and daily activities according to environmental factors and kinship affiliation."[22] The Amungme's economy was once one of trade, using stone for axes and adzes, salt, seashells, and pigs.[23] As of 2016, the Amungme lived in small hamlets separated into twelve valleys between elevations of 1,000 and 1,800 meters.[24] Kal Müller and Yunus Omabak estimated that as of 2008 there were 8,000 Amungme living in the valleys around the mining concession. Before the arrival of the mine, in the Waa Valley alone there were about 200 Amungme. From 1972 to 2008 the number in the same valley

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[20] Cook and Webster, *Amua-Gaig-E*, 6-8.
[21] Abigail Abrash, The Amungme, Kamoro and Freeport: How Indigenous Papuans Have Resisted the World's Largest Gold and Copper Mine, *Cultural Survival Quarterly,* (2001).
[22] Cook and Webster, *Amua-Gaig-E,* 1.
[23] Kal Müller and Yunus Omabak, *Amungme: Tradition and Change in the Highlands of Papua* (Jakarta: Freeport Indonesia, 2008), 27-8.
[24] Cook and Webster, *Amua-Gaig-E*, 2.

had increased dramatically.[25] According to the 2010 census, Tembagapura, Freeport's mining town near Grasberg, comprised 16,917 people. The new population included miners, their families, and other Papuans who moved to the area to benefit from the mine.[26]

There are now few people groups in Papua untouched by at least some modernization. As of the 2010 census, Papua province consisted of 2.8 million people and West Papua reported a population of 760,422.[27] The largest city in West Papua—Kota Sorong, in the Bird's Head—had 190,625 people as of 2010.[28] The capital city, Jayapura, on the north coast, contained 256,705 people as of the census and was the largest city in Papua. Mimika Regency in the lowlands, where the Kamoro and the large city of Timika is located, totaled 182,001 in 2010. The rest of the provinces are divided into regencies, several numbering over one hundred thousand.[29] Papuans do not make up one hundred percent of these numbers. They are now sharing the province with transmigrants from other regions of Indonesia, as the nation has either forcibly relocated or encouraged immigration to the island to decrease population pressures in other areas, especially Java. There is also pressure to "Indonesianize," or assimilate into Indonesian culture and nationalism.[30] Ever since the birth of the Republic of Indonesia, this has caused marginalization among indigenous Papuans as it encouraged the loss of their own culture.

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[25] Müller and Omabak, *Amungme: Tradition and Change,* 27-8.
[26] Ibid., 27-8.
[27] "Indonesia: Papua Province," City Population; "Indonesia: West Papua Province," City Population.
[28] "Indonesia: West Papua Province," City Population.
[29] "Indonesia: Papua Province," City Population.
[30] Gietzelt, "Indonesianization."

Although the Amungme and Kamoro faced major changes driven by industrial capitalism at the end of the twentieth century, it is a mistake to believe that cultures in their respective environments have never changed over time. West and and D'Arcy both argued that it is false to believe that indigenous populations were in a pristine, static state before European contact upended them. D'Arcy pushed against the idea that sea peoples were "closed cultural system[s]," in which Pacific Islander cultures were isolated before Western explorers arrived, and instead contended that they traveled among the islands regularly, using the sea as a "means of communication rather than isolator."[31] West argued that "a past of stasis" and a "future of rapid modernization and change" were both fallacies in regards to the relationship between the Gimi people of Papua New Guinea and conservationists. The conservationists imagined a past of stasis for the Gimi, and the Gimi desired rapid modernization.[32] Both examples point towards a realization that cultures and their environments are never unchanging, and neither are the Kamoro and the Amungme. Although these groups had faced changes before, Freeport's arrival was a crucial turning point for the land and their lives.

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[31] D'Arcy, *The People of the Sea*, 6.
[32] West, *Conservation is Our Government Now*, 217.

CHAPTER TWO: THE POLITICAL

When Freeport began mining in 1972, the company gave no regard for the environment and tailings were disposed of into the Ajkwa river system. The Indonesian government seemed unconcerned about environmental matters; Indonesia only appointed its first environmental minister in 1978 and passed its first environmental regulation in 1982.[1] As Leith noted, in 1989 the company "publicly expressed a commitment to environmentally sustainable development" because of the attention of NGOs monitoring them. An environmental department was created by Freeport in 1990, but the manager was given little support and poor treatment.[2] It took a highly damaging event in the lowland rivers to spur any environmental cleanup on Freeport's part. Freeport did as little as possible to follow regulations, even flouting them for its own ends. When confronted by the government it was able to wield its power to evade consequences for its actions and avoid interruption of its operations. Freeport at many times boasted of being "the world's lowest-cost copper producer"; a reason for this is undoubtedly the failure of the company to adhere to government and best practice regulations, allowing it to avoid altogether expensive environmental maintenance.[3] Ultimately, due to the government's desperation to obtain foreign capital, the mining giant was able to ignore regulations for

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[1] Leith, *Politics of Power,* 156.
[2] Ibid., 163.
[3] "World's Second Biggest Pension Fund Dumps Rio Tinto: The Government Pension Fund Divests its Holdings in Mining Company," MAC: Mines and Communities, September 16, 2008, http://www.minesandcommunities.org/article.php?a=8809.

its waste disposal because of its importance as a national asset, all the while claiming compliance.

Indonesia was in need of capital because of its struggle to jumpstart the economy as a young nation post-independence, and Freeport was the perfect solution. Freeport was the first multinational corporation to sign a CoW, bringing foreign capital to the new nation.[4] After Communist-leaning Sukarno was ousted and replaced with Suharto, the new president was hard-pressed to find capital to replace the foreign businesses that Sukarno had driven from the country or who had left after independence. Freeport was able to take advantage of a prostrate state government desperate to attract capital investment as it "exploited and turned into much-needed foreign currency the natural resources that Jakarta lacked the expertise and capital to exploit."[5] As Leith noted, by 1969, $1.226 billion foreign capital "underwrote the Suharto regime for more than three decades."[6]

A source of Papua's wealth was Tengogoma, a peak sacred to the Amungme. The black, green, and blue rock mountain captured the attention of Jean Jacques Dozy, a Dutch explorer and geologist whose goal was to climb the high peaks of the Carstensz range in what was then Dutch New Guinea.[7] In 1936 Dozy mused, "I knew in the blink of an eye what this was about...It was hard to miss, with all the green and blue spots…The copper was obvious…I realized that no one could do anything with it…There

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[4] Leith, *Politics of Power*, 3.
[5] This capital advantage can be described as "crisis capital." See Shaun Nichols, "Crisis Capital: Industrial Massachusetts and the Making of Global Capitalism, 1865-Present," *Enterprise & Society* 18, No. 4 (2017): 795-809; Leith, *Politics of Power,* 13.
[6] Leith, *Politics of Power,* 13-4.
[7] Ibid., 1.

were no roads, no harbors, no factories. It was just like a mountain of gold on the moon."[8] Ertzberg, as Dozy called it, was highly inaccessible, and Dozy's discovery was forgotten until after WWII when in 1959 a mining company named Freeport Sulphur approached Forbes Wilson (who had heard of Dozy through a friend) to discuss extracting the ore.[9] After meeting the famed explorer and being convinced of the story's validity, Wilson convinced the company to send him to Papua to sample the deposit. When the samples were tested, it was found to be such a rich deposit (Ertzberg was once the world's largest above-ground copper deposit) that the company approved opening a mine in one of the most remote regions in the world.[10] An even greater reserve, Grasberg, was discovered later in 1988 in the nearby mining concession, which came to be worth billions.[11]

Mining became one of the largest driving forces of Papua's economy—especially the area near the concession—and Freeport grew to be the largest employer in the province, employing approximately 7,500 workers by 2004.[12] Ertzberg has since been depleted and Grasberg, the world's second largest gold mine, is still in operation today.[13] Freeport's original CoW with Indonesia ends in 2021, yet the government was continuing

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[8] George A. Mealey, *Grassberg: Mining the Richest and Most Remote Deposit of Copper and Gold in the World, in the Mountains of Irian Jaya, Indonesia* (New Orleans: Freeport-McMorRan Copper and Gold, 1996), 71.
[9] Leith, *Politics of Power*, 2.
[10] Ibid., 2.
[11] Mealey, *Grassberg,* 71; Paull, Banks, Ballard, and Gillieson, "Monitoring the Environmental Impact," 36.
[12] Prakash Sethi, David B. Lowry, Emre A. Veral, H. Jack Shapiro, and Olga Emelianova, "An Innovative Voluntary Code of Conduct to Protect Human Rights, Create Employment Opportunities, and Economic Development of the Indigenous People," *Journal of Business Ethics* 103, No. 1 (Sept 2011): 8.
[13] "Top Ten Biggest Gold Mines in the World," Mining Technology, last updated December 4, 2020, accessed May 4, 2020, https://www.mining-technology.com/features/feature-top-ten-biggest-gold-mines-south-africa/.

to work with Freeport to extend it until 2041.[14] As of 2001 the mine was "one of ten 'national assets'," and as historian Chris Ballard of Australian National University called it, the "jewel in the crown of provincial development for Irian Jaya, accounting for 88 percent of the province's non-oil exports."[15] In 2009, Freeport's "consolidated recoverable proven and probable reserves…totaled 104.2 billion pounds of copper, 37.2 million ounces of gold, 2.59 billion pounds of molybdenum, 270.4 million ounces of silver, and 780 million pounds of cobalt."[16] In 2016, it was reported to be worth $100 billion; Freeport is, in fact, Indonesia's largest taxpayer.[17]

Having been removed from their lands so mining could begin, the Amungme and Kamoro tribes became part of the system that removes material resources from the environment with little return for them, the original landowners. This verdant land teeming with rare wildlife is home to over three million people, yet many indigenous people have felt betrayed by those exploiting resources from the land once controlled by them alone. Freeport is one of many co-opting resources in Papua, yet is the most profitable, leaving a deep imprint on the land and therefore the people.

As a newly independent, developing nation in 1945, it was decades before Indonesia gave any serious consideration to environmental conservation. The 1945

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[14] Freeport-McMoRan, *External Environmental Audit 2017: Executive Summary Prepared for: PT Freeport Indonesia, Affiliate of Freeport McMoRan,* https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/PTFI_ExternalEnvironmenta%20Audit2017.pdf.

[15] Chris Ballard, and International Institute for Environment and Development, *Human Rights and the Mining Sector in Indonesia: A Baseline Study* (2002), 23, http://www.dhaatri.org/rimm140508/Documents/indonesia_hr_baseline.pdf.

[16] Sethi, Lowry, Veral, Shapiro, and Emelianova, "An Innovative Voluntary Code," 3.

[17] Susan Schulman, "The $100bn Gold Mine and the West Papuans Who Say They Are Counting the Cost," *The Guardian*, November 1, 2016. https://www.theguardian.com/global-development/2016/nov/02/100-bn-dollar-gold-mine-west-papuans-say-they-are-counting-the-cost-indonesia.

Constitution, created under the influence of the occupying Japanese forces, emphasized that "environmental resources shall be controlled by the State and exploited for the greatest benefit of the people." In the 1970s, the environmental movement caught the world, and the young nation became aware of environmental conservation when its representatives attended the UN conference on Human Environment in Stockholm in 1972. Although it participated in the conference and ratified a few domestic laws, it was not until 1982 that Indonesia enacted an environmental management act.[18]

Indonesia's policies and laws linked the environment directly to the rights of the people. According to Naoyuki Sakumoto, there were several stages of environmental development in Indonesia, the first of which was from 1945-1972. During this time, there were "some mining and natural resource laws," however, "industrial development or exploitation of natural resources was a greater priority." In 1967 (the same year that Suharto signed a contract with Freeport), Mining Act No. 11 stated that "the holder of a mining authority shall be responsible for returning the land to the State before it causes any danger of diseases to the people of the community," allowing for "certain 'prohibition' of activities in certain cases." The EMA law of 1982 added five constitutional provisions, including one that asserted "'every person shall have the right to live in physical and spiritual prosperity, to have a home and to enjoy a good and healthy environment' (Article 28H)." A specific provision was added about resources, stating that "'utilization of natural resources…between the Central Government and

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[18] Naoyuki Sakumoto, "Chapter VIII Development of Environmental Law Legal Reform in Indonesia," *Reforming Laws and Institutions in Indonesia: An Assessment* 74 (2007): 224, 205, http://hdl.handle.net/2344/00015903.

Local Governments shall be regulated and executed fairly and equitably based on the law' (Article 18A)."[19]

The EMA 1982 law was amended in 1997, highlighting sustainable development as the core value in environmental matters. The amendment added such issues as human rights, environmental audits, and environmental impact assessments. One of its purposes was the "delegation of authority to local Central Government offices," and to "transfer part of authority and matters of Central Government to local governments." Yet it also stated intent to "Determine national policy on environmental management in an integrated manner (Art. 8, Art. 11)/Integration of environmental management and policy at national level (Art. 11(1), Art. 12(1))." According to Nauyoki Sakumoto, "the general situation of law in this period was chaotic and unsystematic," and "difficult to characterize the Indonesian legal system as integrated, modernized, or democratized at this time," but that "adoption of the integrated approach is emphasized repeatedly."[20] The EMA 1997 amendment seemed to promote decentralization while simultaneously prioritizing integration on a national level.

Several environmental organizations were formed to monitor the environment; however, they proved to be extremely ineffective under Suharto's regime. An organization called KLH was formed in 1983, and an Environmental Impact Management Agency (BAPEDAL) was formed in 1990.[21] According to Leith, BAPEDAL was "belatedly and somewhat reluctantly established by the government in reaction to

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[19] Sakumoto, "Chapter VIII Development of Environmental Law Legal Reform in Indonesia," 207, 212, 223-4.
[20] Ibid., 211, 218-220, 228.
[21] Ibid., 214.

pressure from international organizations and Indonesian NGOs," and "were deliberately undermined." Being directly under the purview of Suharto, the organization "remained structurally weak." The mining laws allowed Freeport to self-regulate, but BAPEDAL was allowed to inspect Freeport. However, since it was not funded well, it was "forced…to rely heavily on other agencies such as NGOs to report any breaches of permits," and its lack of "qualified personnel in the assessment area" was weak.[22]

After Suharto fell in 1998, the nation worked to decentralize, and this included delegating certain powers to the regional governments. There was much confusion after Suharto was ousted from the presidency, which may account for some of the chaos with the laws surrounding Freeport's environmental management. However, this does not detract from the fact that Freeport ignored specific regulations and requests from the government to remedy their environmental management. The government plan from 2005-2025 (PJP II) remained focused on societal health and resource use, "in utilizing natural resources and protecting the environmental function in a sustainable, fair, and balanced manner for the optimal use in favor for the welfare of people."[23]

In 2018, Indonesia attempted to hold Freeport accountable for its environmental abuse, but the CEO used his power to threaten to withhold royalties and taxes. On May 24, 2018, *Reuters* reported that the government of Indonesia was giving Freeport six months from April to improve its tailings deposition problem. The CEO of the company, Richard Adkerson, protested to the ministry of the environment, saying that this ultimatum placed "undue and unachievable restrictions" upon them, and to the

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[22] Leith, *Politics of Power,* 156-7.
[23] Sakumoto, "Chapter VIII Development of Environmental Law Legal Reform in Indonesia," 224, 216.

government, he said, "I am deeply concerned that these actions have the potential to derail the progress that all of us have worked so hard to achieve."[24] Adkerson labeled it a political "distraction," saying, "you all know over time we have to deal with political issues, and this is one of them." The CEO then made a veiled threat, saying, "We don't see anything to interfere with our operations. The government needs and desires now to make sure that we continue to operate and they collect their taxes and royalties."[25]

Throughout its presence in Papua, Freeport consistently claimed compliance with Indonesian environmental laws and regulations during its mining operations. Until then, Freeport had never been charged formally by the Indonesian government for its environmental damage, nor reprimanded due to its negligence. There is now evidence that in some instances, the company did follow the law; in its own publicly available audits, the auditors maintained that Freeport was following all regulations set forth by the regional, provincial, and Indonesian authorities. Yet according to environmental groups, the Indonesian government's Supreme Auditors (Badan Pemeriksaan Keuangan, or BPK), and several warnings over the years by the environmental minister of Indonesia, Freeport did not have full permission from the national level to dispose of their waste in the way that they were.

Freeport began disposing its tailings, or ground waste rock, into the Ajkwa river system in the 1970s after opening the Ertzberg mine to the detriment of the lowlands.

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[24] *Tempo* called this statement a threat in Khairul Anam, "Freeport's Tailing Mess," *Tempo*, 7 May 2018, https://magz.tempo.co/read/34437/freeports-tailing-mess.

[25] Bernadette Christina Munthe and Fergus Jensen, "Distraction or Disaster? Freeport's Giant Indonesian Mine Haunted by Audit Report," *Reuters,* May 24, 2018, https://www.reuters.com/article/us-indonesia-freeport-environment-analys/distraction-or-disaster-freeports-giant-indonesian-mine-haunted-by-audit-report-idUSKCN1IP1H5.

After throughput increased with the opening of the Grasberg mine, the Ajkwa river flooded in 1990, "sheeting" over to another river, killing a large corridor of forest.[26] To mitigate the situation, Freeport built a 50 kilometer levee on the west bank, pushing the water east and creating the Modified Ajkwa Deposition Area (ModADA), a tailings disposal area.[27] In Freeport's report, *Controlled Riverine Tailings Management at PT Freeport Indonesia,* the company claimed that it had gotten permission from the Indonesian government in 1991 to "use the land known as the project area (stretching down a corridor from the existing mine area to the Arafura Sea)…including the tailings deposition area, through a Contract of Work (and the earlier 1967 COW)."[28] Yet, according to Alonzo *et al.,* the levee construction "was approved *ex post facto* by several Indonesian government ministries under President Suharto as a legal expansion of the ADA."[29] Suharto's administration overlooked that the area the tailings destroyed had not been approved before the sheeting event happened, which corresponded with the report from Freeport. Freeport also claimed that in 1994 Indonesia completed an environmental impact analysis report and "approved the controlled riverine tailings management system."[30] According to the Indonesian newspaper, *Tempo,* and Freeport's own word, in 1995 Freeport asked and was granted permits by the provincial governor to dump tailings

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[26] Leith, *Politics of Power*, 167-8.
[27] Alonzo, Van Den Koek, and Ahmed, "Capturing Coupled Riparian and Coastal Disturbance from Industrial Mining," 6.
[28] PT Freeport Indonesia, Affiliate of Freeport-McMoRan, *Controlled Riverine Tailings Management at PT Freeport Indonesia,* 2016, 10, accessed November 3, 2020, https://fcx.com/sites/fcx/files/documents/sustainability/riverine.pdf.
[29] Alonzo, Van Den Koek, and Ahmed, "Capturing Coupled Riparian and Coastal Disturbance from Industrial Mining," 6.
[30] PT Freeport Indonesia, *Controlled Riverine Tailings Management*, 10.

in the Ajkwa River.[31] Yet *Tempo* noted that neither specified how the company was to manage it.[32]

Freeport continued to receive special favors from the government regarding environmental impacts. The Indonesian AMDAL (Analysis Mengenai Dampak Lingkungan) is an environmental impact assessment that is "required to approve any development project that could cause harm to the environment."[33] Specifically, in 1997 the government approved a 300K AMDAL which was an agreement that allowed Freeport to increase its throughput and process 300,000 tons of ore per day at the Grasberg mine, meaning that up to 300,000 tons of tailings per day could be disposed of into the Ajkwa river system. Yet Leith noted that Freeport obtained permission specifically from the president to increase throughput to 300K tons per day before the AMDAL was conducted.[34] In the impact assessment, the 300K AMDAL predicted the tailings' impacts on the environment in the lowlands. Riza Pratama, spokesman for PTFI, stated in 2019 that "we have implemented the best, internationally-applied practices in accordance with government provisions, specifically following the 300K Amdal [sic] and the environment minister's decision regarding tailings management with site-specific methods."[35]

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[31] PT Freeport Indonesia, *Controlled Riverine Tailings Management,* 10; "Freeport's Waste Disaster," *Tempo*, 29 January, 2019, https://magz.tempo.co/read/35211/freeports-waste-disaster.
[32] "Freeport's Waste Disaster," *Tempo.*
[33] Basten Gokkon, "Indonesia to Strengthen Environmental Impact Assessments Through Process Review," *Mongabay*, 24 January, 2018, https://news.mongabay.com/2018/01/indonesia-to-strengthen-environmental-impact-assessments-through-process-review/.
[34] Leith, *The Politics of Power,* 166; Nita Dian, "We Predicted the Tailings Impact," *Tempo*, Investigation 4/5, 29 January, 2019, https://magz.tempo.co/read/35213/we-predicted-the-tailings-impact.
[35] Nita Dian, "We Predicted the Tailings Impact," *Tempo*.

Although Freeport was appearing to follow environmental regulations, NGOs uncovered evidence that it was only a smoke screen. In 2006 *The Age* reported that environmental risk assessments were leaked to the Indonesian Forum for Environment (Wahana Lingkungan Hidup Indonesia, or WALHI), Indonesia's oldest watchdog environmental NGO. These documents "show that the company's tailings are polluting the world-heritage Lorentz National Park, which stretches from glacier-capped mountains to a tropical marine environment." Igor O'Neill of WALHI said, "Modelling by an expert employed by Freeport confirmed that the tailings are reaching the coastal part of the national park and testing showed that aquatic animals are contaminated with copper." There was no direct proof that the copper was originating from the mining activity, but upstream the animals had normal levels of copper. O'Neill said that it violated Indonesian law, "but the Indonesian Government was reluctant to enforce the law, because 'they are scared to challenge Freeport'." The report stated that "acidic waste produced by the mine was so toxic that it violated even the environmental hazard restrictions for factories." O'Neill concluded, "'The mine is breaching Indonesian industrial standards and breaching water quality laws for lakes, streams and rivers. It is definitely illegal'." Yet Rachmat Witoelar from the Indonesian Ministry of the Environment disagreed with WALHI's findings. He asserted Freeport was following the law under supervision and that the pollution was minor. WALHI called for suspension of operations.[36]

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[36] Marianne Kearney and Jakarta, "Freeport Mine 'Poisoning' West Papua's Environment," *The Age*, May 4, 2006, https://www.theage.com.au/world/freeport-mine-poisoning-west-papuas-environment-20060504-ge28v7.html.

It appeared that Freeport was not only disregarding environmental laws but that it was also attempting to use its power to influence these laws. According to WALHI's 2006 report, Freeport had breached Indonesian regulations to the point that they were considering manipulating water quality laws. The company "has failed to comply with government orders to amend its dangerous waste management practices despite years of official findings that the company is in breach of environmental regulations. The law is not enforced by the Ministry of Environment due to the joint venture's pervasive financial and political influence, to the degree that a Freeport-Rio Tinto proposal for circumventing water quality standards seems to be under consideration."[37]

In addition, the company was accused of water regulation breaches. WALHI stated in its report that Freeport "relies on legally invalid permission from a local official to use the highlands river system to transport tailings. The company has been asked to build a tailings pipeline to the lowlands (in years 2001, 2006)." The government also asked the company to build a containment dam in 2001. The NGO also accused Freeport of "polluting the river system and estuarine environment in breach of regulatory water quality standards (in years 2004, 2006)," and that it was "discharging ARD [Acid Rock Drainage] without a hazardous waste license, at levels breaching industrial effluent standards, and has failed to establish mandated monitoring points (in year 2006)."[38] The report stated that the disposal of tailings into the Aghawagon-Otomona-Ajkwa river

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[37] "WALHI Report on Freeport-Rio Tinto," Investment Watch: Keeping an Eye on Where Your Money Goes (website), September 7, 2007, https://investmentwatch.wordpress.com/2007/09/07/walhi-report-on-freeport-rio-tinto/; "Freeport and Rio Tito Indicted," MAC: Mines and Communities, May 4, 2006, http://www.minesandcommunities.org/article.php?a=978.

[38] "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.

system was "expressly prohibited under the Indonesian Water Quality management and Water Pollution Control Regulations 2001." Yet Freeport claimed that the water quality "'flowing through the [tailings deposition] system conformed to both Indonesian regulations and international standards regarding potentially harmful metals'." WALHI pointed out that its own data contradicted this statement. The legal limit for dissolved copper in the fresh water was double Indonesian standards and much higher than Australian standards. Copper concentrations in saltwater levels were being breached as well. Most strikingly was the amount of total suspended solids (TSS) in the fresh water, with the TSS levels being hundreds of thousands of mg/L higher than the legal limit of 50 mg/L. The TSS levels were continuing to breach legal limits all the way out to the Ajkwa estuary and out to sea.[39]

The NGO also had reason to believe that Freeport was not disposing of hazardous mining waste, such as ARD, in a lawful manner. WALHI's report indicated that Freeport did not, as of 2005, have a permit from Indonesia to dump mine waste "as required by the 1999 hazardous waste regulations." WALHI stated that the company is "discharging ARD without a hazardous waste licence [sic], at levels breaching industrial effluent standards." It also stated that Freeport was breaking regulatory water quality standards by its pollution of the river system and estuarine environment.[40] But Freeport declared that its waste was in no way hazardous, and Jim Bob Moffett, then CEO of the company,

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[39] Ibid.
[40] Ibid.

stated on record that his company never polluted.[41] In fact, in his infamous—and far more odious—statement, he said that what Freeport is doing to the environment is "the equivalent of me pissing in the Arafura Sea."[42]

Freeport had a reputation for withholding its environmental reports. WALHI stated that Freeport "operates without transparency or sufficient regulatory oversight…despite legal requirement for public access to environmental information, the company has not made key documents public, including the ERA, nor has it made public any independent external audits since 1999, breaching its environmental permitting requirements."[43] However, under scrutiny for lack of concern for the environment, Freeport began to conduct its own audits, albeit without releasing them to the public. However, audits based on the company's own data are now publicly available online, claiming to be "independent" and "external." Each audit has included compliance and regulatory reports, and they state that the company has followed environmental regulations. For example, the 2005 audit mentioned issues with compliance in several areas that were noted in the audit from that year, including tailings classification, but auditor Montgomery Watson Harza (MWH) stated that Freeport's "technical and regulatory positions…are reasonable and defensible from both environmental and

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[41] Jane Perlez and Raymond Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times,* December 27, 2005, https://www.nytimes.com/2005/12/27/world/asia/below-a-mountain-of-wealth-a-river-of-waste.html.
[42] Robert Bryce, "Written in Stone," *The Austin Chronicle*, September 23, 2005, https://www.austinchronicle.com/news/2005-09-23/292538/.
[43] Freeport has since ameliorated the audit issue, as it now has posted audits from 2005–2017 on its website; "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.

technical perspectives."[44] Freeport was also instructed to "continue to seek regulatory approval for a definition of compliance at the southern extent of the ModADA," indicating a problem of compliance with part of the deposition area.[45]

Freeport's audits claimed environmental compliance for disposing tailings into the Ajkwa river system. Although there was no mention in Freeport's own audits of the 2006 WALHI report, the company confidently stated that it was within the legal bounds of environmental restrictions.[46] In fact, the 2011 audit assured that PTFI had obtained permission from the Irian Jaya governor on January 4, 1995, to use the Ajkwa River for tailings disposal, and then in 1996 to use the Aghawagon, Otomona, Ajkwa, and Minajerwi rivers for tailings transport. The audit also firmly asserted that Freeport received permission from the Mimika Regent in 2005 for using the Aghawagon-Otomona-Ajkwa-Minajerwi Rivers: "All of the foregoing are Environmental Permits, thus, the use and utilization of Aghawagon, Otomona, Ajkwa, and Minajerwi Rivers is legitimate because PTFI has obtained the appropriate permits from Governor of Papua and the Mimika Regent."[47] The audit continued by saying that Law 32/2009 (from 2009) allowed them to dispose of tailings in the river systems as long as they met environmental

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[44] Freeport-McMoRan: *Executive Summary: 2005 External Environmental Audit Prepared for PT Freeport Indonesia, Jakarta, Indonesia*, ES-10, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/FINALPTFIAuditExeSum.pdf.
[45] Freeport-McMoRan, "PT Freeport Indonesia Response to Montgomery Watson Harza 2005 Audit Recommendations." *2005 Independent External Environmental Audit of PTFI,* 6, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/MontWatAudit_Rec.pdf.
[46] Freeport McMoRan. *Audit Report: 2008 External Environmental Audit Prepared for PT Freeport Indonesia, Jakarta, Indonesia,* ES-2, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/Executive_Summary_2008.PDF.
[47] Freeport McMoRan, *2011 External Environmental Audit Report Executive Summary Prepared for PT Freeport Indonesia,* Executive Summary – 12, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/Executive_Summary_Audit_PTFI_2011.pdf.

quality standards and obtained permission from an authorized official: "This is in line with the meaning of Environmental Pollution provided in Article 1 point 14, in which we conclude waste disposal to an environmental media only constitutes environmental pollution if following the disposition the environmental media exceeds the quality standards. In other words, as long as waste disposal complies with the determined quality standards, then there is no pollution."[48] The auditors concluded in 2011 that PTFI had a permit through Ministerial Decree (Kepmen LH) 431 from 2008 to manage the ModADA tailings by an interpretation of the law.[49] "Any environmental permit that will be awarded to PTFI in the future, on top of the current environmental permit, shall be determined after considering all studies…including [a] study on 5-yearly tailings utilization plan for infrastructure development of Papua and Eastern Indonesia Zone."[50]

According to the 2011 audit, everything seemed in order regarding compliance and regulatory matters. Yet the PT LAPI ITB (of the Bandung Institute of Technology, ITB) audit of 2017 differed from the earlier years. It stated that the Ministry of Environment and Forestry of Indonesia reprimanded Freeport in 2015 "in order to evaluate the significant environmental impacts of PTFI activities that have not been included in the AMDAL 300K document," alleging that Freeport had extended its environmental reach beyond what the AMDAL had allowed. Freeport then submitted an improved form to the Secretariat of the Central Commission of AMDAL in January 2017. At the time of the audit there had yet to be approval from AMDAL, but the study

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[48] Freeport McMoRan, *2011 External Environmental Audit Report,* Executive Summary*,* 11-12.
[49] Ibid., 13.
[50] Ibid.

included twenty-one changes Freeport would need to make in its environmental management and monitoring.[51] It is unclear whether this reprimand was related to the following events.

Freeport's ability to escape governmental reprimand for its environmental management seemed to be in jeopardy by 2017. That year, *Tempo* released an article stating that the Supreme Audit Agency (BPK) of the Indonesian government had charged Freeport with six environmental violations after auditing them for the 2013-2015 fiscal year.[52] This report was separate from Freeport's independent audits. The report was called "An Audit for Specific Purposes on Freeport Indonesia's Working Contract (PTFI) from 2013 to 2015." The National Institute of Aeronautics and Space had reportedly given BPK the data on the severity of the environmental damage at Grasberg.[53] *Tempo* reported that the government auditors charged Freeport with dumping waste into forests, rivers, estuaries, and the ocean with damage amounting to Rp 185 trillion ($12.6 billion at 2020 exchange rates). BPK claimed that Freeport was using 4535.93 (45.35 km^2) hectares of protected forest with no permit for the 2008-2015 term, violating Forestry Law No. 41/1999 and No. 19/2004. This claim contrasted with what the auditors stated from 2011 about an interpretation of the 2008 law. BPK found in 2017 that tailings were indeed on 230 km^2 (AMDAL 300K) of the area but also had expanded to 239 km^2 of estuary; "BPK concluded that the tailings had also traveled 120 kilometers into the

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[51] Freeport-McMoRan, *External Environmental Audit 2017,* 12.
[52] Putri Adityowati, "BPK: Freeport Committed Six Environmental Violations," *Tempo*, 2 May, 2017, https://en.tempo.co/read/871498/bpk-freeport-committed-six-environmental-violations.
[53] "Freeport Has Cost $13 Billion Losses in Environmental Damage, Says BPK," *The Jakarta Post*, March 20, 2018, https://www.thejakartapost.com/news/2018/03/20/freeport-has-cost-13-billion-losses-in-environmental-damage-says-bpk.html.

Arafura Sea."[54] Disposing of the mining tailings into the Arafura Sea violated Indonesian law.[55]

It is unclear whether the audit by PT LAPI ITB took place before or after this news broke in early May of 2017, but Freeport asserted its environmental compliance in its own records. Freeport's 2017 independent audit stated that "although not all of the laws and regulations provide specific guidelines and arrangements regarding PTFI's environmental management activities, PTFI has initiated to undertake this inventory…to appreciate the environmental management responsibilities that go beyond compliance requirements."[56] According to BPK, Freeport was not going beyond compliance requirements by any means.

The government of Indonesia moved to prosecute Freeport for breaching environmental permits. The next year, in March 2018, it was announced in the *Jakarta Post* that Indonesia was summoning Freeport to court for environmental damage.[57] Two Ministerial Decrees were issued on April 5, 2018. Ministerial Decree No. 172/2018, "Measures to Resolve Freeport Indonesia's Environmental Problems," called for the termination of "all activities that have no environmental permit" and the "cessation of all activities that are inconsistent with the environmental impact assessment (Amdal [sic]) and are in violation of tailings management." Ministerial Decree No. 175/2018, "Freeport Indonesia's Tailings Management in the Ajkwa Dumping Zone or Modified Ajkwa

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[54] "Subsisting on Fouled Fish," *Tempo*, 29 January 2019, https://magz.tempo.co/read/35212/subsisting-on-fouled-fish.
[55] Alonzo, Van Den Koek, and Ahmed, "Capturing Coupled Riparian and Coastal Disturbance from Industrial Mining," 1.
[56] Freeport-McMoRan, *External Environmental Audit 2017,* 11-12.
[57] "Freeport Has Cost $13 Billion Losses in Environmental Damage, Says BPK," *The Jakarta Post*.

Deposition Area (ModADA) in Mimika Regency, Papua," "revokes the Decree of the Environment Minister No. 431/2008. In short, the two new ministerial decrees annulled the procedures for handling Freeport's tailing that have been implemented for years."[58]

The mining company was accused of damaging aspects of the environment from heights reaching the glacier near the mine to the depths of the ocean. On March 20, 2018, *The Insider Stories*, a news outlet that reports on the Indonesian economy, stated that Freeport's activities caused a loss of forest, diminishing biodiversity, and pollution beyond regulation. There was damage to the rivers, mangroves, and ocean, as well as exposure to mining waste in the ModADA. Furthermore, the glacier near the mine had retreated due to pollution. According to the report, Freeport failed to follow environment management and monitoring plans. The article reported that Category B3 waste (Hazardous Toxic Substances) was flowing into the Ajkwa River and all the way to the Arafura Sea. Total Suspended Solid Standards (TSS) surpassed Indonesian regulations in Ajkwa river and in total, 23,000 hectares (230 km2) of forest had been killed.[59]

Although it seemed as though the government was finally charging Freeport with damaging rivers and forests, Freeport was actually reprimanded for exceeding the bounds of its land permits. *Reuters* reported in July of 2018 that the reason Freeport was charged by the government for environmental damage was not necessarily because it had been dumping into the forests and rivers; the 300K AMDAL had set out agreements as to what

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[58] Anam, "Freeport's Tailing Mess," *Tempo*.
[59] Linda Silaen, "Indonesia Will Summon Freeport on Environmental Damage," *The Insider Stories*, March 20, 2018, https://theinsiderstories.com/indonesia-will-summon-freeport-on-environmental-damage/.

areas would be polluted over the course of the mine's life with permission.[60] According to *Tempo,* BPK said Freeport had not only exceeded the tailings holding area beyond their permit restriction of 230 km^2 but they had also not built the eight kilometer embankment to expand the ModADA because of leaching. According to the Environment Minister's Decree No. 431/2008 Freeport had not been monitoring the tailings leaching from the pond since March 2013 nor marine life according to Law No. 431/2008.[61] *Reuters* stated that Parliament had given orders to the ministry of the environment to "conduct environmental risk analysis and environmental audits on a regular basis." The mining minister needed a permit from the ministry of the environment before giving a new permit for the mine. Freeport insisted it was following regulations.[62] The 2017 audit report by BPK led to instructions in April from the ministry, in which they were "barred from any activities in areas that lack environmental permits," and the damage needed to be cleaned up in six months.[63]

According to the CEO of the company, there was reason to believe that the environmental charges against Freeport was only a political stunt. The reason Richard Adkerson, the CEO of Freeport, believed this summoning to court could be political was that Rio Tinto, shareholder of Freeport, was slated to sell its stake to PT Inalum

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[60] Bernadette Christina Munthe, "Indonesian Government Asked to Recalculate Freeport Mine Damage," *Reuters*, July 25, 2018, https://www.reuters.com/article/us-indonesia-freeport-environment/indonesian-government-asked-to-recalculate-freeport-mine-damage-idUSKBN1KF1I9.
[61] Syailendra Persada, "The High Cost of Waste," *Tempo*, 29 January 2019, https://magz.tempo.co/read/35215/the-high-cost-of-waste.
[62] Munthe, "Indonesian Government Asked to Recalculate Freeport Mine Damage," *Reuters*.
[63] Silda Asmarini, Fergus Jensen and David Evans, "Indonesia Targets Closure of Freeport Deal in December—Official," *Reuters*, October 17, 2018, https://www.reuters.com/article/indonesia-freeport/indonesia-targets-closure-of-freeport-deal-in-december-official-idUSL3N1WX37X.

(Indonesia Asahan Aluminum), which is owned by the government of Indonesia.[64] PT Inalum was planning to buy and control 51.23 % stake in the company for nearly four billion US dollars, but the deal was stalled due to the environmental permit that was being held from them because of environmental issues.[65] *Tempo* reported that the government wanted a discount—$2 billion—for the shares because of the damage.[66] Adkerson refused, saying that "Freeport will not accept giving any significant discount in the valuation of the business for the unfounded environmental claims, 'nor will Freeport agree to make unnecessary remedial expenditures to address purported environmental deficiencies that simply do not exist'."[67]

The charge from the government also preceded the 2019 presidential elections, adding another reason that Adkerson believed it to be politically motivated. It would be "difficult for [President] Widodo to finalize a deal for a majority government stake in Grasberg before the audit issues are resolved," and, "for Widodo, getting a majority stake for the Indonesian government in one of the world's biggest mining operations under his watch would be a political boon."[68] Even in 2018 Freeport remained an important asset to the nation—one that could sway elections.

Although Freeport had overstepped the bounds of the environmental permits, the government actively negotiated with the company to restore its operations. BPK was preparing a permit for the 4,536 hectares of forest for tailings disposal and $32 million

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[64] Munthe and Jensen, "Distraction or Disaster?" *Reuters*.
[65] Asmarini, Jensen and Evans, "Indonesia Targets Closure of Freeport Deal in December—Official," *Reuters*; Munthe, "Indonesian Government Asked to Recalculate Freeport Mine Damage," *Reuters*.
[66] "Freeport's Waste Disaster," *Tempo*.
[67] Anam, "Freeport's Tailing Mess," *Tempo*.
[68] Joko Widido is the current president of Indonesia (2014-present); Munthe and Jensen, "Distraction or Disaster? *Reuters*.

would be required to be paid within 2 years. According to a report from *Reuters* in December 2018, the forest in question had been used by Freeport from 2008. The company was supposed to have been paying 34 billion rupiah per year as royalties to the Indonesian government. The Environment and Forestry Minister Siti Nurbaya Bakar said that "damage from Grasberg tailings was 'quite heavy', and a planned revision of the tailings management system would be rolled out in two stages up to 2030 because 'it cannot be completed in five years'."[69]

The Indonesian government retreated from a harsher reprimand against Freeport to one willing to work with the company because of Adkerson's protests. It ultimately removed the environment from the discussion during the PT Inalum transaction. Harsher laws for tailings and mining waste had also been slated for 2018 but Adkerson objected and the government relented.[70] Inalum purchased 51.2% stock for $3.85 billion in December 2018.[71] The government gave the company eleven steps to remediate the tailings situation. One of these goals was to bring down the soluble content of tailings to 200 mg per liter of water from 18,000 mg per liter. Yet the Indonesian government's level of dedication to this goal was apparent when the Environment and Forestry Ministry's Inspector-General stated, "but one thing for sure, it is not done by lowering mine production."[72] Merah Johansyah, Coordinator for the Mine Network (an NGO that

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[69] Bernadette Christina Munthe, "Freeport to Pay Indonesia $32 Million for Illegal Forest use: State Auditor," *Reuters*, December 29, 2018, https://www.reuters.com/article/us-indonesia-freeport-environment/freeport-to-pay-indonesia-32-million-for-illegal-forest-use-state-auditor-idUSKBN1OI145.
[70] "Freeport's Waste Disaster," *Tempo*.
[71] Ibid.
[72] "Divestment Does Not Erase Environment Issues," *Tempo*, 29 January 2019, https://magz.tempo.co/read/35214/divestment-does-not-erase-environment-issues; The company was given eleven steps to remediate the tailings situation. One of these goals was to bring down the soluble content of tailings to 200 mg per liter of water from 18,000 mg per liter.

monitors Freeport's waste), complained that "the government was stern only in the beginning…we have given Freeport too many breaks" and the 300K AMDAL "was the root of the problem of waste management at Freeport. 'There were no regulations in place to control it'."[73] He added, "'in the end, it is the Indonesian government which will have to settle this tailings matter'."[74]

Freeport's compliance record in regulating mining waste was scattered and questionable. Although the mining giant began its work in 1972 without much governmental oversight and no environmental regulations in place due to the government's focus on economic development and desperate need for capital, the company was able to repeatedly ignore government calls for remediation, as documented in WALHI's report. The company's audits from 2005 until 2014 claimed compliance in regulatory areas even though environmentalists brought attention to its many failures to comply to the government's requests. In 2017 environmentalists nearly claimed victory over Freeport as BPK charged the company with environmental damages amounting to billions of dollars. Unfortunately, their hopes fell short in 2018 when Adkerson used his authority as CEO of the most profitable gold mine in the world and leader of one of the top national assets to manipulate the outcome in the company's favor.

Freeport maintained continuous leverage with the government of Indonesia since the nation's birth. The company enjoyed a close relationship with Suharto up until the president's ousting in 1998. It continued to maintain its power in the face of government regulations and lawsuits, to the detriment of social and environmental consequences.

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[73] "Freeport's Waste Disaster," *Tempo*.
[74] Ibid.

Leith, who researched the politics of Freeport in the early 2000s, skillfully showed how Freeport's close relationship with Indonesia's notorious second president, Suharto, shielded the company from scrutiny and ramifications for their human rights abuses and environmental record. At the time she was writing (2003), which was after Suharto's fall, the company was in a precarious position because of the change in regimes. Yet the company's "economic and political importance to Jakarta only serve to reinforce the province's significance to the center and means that it will remain central to both Jakarta's and Jayapura's political aspirations."[75]

After the publishing of Leith's book, Freeport remained strong, as evidenced by its ability to evade the consequences of its actions. In 2006, WALHI's report stated that "the law is not enforced by the Ministry of Environment due to the joint venture's pervasive financial and political influence."[76] According to Ballard and Banks, Freeport was one of ten "'national assets'" declared vital under Suharto's rule, and in 2009 remained Indonesia's largest taxpayer. In addition, according to data from the same year Freeport "contributes over 50 per cent of the provincial gross domestic product (GDP) and accounts for 90 per cent of the province's exports," as well as employing 18,000 people directly. Ballard and Banks argued in 2009 that "Freeport survived the post-Soeharto [sic] transformations at the national and provincial levels, to emerge—in defiance of all expectations—in a position that is possibly even stronger than it was before 1998," being "remarkably successful at managing its political environment while scarcely wavering from its essential objectives, or modifying its basic strategies." In

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[75] Leith, *The Politics of Power*, 259-60.
[76] "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.

addition to these statements, Freeport's CEO Adkerson brushed off the concern of the lawsuit against the company as a political stunt and used royalties as leverage against the central government. Furthermore, Freeport was used as political leverage in the nation's 2019 election. The mining giant maintained its power despite "the most chaotic and violent of political landscapes."[77]

Initially, it was Indonesia's slow regulatory participation and Suharto's reluctance to charge Freeport with any breaches of environmental laws that allowed Freeport to evade consequences for its pollution in Papua. Suharto was mainly concerned with economic development and eager for companies to bring foreign capital to the nation. However, post-Suharto, the company was in fact again shielded from accountability due to its importance as a national asset. While damaging the environment and endangering ecosystems and human populations, it showed a lack of motivation to spur change and acquiesce to regulations set forth by the Indonesian government. It was able to do so because of its power and the government's complicity. Unfortunately, this power and lack of concern for the environment led to disastrous effects on the environment. Evidence of this damage lay with information gleaned by environmentalists but also within the company's own records.

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[77] Banks and Ballard, "Monitoring the Environmental Impact of Mining," 149-150; 155, 173.

CHAPTER THREE: THE MATERIAL

Imagine a verdant lowland forest, stretching 230 square kilometers from rugged mountains scattered with waterfalls that become meandering rivers crawling to the sea. Then imagine a corridor of grey, thick, sludge dispersed with dead trees littering a wide swath, cutting abruptly through the trees. The grey plain covers what had been green mangrove and sago forests surrounded by clean rivers replete with healthy aquatic life, sustenance for the indigenous people. Now, the giant grey shadow of what was a forest lays stagnant, squelching life from the roots up, asphyxiating all living things, and leaving a dull stain amid vibrant surroundings. Its legacy has attracted the attention of people around the world.

In the 1990s, international environmentalists brought the world's attention to the environmental disaster that is still Freeport's tailings deposition area. Freeport's environmental record worsened since critics of the company first spoke out against its waste management. The company did not make any efforts to address environmental damage until the 1990s after the Grasberg mine was opened and deepened the effects of the tailings on land and water. Although the destruction was typical for an open pit operation, it did not erase the enormity of the environmental degradation that occurred at the Grasberg mine.[1] The damage at Freeport's Grasberg mining concession had disastrous effects on the environment and worsened over time while the company

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[1] For more on the destruction of large-scale copper mining, see LeCain, *Mass Destruction*.

greenwashed itself to appear environmentally sustainable to ward off critics of the company.

There was a lasting divide between Freeport, environmentalists, and NGOs. Environmentalists consistently opposed Freeport's mining activities in Papua and asserted that the company destroyed the land along with the people's livelihoods and health, increasing risk towards the environment and the people.[2] Freeport greenwashed the company over the years in order to appear more environmentally responsible to those concerned about the destruction left in its wake. As Freeport experts Chris Ballard and Glenn Banks stated, "Freeport has been remarkably successful at managing its political environment while scarcely wavering from its essential objectives, or modifying its basic strategies."[3] Putting forth its best "green" foot, Freeport's "basic strategies" evolved over the years to appear to be complying with environmental expectations. Yet all the while its opposing foot was stuck in the shadowy, toxic mud it created for those left behind as it held the most precious metal on earth in its hands. As journalist John McBeth stated in 1994, "it wants to be known as 'a good neighbour'—even if it likes to dig holes in its backyard."[4]

Two different perspectives existed regarding Freeport's environmental record. Leaked government reports, contemporary media, and several scientific studies showed that the environmentalists' stance on Freeport was extremely critical of the company. Yet Freeport's own external and independent audits and related publications presented

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[2] "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[3] Ballard and Banks, "Between a Rock and a Hard Place," 173.
[4] John McBeth, "Nature's Reserve," *Far Eastern Economic Review,* 157 no. 10 (1994): 53.

responsible environmental stewardship on its website and to the public.[5] What Freeport stated about its actions and what others said about the environmental stage at the Grasberg mine was increasingly at odds from the 1990s—although some became persuaded that Freeport pivoted environmentally and socially and improved its practices.[6]

From 1967 to the 1990s Freeport was able to escape notoriety for its environmental and social stewardship. Yet in October 1995, *The Independent* revealed that the Clinton administration's development finance institution—Overseas Private Investment Corporation (OPIC)—withdrew a $100 million political risk insurance from the Freeport McMoRan Copper and Gold Company for polluting the forests with mining waste. WALHI published the report that led to this cancellation. Robert O'Sullivan (general counsel for the insurance and claims) stated that "the massive deposition of tailings in the Ajkwa River and Minajerwi River severely degraded the rainforests surrounding (them)." In this unprecedented move, OPIC said that Freeport "has created and continues to pose unreasonable or major environmental, health, or safety hazards with respect to the rivers that are being impacted by the tailings, the surrounding terrestrial ecosystem and the local inhabitants."[7] A WALHI spokesman at the time stated that "this huge mine is massively damaging the biodiversity of the areas [sic] and harming the health and sustenance of local indigenous [populations]." The company had

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[5] Freeport's external, independent audits are notorious for their conflict of interest.
[6] For an argument that Freeport has improved environmentally and socially and improved its ethical standing, see P.A. Rifai-Hasan, "Development, Power, and the Mining Industry in Papua," 129-143.
[7] Robert Bryce, "Written in Stone," *The Austin Chronicle*, September 23, 2005, https://www.austinchronicle.com/news/2005-09-23/292538/.

tripled its production beyond what it had originally stated and had "overwhelmed the capacity of these rivers to wash away the effluent."[8]

Evidence continued to surface that Freeport was a massive polluter in Papua. According to *The Independent*, by 1995 Freeport was dumping 110,000 tons of mine waste per day into the rivers with the Indonesian government's permission.[9] In addition to WALHI's report, EnviroSearch International noted that same year that "inspection revealed what appeared to be obvious signs of ARD already occurring on the southeast flank of the Grasberg mine." On a visit to the mine in 1999, US State Department Foreign Service Officer Ed McWilliams witnessed the ARD himself and heard rumors that this acid was seeping into the groundwater at Timika. He also reported that tailings were reaching the ocean and that the tide was spreading tailings up and down the coast. Concurrently, evidence by satellite showed evidence of tailings extending west beyond the CoW area. According to a spokesman of WALHI, Freeport was one of the "biggest polluters worldwide by volume of waste and by area of land contaminated."[10]

The mining giant's environmental troubles were further publicized upon an international stage. Following OPIC's insurance withdrawal, the World Rainforest Movement urged the World Bank to withdraw its political risk insurance as well.[11] Freeport tried to block the OPIC report from being aired publicly, saying that it had "reached 'inaccurate conclusions'," and subsequently tried to sue OPIC.[12] Henry

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[8] Janine Roberts, "UK Cash Props Up Terror Mine," *The Independent*, Nov. 26, 1995, https://www.independent.co.uk/news/world/uk-cash-props-up-terror-mine-1583735.html.
[9] Roberts, "UK Cash Props Up Terror Mine," *The Independent.*
[10] Bryce, "Written in Stone," *The Austin Chronicle*.
[11] Roberts, "UK Cash Props Up Terror Mine," *The Independent*.
[12] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.

Kissinger, former US Secretary of State and director of Freeport, immediately lobbied for the company and pressured the US to stop funding WALHI. Both efforts failed.[13] OPIC reinstated the insurance for a few months but Freeport never renewed it.[14] To save its reputation, in 1996 Freeport paid $162,000 for an eight-page ad in *Texas Monthly* and paid for full page ads in *The New York Times*, portraying itself as an environmentally responsible company.[15] Yet its publicity troubles were far from over.

Ten years later, in 2005, more than Freeport's environmental record was aired; its integrity was called into question when evidence of corruption was leaked. In an article titled "Below A Mountain of Wealth, a River of Waste," *The New York Times* stated, "only lightly touched by a scant regulatory regime, and cloaked in the protection of the military, Freeport has managed to maintain a nearly impenetrable redoubt on the easternmost Indonesian province as it taps one of the country's richest assets." The article's two authors, Jane Perlez and Raymond Bonner, accused the largest and most profitable gold mining company in the world of laying the land around the mine to waste. They purported to have damning evidence from leaked data given to the paper by WALHI. The NGO has consistently raised awareness of Freeport's environmental and social practices since the 1990s. Typically, Freeport and the Indonesian government alike ignored WALHI's calls for accountability. However, in the early 2000s, the NGO was able to gain access to previously unreleased data (company and government monitoring reports) and leak it to the public. News outlets gained access to WALHI's report and Freeport came under scrutiny internationally for its environmental practices. The report

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[13] Roberts, "UK Cash Props Up Terror Mine," *The Independent*.
[14] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.
[15] Bryce, "Written in Stone," *The Austin Chronicle*.

included environmental statistics, as well as details on other questionable actions enacted by the company. For example, the article, having been given information from former employees of the company, stated that Freeport had been using Indonesian military intelligence officers to intercept emails and listen to phone conversations to spy on NGOs who opposed it.[16] The article was replete with stories of secrecy, spies, and scandal involving the mining giant.

Freeport's environmental record also made waves across the globe in financial worlds. In a press release in Oslo, September 9, 2008, it was announced that Rio Tinto, a shareholder of Freeport, was being dropped by Norway's Ministry of Finance from the Government Pension Fund-Global because of "severe environmental damage." In answer to Freeport's claims of the riverine disposal of tailings being the safest manner of disposal, the Council responded by blatantly saying,

> low infrastructure and maintenance costs are the main advantages attributed to riverine disposal. The Council finds it reasonable to assume that this has been a decisive factor for Freeport, an assumption supported by the company's previous marketing of itself as 'the world's lowest-cost copper producer.' The Council is of the opinion that Freeport knew riverine disposal could cause severe damage to the natural environment, but that the company and the Government attached little importance to environmental concerns.[17]

Indeed, since their beginnings in Papua, the company prided themselves on being the world's lowest-cost copper producer, and a very low-cost gold mine as well.[18]

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[16] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.
[17] "World's Second Biggest Pension Fund Dumps Rio Tinto: The Government Pension Fund Divests its Holdings in Mining Company," MAC: Mines and Communities, September 16, 2008, http://www.minesandcommunities.org/article.php?a=8809.
[18] In 2005 it was noted by Robert Bryce in *The Austin Chronicle* that over the past four years or so, copper prices doubled, gold prices jumped by 70% (the highest level since 1988), and Freeport's stock price quadrupled. Concurrently, the company's production costs fell by 75%, to a mere 11 cents per pound—the lowest in the copper mining industry; Bryce, "Written in Stone," *The Austin Chronicle*. In addition to Norway's move, the Swedish Pension fund divested Freeport holdings as well. The Ethical Council said

Indonesia attempted to gain control of the environmental accusations against the company that had been made so public. A few months after Perlez and Bonner's article questioned Freeport's environmental reputation, *The New York Times* reported that Indonesia was giving Freeport two to three years to remedy its environmental disaster or go to court. The Environment Minister Witoelar said, "We want Freeport to start following the rules here…Freeport shouldn't be its own country within a country. There are 500 other companies like Freeport here that follow the rules." Twenty-four independent experts were brought in for a government investigation; Witoelar said it was illegal to dispose of tailings into the coastal estuary, where one-third of the waste was spilling. Freeport did not have a permit to dispose tailings into the river and into the coastal estuary and this has been illegal since 1990.[19] Yet the Indonesian government took no further action to pressure Freeport to follow the laws and regulations, including legal action at this time and the government backed down. The company did not face any other legal recourse until 2017, when Indonesia opened an environmental lawsuit against it. Despite Freeport's efforts at currying favor with the public over its environmental record after the 1990s and WALHI's report from 2005, the mining's effects on land and water had already done great damage due to the company's own negligence.

Freeport is "linked to serious adverse environmental impacts that contravene the UN Convention on Biological Diversity," adding that the Grasberg mine is home to "high biological diversity and is adjacent to Lorentz National Park, a UNESCO world heritage site"; "World's Second Biggest Pension Fund Dumps Rio Tinto," Mines and Communities; Jenny Denton, "Swedish Pension Funds Divest Freeport McMoRan Holdings," *Environment News Service*, October 18, 2013, https://ens-newswire.com/2013/10/18/swedish-pension-funds-divest-freeport-mcmoran-holdings/.

[19] Peter Gelling, "U.S. Mine Company Gets Warning from Jakarta," *The New York Times*, March 23, 2006, https://www.nytimes.com/2006/03/23/world/asia/us-mine-company-gets-warning-from-jakarta.html.

As part of Freeport's efforts to persuade critics of its environmental responsibility, the company initiated independent/external audits every three years.[20] Freeport maintains today that these audits have been conducted independently and externally. For example, the 2005 audit carried out by Montgomery Watson Harza (MWH) and a team of Indonesian and international subcontractors aimed "to maintain transparency" by inviting observers to participate from the Indonesian regulatory community, such as different environmental departments in the regency and other environmental organizations within Indonesia.[21] Five of the audits since 1996 have been published publicly on Freeport McMoRan's website.[22] The first three audits from 1996, 1999, and 2002 are no longer available, although they were in the past for a time. Nevertheless, currently, the most recent five audits are available to the public, as well as Freeport's responses to the problematic issues within the audits. The 2005 and 2008 audits were conducted by MWH. The Institute for Research and Community Services of the Bandung Institute of Technology (LPPM ITB) conducted the 2011 audit, and the 2014 and 2017 audits were conducted by PT LAPI ITB, another Indonesian auditor with the Bandung Institute of Technology (ITB).

Critics of the company took issue with at least the first two auditors who together conducted the first five audits. Political expert Denise Leith claimed there was a conflict of interest with Dames and Moore's 1996 audit; it seemed Freeport had ties to this group in the past.[23] MWH conducted the next four audits—1999, 2002, 2005, and 2008. Yet

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[20] Freeport-McMoRan, *Executive Summary: 2005 External Environmental Audit*, ES-1.
[21] Freeport-McMoRan, *Executive Summary: 2005 External Environmental Audit*, ES-1.
[22] "PT-Freeport Indonesia External Audits," Freeport-McMoRan (website), accessed November 8, 2020, https://fcx.com/sustainability/environment/ptfi-external-audits.
[23] Leith, *The Politics of Power,* 179-181.

there were questions as to the independence of this organization as well. In fact, they praised Freeport for its environmental practices even though there was much negative publicity within those years because the WALHI report leaked evidence to the public of Freeport's environmental neglect.[24] Also, as Daniel Franks noted, Freeport's audits use the company's own data, not independent data, thus the words "independent" and "external" are misleading.[25]

The auditors had mixed reviews of Freeport's environmental actions in later audits, although they continued to praise the company. In 2017, PT LAPI ITB lauded Freeport as having "a form of independent concern to appreciate the environmental management responsibilities that go beyond compliance requirements."[26] Yet simultaneously, it called the ModADA the "single largest environmental risk from the PTFI operations" due to breach risks. Included in these risks were "potential long-term chronic impacts to be managed (i.e., surficial deposition of pyrite being oxidized and potentially affecting surface water quality)."[27] Freeport and the auditors were primarily concerned with maintaining what became the status quo of the damage, and even when Freeport failed in very serious ways, the audits continued to commend the company's regulatory compliance and commitment to sustainability.

Yet regardless of these obvious faults on the part of the company, today Freeport's sustainable image is still nevertheless woven throughout its website. Not only

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[24] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*; "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[25] Franks, "Consuming Landscapes," 245.
[26] Freeport-McMoRan, *External Environmental Audit 2017,* 1.
[27] Freeport-McMoRan, *External Environmental Audit 2017,* 5.

has Freeport posted their independent, external audits on their website, but they also labeled sections as "Sustainability," and "Environment."[28] They have published documents such as *Core Values: Freeport-McMoRan Copper & Gold Inc. 2008 Working Toward Sustainable Development Report* under "Tailings Management & Stewardship."[29] Other reports include *Building on Strength 2019 Climate Report* and *2019 Annual Report on Sustainability*.[30] On a webpage titled "Water Stewardship," the company states that "access to safe water is a fundamental human right…Freeport-McMoRan is dedicated to responsibly managing water resources," and it "maintains an extensive global water management program designed to balance the needs of our operations with the needs of our communities and the sustainability of the environment and ecosystem."[31]

The company has posted documents that showcase their tailings management practices in a positive light, such as *Controlled Riverine Tailings Management at PT Freeport Indonesia*.[32] This publication is an attempt to greenwash their tailings management, or rather, lack thereof. The swath of dead forest described at the beginning

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[28] "Sustainability," Freeport-McMoRan (website), accessed November 3, 2020, https://fcx.com/sd; "Environment," Freeport-McMoRan (website), accessed November 3, 2020, https://fcx.com/sustainability/environment.
[29] "Tailings Management & Stewardship," Freeport-McMoRan (website), accessed November 4, 2020, https://fcx.com/sustainability/environment/tailings-mgmt-steward.
[30] Freeport McMoRan, *Building on Strength 2019 Climate Report*, accessed November 4, 2020, https://fcx.com/sites/fcx/files/documents/sustainability/2019-climate-report.pdf; Freeport McMoRan, *2019 Annual Report on Sustainability*, accessed November 4, 2020, https://fcx.com/sites/fcx/files/documents/sustainability/2019-annual-report-on-sustainability.pdf.
[31] "Water Stewardship," Freeport-McMoRan (website), accessed November 4, 2020, https://fcx.com/sustainability/environment#environmental. In a small footnote beneath a total discharged water quality table on its webpage, it states, "utilizing the ICMM [International Council on Mining and Metals] water reporting guidelines," it is "categorized as low quality due primarily to…the discharge water associated with the function of PT-FI's controlled riverine Tailings system contains alkaline pH."
[32] PT Freeport Indonesia, *Controlled Riverine Tailings Management,* 10.

of this chapter is where Freeport has been dumping its untreated tailings since 1972, when Ertzberg was being mined. In this document the company has posted a timeline of the major events associated with the tailings disposal. The earliest date listed in the document regarding any management practices is 1991—they are silent about any time prior. In addition, there is no mention of the sheeting event of 1990, nor anything after 2012.[33]

One of the most devastating environmental effects upon the environment at Grasberg is tailings. Tailings are the ground residue remaining after rock is crushed to separate the valuable ore from the waste rock. Approximately 3% of the crushed rock is salvaged as desired ore; the rest of the 97% is poured into the Ajkwa river system.[34] As of 2005, according to Perlez and Bonner, Freeport was generating 700,000 tons of waste per day—220,000 metric tons of tailings, and the remainder disposed of as overburden.[35] The tailings are dumped into the Ajkwa river system and carried down the mountains into the ModADA, or the holding zone for the tailings, and is currently stretching out into the Arafura Sea.[36] Freeport has described its act of disposing tailings into the Ajkwa river system as "speeding up geological time," since the mountains are eroding anyway and carrying large sediment loads to the lowlands.[37] In its controlled riverine tailings report, Freeport stated that "river systems carrying high natural sediment loads," are "part of a continuous process of erosion in the highlands (due to heavy rainfall)." The company

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[33] Ibid., 10.
[34] Ballard and Banks, "Between a Rock and a Hard Place," 164; PT Freeport Indonesia, *Controlled Riverine Tailings Management,* 1.
[35] Overburden is rock that is removed in order to mine the more valuable ore.
[36] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.
[37] McBeth, "Nature's Reserve," *Far Eastern Economic Review,* 53.

then claimed the Ajkwa River and estuary deposition area was "one of the largest naturally occurring sedimentary deposition centers in Papua."[38] The statement about "naturally occurring sedimentary deposition centers" was misleading; the carrying capacity of the Ajkwa River is between 15,000 and 20,000 tons per day, an exceedingly low number in comparison to the 220,000 tons per day flowing down the river in 2016, and at peak, 300,000. The enormous sediment load was what led to a sheeting event of 1990 when the Ajkwa River spilled over into two other rivers, asphyxiating forest in between.[39]

In most of the world, riverine tailings disposal is illegal due to its highly destructive effects on the environment. Freeport would never have been allowed to dump tailings into rivers in its home country of the United States. As of 2019 there were only three mines in the world that dumped tailings into rivers—two in Papua New Guinea and one in Indonesia, just across the border—because it was against international law. Of the 2500 industrial-sized mines in the world, 99.3% of them were disposing of tailings on land—not in rivers, and not in the sea; there were 3500 mine tailings dams/impoundments on land. Of those, 141 failed—or four percent. In 2015, sixteen of the 2500 mines were disposing their tailings using submarine disposal.[40] Freeport

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[38] PT Freeport Indonesia, *Controlled Riverine Tailings Management,* 5.
[39] Leith, *The Politics of Power,* 167-8; Alonzo, Van Den Koek, and Ahmed, "Capturing Coupled Riparian and Coastal Disturbance from Industrial Mining," 5-6.
[40] Deep sea tailings placement (DSTP) is a new option for mine waste, but it is debatable whether deep sea tailings placement or land tailings dams are better; according to an article by Kwong, *et al.,* it depends on the site, due to the "poorly defined environmental impacts" of deep-sea placement. However, it was duly noted by the scholars that sedimentation would be far less harmful to oceans than rivers, Y. T. Kwong, Simon C. Apte, Gert Asmund, Michael D. E. Haywood, and Elisabetta B. Morello, "Comparison of Environmental Impacts of Deep-sea Tailings Placement Versus On-land Disposal," *Water Air Soil Pollution* 230**,** 287 (2019), https://doi.org/10.1007/s11270-019-4336-1.

rejected all of these options, continuing to dispose waste into otherwise healthy rivers, affecting not only the estuarine environment but the sea, where a copper plume already reached 5-10 kilometers offshore by 2006.[41]

Freeport made some effort to contain the damage from Grasberg's tailings. After the sheeting event in 1990 in which the inundated Ajkwa River spilled over into two other rivers, Freeport constructed levees to contain what became the ModADA.[42] According to Leith, the area was so poorly contained that it killed at least 33 km^2 of sago bearing forest by 1995.[43] In 1994 and 1997 Golder Associates evaluated the tailings disposal options for the company. The method of disposal was then agreed upon in the 300K AMDAL agreement with Indonesia in 1997. It "involved engineered north-south levees designed to control and manage the lateral extent of the tailing impact zone and to maximize retention of the tailings material on shore."[44]

Freeport stated for years that the disposal of tailings into the river and its holding area was the best option available. The 2005 auditors agreed, confidently stating that it was "best suited to the unique topographical and climatological conditions of the site, with a far lower level of environmental impact and risk than would be afforded by construction of a highlands-to-lowlands tailings pipeline, a highland tailings dam and disposal facility, or any of the many other evaluated options."[45] The company insisted

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[41] "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[42] Leith, *The Politics of Power,* 167-8.
[43] Ibid., 168.
[44] Freeport-McMoRan, *External Environmental Audit 2017,* 5.
[45] Freeport-McMoRan, *Executive Summary: 2005 External Environmental Audit*, ES-2. The 2008 audit, again conducted by Montgomery Watson Harza, restated that the tailings management being used by Freeport was the "best option available"; Freeport McMoRan, *Audit Report: 2008 External Environmental Audit,* ES-3.

that a pipeline from the mountain to the sea would be too expensive and prone to disaster due to landslides and floods, and a holding dam would be unsafe because of the ubiquitous earthquakes in that region of the world.[46] Yet as the *New York Times* reported, WALHI criticized Freeport in its 2005 report, saying that it "characterizes engineered alternatives as having the highest potential for catastrophic failure when the project otherwise takes credit for legendary feats." For instance, they noted how Freeport had boasted of transporting its own slurry from mill to port through a sixty-mile-long pipeline from the mountains to the lowlands. Freeport created a 90 square mile (230 km^2) area of tailings damage in mangrove forests, "once one of the richest freshwater habitats in the world." It became inundated by tailings "the consistency and color of wet cement."[47]

The other devastating pollutant resulting from the mine is overburden. Overburden storage in the highlands also worsened since the 1990s due to company neglect despite claims of sustainability. According to *The New York Times,* Stuart Miller, a geochemist who managed Freeport's waste rock, admitted at a mining conference in 2003 that acid runoffs from the rock had begun as early as 1993.[48] On May 4, 2000, hundreds of tons of overburden slipped and slid into Wanagon Lake, sending a tidal wave down the valley. It killed four subcontractors from Freeport and swept through Banti village, taking some animals and structures with it and an "uncontrolled release of toxic

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[46] PT Freeport Indonesia, *Controlled Riverine Tailings Management,* 8; Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.
[47] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.
[48] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times.* According to John McBeth in 1994, already for years environmentalists had been saying that the tailings were toxic, even though he reported that water still met WHO standards at the time. Freeport protested this claim and insisted there were no heavy metals in the water such as arsenic, mercury, and lead. They also asserted that the rivers diluted the lime and alcohol from the milling process, causing no harm to any marine life; McBeth, "Nature's Reserve," *Far Eastern Economic Review.*

waste."[49] In addition, according to the 2014 audit, since 2011 "large scale erosion due to scouring occurred and significant amount of material flowed into the downstream area to the Modified Ajkwa Deposition Area (ModADA)."[50] Overburden created hazardous working areas as well as the potential for leaching copper into miles of groundwater, including Lorentz National Park, a World Heritage site.[51] Its mishandling led to the accumulation of ARD that threatened groundwater systems in the alpine regions where the Amungme lived and erosion into the rivers that led to the ModADA.

The audits maintained Freeport's innocence, yet contradicted its own statements as well. In its 2005 PTFI audit, Montgomery Watson Harza praised Freeport's overburden management as a "well-integrated overburden management plan that fully incorporates the reduction, collection, treatment and management of ARD from the mine," yet also stated that overburden "has been and will remain a critical issue for PTFI."[52] As of 2006, according to a report by Freeport the company was excavating 760,000 tons per day.[53] Of that number, 550,000 tons of that rock was placed in overburden dumping sites on the outskirts of the mine (most being dumped to the west in the Wanagon and Lower Wanagon dump sites). Dumping sites completely covered Lake

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[49] Silaen, "Indonesia Will Summon Freeport on Environmental Damage," *The Insider Stories*; "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[50] Freeport McMoRan, *2014 External Environmental Audit Prepared for PT Freeport Indonesia,* ii, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/Executive_Summary_2014.PDF.
[51] "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[52] Freeport-McMoRan, *Executive Summary: 2005 External Environmental Audit*, ES-3.
[53] Yuni Rusdinar, "Long Term ARD (ARD) Management at PT Freeport Indonesia," *7th International Conference on ARD (ICARD) St. Louis, MO*, ed. R.I. Barnhisel, Lexington: American Society of Mining and Reclamation (ASMR), (March 26-30, 2006): 1775-1776, http://www.imwa.info/docs/imwa_2006/1774-Rusdinar-IN.pdf.

Wanagon and several "pink, orange and red [alpine] lakes." The rubble will "eventually tower up to 270 meters high, covering 1.35 km2." By the end of the open pit mine life (which was originally estimated to be 2015, but now has been extended until 2021), Freeport estimated 2.75 billion tons of overburden (not including the three billion tons of tailings) would be generated.[54]

Another problem with the overburden was the potential for ARD formation. According to the Environmental Protection Agency, some called ARD the "largest environmental problem facing the U.S. mining industry."[55] ARD is created when "copper deposits…comprise[ing] metal sulfides…when dug up, crushed and exposed to air and water, become unstable."[56] This process can adversely affect the soil and especially water into which it leaches and can cause heavy metals to leach from the waste, such as overburden and tailings. The Environmental Protection Agency stated in their report on ARD that the Forest Service believes "the metal load causes environmental damage, and is of greater concern than the acidity in environmental terms."[57] According to a report by Freeport, thirty percent of the total amount of overburden at the end of open pit mining will be acid consuming limestone, which is meant to neutralize ARD.[58]

In 2005, *The New York Times* obtained a report from a Parametrix environmental risk assessment in 2002—one of the documents obtained by WALHI—that stated "the mine had 'an excess of acid-generating material'." Furthermore, the *Times* reported in the

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[54] Rusdinar, "Long Term ARD (ARD) Management at PT Freeport Indonesia," 1775-1776.
[55] "Technical Document: Acid Mine Drainage Prediction," *U.S. Environmental Protection Agency* (Washington D.C.: Office of Solid Waste, Special Waste Branch, 1994), 1, https://www.epa.gov/sites/production/files/2015-09/documents/amd.pdf.
[56] "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[57] "Technical Document: Acid Mine Drainage Prediction," *U.S. Environmental Protection Agency*, 1.
[58] Rusdinar, "Long Term ARD (ARD) Management at PT Freeport Indonesia," 1783.

same article from 2005 that a Freeport geologist admitted that "acids were…flowing into the groundwater. Bright, green-colored springs could be seen spouting several miles away." Freeport contradicted these findings, stating that the springs were "located several miles from our operations in the Lorentz World Heritage site and are not associated with our operations." Yet the geologist disagreed with Freeport, stating that acids and copper were indeed affecting Lorentz. Other environmental experts and former employees expressed to *The Times* their concern for a "honeycomb of caverns and caves beneath the mine in a wet climate that gets up to 12 feet of rain a year," which connects underground water; there was a clear possibility that copper and acids were affecting Lorentz.[59]

Conversely, a Freeport expert expressed his confidence in Freeport's ability to neutralize the ARD. In 2006 the General Superintendent of ARD and Long-Term Hydrology at PTFI concluded in a report that the ARD containment program at PTFI was successful; "Preliminary performance evaluation shows that acid generation at Lower Wanagon in the short to medium term is not expected and is less probable in long term providing the acquired knowledge and OBM practice are consistent."[60] Yet this contradicted what WALHI reported in 2006, and later issues that arose with the overburden stockpiles' acid generation in 2017 which Freeport included in its own audits.

Freeport continued to assert its compliance and environmental responsibility. Freeport's data in the audits showed negligible effects of the ARD on water quality. In 2008 MWH claimed that the risk of ARD in the ModADA was "low to negligible."[61]

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[59] Perlez and Bonner, "Below a Mountain of Wealth, a River of Waste," *The New York Times*.
[60] Rusdinar, "Long Term ARD (ARD) Management at PT Freeport Indonesia," 1783.
[61] Freeport McMoRan, *Audit Report: 2008 External Environmental Audit,* ES-3. In 2011 Freeport was instructed to build monitoring wells to determine whether ARD was affecting areas even outside the mining

MWH approved of Freeport's practices of handling ARD by limestone blending."[62] In 2011, in response to the auditor's recommendations that ARD control be constantly evaluated, Freeport insisted that efforts to treat leachates were working well, and that "Lower Wanagon overburden stockpile is designed to have no potential for ARD formation by blending of overburden types and addition of limestone when needed."[63] The auditors recommended creating a limestone structure to neutralize ARD long-term. Freeport then repeated that the Lower Wanagon "has been designed and is being constructed to have no potential for ARD formation," and if needed in the future they would think of adding a limestone structure.[64]

Freeport's confidence in zero potential for ARD formation out of the Lower Wanagon OBS foreshadowed the next audit's findings. In 2017 the audit stated that the "instability of overburden stockpiles has the potential to expose the PAF [Potentially Acid Forming] materials that have already been encapsulated during OB dumping operation," meaning that the eroding stockpiles would expose PAF material that had been

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concession, Freeport McMoRan, *2011 External Environmental Audit Report,* Executive Summary – 5. According to Freeport data, in 2011 the pH in the Wanagon River was recording good pH levels, and at a critical monitoring station (#57, Banti), it was generally over 7.5; Freeport McMoRan, *2011 External Environmental Audit Report,* Executive Summary – 10.

[62] Freeport McMoRan, *Audit Report: 2008 External Environmental Audit,* ES-2. In 2011 the auditors were concerned about the mixing practices Freeport was using to blend sediment and overburden in order to neutralize the ARD. The concern was that this practice could "weaken the entire overburden material in the stockpile," causing slippage (and subsequent ARD). Eleven years after the 2000 slippage in which subcontractors were killed in a tidal wave, there was again an incident in March of 2011 of slippage at the Lower Wanagon OBS.

[63] Freeport McMoRan, "Responses to Recommendations January 2014 Update." *PT. Freeport Indonesia - 2011 External Environmental Audit,* V-6, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/PTFIExternal_Audit_Report_UpdateJanuary2014.pdf.

[64] Freeport McMoRan, "Responses to Recommendations January 2014 Update." *PT. Freeport Indonesia - 2011 External Environmental Audit*, V-7.

previously contained by the stockpile.[65] The 2017 audit then raised a serious complication indicating that the neutralizing was failing—the presence of orange surface staining in the upper ModADA.[66] According to the report, staining had first been observed in mid-2016, spanning an area of 500 hectares, or 5 square kilometers. Staining indicated the "presence of a thin surface layer of low geochemical Factor of Safety material requiring remedial works, which are already underway." The audit continued, "approximately 25% of the material exiting the ModADA to the estuary is geochemically classified as PAF. Geochemical staining suggesting the presence of sulfides appears to be increasing in the ModADA." The Wanagon Overburden Stockpile in the highlands by Grasberg was suspected to have been causing the eroding downstream from the mountains.[67] The auditors recommended closing the Lower Wanagon OBS (the overburden stockpile just south of the Wanagon OBS) "with the greatest urgency" due to sedimentation in ModADA; Freeport, in response, claimed that monitoring showed there had been a "significant decrease of TSS [total suspended solids] in Wanagon River."[68]

Environmentalists asserted for years that Freeport's environmental record was poor, but access to the mine's concession area was tightly restricted by the mine and by

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[65] Freeport-McMoRan, *External Environmental Audit 2017,* 4.
[66] Freeport had responded in the 2011 audit that 360 hectares (3.6 sq. km) of vegetation was planted to reduce erosion in ModADA between the levees and tailings stream between 2011-2013, indicating a serious problem with the levee system, hence leaching of toxic tailings into surrounding water supplies. Another issue was the tailings seepage issue from prior years that was affecting the river water on either side of the ModADA; the pond water next to the levees had grown. The audit recommended continued testing of the water quality because of this; Freeport McMoRan, "Responses to Recommendations January 2014 Update." *PT. Freeport Indonesia - 2011 External Environmental Audit,* V-2-V-3.
[67] Freeport-McMoRan, *External Environmental Audit 2017,* 5.
[68] Freeport McMoRan. "Responses to Recommendations – Fourth Quarter 2019 Update." *PT. Freeport Indonesia - 2017 External Environmental Audit,* V-10, https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/2017ExternalAuditMatrixQ4.pdf.

the government. Freeport "operates under a shroud of secrecy," according to WALHI, and this hindered attempts at conducting outside scientific audits.[69] Franks reported that there were only three known published external scientific studies conducted on Freeport's effects on the environment. One particularly important study, by Paull *et al.*, used remote sensing data used to determine the damage of the tailings to the forests in the deposition area.[70] Since then Alonzo *et al.* published a fourth study—another remote sensing study conducted in 2016.[71] This latter study confirmed what previous environmentalists, such as WALHI, and the Paull *et al.* study had been saying about the deleterious effects of the tailings over time on the lowlands.

These studies confirmed and contributed to Freeport's culpability. Both Alonzo *et al.* and Paull *et al.'s* studies showed significant forest damage from the mine. Alonzo *et al.*'s study used moderate resolution (30m) Landsat satellite imagery, which according to the team is excellent for monitoring from a distance.[72] Paull *et al.* had also used Landsat but were not able to conduct a survey of more than three dates because of cloud cover, monitoring the vegetation coverage in 1988, 1996, and 2004. In 2016, Alonzo *et al.,* through cloud-resilient satellite time series analysis, used dense "Landsat time series sensing methods to 'peer through' atmospheric contamination" and calculated that a 138 km^2 area of mangrove, rainforest, and agricultural land was destroyed between 1987 and

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[69]"WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[70] See Paull, Banks, Ballard, and Gillieson, "Monitoring the Environmental Impact of Mining," 33-42. One study concerned the oceanography of waters around the tailings area. Another was about sediment and trace element depositional history in the Ajkwa River estuarine mangroves, Franks, "Consuming Landscapes," 245.
[71] See Alonzo, Van Den Koek, and Ahmed, "Capturing Coupled Riparian and Coastal Disturbance from Industrial Mining," 1-11.
[72] Ibid.," 2, 5.

2014 in the tailings deposition area, which was 42 times larger than Grasberg mine. They determined that "between 1987 and 1998, the rate of disturbance was highly correlated…with mining activity."[73] The team used annual reports of PTFI and WALHI data to "show that vegetation disturbance directly correlates with the interannual rate of Grasberg tailings production and, critically…indicating a failure by PT-FI [sic] to confine tailings and associated heavy metals to the ADA." In addition, the Arafura Sea began carrying heavier loads of suspended particulate matter (SPM) after 1998.[74] The damage included river aggradation, vegetation inundation, and coastal deposition.[75] Both studies' numbers indicated that there was a vast amount of vegetation disturbance by 2004. Alonzo *et al.* believed their study supported the environmentalists.[76] In its leaked report, WALHI used unpublicized reports from Parametrix, Freeport monitoring reports, and internal Indonesian Environment Ministry reports.[77]

Freeport's audits all contained information for reclaiming the land after the mine's life was over. As the auditors PT LAPI ITB stated in the 2017 environmental audit of Freeport, in AMDAL 300K RPL, "one of the objectives of reclaiming mined areas is to rebuild/restore ecosystem function to its original state."[78] The 2005 audit did not discuss the impacts of the mining waste upon the biodiversity or ecology of the area.

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[73] Sago and matoa fruit, and mollusks were destroyed by suspended particulate matter (SPM) and copper toxicity, depleting the food supplies the Kamoro peoples of the lowlands relied upon; Ibid., 1-3.
[74] Ibid., 2-3, 6.
[75] Ibid., 2-3,
[76] Ibid., 5. Numbers were slightly different than Paull *et al.*, in that the 2014 study calculated that the area of disturbed vegetation was 50.2 km2 in 1996 and 131 km2 in 2004, whereas Paull *et al.* calculated it as 65km2 and 164 km2 in 1996 and 2004 respectively. Yet Paull *et al.* were including the areas that had already been water before the tailings destroyed forest; Paull, Banks, Ballard, and Gillieson, "Monitoring the Environmental Impact of Mining in Remote Locations," 33-42; Franks, "Consuming Landscapes," 245.
[77] Franks, "Consuming Landscapes," 245.
[78] Freeport McMoRan. "Responses to Recommendations – Fourth Quarter 2019 Update," V-28.

Instead, it focused on the future of biodiversity, i.e., reclamation at the end of mine life. The audit stated that "all plants grown and tested on tailings-based soils pose no risk to human health or wildlife."[79] Yet it added a caveat: "long-term strategies for agricultural use or reclamation of the Mod ADA [sic] should preclude the introduction of a few species that could potentially concentrate metals to levels of concern…continue to assess metals uptake and any associated potential risks to human health and wildlife."[80]

In its talk of reclamation, the 2005 audit presented the ModADA in a positive light in its relation to the wildlife of Lorentz. The audit suggested that Freeport "consider the potential for the ModADA to serve as a biological buffer between the Lorentz National Park and the growing population, increased agriculture, and other demographic characteristics associated with Timika." In the same document, it recommended using "plant species that do not concentrate metals to levels of concern," urging continued monitoring of metal uptake in the plants that were to be used to reclaim the tailings area.[81] This was concerning considering that Lorentz borders the mining concession and is located very near the ModADA. However, the auditors seemed to emphasize that the growing population was proving a greater threat to the World Heritage site than the tailings in the ModADA. Indeed, population puts pressure on nature and can lead to serious degradation of a conservation site and natural habitats. However, human activity notwithstanding, in this case the weight of the damage lies in the dangerous metal concentrations. Today, these metals could easily disturb the delicate ecology of one of the

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[79] Freeport-McMoRan, *Executive Summary: 2005 External Environmental Audit*, ES-7.
[80] Ibid.
[81] Freeport-McMoRan, "PT Freeport Indonesia Response to Montgomery Watson Harza 2005 Audit Recommendations," 19.

most diverse regions of the world, with concentrations lasting for years beyond the mine closure date affecting animals, plants, and people.

Yet evidence to the contrary showed that metal uptake was far more serious than Freeport was admitting. The 2006 WALHI report was far more concerned about metal uptake than Freeport portrayed in its audits. WALHI claimed that heavy metals such as "selenium (Se), lead (Pb), arsenic (As), zinc (Zn), manganese (Mn) and copper (Cu)" were affecting plant and wildlife and that they are "significantly elevated in Freeport's tailings compared to natural jungle soil," exposing several important birds and mammals such as cassowaries, kingfishers, the flying fox, bats, and pigs to heavy metals. Freeport's own ERA performed by Parametrix predicted that "small birds and mammals which feed exclusively on estuarine invertebrates may suffer reproductive impairment and reduced fitness, and larger predators (such as raptors) in turn will have less food available."[82]

Freeport claimed reclamation efforts were successful, but WALHI believed otherwise. In 2008 the audit mentioned that Freeport was using native species to reclaim the tailings and overburden areas. They were experimenting with edible and commercial crops in the tailings area, "demonstrating the technical feasibility of agricultural and other commercial cropping activities on soils containing tailings."[83] Nevertheless, it is significant that two years earlier, in 2006, WALHI reported that

> Mine tailings, which will eventually comprise most of the 230 km2 ADA area, at depths of up to 17 meters, lack organic carbon and other key nutrients, and have very poor water holding capacity. Tests have shown pure tailings cannot support

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[82] They explained further that "wildlife in the mangrove area is exposed through eating plants and invertebrates, which take up heavy metals from tailings sediment, particularly copper." The fish (in the Ajkwa Estuary) have high levels of copper in them and "non-mobile aquatic animals" there "are contaminated with copper in their bodies at levels 100 times higher than normal, up to an extraordinary level of one gram per kilo"; "WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.

[83] Freeport McMoRan, *Audit Report: 2008 External Environmental Audit,* ES-5.

> adequate germination or growth of most native or garden plants without intensive fertilisers [sic], compost and/or the import of topsoil. Company efforts to rehabilitate a small and relatively shallow area of tailings have involved unsustainably high inputs and elaborate irrigation systems. The large ADA area which has experienced dieback from tailings will not return to its original species composition after tailings deposition ceases. Native species which regenerate in tailings are neither especially useful to local communities nor representative of the diverse species which comprised the native jungle and riverine rainforest destroyed within the ADA.[84]

The report noted the important distinction between what Freeport said and what actually happened; they stretched the truth—perhaps there was regrowth among the tailings, yet it required intensive care, extensive irrigation, and addition of fertilizers. Furthermore, the species that were able to survive in the tailings were not of use to the population living in the region in addition to the problem of heavy metal uptake in the vegetation as discussed above.[85]

Despite the negative 2006 WALHI report the company continued to portray itself as an environmentally friendly entity. In fact, the 2008 audit claimed that "the increased sediment loads from the ModADA resulted in expansion of the mangrove communities in the estuary, in particular on the newly-formed Ajkwa Island. Mangrove ecosystem conditions (fauna and flora) in the Ajkwa River estuary appear to be in good condition."[86] The audit noted that Freeport was "providing a significant contribution to knowledge of the biota and ecology of southern Papua and the Arafura Sea."[87] In Freeport's audit response, the company boasted its involvement in programs such as

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[84]"WALHI Report on Freeport-Rio Tinto," Investment Watch; "Freeport and Rio Tito Indicted," MAC: Mines and Communities.
[85] Ibid.
[86] Freeport McMoRan, *Audit Report: 2008 External Environmental Audit,* ES-5.
[87] Ibid.

educational studies and books on biodiversity. When asked to address social issues that were intertwined with biodiversity, Freeport responded with promises to follow regulations such as AMDAL, Indonesian regulations, and the International Counsel on Mining and Metals' protocols.[88]

Freeport greenwashed its image by presenting its best green foot on its own website, where it states, "Conserving and protecting Papua's biodiversity and ecosystem is a priority for both PT-FI and Freeport-McMoRan." The webpage boasts programs labeled "Biodiversity Research and Monitoring," Education and Biodiversity Outreach Programs," "Papua Endemic Wildlife Repatriation," **"**Continued Re-vegetation and Restoration of Ajkwa and Waii Islands in the Ajkwa Estuary," "Progressive Reclamation and Restoration of Subalpine Ecosystems at Grasberg," and "Tropical Reforestation Initiatives through Tree Planting."[89] It looks impressive, and their programs sound compelling. Yet given the information from Freeport's own Environmental Risk Assessment (2002) reported by WALHI in 2006, it is highly unlikely that all is well fourteen years later in regard to the biodiversity in the lowlands concession area with a billion tons more tailings filling the ModADA and seeping into the Arafura Sea. Although Freeport claimed to be implementing a reclamation program, it did not address the reality that biodiversity was being poisoned by heavy metals as reported in their own ERA from 2002. And with the presence of ARD expanding in the ModADA as noted in

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[88] Freeport McMoRan, "PT Freeport Indonesia Response to MWH 2008 Audit Recommendations." *2008 Independent External Environmental Audit of PTFI,* https://www.fcx.com/sites/fcx/files/documents/sustainability/audits/Findings_Matrix_Responses_Sept_2010.pdf.

[89] "Biodiversity," Freeport-McMoRan (website), accessed November 8, 2020, https://fcx.com/sustainability/environment#Biodiversity.

the 2017 audit, the positive statements Freeport made concerning biota in the Ajkwa River system and estuary do not seem credible, especially given the presence of ARD which appeared in the ModADA.

From the time of OPIC's insurance cancellation in 1995 to 2017, Freeport's environmental record was scrutinized by the public. The company attempted to gain control of its reputation by submitting itself to audits (albeit questionable) every three years and greenwashing its rhetoric to appear more environmentally friendly. It built an environmental lab in the early 1990s, attempted to neutralize the ARD generating from the overburden, installed monitoring groundwater stations, and was even documenting biota in the region for not only reclamation purposes, but educational ones as well. Freeport's plan to reclaim the land after the mine closure was one that appeared sustainable and responsible at first glance. Yet its failure to aggressively address the environmental impact and the worsening effects of mining waste on the land and water became clear over time. Environmentalists were concerned since the opening of Grasberg mine. Their concern was founded on the few scientific studies that were conducted despite Freeport's unwillingness to cooperate. Yet, according to the company's audits that were based on their own data, it became apparent that the environmental waste disaster worsened since the earlier studies were published. Freeport could not have denied that its environmental record was poor when the evidence in their own data reflected so negatively on them; more than once did this prove true. As the company failed to live up to their green rhetoric, comply with governmental requests to improve their record, and abide by national regulations, the environmental degradation at Grasberg mining concession only worsened under the surface of a green façade.

CHAPTER FOUR: THE CULTURAL

The environment's destruction was not the only concern at Grasberg. There were people who lived and depended on the land for sustenance for thousands of years. These people were affected just as terribly as the water and the earth that suffered from heavy metal uptake and acid rock drainage. As seen in the previous chapter, drinking water quality was at stake and crops were destroyed from heavy metals and inundation. There were many factors involved with Freeport and the indigenous populations that lived near the mining concession and its polluted waste, and these factors caused much conflict between the two. The indigenous populations were woven tightly into the tapestry of the environment before Freeport implemented the destruction of their lands under the aegis of industry and development.

Freedom and land rights are a component of environmental justice, which is part of the history of the Amungme and Kamoro. Freeport not only degraded the land in its technological pursuits but put the indigenous populations in danger of pollution, cultural breakdown, marginalization, and human rights abuses as a result of its presence. This caused much suffering on the part of the people, as the biota in the surrounding regions on which they depended was destroyed. The enormity of resource extraction and development engendered a deep environmental and spiritual impact that destroyed and endangered much of Amungme and Kamoro land and values. As a result, their socio-economic position continued to worsen as Freeport's activities left a wake of destruction

on their land and their lives. Yet although their lives were greatly disrupted, they demonstrated their agency through these changes.

The Amungme and Kamoro people groups live in one of the most remote and biologically diverse environments in the world. The Amungme historically lived in the mountains, gardening and practicing animal husbandry near the mining concession. Many were relocated to the lowlands, but some stayed in the highlands in the valleys surrounding the mine. The Amungme were the first to be relocated when mining operations began in the 1960s and 1970s and they have been the most vocal about the injustices leveled against them by Freeport. The Kamoro, on the other hand, historically made their living harvesting sago, fishing, and hunting in the lowlands. Some were removed from the tailings deposition area. There is markedly less scholarship on the Kamoro, but the consensus in the literature is that their subsistence living was also adversely affected by mining waste.[1]

Drastic changes were brought to these people groups in the twenty and twenty-first centuries, and not all were welcomed. When Freeport began drilling the rock in Papua to test the copper concentrations in 1967, the Amungme placed hex sticks resembling crosses around the work site as taboo symbols, warning that it was forbidden ground. Those responsible for the hexes communicated to the workers through an interpreter that the land was sacred, and not to be disturbed. When the Western drillers

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[1] Due to several complicated circumstances, one being SARS-CoV-2 (COVID-19), research for this thesis was thwarted. Plans for travel to Papua to interview members of the Amungme were cancelled; unfortunately, as a result, there is a paucity of indigenous voices in this thesis. I was able to find online sources and a book written by Tom Beanal, an Amungme activist, but most of the information was gleaned from secondary sources.

left, the Amungme destroyed their former camp, thinking they were gone. Yet the miners returned and operations began.[2] Soon, the Amungme were to find that not only were their sacred spaces at risk but that they were not welcome on their land anymore.

According to the government and Freeport, the Amungme did not have rights to the land. The Indonesian 1960 Agrarian Law stated that any land that was not being used by permanent agriculture or villages was state property.[3] In the eyes of the government the land and resources belonged to the nation and were exploitable. According to Anti-Corruption Commissioner Adérito De Jesus Soares, in 1965 the CoW that Freeport signed with Indonesia "guaranteed the right of Freeport to acquire the land and other property in the mining area and to resettle the indigenous population from their original homes but contained no requirement that Freeport pay compensation, or consult with local inhabitants about its activities."[4] As historian and Freeport expert Chris Ballard noted, Freeport paid nothing except "'reasonable compensation for dwellings to local inhabitants and the cost of their resettlement'."[5] In exchange for their land, the highland tribe was paid in tobacco and goods. As Ballard aptly noted, this was an absurd compensation for the enormity of what was being traded.[6]

The Amungme's beliefs were tied to the land; the surrounding peaks held sacred value to them. Freeport's first mine, Ertzberg, was excavated from a huge standing monolith that was called several different names in Amungsal, the Amungme's language.

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[2] Kal Müller, *The Amungme* (Indonesia: Lembaga Pengembangan Masyarakat Amungme dan Kamoro, 2014), 198-99.
[3] Müller, *The Amungme,* 89.
[4] Soares, "The Impact of Corporate Strategy," 121.
[5] Ballard, and International Institute for Environment and Development, *Human Rights and the Mining Sector,* 24.
[6] Ibid., 24.

One of these names is Tengogoma. According to Freeport consult Müller, it generally means "a bird with flame on its feathers, the color of gold and copper." It was regarded as a place that "was the home of ancestral spirits whose bodies were cremated." There is now a giant hole, filled with turquoise water left over from mining operations where the Ertzberg, or "Tengogoma" was, yet the importance of the landmark remains for the Amungme. The mountain on which the mine sits was called Nemangkawi Ninggok, which means "White Arrow Peak," and Grasberg—the gold and copper mine in operation today—was called "Uangmabuk Ninggok, or fern mountain."[7] Although these peaks are now deep open pits, many Amungme still regard these areas with care and reverence. Therefore, having mines placed within these sacred areas carried deep meaning for the Amungme, and their concerns for their environment were spiritual as well as physical.

Historically, the Amungme were tied to the land spiritually and culturally. The Amungme "do not separate the natural physical world from their spiritual world…there is an underworld, a middle world, and an upper world." They believe in the "balance of all things," and "have an intimate knowledge of their environment, and using their methods of subsistence and spiritual beliefs and practices, strive to keep things balanced and 'whole'."[8] According to cultural anthropologist Cook, when this balance breaks, "many of them first look for sources of the imbalance in spiritual forces, evil spirits, witchcraft, or sorcery," so since they "want to live in balance with the supernatural world…to do so they use a system of both appeasement of spirits and punishment to correct errors in human moral conduct."[9]

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[7] Müller, *The Amungme*, 90-4.
[8] Cook and Webster, *Agua-Gaig-E,* 8-10.
[9] Ibid., 10.

The creation story of the Amungme speaks to the historical sacredness of the valleys they occupied before Freeport began its work. This beautiful creation story describes the sacrifice that a mother of two sets of twins made to ensure their survival from a drought. She asks them to kill her to save themselves and throw her divided remains in the four cardinal directions.[10] When the children completed the task, the landscape physically transformed into the landscape that exists today, creating rich soils with crops, rugged mountains, and rivers. The story is worth quoting in full:

> That night, while they slept, nature went wild. There was a big rain storm, as though water being poured from the sky…At dawn, strange things happened. Their humble hut had turned into a big, beautiful house, and their garden full of flowers were blooming in full color. Crops were abundant and ready to be harvested. To the west, they saw a wide field spreading across the horizon. The field was also full of crops. Some were ripe, the others newly grown. When they cast their eyes to the east, they saw the same picture. To the north, the direction of the spring of the river Bella, they saw mountains stretching up from east to west, with their peaks standing tall against the sky. From the tops of those mountains, water sprang from fresh clear pools, between the rocks, which formed creeks and rushed downward. At the foot of the mountains were the forests, where species of birds flew around, enjoying the beautiful morning. The kuskus sunbathed along the branches of the trees. Looking south, they saw flat land that was so vast that they could not see where it ended.[11]

At the mother's last request, the twins intermarried and produced offspring, and "it is their offspring who then became the ancestors of the present Amungme tribe."[12]

This creation story is linked to the Amungme's beliefs about the landscape where they lived and worked and paints a picture of what life was like before Freeport arrived and began its operations on Amungme lands. The Amungme perceived the landscape as the mother who died. The mountains where the glacier lies and just below it was

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[10] Tom Beanal, *Amungme: Mababoarat Negel Jomebei-Peibei* (Jakarta: Wahana Linkungan Hidup Indonesia, 1997), 87-92.
[11] Beanal, *Amungme: Mababoarat Negel Jomebei-Peibei*, 90-91.
[12] Ibid., 92.

symbolic of her head, sacred land that is uninhabitable for humans and where no one ventured out of respect for the mother. The land below that is where the Amungme lived. This region was where they hunted, gathered, grew their crops, and raised their pigs—"they regard this land as a fertile and safe spot, as it is close to the breast, heart and the shoulder of the Mother." It is also where they built their huts and where their villages lay. It was here in this habitable zone that represented their mother's breast and belly that nourishes them. The lower zone was the dangerous zone, representing the genitals and legs of the mother, where they did not dare linger for long except to hunt or fish. This area was unhealthy—a place to die, filled with malaria, disease, and other dangers that were not present in the mountains. Yet, this lowland was the area where Freeport relocated many of them as it began its work and where their mythology specifically expressed that this area was dangerous and the "end-stream of all evil."[13]

Amungme not only saw the mountain, valleys, and lowlands as their mother and sacred, but they respected the land as it were themselves. They believed that "to destroy the environment is akin to their ownself [sic] destruction." Their beliefs stated that if harmony with nature was disrupted, the relationship between people (including Freeport) would be rife with conflict, they would live short lives, and would fail in all their endeavors. The Amungme had a saying, credited to a wise man: "My children, why are you acting like this? You know very well that the tree is nothing but myself, the dog is nothing but myself, so is the water, the land, the stones. Do whatever you wish but I shall

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[13] Ibid, 92-93.

always be watching you!"[14] According to this proverb, the Amungme were embodied by the land.

The Amungme's sacred beliefs were profound when considered within the context of Freeport's industry. Since the Amungme saw the land as an extension of themselves and their mother, the destruction of their mountain was tantamount to the destruction of themselves, their identity, and of their sacred mother—the one who sacrificed herself for the survival of their people. As many were relocated to the dangerous lowlands, they believed the harmony between themselves and with Freeport was fractured, and their health and spirits were now at risk. The Amungme's way of life was threatened, as well as the land on which they used to depend; Amungme came to see the mine as a "cornerstone in the battle for freedom and land rights."[15]

The fight for land rights was due to the reality that the indigenous people's lands became inundated with severe pollution. The company washed billions of tons of waste from the highlands down the Ajkwa river system, delivering toxic heavy metals and acid rock drainage into the rivers, estuary, and sea, and endangering ground water leading to the large city nearby. Forests were destroyed by inundation with tailings, removing a vital food source for the Kamoro. Plants and wildlife were in danger of heavy metal uptake. People in the region were forced to fish in the toxic rivers for sustenance. In the highlands, millions of tons of overburden were dumped into alpine lakes, threatening the groundwater supply with acid rock drainage as well. In addition, the overburden that was

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[14] Ibid, 84, 108.
[15] Sethi, Lowry, Veral, Shapiro, and Emelianova, "An Innovative Voluntary Code," 4.

piled in the valley near Wanagon Lake slipped several times, causing avalanches of tons of waste rock and endangering lives below.

This overburden greatly polluted the Amungme's surrounding land and river near the mine's core, causing landslides, relocation, and water pollution. As of 2006, Freeport was dumping 550,000 tons per day of overburden into a waste dump in the Wanogong River.[16] Freeport had begun to treat the rock in order to precipitate the metals from the overburden; however, it was polluting the lake as of 2001. Moreover, because in some areas the overburden piles reached 450 meters in height, risks of landslides were great, such as the one that occurred in 2000 when four hundred tons slid down into Lake Wanagon. This event forced Freeport to relocate Banti, an Amungme village, to higher ground. There was also concern for the overburden polluting alpine groundwater, as in 2000, when in Tsinga village the water turned blue as a result of copper concentrate.[17] The silting of the rivers and dumping of overburden into the Amungme's rivers and valleys was a point of contention between Freeport and the Amungme. Despite demands by the Amungme for this to stop, according to the company's External Environmental Audit Executive Summary these activities had not ceased as of 2017.[18]

Discontented with the mine's presence, the Amungme at times retaliated against the operation, resulting in an escalation of violence between the military and the neighboring rebel group. Müller explained that the Amungme do not believe that land can

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[16] Rusdinar, "Long Term ARD (ARD) Management at PT Freeport Indonesia," 1775-1776; There is an inconsistency as to whether the amount was 500,000 or 550,000 tons per day, however, Rusdinar was employed by Freeport and in his report it was stated as 550,000 tons per day; Paull, Banks, Ballard, and Gillieson, "Monitoring the Environmental Impact," 36-8.
[17] Leith, *Politics of Power,* 171-75.
[18] Freeport-McMoRan, *External Environmental Audit 2017.*

be leased or sold; conversely, "to them, the only way to lose their land is to be driven out by warfare." In January 1974 Freeport held a meeting with the Amungme and made an agreement that the Amungme signed, allowing Freeport to mine Ertzberg and build Tembagapura, the company town in the highlands, in exchange for infrastructure to be built on behalf of the people.[19] Yet according to Ballard, the Amungme intended to oppose the mine at the meeting but felt they were being intimidated by the Indonesian military which was a go-between for the Amungme and Freeport. As the Amungme realized what was happening as a result of the Agreement and as they were increasingly excluded from the mine site, they rioted in 1976 and in 1977 and expelled two policemen from one of their villages. In retaliation, the military strafed their villages. The rebel group, OPM, attacked the military in return, and the military again strafed the village. Approximately 30 Papuans died in the exchange, and two more settlements were destroyed. Intermittent clashes between the Amungme, the military, and Freeport occurred many times after.[20]

Clashes such as these fit within the traditional cultural framework of the Amungme. Tom Beanal—a member of the newly formed Amungme Traditional Council (Lembaga Masyarakat Adat Amungme, or LEMASA)—explained that when antagonized, traditionally, the Amungme actively try to disrupt "the work of the 'outsiders'."[21] Over the years as operations continued in the mining concession, clashes such as these were replete with staged protests, destruction of mine property, and

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[19] Müller, *The Amungme,* 89, 203-4.
[20] Ballard, and International Institute for Environment and Development, *Human Rights and the Mining Sector,* 24-7.
[21] Beanal, *Amungme: Mababoarat Negel Jomebei-Peibei,* xxiv.

retaliation from the military towards the indigenous population. In 1977, a group of Amungme and members of the separatist group, OPM, cut one of the mine's slurry pipelines, as well as fuel and power lines.[22] The military, which the government provided to Freeport for payment to secure the mine, retaliated against them, destroying seventeen buildings that Freeport had built for the Amungme in the Waa and Tsinga valleys.[23]

The Amungme's reactions to Freeport in the following years were varied. A few Amungme individuals led protests against Freeport. Yosepha Alomang, or "Mama Yosepha," an Amungme tribal leader and member of LEMASA, gained a name for herself in protesting against Freeport in different ways, staging several demonstrations. Once, she destroyed imported food when Freeport refused to buy their local fruits and vegetables and in 1991, lit a fire at the airport in Timika to protest the military violence and Freeport's presence.[24] During protests in 1996, she "gave a lengthy and passionate speech about how she no longer trusted Freeport and Moffett [CEO of Freeport at the time]. In a very theatrical move, she took off her *noken* [string bag] and threw it on the floor in front of Mr. Moffett, saying he should fill it up with good will (as well as material goods) and return it to her. Only then would she be able to trust Freeport."[25] In 1999 she attended and testified at the Symposium of Indigenous Women in the First Congress of Indigenous Peoples of the Archipelago in Jakarta, Indonesia, saying that

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[22] Müller, *The Amungme*, 204.
[23] Ibid, 206.
[24] "Persekutuan Perempuan Adat Nusantara Aliansi Masyarakat Adat Nusantara," *The Journey of Perempuan Aman: An Overview of Indigenous Women Participation During Five Congresses of the Indigenous Peoples of the Archipelago 1999-2017*, trans. by Albertus Hadi Pramono and Dian Abraham (Jakarta: Perempuan Aman, 2017), https://perempuan.aman.or.id/wp-content/uploads/2019/01/The-Journey-of-PEREMPUAN-AMAN1.pdf.
[25] Müller and Omabak, *Amungme: Tradition and Change in the Highlands of Papua*, 179.

"When indigenous women are united, no one can beat us."[26] In 2001 Alomang won the Goldman Environmental Prize for her work in protesting environmental damage and human rights abuses against her people in connection to the mining operations.[27]

Meanwhile, Beanal became more vocal about Freeport's actions, or lack thereof. In 1992, he first took the time to praise the company for its generosity and role in bringing modernity to his people.[28] Yet he then stated that "there was not the least reflection of the wishes of the community. Freeport's appreciation of the tribe and clans has not been noticeable in the application of the agreement." Furthermore, he then claimed that Freeport had broken the agreement and built outside the area agreed upon, and that the Amungme had been "belittled." He asked questions regarding Freeport's perceptions of the people: "Was all this done because we're backward? Or by special authorization from the government? I hope that the company will realize that what it has been doing is completely contradictory to tradition and the contents of the Jan. 74 Agreement."[29] Yet Beanal did not stop at criticism of Freeport at this time.

In 1996, Beanal took his concerns even further than speaking out against the company. That year, Beanal filed a lawsuit against Freeport along with Alomang in the mining company's former home state of Louisiana for $6 billion for human rights and environmental abuses. He claimed the company had "violated international law by causing environmental damage, participating in human rights abuses, and committing

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[26] Yosepha Alomang, as quoted in "Persekutuan Perempuan Adat."
[27] Leith, *The Politics of Power*, 14; The Goldman Environmental Prize (website), accessed March 3, 2020, https://www.goldmanprize.org/recipient/yosepha-alomang/.
[28] It was not clear in the text what "modernity" Beanal was speaking of, but it seemed as though he was referencing the infrastructure Freeport built (including the 17 buildings that were destroyed by the military), cash economy, access to the outside world, etc.
[29] Müller, *The Amungme*, 207-8.

cultural genocide."[30] The next year, in 1997, in a speech at Loyola University in New Orleans, Beanal stated that "our environment has been ruined and our forests and rivers polluted by waste," saying that the Amungme's reliance on hunting was also compromised as the animals had "disappeared," and the tailings had silted the rivers, destroying the land they previously lived on. The last sentence of his speech powerfully emphasized his frustration: "Gold and copper have been taken by Freeport for the past 30 years, but what have we gotten in return? Only insults, torture, arrests, killings, forced evictions from our land, impoverishment and alienation from our own culture," calling his people "strangers in our own land."[31]

The environmental and human rights abuses drew international attention as NGOs put pressure on the company to address these issues. Freeport responded to criticisms of their lack of responsibility towards the indigenous populations and its environmental abuses and worked to solve these problems. The company then committed to community development, building hospitals and schools for the indigenous population. Freeport also increased its interest in environmental conservation and worked on a reclamation plan for the mine once its lifespan was complete.

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[30] Müller and Omabak, *Amungme: Tradition and Change in the Highlands of Papua*, 180.
[31] Tom Beanal, "Tom Beanal's Speech at Loyola University in New Orleans," Corpwatch: Holding Corporations Accountable: Project Underground, May 19, 1997, https://corpwatch.org/article/tom-beanals-speech-loyola-university-new-orleans. The OPM—based nearby—has attacked the mine several times over the years, so in response, the government and Freeport have established a heavy military presence, exceeding 1,800 troops by 2001, not only to protect the mine but also to attempt to control the rebel group; Ballard, and International Institute for Environment and Development, *Human Rights and the Mining Sector*, 23. The Amungme are often blamed for these attacks against the mine. From 1994-1996, several NGOs raised awareness to human rights abuses being carried out by the Indonesian military against the indigenous population. According to reports, 200 extrajudicial killings occurred within the Freeport concession area and others were detained, tortured, or disappeared; Ballard, and International Institute for Environment and Development, *Human Rights and the Mining Sector*, 27.

These efforts were met with mixed reactions on the part of the indigenous population. In 1996 Freeport attempted to appease the Amungme by offering a One Percent Trust Fund to the local tribes. It was an agreement that would give seven tribes one percent of profits from the mine to be dispersed among the original landowners. Unfortunately, the Trust Fund led to conflict between other tribes that claimed original ownership, causing a war between the Dani mountain tribe and Amungme; eleven people died in this war.[32] Many Amungme initially rejected the Trust Fund because of this conflict and also due to the element of dependency upon the company, saying "with the help of God we shall never [succumb] to the offer of bribes, intimidation or [be] dishonestly induced into accepting PT. Freeport Indonesia's 'Settlement Agreement'."[33]

Complicating the tension between the Amungme and Freeport even more, Beanal and Freeport came to an agreement. Beanal's 1996 $6 billion environmental and human rights abuse lawsuit in Louisiana was dismissed by the U.S. Fifth Circuit Court of Appeals in 2000. However, the *Austin Chronicle* reported that immediately after this, in a strategic move on Freeport's part, Jim Bob Moffett, the current CEO of Freeport, offered a Memorandum of Understanding to Beanal on behalf of the Amungme tribe "to seek a mutually beneficial relationship 'based on principles of equality, honesty, and justice'." In a controversial—to the Amungme—decision, Beanal accepted it. He stated in a press release by Freeport that "all we have ever asked for is to be treated fairly and with dignity." *The Austin Chronicle* quoted Moffett as stating that the "agreement is the result

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[32] Soares, "The Impact of Corporate Strategy," 136.
[33] Abrash, "The Amungme, Kamoro & Freeport," 38.

of 'years of patient dialogue,' and is 'further evidence of our commitment, and now means we will continue this effort hand in hand with the local people'."[34]

The agreement was significant for the company, Beanal, and the Amungme. It allowed three projects to move forward, including employing Papuans in the mine, starting an agricultural, aquaculture, and livestock project, and building an office for LEMASA and the tribal elders.[35] It also was the genesis of what is called the "Tiga Desa" (Three Villages) Program. According to Freeport, the company committed to building bridges, airstrips, roads, churches, sewage systems, and markets in three Amungme mountain villages—Wa'a Banti, Aroanop, and Tsinga.[36] The two parties signed the memorandum after more than thirty years of strife regarding land rights.

Yet many other Amungme criticized Beanal's actions in allying with Freeport, stating that they were not consulted in the matter.[37] In an interview shortly after this, Alomang blatantly stated that Beanal "was a leader in the struggle, an educated person. He is the leader of my people but now he has been bought by Freeport."[38] However, Beanal later expressed some of his complex feelings about working with Freeport—he admitted he was limited in his choice in signing the memorandum and working with Freeport, that he "was always obliged to choose what was desired by Freeport. People see

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[34] Robert Bryce, "Amungme Tribal Member Tom Beanal signs a 'Memorandum of Understanding' with Freeport-McMoRan: A Major Coup for the Company," *The Austin Chronicle*, Sept 1, 2000, https://www.austinchronicle.com/news/2000-09-01/78470/.
[35] Soares, "The Impact of Corporate Strategy," 138.
[36] "Communities," Freeport-McMoRan (website), accessed May 4, 2020, https://www.fcx.com/sustainability/communities#land-use-customary-rights.
[37] Soares, "The Impact of Corporate Strategy," 138.
[38] Josepha Alomang, interview, "Endless Extraction: Mining and Community Responses," *Making Contact,* National Radio Project, Oakland, California, 20 June 2001 http://www.radioproject.org, as quoted in Leith, *The Politics of Power,*15.

me as working with Freeport now. Perhaps it's true! Nevertheless, in the depths of my heart, I feel that I must do what is best for my people."[39] Whatever his motives or reservations, he became a liaison between the company and the Amungme people, with both approval and dissent among the Amungme, including Alomang's strong critique.

Freeport's efforts to ease tensions between the two parties were at times spurned by individual Amungme who did not believe Freeport's benevolence was an act of altruism nor concern for social responsibility. The company built a new high school, began adult educational programs and social orientation classes, and established a mining university for the Papuans. In 2003 Freeport introduced a voluntary code, "Guiding Principles for Indonesian Operations – People and the Community," promoting human rights, employment, and economic development of indigenous people.[40] In 2001 Freeport granted $248,000 to the Hamak Foundation (Human Rights Foundation of Anti-Violence) which was headed by Alomang to build an office and training facility to educate, train, and fund a workshop in 2002 to promote human rights for women and children.[41] Alomang refused the grant, saying that Freeport was trying to trick her by "'using human rights. This is how they do it with their sweet language. This is how they buy up Papua'."[42] Some Amungme labelled Freeport's operations an "economic colonization by capitalists in contravention of our national economic system," taking

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[39] Abrash, "The Amungme, Kamoro & Freeport," 38.
[40] Sethi, Lowry, Veral, Shapiro, and Emelianova, "An Innovative Voluntary Code," 2.
[41] Alison Guerriere, "Freeport Funds Human Rights Program." *American Metal Market* 109, no. 93 (2001): 7.
[42] Josepha Alomang, interview, "Endless Extraction: Mining and Community Responses," *Making Contact,* National Radio Project, Oakland, California, 20 June 2001 http://www.radioproject.org, as quoted in Leith, *Politics of Power*, 15.

issue with the reality that they are destroying "the very means of our existence," driving "us out of our ancestral lands, to impoverish us and kill us on our own territory."[43]

Making matters even more complex between the two parties, the Amungme have different conflict resolution styles. According to Cook, they "often reopen settled disputes or demand additional payments."[44] She also stated that working with the Amungme at times required "patience and understanding," yet Freeport often did not feel they had the time or patience to "keep renegotiating agreements."[45] The way that the Amungme communicated often seemed long and tedious—beginning their negotiations with a long, drawn-out oral history, and each tribal representative must have his say in order to become a "Big Man."[46] Over the years, Freeport and the Amungme came to compromises in dealings with Freeport by attending "Big men luncheons." These events were a place where they discussed matters and worked on communicating in a way that improved harmony between the two different cultures, picking representatives to speak on behalf of the group to Freeport.[47]

The Kamoro, the people group that historically lived in the lowlands where the ModADA now sits, protested the mine differently, yet most of their efforts were silenced.[48] They protested an extension of the ModADA in a letter to PTFI, writing that it would mean the destruction of the last ancestral lands, and would negatively impact "the

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[43] Abrash, "The Amungme, Kamoro & Freeport," 38.
[44] Carolyn D. Cook, "Papuan Gold: A Blessing or a Curse? The Case of the Amungme," *Cultural Survival Quarterly* 25, no. 1, (2001).
[45] Ibid.
[46] Ibid.
[47] Ibid.
[48] There is less scholarship on the Kamoro, so some of what is discussed is assumed by how the Amungme were treated.

sago palms, and trees, the animals, and plants used for traditional medicine."[49] There are two groups of Kamoro. One was relocated completely by Freeport and the government and thus removed from the resources vital to their survival economically, culturally, and environmentally. Without their means of subsistence, this group was forced to rely upon store bought food. A second group of Kamoro were allowed to remain on their lands and experienced higher rates of education, higher incomes, and more subsistence living choices. According to a UABS report cited by Banks, this difference in experiences was dependent upon "'the extent to which the various Kamoro communities have been relocated or moved from their original land appears to be central to their current social and economic situation'."[50]

The environmental situation made life more difficult for the Kamoro who were relocated, as well as the greater regional population. According to Freeport, the Ajkwa River was not affected by mining waste. Yet sediment buildup in the ModADA caused seepage into the Ajkwa River, damaging sago fields and residential areas.[51] Due to this damage, people in the Mimika Regency resorted to fishing in the Ajkwa River, struggling to feed themselves. However, according to *Tempo*, the people found it difficult to supply food for their families, as fish became scarce in the river due to tailings contamination from the ModADA. Hendrick Omenine, a resident in the region, described the distressing situation: "'Since we lost the sago we have been eating fish'," and "'even if there are fish,

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[49] Glenn Banks, "Mining and the Environment in Melanesia: Contemporary Debates Reviewed," *The Contemporary Pacific* 14, no. 1 (2002): 57.
[50] UABS, Universitas Cenderawasih—Australian National University Baseline Study Final Report: Kamoro Baseline Study, UABS Report 7, Canberra and Jayapura, for PT Freeport Indonesia, 1998, 48, in Banks, "Mining and the Environment in Melanesia," 58.
[51] "Freeport's Waste Disaster," *Tempo*.

they are surely contaminated…so, if there are no fish, we do not eat'."[52] *Tempo* reported in 2019 that Mimikans (the Mimika Region includes the Kamoro and the city of Timika) were relocated near the widened embankment, making it impossible to carry out their normal day to day activities to support themselves any longer. They resorted to panning for gold because even the fish were contaminated. Jatam (Mine Advocacy Network) researched the social impact, which supported the local stories of eating fish due to sago contamination.[53]

Evidence showed that Freeport knew it was causing harm to the surrounding villages and towns with heavy metals in the water. The company began annually compensating each person who lived in certain areas near the toxic waste.[54] Every year the company was giving $6 million to Papua Provincial Government and Mimika Regency Government for damage.[55] The total was Rp 155 billion for compensation as of 2015, in Mimika Regency, Rp 187 billion for Papua, but according to *Tempo,* payments stopped after 2015. BPK's audit stated that "by paying these participation funds, there is an indication that Freeport realized the environmental impact on the ecosystem caused by dumping those tailings," as quoted in *Tempo.* Riza Pratama, spokesperson for PTFI "admitted that the company is aware of this and predicted the impact the tailings would have, as was delineated in the 300K environmental impact report," and stated that they were working to mitigate the impact.[56]

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[52] "Subsisting on Fouled Fish," *Tempo.*
[53] Ibid.
[54] Ibid.
[55] "Freeport's Waste Disaster," *Tempo*.
[56] "Subsisting on Fouled Fish," *Tempo.*

The Amungme and Kamoro's worldviews changed significantly as a result of relocation, mining operations, and development on their lands. Before Freeport began its activities in the mining concession, the Amungme and Kamoro engaged in subsistence living in the form of hunting, fishing, gathering, growing a few important crops, and practicing pig husbandry. With Freeport's arrival came modernity, hospitals, infrastructure, a cash economy, and increasing contact with the outside world. Many of these, such as hospitals, one would say were positive. Yet, as a result, the breakdown of their own culture was well under way after Freeport built the mine and an influx of workers arrived. Cook observed that "with the introduction of materialism, education, Christianity, and medicine, the worldview of the Amungme has become fragmented and no longer as integrated as it once was." At times their beliefs "underpin decisions that they make," but now it is changing— "some [beliefs] are disappearing altogether, while others are emerging more prominently as a backdrop to their new lifestyles."[57] Another observer noted that education and tradition were becoming extremely important for their livelihoods because they became scattered and were losing their identity as Amungme.[58]

Individuals in the group criticized the many social changes that arose among the Amungme because of Freeport, modernity, new experiences, and changing values. One Amungme, Petrus Beanal, raised his concerns since Freeport's arrival:

> The one percent [trust] fund makes everyone lazy. The paths to our gardens used to be clear and now they are overgrown. The young men now just want to play billiards, drink booze or sniff glue. Very few have steady jobs. Most are school dropouts. They are strongly influenced by the youth of other sukus [tribes]. This is in great part due to the one percent money, now administered by the LPMAK. Formerly, only clever people could have access to these funds, but now even stupid people have become proficient in obtaining money. They have learned to make

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[57] Cook and Webster, *Agua-Gaig-E,* 15.
[58] Müller and Omabak. *Amungme*, 202.

> false proposals. They have learned to become angry if their proposals are rejected. And then they obtain what they want. They obtain money but no one checks up on whether the proposal is actually carried out. There is plenty of corruption within the administration of the fund, including by our own people, the Amungme."[59]

Following her previous remarks about Freeport, Yosepha Alomang added that "the people [Papuans] run to Freeport. They are all bought this way. They are all given good-looking women…They give them beer and they let them gamble and all that sort of stuff. That's what they are doing now. In the past they came with weapons but now they give us these things instead."[60]

Additionally, Amungme and Kamoro became dependent upon the company as laborers as well as being recipients of trust fund money from Freeport. When some were introduced to a wage-earning lifestyle and their subsistence living was no longer viable, their dependence upon the company for employment, and therefore goods and services, increased. The booming town of Timika portside near the tailings deposition area grew to over 100,000 people. People flocked to this area from all over the nation for opportunities from the mine. The question remains as to what will happen once the mine is no longer in operation and the company leaves; As Toru Hisada explained, Freeport inadvertently caused the Amungme to be dependent upon the company, as it has "influenced the politics, economies and society around the mine in West Papua." [61] At the end of the mine's life this reliance will cause a dramatic change once the company is no longer contributing to the provincial and local economy.

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[59] Petrus Beanal in Müller and Omabak. *Amungme,* 190.
[60] Josepha Alomang, interview, "Endless Extraction: Mining and Community Responses," *Making Contact,* National Radio Project, Oakland, California, 20 June 2001 http://www.radioproject.org, as quoted in Leith, *The Politics of Power,*15.
[61] Toru Hisada, *Indigenous Development and Self-Determination in West Papua: Socio-Political and Economic Impacts of Mining Upon the Amungme and Kamoro Communities* (Saarbrücken, Germany: VDM Verlag Dr. Müller, 2008).

Freeport's executives did not see the situation this way. In fact, George Mealey, former president, chief operating officer, and a director of Freeport-McMoRan Copper and Gold, stated confidently in 1996:

> Where once there were indigenous people living in poverty, now there are the same people, neatly clothed and living in solid houses they built themselves, either employed by our company or earning wages in one of the many cottage industries that have sprung up around Timika…The health, education and general living standards in the corridor around the Freeport operations have moved into the modern age. Our area has become notorious throughout the province as a place where there is opportunity and a better life. As a result, the growth of the community around us—in ways not directly related to the mine operations—has been phenomenal…"the honey that draws the ants."[62]

His racist and self-congratulatory statement was partially true—healthcare, education, and better housing existed for the Papuans near the concession area. Yet there was also a problem with what he said. Hisada stated that the Amungme were "poor because they were coercively integrated into a capitalist economic system only as the owners of the mineral resources…were given no opportunity of sustained and self-governing economic operations in their own lands and were refused the opportunity to sell their minerals in a way that is beneficial to them."[63]

The Amungme and Kamoro were woven tightly into a tapestry with the environment, as their connection to the land was physical, cultural, ideological, and spiritual. The Amungme in particular were recognized around the world as NGOs helped bring attention to their way of life and the reality that their physical surroundings were being destroyed and their physical and cultural health were now in jeopardy. They engaged in protests, riots, and requests for environmental justice since the opening of the

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[62] Mealey, *Grassberg,* xv.
[63] Hisada, *Indigenous Development and Self-Determination in West Papua,* 137.

mine as their culture, subsistence, and values disintegrated before them. Individuals won awards, opened lawsuits, and spoken internationally concerning the injustices, environmentally and socially. Their way of life was disrupted by exploitation of the land and overrun with pollution by industry and development. Yet the complexities of the relationship between Freeport and the Amungme showed the latter's agency throughout the years as they faced the reality that their way of life was forever changed.

CONCLUSION

The history of the Grasberg mine provides a complete picture of environmental history's three levels of analysis—the political, material, and cultural. The first chapter in this thesis detailed environmental policies that Freeport intentionally ignored. Over the last one hundred years, the United States and other countries created laws and policies that dictated the environmental management of mining corporations. Yet, in the Papuan case, the Indonesian government's warnings and requests for remediation of the environmental damage were weakened by its pandering to Freeport in the name of foreign capital. After the sheeting event of 1990, the company took small steps to contain the damage, yet consistently failed to aggressively address the underlying environmental devastation. In its powerful position, Freeport thwarted its own attempts to mitigate any further damage by ignoring the central government's regulations and requests to alter the management of its tailings and overburden waste. The company was able to sidestep the environmental issues because of its close ties to Suharto and later the financial leverage it held over the government.

The results of the willful neglect of the environment by Freeport had severe consequences to the material level—the ecosystems and livelihoods of the indigenous populations that were dependent upon those ecosystems. While NGOs and environmentalists attempted to reveal the company's appalling environmental record by publicizing leaked reports, Freeport obfuscated the reality of the damage in its audits and reports by greenwashing its rhetoric. Consequently, tailings swallowed forests and

released heavy metals into the soil and water. Overburden threatened the highlands with landslides and the leeching of copper into the environment. Plants and animals died or were poisoned, resulting in a hazardous food source for people and wildlife. The terrestrial and aquatic environments will bear the damage for decades, if not centuries, to come because of Freeport's reluctance to act.[1]

Cultural damage was never considered by the government, and at first the mining company barely noticed the effects on the indigenous people. McNeill's cultural level of analysis points us to the sacred beliefs of the Amungme and the results of mining on those beliefs about the land. When Freeport came under fire from NGOs and the international community for its social record, the company shifted and created policies to address it. However, underneath the surface, the mining corporation did not truly adjust its practices to be socially responsible.

The Amungme and Kamoro faced changes while exposed to trading, exploring, and governing by foreign powers. The Kamoro were exposed to European and other outsider influence and the Amungme moved and interacted with other highlander tribes. Yet at the end of the twentieth century their subsistence living and deeply held beliefs stood in stark contrast to the wealth and industry of Freeport, creating conflicts between the two. When criticized for its social record, Freeport attempted to alleviate tensions between the Amungme and itself. When NGOs publicized Freeport's environmental record, the company moved to alleviate their embarrassment. Yet in the end the company's policies were just an attempt at appeasement and their greenwashing of the company was a veil over the reality that their environmental record was appalling and

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[1] Alonzo, Van Den Koek, and Ahmed, "Capturing Coupled Riparian and Coastal Disturbance," 7.

worsened over time. As a result of Freeport's presence, the Amungme and Kamoro were left with a seriously harmed environment with but a feeble attempt to mitigate the damage.

Environmental justice by definition necessarily involves the agency of indigenous people to act in the face of destruction of their environments. Indigenous groups are not a monolith, and as the Amungme showed, some chose to align with Freeport and others chose to resist. Some chose both at different times. As Soares proposed, indigenous populations "should be allowed to participate and express their views in all aspects of the process of exploitation of their natural resources."[2] Many Amungme and Kamoro, with all their complexities, fought against Freeport's presence in Papua and continued to do so in the face of destruction, pollution, and health hazards brought by Freeport as the company greenwashed and painted a veneer of social responsibility over their increasingly negative management of these issues.

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[2] Soares, "The Impact of Corporate Strategy," 141-42.

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