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A Balancing Act: Zambian Environmental Management in a Financialized Copper Industry

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Abstract

Zambia has struggled to mitigate the environmental damage that is a by-product of its copper mining activity. In our research, we use a literature review and expert interviews to analyze the extent to which the Zambian government fulfils its duty to manage the environmental effects of copper mining. We then analyze our findings in the context of financialization to identify the role it plays in this reality. We find that the legal framework that outlines the process of environmental management in Zambia is sound, but that the laws and regulations are often not enforced to their full effect. This is due to the difficulty of balancing environmental and developmental concerns. Financialization, our findings suggest, provides incentives that encourage governments to neglect environmental management in light of this difficult balance.

Introduction

Zambia derives much of its national identity from its position in the worldwide copper value chain. This commitment to mining activity, however, has not come without a price. The environmental and social harm caused by the presence and management of mines are now common knowledge in Zambia.

In this paper, we provide context for this reality by first determining whether the environment is managed in a way that protects local populations, and if so, to what extent; second, examining the potential reasons for the current state of environmental management; and third, identifying how financialization might play a role in environmental management. Over the course of our research, we found that environmental management in Zambia is lackluster largely due to failures to enforce legislation, and that the opportunities related to financialization can both disincentive environmental management and open up more available channels for environmental justice.

Throughout our research, we have paid specific attention to the Zambian government's role in establishing and enforcing legislation, as a sovereign state has an inherent responsibility to ensure that the laws that protect its people and resources are respected. Though we acknowledge that international law and company policy are also relevant to environmental management, an analysis of these categories was beyond the scope of our research. Some mention is made of these factors, however, when they are relevant to our findings and arguments.

Our paper will proceed as follows: After outlining our methodology, we provide a theoretical analysis of financialization and its effects as they pertain to our research. We then provide a brief history of mining in Zambia before explaining the legal and regulatory framework that is relevant to the environmental management of mining activity. Next, we provide a glimpse of the potential environmental effects of mining and connect them to their public health effects. We then outline our findings on Zambia's environmental law and its enforcement, and then describe its alleged causes in light of our understanding of financialization, as well as any other findings about financialization's involvement in environmental management. Finally, we provide analysis for our findings, make recommendations for the improvement of environmental management and suggest further areas of research.

Methodology

The methodology for this study was based on a literature review of relevant sources and primary interviews, conducted in collaboration with the South African Institute for Policy and Research. The literature review consisted of an examination of environmental legislation and regulations, relevant scholarly material, as well as grey literature in the form of NGO and activist reports. We are mindful that not all sources have verifiable data, so we were careful to consider all information in the context of its source as well as possible and agendas that could have been at play.

Interviews were conducted with stakeholders in the field of environmental management of copper mining activity in Zambia. These actors, all with significant levels of expertise within their respective fields, include lawyers, activists, NGO's, historians, and government officials from the Department of Mines and ZEMA. Snowball sampling was used to obtain these interview contacts. Interviews were conducted in a semi-structured manner. Due to the sensitive nature of some of the information revealed, interviewees were given the option of anonymity.

All research was conducted between June and July of 2017 in Lusaka, Zambia.

Financialization - Explanation and theoretical analysis

Financialization, as defined by Epstein (2005), is "the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of the domestic and international economies." In this context, "finance" does not refer to the mere presence of money, but rather the activities associated with the circulation of it, regardless of whether this circulation corresponds with physical mining and trading activity. In other words, financialization in our context is the notion that the production and subsequent sale of copper isn't the only relevant moneymaking activity in the copper industry. The stock market, the commodity trade industry, and various other investment infrastructures now play a large role in the industry. This understanding led Foster and McChesney (2012) to identify “the long-run shift in the center of gravity of the capitalist economy from production to finance” as the cardinal feature of financialization. In effect, this means that mining companies now have a set of new priorities to consider, new actors to interface with, and new rules to follow.

In our analysis of financialization in the copper industry, we will focus on two salient features associated with this phenomenon: the increasing complexity of financialized industries, and the fact that foreign direct investment is consequently more common and profit driven than it would have been otherwise.

Complexity

As mentioned above, financialization has introduced a number of actors into the supply chain of commodities like copper (Hujo & Lupo 2017). By definition, its associated changes to the status quo attract financial intermediaries and investors into new markets. But financialization’s impact goes beyond this addition. Another result is the process of commodity supply chains becoming more global. Financialization, in fact, has played a major role in the growth and spread of worldwide value chains (Hujo & Lupo 2017). This is the case because the “pressures and opportunities associated with financialization” often compel firms to create and expand global production networks within their given markets (Coe & Yeung 2015). These “pressures,” for example, include shareholder influence and looming market evaluations, which incentivize companies to focus on meeting specific financial goals and bring new relevance to the ruling philosophies on how these goals may be met. As for “opportunities,” examples include the increasing availability of financial investment and the growing potential for earnings from overseas productive assets. The resulting connection between financialization and global production networks is more than a coincidence -- Coe & Yeung also argue that the results of the integration of finance in these markets is one of the “crucial dynamic forces” in the gradual establishment of global production networks in the world economy (Coe & Yeung 2015).

If we see the global nature of the production of commodities like copper -- exhibited in the fact that the industry is dominated by large firms that produce goods as a result of their productive assets across the globe -- as a phenomenon to which financialization was “crucial,” we can analyze the effects of this phenomenon with a sense that they are, to some extent, related to financialization.

Common and profit-driven foreign direct investment (FDI)

The global nature of production networks has, almost by definition, made the prospect of foreign direct investment in resource rich countries increasingly common. As more companies are presented with financialization's "pressures" and "opportunities," they increase their production abroad via mines and other developments that must channel money into Zambia to operate. Though there is much debate on the extent to which this investment improves the lives of local citizens, its existence and relation to financialization are clear. In fact, cross-border capital flows (a group of practices of which FDI is a part) are regarded as a "hallmark of financialization" (Tyson & Mckinley, 2014). The economic data pertaining to FDI bolsters this assertion. In fact, as the integration of finance in a number of industries over the past few decades has been seen, FDI has made up an increasing percentage of the world's GDP (World Bank). More importantly for our purposes, FDI has also made up an increasing percentage of Zambia's GDP over the course of its period of liberalized industry so far, rising from about US$121,700,000 in 2000 (3.4 percent) to US$1,582,666,670 (7.5 percent) in 2015 (World Bank).

Though foreign direct investment has been a reality in Zambia for over a century, we intend to explore the effect of its recent financialization-driven rise. This rise, however, is not the sole impact of financialization on FDI. The new importance of financial goals and the new influence of financial actors has altered the considerations and incentives at play in firms across the globe, thus impacting the practices of those carrying out FDI. Cutler and Waine (2001) categorize this shift as the "dominance of financial criteria as the key mode of evaluating corporate performance" which has, in turn, come with the "marginalization of non-financial criteria for evaluating corporate performance." Essentially, as company leadership becomes more occupied with financial goals like, for example, generating value for shareholders, they are required to focus on earnings and financial assets and not necessarily measures of social or environmental value. In the case of the research of Cutler and Waine (2001), the researchers argue that this fact manifested itself in a decrease in occupational welfare that could be traced to attempts by companies to reach specific earnings targets. Though some financial institutions and actors have attempted to encourage the integration of environmental management into measurements used to develop financial criteria, these attempts have had "limited influence on firm behavior," largely because of the difficulty of assigning monetary values to concepts related to health and the environment (Bracking 2012).

It is important to address the reality that companies in capitalist systems have always had a profit-motive, and have developed this orientation without the influence of financial actors. Financialization's impact, however, capitalizes on this profit-motive, adding in new actors with a vested stake in only the company's financial performance, thus making it more difficult to neglect earnings goals. Where, before financialization, many companies had more freedom to determine the balance they aimed to strike between environmental management and profit maximization, they now have financial targets that they must reach to please shareholders. Reaching these goals may come at the expense of environmental management. In short, financialization has brought with it a major increase in financial incentives without an increase in incentives related to other forms of value, making considerations of these other forms of value far less likely.

History

The history of copper mining in Zambia is the story of a precarious and fickle industry. While this history has been recounted numerous times in many different ways, we present it here with an emphasis on its connection to financialization. When it comes to financialization, the history of copper mining in Zambia more or less begins at the privatization of ZCCM. Before this process, financialization was inherently absent due to the state-owned nature of the copper mines. The integration of finance and its resulting complex and global sprawl was simply impossible to achieve to any significant degree when the copper was being mined not by multilevel, multinational corporations, but solely by the Zambian government itself.

With privatization, however, this all changed. Privatization opened the door to financialization, and gave it the room it needed to begin to grow and develop. The process of privatization began in the 1990's under the presidency of Frederick Chiluba, and largely arose from international pressures on the country. Notably, the World Bank made it a condition of their debt relief scheme for Zambia that the country privatize ZCCM (Fraser and Larmer, 2010). After a long, drawn out process that began in 1997 and left many Zambians deeply disappointed, ZCCM was finally broken up into seven operations and sold (Fraser and Larmer, 2010, Fraser and Lungu, 2007). While the act of privatization in and of itself was not financialization, the subsequent movement of financially-integrated companies into the country was. Within a few short years, the Zambian copper industry had gone from being a simple, state-run industry, to being controlled by a number of complex institutions from around the world.

Privatization also marks the beginning of the pattern (that is examined later in our paper) of lenient Zambian environmental governance in favor of drawing further foreign investment interest. Potentially the most salient example of this pattern is the Development Agreements. The Development Agreements were contracts signed in secret by the Zambian government and incoming firms, and were negotiated to entice potential investors during privatization. These agreements ensured that any commitment that mining companies would have to make to the country, from taxes to following social and environmental regulation, would be severely limited (Fraser and Larmer, 2010, Fraser and Lungu, 2007). Though these agreements were abolished under President Levy Mwanawasa, failures to manage the environment in light of dangerous mining practices still abound (Fraser and Lungu, 2007).

Current regulations and relevant actors

The principle of promoting sound environmental management is present at all levels of Zambian law, starting in the Constitution. Article 253, for example, states that land should be held, used and managed with regard to its sustainable use and its potential to benefit local communities. Numerous statutes and regulations exist that specify exactly how this lofty mandate may be fulfilled.

One of the major pieces of legislation that refers to environmental management in the mining industry is the Mines and Minerals Development Act, passed in 2015. The act gives power to the Director of Mines Safety to "have responsibility for matters concerning the environment, public health and safety in exploration, mineral processing and mining operations" (5.(4)). This director sits on the committee that determines whether a given mining license is granted, and he or she may suspend the operations of a mine which disobeys the established regulations or the terms of the mining agreement. The director knows about the operations of the mines under his or her purview because the holders of mining licenses must submit reports about the compliance of the mine with environmental standards (41.(c)).

When determining whether a particular mining license shall be granted, the Mining Licensing Committee works in collaboration with the Zambian Environmental Management Agency, or ZEMA, to review the application materials submitted by the potential developer (Interview: Acting Director of Mines). The Mines and Minerals (Environmental) Regulations, 1997, outlines the information to be included in this application. A major aspect of these regulations is the mandate that developers of potentially dangerous mining projects submit an Environmental Impact Statement, which discloses how the developer plans to mitigate environmental risk (Regulations 4 and 5).

If the EIS is sound and the project is approved, the license may be granted. Later, an audit that analyzes the director's compliance with the environmental impact statement "shall be conducted within 15 months of commissioning such exploration" by two independent persons (Regulation 8). This audit report is submitted to the director who can then notify the developer of when the next audit will be conducted. Presumably, more audits occur to ensure compliance with the agreement.

Though these guidelines are important, the ultimate responsibility of environmental management in Zambian mines belongs to ZEMA. ZEMA is the primary authority charged with controlling pollution and protecting the environment. Therefore its audits are the most critical line of defense against environmental harm. Many of ZEMA's responsibilities are outlined in the Environmental Management Act, 2011, which gives it the power to "enter and search" plants or establishments like mines "at any reasonable time" to investigate pollution (Section 15). Most importantly, however, the Act requires ZEMA to determine air, water, noise, waste management, and natural resource management standards, and to then police these standards by collecting ongoing data about water quality, air quality, and the like (Section 48, 52, 62, 70, 83).

A number of pieces of subsidiary legislation also exist to govern specific processes in environmental management. A few of these regulations include The Waste Management Regulations (SI 71 of 1993), The Water Pollution Control Regulations (SI 72 of 1993), The Pesticides and Toxic Substances Regulations (1994), The Air Pollution Control Regulations (SI 142 of 1996), The Environmental Impact Assessment Regulations (SI 28 of 1997), and The Hazardous Waste Management Regulations (SI of 2001).

Environmental and health effects of non-compliance

It must be remembered that our fundamental purpose in examining the enforcement of environmental regulations is to assess the impacts that necessarily come when copper mining is undertaken without proper governance. These remarkably serious realities include the deterioration of air quality, surface and groundwater quality, deforestation, erosion, and soil contamination (Princeton, 1988, MIT, n.d., Yabe, Ishizuka, and Umemura, 2010) - all of which carry significant consequences for human, animal, and plant health. These consequences are complex, multifaceted and numerous, and though we cannot list every possible effect here, we attempt to demonstrate the all-encompassing and devastating effects that copper mining has on local communities.

Zambia's dense history of mining has led to acid drainage and loss of usable land. While geological features typically are able to buffer the acid created by mine waste, there have been exceptions, most notably at Chibuluma South Mine in Lufwanyama where drainage had a pH of as low as 2-3. While acid drainage in the Copperbelt is typically contained by the region's geological makeup, the area known as the new Copperbelt in the Northwestern Province does not have the same protective geological features, making acid drainage a much more significant potential problem (Lindahl, 2014).

In addition, the history of mining in Zambia has left a legacy that includes 10,000 hectares of land that are unusable due to mining waste contamination. None of the ways in which the community would typically use this land, like forestry, agriculture, ranching or residency are possible anymore, making this a sizable loss of opportunity (Lindahl, 2014).

Another potential impact is air pollution, which, when it comes to copper mining, predominantly occurs in the form of SO_2. Estimates of the total SO_2 released into the atmosphere due to copper mining activities in Zambia range from 300,000-700,000 tons/year (Ncube and Banda, 2012, Lindahl, 2014). Regardless of the true value, the World Health Organization's limit for SO_2 emissions is 125,000 tons/year, placing Zambia in gross violation of this international standard (Ncube and Banda, 2012). Additionally, certain areas of Zambia are breaking the country's own emission cap of 50 micrograms/m^3 of SO_2, and there have been measurements as high as 1500 micrograms/m^3 in residential areas (Lindahl, 2014). SO_2 concentrations this high could have acute impacts on human health, as high levels of SO_2 have been closely linked to respiratory illnesses, especially in children, and even mortality rates (WHO Air Quality Guidelines, 2005).

Soil pollution levels due to mining are also dangerously elevated in areas with high levels of mining activity. The contaminants present as a result of copper mining in high enough concentrations to constitute a threat to human health are copper and cobalt. As Table 1 displays, these concentrations are considerably higher than international guidelines limit (Lindahl 2014).

Table 1: Average concentration of elements from different cities around Zambia, all of which participate in copper mining. The values marked in green are higher than international guidelines allow, and the values marked in blue are likely to be higher as well. [1]

	Kitwe	Mufulira	Chingola	Kalulushi	Chililabombwe	Chambishi
Population *	522 000	161 000	210 000	96 000	90 000	11 000
Mining operations	Nkana & Mindolo	Mufulira	Nchanga & Chingola	Chibuluma	Konkola	Chambishi
As (mg/kg)	>5	>5	3	1	0.5	0.5
Co (mg/kg)	>60	>60	>60	35	9	19
Cr (mg/kg)	36	36	36	16	25	16
Cu (mg/kg)	>2200	>2200	>2200	1800	600	300
Hg(mg/kg)	>0.06	>0.06	0.035	0.02	0.02	0.02
Ni (mg/kg)	12	22	7	5	7	5
Pb (mg/kg)	>60	>60	>60	5	5	5
Zn (mg/kg)	>60	>60	>60	20	40	10

* Zambia Central Statistical Office 2010.

[1] Lindahl, J. (2014). Environmental Impacts of Mining in Zambia. Geological Survey of Sweden, pg. 9. http://resource.sgu.se/produkter/sgurapp/s1422-rapport.pdf

The Kafue River is Zambia's longest complete river, and has a basin that makes up 20% of Zambia's land area (743,000 km^2). It runs directly through the Copperbelt, making it the most notable recipient of mining's water contamination (Kambole, 2003). A number of studies have demonstrated high levels of copper and cobalt in the river (Yabe, Ishizuka, and Umemura, 2010, and Kambole, 2003), which are then reflected in aquatic life and lead to changes in fish catches, size, and allegedly taste (Kambole, 2003).

The buildup of these pollutants in what seems to be most every aspect of the ecosystem has very direct and noticeable impacts on human life and health. A BBC news article (Rivers of Acid in Zambian villages, 2015) tells the story of residents of Hippo Pool village, located on the bank of the Kafue River in the Copperbelt. A cassava farmer named Leo Mulenga displayed his typically four-meter-high plants which were only barely a meter and dying, saying "I used to grow cabbages, potatoes, tomatoes and bananas but now, there's no future here - only poverty and suffering for everyone because this land is damaged and spoiled." Floribert Kepapa was another villager who, as most villagers do, uses the river's water on a daily basis. He gave testimony of the health effects that mining pollution can have, noting that he spent months in the hospital in addition to losing both his wife and son to illness born of mining's polluting effect. Mr. Kepapa was quoted as saying about Konkola Copper Mines (KCM) "the water was clean before KCM took over. If my children and grandchildren are to survive and live healthy lives here, then KCM has to go," (BBC, 2015).

The impacts of copper mining on the health of the surrounding environment and community are truly comprehensive; it seems that no aspect of life in these areas is left untouched, whether it be human, animal or plant. It should be emphasized then that the issue at hand does not have a quick fix; fix it is a complex and multifarious situation that needs to be addressed in a calculated manner.

Findings: Nature of enforcement

The first pattern that began to emerge from our interviews was a common sentiment concerning the quality of Zambia's environmental regulations. Every expert interviewed, no matter their profession or background, shared a belief that the environmental laws and regulations in Zambia are adequate. Take this selection of quotes for example:

> "The regulations are pretty solid. As a starting point at least, the regulations are OK if they can be enforced." - Environmental Activist

> "Since 2002, to date I have noticed a significant improvement in the environmental legislation...I wouldn't say there's a problem with environmental legislation right now." -Associate Dean of UNZA Law School

> "I think as things stand now, yes we may not have 100 percent policy framework, but it is adequate enough to deal with the issues we are facing in this country with regard to environmental management and mining in particular. " - Director of Programs, ActionAid Zambia

> "For now, we can say that we are happy with the current laws that we have, though of course there is room for improvement" - Acting Minister of Mines

In fact, the only interview in which the current state of environmental regulations were not spoken of highly was with an officer at ZEMA.

> "We are getting there in terms of adequacy [of environmental regulations]" - Officer at ZEMA

The typical government response to environmental issues, namely to create new legislation, does not seem applicable in Zambia. These experts on environmental issues come from vastly different sectors and perspectives, and yet are in consensus on the sufficiency of the legal framework.

The next logical line of inquiry was to examine the enforcement of these regulations. Here too, there was a similar consensus among our interviewees, though the general opinion was less positive than before:

> "[The regulations are] not enforced, to a large extent" - Environmental Activist

> "It is an issue of enforcing, and I think it's a bigger problem even outside the environmental sector. It's a general problem I have noticed in Zambia." -Associate Dean of UNZA Law School

Even an official within the Ministry of Mines admitted that "of course when we are doing the regulation itself, sometimes we may have a few challenges."

The problem clearly lies not with the letter of the law itself, but with its enforcement.

In order to ascertain the degree to which enforcement is lacking, the 2014 Auditor General report on the Management of Environmental Degradation Caused by Mining Activities in Zambia was consulted. This assessment outlines some examples of the failure of governmental bodies to effectively enforce the established regulations.

Some of the report's major findings include:

1. The body of subsidiary legislation that outlined regulations for monitoring pollution was largely overlooked. The Air Pollution Control (Licensing and Emissions Standards) Regulations 1996, the Water Pollution Control (Waste Water and Effluent) Regulation 1993, and The Mines and Minerals (Environmental Regulations) of 1997, for example, all stipulate that mines must submit regular reports to ZEMA about their emissions into the air and water. Neither ZEMA nor the Mines Safety Department were thoroughly monitoring whether this was actually occurring. The report found that 10 out of the 16 investigated mines with the potential to pollute the surface water did not submit the required bi-annual reports about surface water pollution and that 2 of the 5 companies with smelting facilities did not submit reports about their air emissions.
2. The Mines and Minerals (Environmental Regulations) of 1997 require developers to hire an independent auditor to ensure that dumping sites are safe and within the boundaries of the law. This was not enforced.
3. The Environmental Protection Fund, a fund established to mitigate the deleterious environmental effects of mine closures, was not being managed effectively. Companies are required to contribute to the EPF in accordance with the Mines and Minerals Development Act, but the Auditor general report found that defaulting companies were not being held accountable for not reaching their prescribed contribution.

In our interviews we attempted to determine the problems that led to these regulatory breaches. A variety of different answers were given. First of all, there were issues of understaffing in the institutions tasked with monitoring environmental activity in mining communities, specifically ZEMA.

> "The challenges that we have are sometimes mainly due to lack of manpower."
> -Acting Director of Mines

> "It could be a combination of low staffing levels to be able to enforce. The regulator in Zambia, the environmental regulator, ZEMA, has I think four offices now, country wide. That is supposed to cover all environmental related issues, so not just mining, but roads and so on. They cover everything from compliance monitoring, licensing, and inspections." - Environmental Activist

The ZEMA official also confirmed the claim that many issues in the agency stem from low staffing and that ZEMA has only four offices countrywide.

One of the more salient issues with ZEMA and other government agencies' approaches to environmental management seemed to stem from a combination of personal relationships between government and industry as well as conflicts of interests within these governmental bodies.

> "The setup of ZEMA as an agency dependent on government is a problem because it will depend on government for funding. To that extent, they're independence in terms of what projects to decline based on the effects on the environment is more or less compromised" - Associate Dean of UNZA Law School

> "Most of these companies have so much power and influence that they'll influence the politicians to change or go another direction." - Environmental Activist

> "It's relationships. They're people who can pick up the phone and call the minister and say "hey I have a project going on here and [ZEMA] is making it difficult. Can you talk to them?" and the minister get someone [to help them]." - Environmental Activist

> "It is understood when you look at the role of government in this respect, it is a business environment. When government is trying to attract investment, sometimes we come up with incentives which i think are not progressive, maybe because there is competition out there. So we compromise with incentives to try and attract this and that investor and that catches up with us. When you compromise at that stage it will be very difficult now to come and say ok now we enforce...I think in some cases we've seen where for example ZEMA has been caught up in the web and they have failed sometimes to really act because they know behind it there is a political heavyweight, who is trying to make sure this [mining deal] goes through." - Director of Programs, ActionAid Zambia

Another area of concern, raised by ZEMA itself, is the level of current penalties given to companies who fail to comply with environmental regulations.

> "[ZEMA's] greatest challenge is penalties. They are too minimal" - Officer at ZEMA

With time though, a common theme in all of these different, seemingly unrelated issues began to appear. A very delicate balance exists between taking advantage of mining's economic benefits and preventing its environmental and social harm. Any country that wishes to engage in copper mining activity must be constantly aware of this balance, especially considering copper mining's considerable potential for environmental and social damage. It seems that in the instances where poor environmental management occurs, it can be traced to a failure to strike the correct balance between the two concerns. A few interviews in particular were very clear about this fact:

> "Environmental issues are generally secondary to issues of bread and butter. Ordinarily you find the argument that we have to balance development and protection of the environment. What I've seen here is that environmental issues are looked at as elite considerations, why should you be worried about the environment when you do not know what you are going to eat...we do not see the cycle, that if we do not protect the environment that ultimately we will not be healthy enough even to go to work." - Associate Dean of UNZA Law School

> "There is a principle to balance between the environment and the economic, and most of the time economic wins… People think environmental protection is futuristic, if I can't see global warming, why should I worry about it?" - Officer at ZEMA

> "when government is trying to attract investment, sometimes we come up with incentives which I think are not progressive, maybe because there is competition out there, so we compromise with incentives to try and attract this and that investor and that catches up, because when you compromise at that stage it will be very difficult now to come and say 'ok now we'll enforce,' because you were pleading, begging, giving the companies this and that." - Director of Programs, ActionAid Zambia

A number of our interviewees communicated a belief that the government was deliberately limiting its enforcement of regulations in order to attract investment (Associate Dean of UNZA Law School, Director of Programs, ActionAid Zambia). The government officials we interviewed did not confirm this suspicion, but one asserted that as a whole, the government does not prioritize environmental management as much as it prioritizes investment and that ZEMA is often seen as a hindrance to development (ZEMA official).

Though speculations about the extent to which the Zambian government takes deliberate steps to discourage proper enforcement are difficult to prove, it is evident that environmental concerns are often placed on the backburner when economic development is available. As Zambia's inflow from foreign direct investment increases, new developments sprout up regularly, even though ZEMA does not have the capacity to meet even its current environmental responsibilities. Today, it cannot carry out all the necessary audits and hold actors accountable when they breach environmental regulations. Though plans have been laid for two more branches to be established, this comes only after years of insufficient resources, and still fails to place a branch in every province.

> "Some facilities we don't even notice" - Official at ZEMA, speaking about the difficulty of monitoring the environmental impacts of mines.

The failure to provide ZEMA the necessary resources to grow and expand along with Zambia's FDI suggests that the Zambian government is struggling to balance developmental and environmental goals. Even when it comes to discussion of the harms brought by mining, environmental issues are on the sidelines. As Frederiksen writes in his recent study on copper mining in Zambia and CSR, "the national debate on mining has almost entirely focused on taxation and rents, environmental and social impacts remain a sideshow," (Frederiksen, 2017). The staffing issues at ZEMA and the fact that personal relationships between mining and government officials are being used to bypass environmental hurdles seems to stem primarily from this difficulty of choosing between the two occasionally contradictory goals.

After identifying a cause of the chronic lack of environmental enforcement in Zambia, this research's next task was to discover the cause of the practice of environmental disregard, and here is where financialization comes into the picture.

Findings: Financialization's effect

A major goal of our research was to discover the underlying forces at play that could provide insight into the reasons for poor environmental management. Our discussions with experts made it increasingly evident that financialization was one of these critical forces. Specifically, we found that financialization makes foreign direct investment more accessible and can increase the extent to which attempts by the government to attract it incentivize poor enforcement of environmental regulations.

As companies within global production networks become increasingly bound to profit goals associated with financialization, it becomes more critical that they find business environments that are conducive to this focus on financial-criteria. This search for countries with low environmental standards, as a result of either poor laws or poor enforcement, is certainly evident in Zambia.

> "[Many] companies see where it is safest to conduct their business with minimum friction, meaning minimum observance of environmental regulations, and I think

> unfortunately most of sub-Saharan Africa has been identified." - Associate Dean of UNZA Law School

Again, it has been the case for decades that many profit-driven firms favor lax environmental management, but our theoretical analysis of the incentives associated with financialization has shown that this attraction to such environments could be growing stronger and more widespread, in accordance with the associated "marginalization of non-financial criteria" described by Cutler and Waine (2001). As financial criteria and financial actors become more involved in the operations of these companies, governments have more incentive to appear to be compatible with the deep financial focus that can result. This fact can lead to poor enforcement of environmental regulations. Because the ability of a country to attract foreign direct investment is largely contingent upon its reputation as an ideal business environment, and because the increase in incentives within companies to place financial concerns above environmental concerns makes this business environment increasingly important, countries like Zambia are subjected to significant pressure to neglect environmental regulations. Proper enforcement might communicate to prospective companies that setting up shop in Zambia means dealing with a handful of constraints and restrictions.

Another major impact of financialization lies in the fact that it plays a role in the growth of these global production networks and thus the FDI they create in the first place. As mentioned above, Zambia's inflow of money from FDI is increasing steadily, though its capacity to monitor the environmental impact of the mining companies providing this FDI has remained largely stagnant. The fact that there are more opportunities to attract investment and more incentive for the companies who provide this investment to neglect environmental concerns suggests that the Zambian government's failure to strike the right balance between development and environmental protection is at least made worse by the existence of financialization.

International accountability

Though financialization can increase the extent to which governments are incentivized to overlook environmental management, it also has the potential to result in a few positive outcomes that may offset some of this harm under the necessary conditions.

Global production networks, which, as established previously in this paper, have grown largely as a result of financialization, allow for the involvement of many governments in the copper production process. This global structure, characterized by the presence of a single lead firm which establishes subsidiary companies around the world, enables officials in the country of the parent company to have leverage which can fill the environmental enforcement gaps in the countries where subsidiary companies are established. Because of this fact, Zambians, for example, occasionally have access to more avenues by which to seek justice when their health is impacted by the practices of a mine.

This was particularly evident in *Lungowe & others v. Vedanta Resources PLC and Konkola Copper Mines PLC. (2016).* In the case, the claimants were a group of Zambian villagers who found that they could not obtain justice in Zambia for the type of claim they wished to submit. Vedanta Resources plc., a UK company, owned a majority share in Konkola Copper Mines, a Zambian mining company with a development near the villagers. Because Konkola was alleged to have polluted the water used by the local villagers, and Vedanta, as the parent company, exercised significant control over the operations of KCM, the case could be brought to the UK to hold Vedanta liable for the activity that led to health problems in the villages (Herbert Smith Freehills 2016). The defendants challenged the jurisdiction of UK courts in such a case, but in the end, it was decided that though KCM could not be tried, the villagers could in fact bring a claim against Vedanta.

The case represents the growing potential for countries to police each other on environmental regulations. Though international law pertaining to the environment has existed without the influence of factors related to finance, the interconnectedness of global companies that stems from a financialized economy has, in this example and in others, resulted in a greater capacity for locals to seek justice when their plights are overlooked.

This potential for outsourced justice does, however, require that countries have specific legal orientations. In *Lungowe*, the jurisdiction was given to UK courts because of the holding in *Chandler v. Cape (2012),* which held that a parent company can be held liable for the actions of subsidiary companies abroad if the claimants can prove that negligence by the parent company constituted a failure to fulfil their duty of care. *Chandler*, for that matter, was only decided as it was on the basis of doctrines established in a number of other decisions such as *Caparo Industries plc v Dickman (1990).* Though, according to Dr. Sambo, "this (type of legal policy) is common in most of the EU," it is by no means a universal protocol, so the capacity for the emergence of global production networks to result in more avenues for justice is limited by the jurisprudence and political will of countries which house large parent companies.

Discussion

It should be recognized that some voluntary efforts have been made by mining companies to mitigate the social and environmental issues caused by their activity. These programs are generally referred to as Corporate Social Responsibility, defined by the European Commission as "essentially a concept whereby companies decide voluntarily to contribute to a better society and a cleaner environment," and there is a growing body of literature exploring CSR's ability to catalyze positive change in the communities in which they are active (Hamann, Kapelus, 2004). Some mines in Zambia that have taken on CSR programs include Konkola Copper Mines, Kansanshi Mine, and Mopani Copper Mines. Across the board, mines boast about their extensive programs and investments, especially those dealing with social issues, and have they doubtless made some positive impacts in their respective communities (Hamann, Kapelus, 2004, Frederiksen, 2017). The Zambian people and government remain deeply skeptical however, and the popular consensus seems to be that these programs exist primarily for the tax benefits they bring (Frederiksen, 2017). Though these programs represent a step in the right direction, there are fundamental issues with using them as a solution to the social and environmental issues brought about by copper mining.

A first issue surrounds the potential of these programs to make any significant impacts in the first place. One ZEMA officer said about CSR programs, that "to a certain degree mining companies care [about CSR] ... but the actual impacts [of copper mining] are not easy to mitigate, the CSR is just a drop in the ocean."

The intentions behind CSR programs too have been called into question. Hamann and Acutt write that "a critical view of CSR emphasizes the need to consider underlying motivations for business to embrace and perpetuate the CSR concept. These may relate to accommodation - the implementation of cosmetic changes to business practice in order to preclude bigger changes - and legitimization - the influence by business over popular and policy-related discourse in order to define what questions may be asked and what answers are feasible," (Hamann and Acutt, 2003). While one may argue for the irrelevance of the intentions behind CSR - as if results are produced, who cares about the reasons behind those results - the longer CSR programs are in place and the bigger the scope, the more likely it is that these motives will begin to show themselves in the results. For CSR efforts to be a sustainable and long-term solution, there must be a genuine desire to improve on social and environmental issues behind them and not just be 'greenwash,' as Hamann and Kapelus call it (Hamann, Kapelus, 2004).

Another area of concern when it comes to CSR is the argument first made by Milton Friedman, that businesses should stick to doing what they do best, namely creating profits (Friedman, 1970). "The basic premise of this argument is that taking on social responsibilities leads to distortions of the market, interferes with effective and efficient economic activity of firms, and interferes with the government fulfilling its responsibilities," (Hamann, 2003). While this argument is certainly not without controversy as Hamann points out, it provides one critical view of CSR.

The most relevant aspect of Friedman's argument in the context of mining in Zambia is the risk that CSR will interfere with government's efforts to police and maintain environmental and social standards. The relationship between the mining companies and the state is very delicate in nature, and failing to maintain it can lead to CSR programs causing more harm than help. As Hamann writes, "partnerships are often implemented in circumstances where state institutions are weak; yet control, facilitation, and monitoring of the partnering and development process needs to be secured by the legitimacy of the state," (Hamann, 2003). The ability for Zambia to provide this stability, an essential prerequisite for successful CSR programs, while difficult to entirely disprove, could certainly be called into question.

When it comes to enforcement, there is a critical problem with relying on CSR programs to aid the government in its efforts to maintain both environmental and social standards. That problem is essentially that government simply cannot rely on CSR programs to do their job. Regardless of CSR programs and partnerships being put in place, and even regardless of the benefits they might bring, the government must continue to police its regulations. While CSR may have the best and most genuine of intentions, at the end of the day, "there is one and only one social responsibility of business, to use its resources and engage in activities designed to increase its profits," (Friedman, 1970). With this in mind, the state of Zambia has a duty to continually and thoroughly monitor mining activity, regardless of the perceived strength of a CSR program.

The examination and discovery of the connection between financialization and enforcement of environmental regulations is much more than a purely intellectual exercise. There exists a very real problem in Zambia; environmental degradation is endangering the traditions, livelihood, and health of thousands, and this number will only grow unless serious action is taken to reverse the trend. Any insight into the causes of this lack of enforcement then must be used to its full potential to address this problem.

It is clear that for Zambia to sustainably resolve its environmental issues with respect to copper mining, a cultural change is needed. A root of the issue of enforcement is the lack of balance between economic development and environmental protection. Mining is an inherently damaging activity, making this balance all the more important to prioritize, yet all the more difficult to maintain. For as long as environmental issues are disregarded in favor of economic growth, enforcement of regulations will suffer, and the environment along with it. How exactly this cultural change will come about is a major question that Zambia needs to address. Will penalties for breaking environmental regulations be steepened? Will positive environmental management be given some sort of economic value in and of itself? From this lack of environmental priorities stems the more conspicuous issues that come up in enforcement; for example, ZEMA's understaffing and conflicts of interest within government regulatory bodies. While these issues should be addressed directly, addressing *only* these issues without confronting their underlying cause would be nothing more than a 'bandaid' solution.

Because financialization is a major player in the Zambian environmental management infrastructure, the strategies stakeholders employ to improve environmental management should take its influence into account. Using the information gathered in our expert interviews, we have devised a set of recommendations for government, business, and civil society that we believe will help protect the environment and local communities.

<u>Recommendation 1</u>: Integrate environmental management into relevant financial criteria – Financial evaluations of mining companies are carried out regularly by a number of institutions for a number of reasons, whether as a part of an IPO's stock valuation, for a bond rating, or to aid banks and investment corporations in deciding who to give capital. Calls for the inclusion of environmental factors in some of these evaluations are not new, but the idea is often presented as a substitute, not a supplement, to environmental law. We suggest that national and international bodies with influence in the worldwide financial sector make an effort to forge a clear link between the environmental practices of natural resource companies and their bottom lines.

Currently, much of the meager influence of company environmental policies on financial decisions is found in the company's attempts to manage risk (Bracking 2012). In a practical sense, this means that companies manage environmental harm to mitigate the risk of being sued, fined, or shut down by local governments. This structure allows many companies to only manage the environmental externalities that can be easily discovered and traced back to their operations and, in a country where enforcement of environmental regulations is weak, this set of externalities is small. A more overt system of environmental financial influence, where, for example, figures listed on government documents about a company's impact (like the bi-annual emissions reports submitted to ZEMA) correspond to specific aspects of firm valuations, would incentivize both the government and mining companies to do their due diligence when it comes to environmental protection. In such an atmosphere, governments would need to keep up-to-date, accurate records to attract investment, and companies would be incentivized to establish plans and policies to earn high marks on these reports. As noted in this paper and in Bracking (2012), the difficulty lies in assigning specific values to environmental effects, but if financial institutions take the time to find and agree upon a universal algorithm, the work will pay off.

<u>Recommendation 2:</u> Create ideal legal and social structures in other countries – Without the potential for UK-based parent companies to be liable for the actions of subsidiary companies abroad, the *Lungowe* case would not have been possible. A slew of different companies from various countries hold majority shares in Zambian mines,

however, so for the rise of global production networks to fully result in more avenues for justice for villagers, these other countries must implement similar policies.

The need for policies that connect the practices of companies in Zambia to the stakeholders in developed countries is indicative of the broader need for more international involvement in environmental management. In our interviews, we spoke with both Zambia-based and international civil society organizations and found that in international activist networks, an importance is often placed on “building a case on a global level” (Director of Programs, ActionAid Zambia interview). This means conducting research about and involving stakeholders from different countries of relevance to a particular environmental issue. As governments and civil society organizations take on a more global approach to environmental management, the increase in the number of actors could enable fewer environmental missteps to be overlooked.

Recommendation 3: Mitigating the effects of financialization –
One method for monitoring financialization is to mandate that companies seeking to do business in Zambia disclose all beneficial ownership information including any parent companies and countries/addresses of origin. By increasing transparency, the potential for uncertainty and the ensuing difficulty that often is a ramification of increased globalization will be significantly reduced. Also, in accordance with our earlier recommendation, any action that improves upon Zambia and the international community’s ability to monitor financialization is one that will be crucial to the future mitigation of environmental damage.

The first step in mitigating the force of financialization is to ensure that the state of Zambia is able to keep track of how financialization is changing and increasing. Implementing a legal system such as the one suggested has a twofold positive effect: firstly, Zambia is able to monitor the increasing financialization and according complexity and globalization of companies operating inside the country, and secondly, that very complexity, and the impact it has on effective governmental activity, is itself lessened due to the increased transparency.

Further Areas of Study

Mining is not an activity unique to Zambia; in fact, mining is a critical aspect to the economy of quite a few countries in Africa. In the 3rd edition of the International Council on Mining & Minerals’ Role of Mining in National Economies Report, 8 of the top 15 countries in terms of mining contributions to overall GDP (Mining Contribution Index) were African (ICMM, 2016). However, not all of these countries share the same issues with environmental management. The Fraser Institute's Investment Attraction Index, which takes into account the stability, consistency, and scientific backing of environmental regulations, ranks Zambia 17th out of 18 African countries (Fraser Institute, 2016). With this in mind, Zambia clearly could learn some valuable lessons from its neighboring countries. Botswana, which directly borders Zambia to the south, has topped the list multiple times, including the most recent report. A consequential further area for study would be a comparative analysis of the environmental enforcement mechanisms between Zambia and nearby countries who have been more successful in this respect.

This study took a very generalized look at copper mining in Zambia; however, in reality, there are significant differences in environmental management and levels of financialization between individual mines, parent companies, and countries of origin. A valuable further area of research then would be to analyze the differences in environmental management between institutions in these different categories. This could lead to further understanding of the mechanisms and causes behind proper environmental governance, or lack thereof, which in turn allows the country and industry as a whole to address these issues in a more targeted and effective manner.

Limitations

As with all studies, certain unavoidable limitations existed in our research. There were constraints in both time and travel that restricted the amount of fieldwork and research that could be done. Furthermore, as foreign researchers, we did not have a readily available pool of contacts to draw from, which limited the scope of our research.

Conclusion

Regardless of the adequacy of the environmental regulations in Zambia, serious problems have arisen from environmental degradation due to copper mining activity. These problems include public health crises, as well as environmental impacts that contribute to erosion, deforestation, and climate change, to name just a few. The missing link is the enforcement of existing regulations. Upon a closer look at this situation, a number of problems within enforcement began to arise, including understaffing, conflicts of interest, and abuse of personal relationships. However, the underlying cause of these issues appears to be a deep-rooted cultural belief within both government and industry that environmental degradation is a necessary byproduct of economic success. As many of the interviewees put it, the balance between environmental protection and economic interests is greatly skewed to the side of the later.

Financialization is increasing both around the world and in Zambia. Consequently, the study of this increase will be of crucial importance going forward. With this in mind, we chose to explore the environmental issues in Zambia through the specific lens of financialization in order to make a meaningful contribution to the country and industry at large. The findings of this research demonstrate a positive, if complicated, relationship between the expansion of financialization and the suppression of environmental governance. However, our results also indicate that financialization is not necessarily purely damaging, and if managed correctly, could in fact become a force in the improvement of environmental enforcement.

In accordance with these findings, the continued progress of financialization within the copper trade must be monitored, along with changes and trends in environmental enforcement in Zambia. Furthermore, for the current status of environmental management in Zambia to be improved, a calculated effort must be made to address the deep-seated subjugation of environmental issues in favor of economic progress. Our recommendations include the inclusion of environmental factors into financial evaluations, an added emphasis on legal structures in developed countries to ensure that companies are held responsible for environmental management elsewhere, and the implementation of mechanisms designed to aid in the continued monitoring of financialization.

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