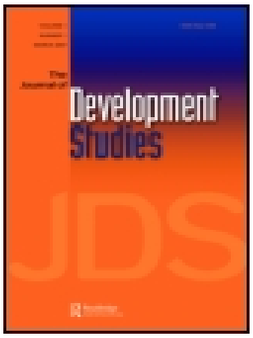

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'Sustainable Mining'? Corporate Social Responsibility, Migration and Livelihood Choices in Zambia

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ABSTRACT *Whilst corporate social responsibility is now part and parcel of many multinational mining operations, and a 'sustainable mining' narrative a fundamental part of their public persona, companies still struggle to provide secure, long-term livelihoods for either locals or the swathe of migrants mining attracts. Minimal opportunities in the formal sector leave migrants in particular engaging in informal and illegal activities that offer poor livelihood security. In this paper we examine these activities in northern Zambia's emerald mines to highlight some of the issues and barriers to sustainable development that exist across mining zones. We conclude that livelihood choices are not augmented by a so-called 'sustainable mining' approach that fails to engage all sectors of the population. We show the numerous challenges faced by migrants in this part of Zambia to accentuate the factors that need to be addressed before favourable environments for fostering sustainable mining might be achieved.*

Introduction

> *We are constantly punishing ourselves in search of a good life.* (Mining migrant and charcoal burner, Kafubu 2012)

The convoluted relationship between mining, local-level development and the use and preservation of natural resources, encapsulated by the 'sustainable mining' narrative, continues to be paramount in debates concerning extractive industry (for example Benson & Kirsch, 2010; Hendrix, 2006; Kirsch, 2010). Central to these debates is the reality that 'sustainable mining' is defeated by the intrinsic character of the industry itself as short-term, capital-intensive, dependent on a specialist, mobile workforce, vulnerable to market fluctuations and frequently interrupted by local grievances (Kirsch, 2010). Yet, in spite of practical limitations, mining companies continue to adopt an approach that claims to contribute to local social and environmental 'sustainability' thus fulfilling increasing expectations on the sector to deliver as paragons of corporate social responsibility (CSR).

The concept of 'sustainable mining' draws on the Brundtland definition of sustainable development[1] to promote the industry's actors as agents of 'best practice' in economic, social, environmental and governance spheres (MMSD, 2002).[2] Mining giants such as Rio Tinto, Barrick Gold and Anglo American underline CSR strategies with a 'sustainability' narrative. For BHP Billiton (2015), for example: 'Sustainability is core to our strategy, ensuring we integrate health, safety, environmental, social and economic factors into our decision-making'. Whilst Rio Tinto (2015) assert that: 'Because

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we recognise that we have a responsibility to all our stakeholders and to the wider world, our commitment to sustainable development is integrated into everything we do'. By actively fostering perceptions of 'sustainable mining', companies present themselves as constructive contributors to development, nurturing positive relations with their host governments and mitigating antagonism with local communities through community development projects. The activation of 'sustainable mining' at the local level thus implies action in socioeconomic (education, health, training) and environmental (promoting the efficient use of natural resources and preventing land degradation) spheres to broaden livelihood opportunities for those affected by the industry.

Whilst some academics argue that recent reforms to extractive industry companies' modus operandi foster positive contributions to socioeconomic development (for example Ite, 2007), others identify 'sustainable mining' as 'a slogan of little practical value to the public-policy makers' (Hendrix, 2006, p. 52), or an oxymoronic concept where the promise of sustainability hides symptoms of social, economic and environmental devastation (for example Benson & Kirsch, 2010; Frynas, 2005; Gilberthorpe & Banks, 2012; Trebeck, 2008).

In this paper we take a more nuanced approach to 'sustainable mining' to show how corporate engagement might be improved in the pursuit of a CSR agenda. Our argument is framed by an acknowledgement of the discord between the characteristics peculiar to 'sustainable development' and those peculiar to mining. Drawing on the Brundtland definition of 'sustainability' and the Western model of 'development' we identify these characteristics as inclusive, linear, progressive, transformative, and target-driven. Transposing these characteristics onto mining zones is, we argue, like trying to fit a square peg into a round hole. The approach needs to be chiselled and modified to fit both the context and the peculiarities of the industry itself. Corporate ambitions of 'sustainable mining' remain limited by this lack of tailoring.

To illustrate this, we focus on the role that the thriving migrant population mining typically attracts plays in local socioeconomic activity. By focussing on this sector of the population we show how industry practitioners continually struggle to engage with the complexity of the aspirations and grievances of the diverse and thriving populations that mining generates. We argue that a 'sustainable mining' approach to CSR must engage all sectors of the population. This engagement must be individual and inclusive to provide the tools for a sustainable lifestyle that can improve livelihoods on an immediate and subsequently long-term basis.

The opportunities for income generation in mining zones and subsequent potential for sustainable development have been widely debated (for example Buxton, 2013; Grätz, 2009; Heemskerk, 2002; Hilson, 2010; Hilson & Garforth, 2013; Hilson & Potter, 2005; Lungu & Shikwe, 2006; Nyame, Grant, & Yakovleva, 2009; Tschakert, 2009; Werthmann, 2009). On the one hand, researchers identify key outcomes such as reducing levels of youth unemployment and facilitating economic booms (for example Hilson & Osei, 2014; Nyame & Grant, 2014; Wilson, 2012), whilst others identify socioeconomic marginalisation and subsequent economic instability (for example Gilberthorpe & Banks, 2012; Maunamoha, Maharaj, & Preston-Whyte, 2010).

As recent research suggests, the majority of migrants moving to mining zones come in search of formal employment with commercial mine operators (Gyan-Baffour, 2003; Hilson & Garforth, 2013; Hinton, 2011). Whilst a minority succeed in this endeavour, many more do not for reasons discussed widely in the literature (for example Maunamoha et al., 2010; Nyame et al., 2009) and in more detail below. With few other options available, migrants engage in the numerous informal opportunities for income generation that mining zones offer (where the resource is so-called 'lootable'), including unlicenced artisanal and small-scale mining (ASM) and the theft of minerals from concessions established by commercial mines (Buxton, 2013). Other satellite activities have been documented to frequently mushroom around this informal sector, with small businesses catering to the needs of migrant mining populations and branching out to exploit other readily available resources, such as fisheries and timber. This collection of alternative approaches to generating livelihood incomes constitutes a vibrant informal sector operating on the periphery of commercial mining operations.

In this paper we explore 'sustainable mining' in the Kafubu emerald mines of northern Zambia, an area undergoing large-scale, open-pit mining by two companies operating within a sustainable mining

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framework.[3] Kafubu has attracted a vast number of individuals who come in search of opportunities to share in its wealth (Lungu & Shikwe, 2006). We explore the expectations originally held by these migrants and the range of informal activities they fall into when their ambitious expectations are not met. We examine the informal economy they have assembled to assess the effects of these activities on livelihood security, the local economy and social dynamics and on natural resource availability. We further examine how corporate activities founded on sustainable approaches to natural resource use engage with the host of informal activities that spring up around mining sites, and the corporate capacity to engage with the migrants living and working outside of formally-recognised communities (Gyan-Baffour, 2003; Hilson & Garforth, 2013; Hinton, 2011).

Our findings show that the informal migrant economy is a defining driver of local economic activity, underpinning social change and determining the dynamics of local resource use and availability. As such, we argue, it is critical that mining companies recognise the informal economy as both a primary source of minerals arriving onto the market and a fundamental determinant of natural resource availability around mining sites when designing and implementing CSR initiatives. Only through engagement with this informal sector can secure livelihoods[4] for all sectors of the population affected by their operations be achieved.

We postulate that this might be achieved through CSR programmes that go beyond investments in infrastructure and services for established villages. We draw on our findings to highlight lessons for CSR initiatives to improve not only their approach to infrastructural development and service provision, but also their engagement with the informal sector populated by the migrants their operations attract.

We begin with an outline of the methods used and the study area, followed by an examination of the data and consideration of our findings to contribute to the 'sustainable mining' debate. Finally, we provide recommendations and 'lessons learned' with the aim of contributing to CSR policy in mining zones.

Methods and Study Area

Methods

Research was funded by The World Land Trust (WLT) on behalf of Gemfields Resources PLC (Gemfields from herein), a relatively new British-based mining company. Gemfields' glossy marketing campaign, featuring global ambassador Mila Kunis, presents the company as 'the world's leading supplier of responsibly sourced coloured gemstones' (Gemfields, 2015). Funding was for an anthropological study (Gilberthorpe, Agol, & Gegg, 2012) highlighting key social issues in the area initiated by the company's ambition to develop a CSR programme. As a result of our findings and recommendations, and that of a lateral ecological study, the company established a dedicated CSR branch and budget. There were no restrictions on the fieldwork or obligations to either the company (Gemfields) or the NGO (WLT) and we retained ownership of raw data throughout.

Research was conducted between April and September 2012 within and around northern Zambia's Kafubu emerald fields in Lufwanyama District, Copperbelt Province. The fields, formally designated as the 'Ndola Rural Emerald Restricted Area', are currently undergoing commercial mining by Gemfields and a second Senegalese private mining company, Grizzly Mining Ltd (Grizzly from herein).

Fieldwork was conducted within Gemfields' Kagem mine and Grizzly's Kamakanga mine, migrant camps within the restricted emerald fields, Pirala village, which is the only village within the restricted area, and three further sample villages – Kapila, Kandole, and Nkana – each located within 10–25 kilometres of the emerald fields' borders. After an initial desk-based literature review, data were collected using a mixed methods approach. A general ethnographic study, combining participant observation, conversation, semi-structured interviews and focus groups, was carried out to identify livelihood activities, natural resource use, political and administrative structures and interactions across

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the broader Lufwanyama District. From this study we identified expectations and perceptions of development, vulnerable actors and potential sources of conflict.[5]

We conducted a rapid socioeconomic assessment of a random sample of 49 migrants within and around the emerald fields,[6] to identify age and gender populations, and levels of income, education and employment. We also conducted research with local political representatives, security forces, expatriate corporate personnel and local mine employees. Ethical clearance was granted by the International Ethics Committee at the University of East Anglia.

Zambia's Emerald Mines

Zambia's Copperbelt has a long history of mining, stemming from the extraction of copper in the late 1890s (see Fraser, 2010). The copper industry has been instrumental in Zambia's economic development and long periods of good governance have ensured its relative stability (detail in Craig, 2002; Ferguson, 1999; Fraser, 2010). With global copper prices currently in a lull, the country is moving to diversify its economic base through agriculture, tourism and emerald mining (Larmer, 2010).

Whilst emeralds were initially 'discovered' in the Kafubu area in 1928, commercial excavation did not begin in earnest until the 1940s.[7] By the 1970s, Kafubu was a significant site for emerald mining, attracting a swathe of hopeful miners (Seifert et al., 2004). In 1985 the Zambian Government declared much of Kafubu a restricted area, renaming it 'Ndola Rural Emerald Restricted Area' (NRERA) and officially limiting access to those with mining licences and their associates. The local population was relocated and approximately 170 square kilometres demarcated into more than 520 mining concessions. Licence owners range from the Zambian Government and private companies to individual investors from both inside and outside the immediate vicinity. Of the original licences, less than 10 are currently in successful production.

The two main emerald mines in the NRERA, Kagem and Kamakanga, are small compared to the copper mines the region is known for. Nonetheless, at 41 square kilometres Kagem is the largest emerald mine in the world, with an open-pit measuring approximately 105 metres deep and 900 metres long (Gemfields, 2015). The area supplies approximately 20 per cent of the world's emerald production, estimated to be worth between US$100 and 200 million (Behling & Wilson, 2010; Gemfields, 2015).

Zambia's Ministry of Mines and the Environmental Council manage the mining industry through a number of regulatory frameworks such as the Mines and Minerals Regulations Act, which covers a range of sociocultural (preserving cultural heritage and historical sites), economic (acquiring mining rights through licensing, mine closure), and environmental (surface excavations and air, soil and water pollution) issues. These regulations are, however, difficult to enforce outside of the formal mining sector, mainly due to a lack of resources (cf. Nyame et al., 2009). Consequently, the monitoring of ASM, logging, pollution and poaching are weak and the area surrounding Kafubu is largely neglected by the various levels of governance. Local chiefs deal with grievances, conflict and property issues, whilst Gemfields and Grizzly take on a pseudo-government role by investing in infrastructural development.

CSR Initiatives

Both the corporations discussed in this paper present themselves as practitioners of responsible mining with a clear CSR agenda.[8] Both have initiated a number of CSR projects across the region. Gemfields' have invested in several farming co-operatives, whilst their two-year investment strategy (January 2014–2016) will see US$2 million invested into the villages outside the NRERA through a number of initiatives, including the upgrading of a local clinic to a hospital, a new higher secondary school, a tree nursery (in collaboration with the Forestry Department), road upgrades, sports equipment in schools and improved support for local farmers in agri-businesses (ZMM 2014). Grizzly's initiatives include road and bridge maintenance, healthcare and the building of two schools in Lufwanyama District including the only school within the NRERA (see Grizzly, 2015).

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Kafubu

Kafubu is home to the Lamba ethnic group who reside in approximately 34 villages across Lufwanyama District. Individuals from other ethnic groups, including Tonga, Luvele, Bemba, Lunda, Kaonde and Nyaja, also live in the area, having migrated to pursue employment in the Copperbelt mines or fulfil marriage commitments in the Kafubu area (Grätz, 2009; Werthmann, 2009). Many have strong ancestral links with the Lamba, especially the Tonga and Luvele, and are well integrated into local communities.

Pirala, an informal settlement and trading hub with a population of approximately 250 people, is the only village within the NRERA. Pirala is predominantly inhabited by migrants from other mining zones across the Copperbelt as well as individuals from, inter alia, Northwestern Province, Senegal and the Democratic Republic of Congo. The settlement has mushroomed around the trading centre of Pirala market, which caters for the diverse needs generated by Kafubu's informal mining sector. Illegally erected within the NRERA, Pirala bears no formal recognition by regional government and does not have access to state services such as schools, transportation, or water and electricity infrastructure, relying instead on what has been established by Gemfields and Grizzly.

The NRERA overlaps two local chiefdoms, the political institution that remains distinctly at the core of social organisation in northern Zambia. Although Kafubu's land was nationalised and labelled 'restricted' in 1985, traditional structures of customary land ownership remain influential and land tenure is still administered by local chiefs. Two chiefs govern Kafubu and the surrounding area in partnership with the local government. They grant rights over customary land, maintain peace and order, assist local community members and promote development. Both chiefs support mining activities and advocate a mineral-driven development through provision of employment and improved social services and amenities.

Access to healthcare, education, transport and telecommunication services remain poor. One health clinic serves approximately 6500 people. There are no public transport services and the nearest urban centres can only be reached by unsealed roads in private vehicles, which are costly and minimal. Power supplies are limited and only a few establishments, such as the company headquarters, have electricity.

There is one private school, owned and financed by Grizzly, providing basic primary education within the NRERA and several state-run primary schools outside the emerald fields. The quality of education is poor and few children continue to secondary and post-secondary levels. It is against this backdrop of low-level education, high levels of non-kin migration, poor service provision and restricted access to land that we conducted our fieldwork and on which the below findings are based.

Findings

Whilst migration into Kafubu has historically followed the traditions of kin-based marriage, obligation and exchange, our findings show that it has intensified over the last decade as a result of incentives to engage in the economic activities mining provides. Approximately 4000 migrants currently reside within the NRERA (excluding formal mine employees). These migrants are engaged in the informal sector, with informal mining being the predominant livelihood activity, followed by charcoal burning, then small businesses. This wave of overwhelmingly male migrants is partly due to Kafubu's proximity to the Copperbelt mines, with 76 per cent of our sample migrating from other mining zones in the Copperbelt. Typically, these mining migrants have no kinship ties to the Kafubu area.

Migrants reside in makeshift accommodation (mostly tents) in woodland within the NRERA, have family members in other parts of the country or continent and intend to return to them in the near future. Whilst a small number (particularly those with experience from working in other mines) have secured employment at the mines, or practice farming on land acquired from local chiefs outside the NRERA, the majority engage in the informal sector, which includes informal ASM, illegal mining, charcoal production and trading. We discuss each of these activities in turn below.

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The Formal Sector

Employment with Mining Companies. Mining companies are the main source of formal employment in and around Kafubu, hiring a range of people from unskilled labourers for chiselling and cleaning to engineers, surveyors, geologists, drivers, security officers and administrators. Approximately 800 migrants are employed on a contractual basis by Gemfields (approx. 500) and Grizzly (approx. 300). Mine employees enjoy regular incomes, catering, free healthcare and onsite accommodation facilities.

The type of employment individuals acquire depends on their level of education and skills. Entry into the formal mining sector requires qualifications beyond primary level, which limits opportunities for locals and many migrants amongst whom education levels are low. Our assessment of households from Pirala and Kapila recorded that the majority of adults (approximately 70%) did not progress beyond basic primary education. Obstacles such as school fees, inadequate resources (textbooks, uniforms, desks), household labour demands and a lack of transport services further affect the quality of education and student retention across Lufwanyama.

Notably, the majority of senior positions are held by expatriates, whilst those holding skilled positions are part of the mobile workforce characteristic of mining. Of the Zambians employed by Gemfields, for example, approximately 25 per cent are locals originating from Lufwanyama. The rest are from towns in the wider Copperbelt region and have permanent homes in larger cities. As such, cash generated in the formal sector is removed from the local economy, often in the form of remittances dispatched to urban centres, rather than stimulating a localised form of economic development.

Risks in the Formal Sector. At the individual level the formal sector appears to offer greater livelihood security than the informal sector, but there are risks. First, the short-term and volatile nature of mining means jobs are temporary, posing particular risk for the non-specialised and non-skilled sector of the workforce. When mining operations cease, local (unskilled) employees do not become part of the otherwise mobile (skilled) workforce. Second, recruitment processes are poor. Informants stated that information about job openings was only available in newspapers and through professional networks, to which people within the NRERA have limited access. Whilst the government advocates local employment, the local chiefs stated that not enough locals are employed by the large mines. Third, there is a high level of dismissal. Employees stated that suspicions run high within the corporations; association with illegal miners is strictly forbidden and emerald theft (or suspicion thereof) carries immediate dismissal. The formal sector thus provides minimal opportunities for locals and migrants and goes little way to contributing to economic development, and thus ‘sustainable mining’, across the region.

The Informal Sector

Our findings revealed that the NRERA incorporates a vibrant informal sector comprising a varied collection of activities. Whilst these are the predominant source of income for the thousands of migrants failing to secure employment at the Kamakanga or Kagem pits, they are not exclusively practiced by migrants. The restricted nature of the NRERA zone, which overrides traditional chiefdom governance to exclude individual rights to tenure and resource use, automatically defines all residency and activities as de facto informal when practiced by those outside of salaried employment by a mining firm. The portfolio of informal activities practiced by migrants ranges from increasingly audacious forms of unauthorised mining to setting up businesses that cater to the mining community and draw on other locally available natural resources, such as charcoal.

Informal Mining. Because emeralds are so-called lootable resources of value to an external market, the Kafubu fields facilitate illegal mining activity. The informal mining sector includes informal ASM and the illegal mining of gemstones from pits owned by commercial companies. Many migrants and

locals across Kafubu engage in ASM. Whilst some register excavation activities under small mining concessions, most pits are operated informally with no licence. Because ASM requires a level of economic stability to purchase operating equipment and apply for and purchase a mineral exploitation licence, those operating informally do so with unsophisticated excavation tools and water pumps (see also Siegel & Veiga, 2010). During our interviews, illegal miners stressed they are unable to afford the equipment needed for mining, mainly because they do not have access to credit facilities such as loans. They further stated that ASM work is tedious with low success rates. As such, locals mostly combine ASM with other formally-recognised activities on registered land whilst migrants engage in other illegal activities such as stealing from established pits and charcoal burning.

Many migrants living within the NRERA exploit the opportunities unearthed by Grizzly and Gemfields' excavations. These 'miners', frequently labelled as *illegals* by mining companies and locals alike, organise themselves into groups, sometimes of more than 50, to trespass onto corporate mining concessions and steal excavated material from industrial dump sites.

Gemfields estimate a loss of approximately one-fifth of potential revenue to theft at the Kagem pit (Bloomberg Business, 2015). Stringent security measures including electric fencing, 24-hour armed security guards and guard dogs have been deployed to impede this loss. Encounters between *illegals* and security personnel are common, with trespassers being apprehended on a weekly basis.

Illegally mined emeralds are usually sold to urban merchants via travelling middlemen, known as 'Go-Comes'. Go-Comes play an important role in the market chain, identifying buyers and sellers, negotiating prices and establishing informal agreements. Occasionally they establish contractual agreements with long-term ASM workers and *illegals* in which a stipend is supplied.

Charcoal Production. Charcoal production is the most significant livelihood income for migrants living within the NRERA woodlands. Rudimentary kilns erected in the Kafubu woods produce up to 15 bags of charcoal weighing approximately 50 kg, with a single bag yielding up to US$4.00. Charcoal is a highly valued resource across Kafubu. It is the primary source of power for cooking and heating houses, restaurants, institutions (for example hospitals and schools) and open market places. It is thus a reliable source of income for migrants struggling to make a living from ASM or illegal mining. Bags of charcoal are frequently displayed for sale on the roadside within the NRERA and it is common to see men transporting bags by bicycle on the long journey to urban centres.

Whilst charcoal burning is regulated by the Forest Department, with individuals being required to obtain a seasonal permit for burning and selling charcoal, the activity is difficult to monitor. Because charcoal burners have no land title deeds due to the emerald fields' restricted status, they are not legally entitled to obtain licences. For locals living in the villages around Kafubu, the activity may complement farming but it is not a principal source of livelihood income. Many migrants complement night-time raids on the Kagem and Kamakanga pits with charcoal production during the day.

Trading and Small Businesses. The growth of small business centres operated by migrant traders to cater for the informal mining sector is a typical accompaniment to mining (Hilson, 2010; Hinton, Veiga, & Veiga, 2003).[9] Pirala typifies this case, having sprung up in proximity to the Kamakanga mine despite the government restrictions placed on tenure within the NRERA. Pirala serves as both a hub for housing and business activities, all of which are, by nature, informal in their deliberate evasion of the NRERA's exclusion rules. All Pirala traders interviewed identified trading as a reliable source of income that is directly linked to mining: *'Since my business started four months ago, life has been better. People migrating here have brought development and improved the local economy. These people will come to my shop every day, I will always have some cash available'* (Grocery shop owner, Pirala).

Pirala has several small grocery shops, taverns, a butchers, a drug store and a pool table house. Structures are basic and temporary, with mud walls and thatched or corrugated iron roofs. Shop owners procure supplies from local farm cooperatives and urban centres. Whilst Pirala is a convenient trading centre, lack of public transport is a challenge for traders who must hire private vehicles to transport goods into the NRERA.

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Traders boast a continual income, making an average monthly profit of 300,000 Kwacha (US $60.00), allowing traders to acquire bicycles, livestock and poultry. Trading off the back of the informal mining community's activities provides migrants with a means of venturing into new businesses or investing in existing livelihood activities such as farming outside of the NRERA, where the dominion of local chiefs allows them to acquire and invest in land. Pirala's economy is managed by a market committee of migrant traders who regulate community activities and collect rent. The committee also runs a neighbourhood watch group, advocating disciplinary measures against violent misconduct, theft, prostitution and even infidelity.

Unlike other mining zones where a gradual development of a commercial form of migration has seen traders settling more permanently in and around a growing informal economic base (Nyame et al., 2009), this was not possible in Kafubu. All activities in Pirala, from illegal mining to selling groceries, fall beneath the umbrella status of informal activities by nature of their location within the NRERA. Restrictions on establishing Pirala as a permanent settlement result in a lack of infrastructure, non-existent health facilities and prohibitively expensive transport links.

Risks in the Informal Sector. Illegal mining carries a number of physical risks including back strain from carrying large bags of excavated material, threats of guard dog attacks, and capture and detention by security personnel. The use of crude mining methods for those practicing ASM presents its own dangers, especially during the rainy seasons when soil collapses are frequent.

The ancillary activity of charcoal production carries significant environmental consequences for the Kafubu area, with much of the land outside the active mine concessions being considerably deforested, despite the restrictions on land use. A recent study on the impacts of charcoal production on the type of Miombo forest found in Kafubu identifies deforestation in the direct vicinity of poorly managed kiln sites, higher rain runoff, increased flooding in the rainy season and drought in the dry season. Such environmental impacts lead in turn to a reduced local supply of timber, fuel, non-timber forest products, meat, honey and fruits for local communities (Chidumayo & Gumbo, 2013). We made similar findings. Increased activity in Kafubu has increased pressure on the environment: trees are felled at high rates for charcoal burning, forests are cleared for mining and construction with few afforestation activities to compensate; an increase in human population and an emerging discourse on 'conservation' by NGOs aiming to counteract the negative impact of mining means wild animals and birds are less accessible for subsistence, and rapid land and water degradation around formal and informal mining sites is reducing opportunities for farming and food security (cf. Buxton, 2013; Hinton et al., 2003). These environmental impacts greatly reduce resource availability and threaten livelihood security and sustainability for both migrants and locals.

A number of social risks further threaten migrant livelihood security. Many migrants indicated that they set out specific goals at the onset of their arrival in Kafubu, namely to raise funds to educate their children and to buy property back home. The timeframe for meeting these goals was between six months and two years. However, no individual interviewed had attained their ambitions. Some had been performing illegal mining/charcoal burning in Kafubu for over 10 years and were still waiting to 'hit the jackpot'. Traders from Pirala suggested the illegal mining of emeralds in particular is addictive, despite earning incrementally from small finds, individuals described a 'craving' for more. A 62-year old illegal miner, for example, stated that: *'illegal mining is hard work and a gamble but it is worth it. It is also addictive. I have been doing it for the last six years and the most amount of money I have made from it is 5 million Kwacha [approx. US$ 680]. My life has not changed for the better because I have too many children to look after'.*

This ongoing isolation from the security provided by kin networks at home is accentuated by local-level isolation, which largely derives from the social stigma of being classed as an *illegal* – a term extending from its original designation of trespassers on commercial mines to describe the wider migrant population living informally within the NRERA.

This wider societal stigma depicts *illegals* as living in a world rife with drug abuse, criminality, violence, prostitution and general anarchy (c.f. Walsh, 2003) and they are often branded by policy-makers and the international donor community as misguided individuals, lured by the desire to rapidly

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accumulate wealth (Barry, 1996; Slater, 1994; World Bank, 2005) or as ex-offenders who have escaped from prison and found refuge around mining zones. The derogatory narrative is crude and broad, obscuring not only the complex decisions that lead people to undertake these activities, but also the implications of these activities for wellbeing and livelihood security (Hilson, 2010).[10]

Migrants are thus considered distinct from the 'legitimate' livelihood activities that locals engage in and excluded from the CSR activities designed by companies to invest in 'affected' populations. For example, illegal miners stated that NGOs and companies do not engage with them when conducting activities such as land restoration through afforestation. Instead, they are identified as the ones responsible for destructive activities. In one focus group discussion with migrants, participants asserted that no one has ever asked them their challenges and offered opportunities for improving their livelihoods: *'We are poor, have no representative to voice our concerns; we have less power'* (Migrant living in the NRERA woodland). Because CSR activities do not engage with the migrants occupying the substantial informal sector, they have particularly poor livelihood security. The significance of this critical omission is the focus of our discussion below.

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Discussion 'Sustainable Mining'

Livelihood security is determined by a number of factors, including access to and availability of certain assets, infrastructure, and the opportunity to pursue economic activities (Carney, 1998; Ellis, 2000), as well as strong social support networks (Gilberthorpe & Banks, 2012). A recent study in Ghana showed that informal mining can enhance financial security and livelihoods through the successful accumulation and investment of savings from ASM returns into household assets to support other livelihoods and child education (Hilson & Garforth, 2013; see also Cartier, 2009; Fisher, Mwaipopo, Mutagwaba, Nyange, & Yaron, 2009; Hilson & McQuilken, 2014). These kinds of investments and types of livelihood diversification are limited in Zambia's emerald mines because of the restricted status of the emerald fields and the increased pressure on limited natural resources, environmental degradation from various forms of mining, and poor employment opportunities due to low levels of education.

Whilst in the formal sector, livelihood security is challenged by the high risks of redundancy and dismissal that migrants face, it is the informal sector that presents the biggest challenge to migrant livelihoods. Small business enterprises are restricted by inadequate mobility and infrastructure, and ASM provides little guarantee of an income. In addition, unstable mineral prices and exploitative trade deals in illegal markets provide a highly sporadic income in the informal mining sector (Buxton, 2013; Fisher et al., 2009; Yelpaalaa & Ali, 2005). As a result, opportunities for investment or supporting family members can be limited (Cartier, 2009), particularly in terms of food security (Buxton, 2013).

The relationship between informal mining and charcoal burning can further be framed as a livelihood security issue: when migrants discover that informal mining activities yield unreliable returns, they turn to charcoal production as an alternative informal activity. Whilst charcoal burning ensures an income it is poorly regulated and requires individuals to operate outside a legal framework, limiting the levels of security and support. Growing concerns amongst locals over the environmental impacts of increased activity in Kafubu, including the high level of tree felling, forest clearing and land and water degradation, further limit migrant livelihood security by isolating them from local networks of social, economic and political support. For example, local respondents stated that mining activities attract migrants who engage in unsustainable activities such as charcoal burning. This perception of migrants as 'adding to' the degeneration already accelerated by mining activities amplifies the hostility felt towards this sector of the community. In addition, illegal mining is associated with anti-social behaviour such as theft, 'idleness' and prostitution, the latter being a great concern for many locals who fear an HIV/AIDs epidemic. These difficulties were all recounted by migrants as characteristics of their life as a Kafubu migrant.

Commercial mines' initiatives to contribute to the development of the surrounding economy go some way towards mitigating the concerns of local villages, providing funding and technical

expertise in infrastructure and providing vital help in supporting health and education facilities. But this problematises, rather than addresses and embraces, the *informal economy* that companies unwittingly attract, or the critical role it plays in local socioeconomic dynamics. The livelihood activities of the predominately migrant population that inhabit this informal sector have important repercussions in local social, economic and environmental spheres. Thus, to meaningfully contribute to local development, companies must not only communicate with local villages but also engage with this informal economy. Failure to do so denotes a narrow perspective of sustainability, CSR *and* mine impacts. Below we present a number of lessons that might be taken from this study and applied to this and other mining zones to improve this type of development engagement and the way CSR is actioned.

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Lessons Learned

We argue that solutions to the above problems will require improved communication and cooperation by multiple actors at multiple levels to produce political goodwill, corporate commitment and strong leadership from local chiefs and village headmen. Recommendations in the two key sectors of the population (locals and migrants) in and around the NRERA are:

Locals

Improved corporate engagement with the needs and institutions of local inhabitants around mining zones is crucial. Lessons from Gemfields and Grizzly's operations in Kafubu highlight three approaches to achieving this:

Institutions. Corporate development programmes would benefit from operating through existing institutions, such as chiefs and other forms of village leadership, to maximise local engagement with their contributions. As mining investors have signed land use contracts with government bodies, the approval of local chiefs is frequently not considered as crucial. This has reduced chiefs' traditional role as influential stakeholders in land distribution matters, weakening their power. One Kagem mine employee stated that the chiefs are *'reduced to begging the companies for support and have to accept what they get'*. Corporate relations with neighbouring communities would benefit from the inclusion of chiefs in company decision-making processes. Grizzly include one Lufwanyama chief on their board, inviting him to identify key areas of development when making decisions concerning both official villages outside of the emerald field and the informal settlement of Pirala. The Lufwanyama District Commissioner referred us to a quid quo pro approach to local appointments that has been trialled in Livingstone, southern Zambia. In this case, a chief is a member of a corporate board in exchange for the nomination of a company director as a village headmen. While initially facing scepticism from community members, these director-headmen have become far more connected to and aware of local development and employment needs than their colleagues back at the office.

Engagement. Grizzly and Gemfields both engage with local communities to an extent. The farming cooperatives supported by Gemfields, for example, are an attempt to help local communities become self-sustaining; but this could be extended in both scope and quality. In addition, both companies contribute to the cost of ceremonies and chief visits and have donated vehicles to the district commissioner and chiefs, whilst Gemfields funded building improvements to both chiefs' palaces. However, material gifts have made the chiefs appear greedy, stoking community resentment towards their leaders. Material gifts can be ineffective if they are not made sensitively along traditional lines and are not enough to qualify companies as making a meaningful contribution to local development in the eyes of the population. Companies must think beyond short-term material benefits by facilitating activities that can be sustained over a long period of time.

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Infrastructure. Community expectations of development by mining companies are very high. As such, contributions by companies to local infrastructure and services are crucial to development around the NRERA. 50 per cent of our respondents said that they expect the mining companies to, inter alia, improve road networks, provide transport links, provide more learning resources in primary schools, build secondary schools and provide electricity to households. Although several informants acknowledged the CSR efforts already made by companies in local schooling, they stated that they expect the industries to offer solid commitments in terms of transparency and accountability in order to promise long-term investments in local development. Some respondents from around Kafubu voiced frustration with how the level of actual development fails to match their expectations of shared wealth from Kafubu's emerald resources:

> *They [mining companies] are potentially very important, but they have done very little for the communities. They could improve roads and transport. Communities would like them to participate and contribute to functions in villages – like traditional ceremonies*. (District Commissioner, Lufwanyama District, September 2012)

> *Having an idea about production level of the mining companies would help the community to decide what kind of support they could ask for.* (Councillor, Pirala village, September 2012)

> *These mining companies make a lot of money but they do very little to the local economy.* (Local Farmer, Kapila Village, September 2012)

If the above initiatives are achieved through local consultation and engagement, considering the requirements of both locals and migrants, they hold the potential to reduce dependency on the resources provided by the mining companies and will go some way towards fulfilling a sustainable mining narrative.

Migrants

Active engagement with the informal economy populated by migrants, is essential to providing secure livelihoods, encouraging sustainable levels of natural resource use and mitigating conflict with companies. This could be achieved in a number of ways:

Tenure. Securing rights to land use for migrants on a long-term basis is relatively straightforward in the villages just outside the NRERA. Chiefs in Lufwanyama allocate parcels of land freely to new arrivals in Lufwanyama in return for a gift as a demonstration of respect (*'Lambas are generous with their land'* [Police Assistant Superintendent, September 2012]). This approach has successfully mitigated conflict between locals and migrants around Kafubu and provided a level of localised livelihood security for migrants. However, within the NRERA tenure rights remain a challenge to be addressed.

Security. A more liberal approach to security on land concessions outside core mining areas would contribute to a greater sense of livelihood stability for those living within the NRERA. This migrant population need to be recognised by companies, who could go beyond stringent security measures to engage with the informal economy. Gemfields' security measures have long been coupled with an unwillingness to engage with the realities of the population living around their mining site. Grizzly has engaged with this sector of the population by permitting the establishment of the Pirala settlement and trading hub on their concession, as well as setting up a school within the NRERA. These provisions allow alternative businesses to grow, and provide relatively secure tenure, without the constant threat of eviction. Formalising this settlement would increase investment in longer term goals and provide greater security and opportunities for its residents. Informally, chiefs have dominion over Pirala. If formalised, community activities would be easier to regulate – from informal mining to charcoal

burning. Chidumayo and Gumbo (2013), for example, argue that secure and strongly defined land ownership is a key management policy that would provide the basis for more sustainable charcoal production methods in Zambia.

Engagement. Charcoal burning is identified as at once a primary source of energy across Kafubu and a significant source of environmental destruction. Thus, better engagement with actors involved in this activity is critical. Currently, migrants living within the NRERA cannot obtain title deeds. As such, charcoal burners are not legally entitled to obtain licences. The wider provision of electricity would also contribute to reducing the negative environmental effects of charcoal burning, although this would need to be mediated with alternative livelihood sources such as conservation projects. We found that migrants are ready and willing to engage in conservation activities in return for formal recognition. This could be achieved through concessions to land use within the NRERA.

Public-Private Partnerships. The opportunities for public-private partnership engagements should be embraced. In addition to the relatively piecemeal projects the companies fund (for example a farmer cooperative, building a few classrooms, funding a cultural event, and so forth) a more transparent short-to-medium-term strategy that clearly outlines specific projects and funding initiatives that will benefit the total population on a sustainable level would be welcomed. For example, the mining company may not necessarily give direct support to *illegals*, but they can support the government in designing and implementing programmes that can help minimise detrimental activities by building capacity in relevant government departments (for example the environment) and enforcing strict laws (for example on charcoal burning). Realistically the companies cannot replace the state, but they can work together through these partnerships and capacity building initiatives to construct a more sustainable framework around engagement.

Gemfields have recently taken important steps towards engaging with the informal mining sector. In April 2015, they opened a buying office in the nearby town of Kitwe that will purchase stones back from the informal sector, a market currently dominated by the Go-Come cartels and their buyers. The centre could, according to Gemfields' executives, 'eventually provide the company with the equivalent of as much as 25 per cent to 30 per cent of production from its nearby Kagem mine' (Bloomberg Business, 2015). Gemfields states that: 'Small-scale emerald miners and traders will get 'far higher prices' at the centre for their gems than from other buyers […]. Many of Zambia's emeralds end up on the illegal market and are smuggled out of the country, selling for less than a tenth of the price Gemfields may achieve in auction. The office will help boost Zambia's tax revenue by capturing more of the trade' (Bloomberg Business, 2015). This private sector initiative may not be representative of 'sustainable mining' per se, but this type of engagement with the informal sector demonstrates a way in which the mining industry might work *with* rather than *against* the actors mining attracts in their CSR efforts. The effects of this engagement warrants further research to identify its immediate and long-term outcomes for migrant livelihoods.

Conclusions

There is little doubt that the mining industry can contribute to improved livelihood security in the areas they operate. The level to which this contributes to 'sustainability', we argue, depends on a number of factors, many of which are still overlooked in the industry's engagement strategy. This study has shown that the pursuit of sustainable mining is more complex and challenging than a commitment to CSR entails because it involves understanding and meeting the needs and expectations of many different stakeholders. Emerald mining in Kafubu has important livelihood benefits through the provision of formal employment and improvement of social services such as health and education. But numerous benefits are derived from the substantial informal economy that has mushroomed around mining, ranging from activities in ASM to more audacious forms of extracting Kafubu's mineral wealth, as well as a host of business ventures and exploitation of the area's other natural

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resource reserves, notably its forests for charcoal production. This informal economy is largely populated by migrants, having initially travelled to Kafubu in the hope of finding a job with commercial mines. Our findings suggest that livelihood security for mining migrants, and sustainable development more broadly, remains restricted by poor engagement with this sector.

This nuanced approach to 'sustainable mining' makes an important contribution to the literature. We move beyond a consideration of impacts (positive and negative) to argue that it is the multitude of actors themselves that determine whether and how mining might be 'sustainable', not the CSR initiatives designed and implemented within a corporate space. In the face of weak government regulation and enforcement, and poor engagement with mining populations, the role of the corporate sector is magnified in mining zones like Kafubu. As such, we argue, corporations cannot be reductive in their approach to CSR. They must engage with the actors determining the narrative within the landscape of extraction.

We provide recommendations on how CSR initiatives can not only improve corporate investments in infrastructure and services, but also engage with the informal sector to support livelihood security for locals and migrants alike. This would begin with recognition of the importance of the informal sector in generating significant sources of income and determining the dynamics of local resource use and availability. Promising initiatives to build on this resolve are emerging, as Grizzly has demonstrated with the establishment of Pirala School, and Gemfields by exploring options to 'informally' acquire emeralds. However, mining companies need to engage on a far more expansive and inclusive scale with both the formal and informal activities surrounding their operations before claims of delivering 'sustainable mining' and 'responsibly sourced' gemstones are fully achieved.

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Notes

1. 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (WCED 1987, p. 43).
2. According to the report of the Mining, Minerals and Sustainable Development Project (MMSD, 2002) 'One of the greatest challenges facing the world today is integrating economic activity with environmental integrity, social concerns, and effective governance systems. The goal of that integration can be seen as "sustainable development." In the context of the minerals sector, the goal should be to maximise the contribution to the well-being of the current generation in a way that ensures an equitable distribution of its costs and benefits, without reducing the potential for future generations to meet their own needs.'
3. Other mines were opening during the time of our fieldwork including a new Chinese-run emerald mine. For the sustainable development initiatives developed by the two companies present in our study see Grizzly (2015) and Gemfields (2015).
4. Livelihood security is taken to mean the adequate and sustainable access to income and resources to meet basic needs, including suitable access to food, potable water, health facilities, educational opportunities, housing, and time for community participation and social integration (see Frankenberger & McCaston, 1996).
5. We are limited by space to discuss issues of conflict, but it is important to note that conflict is currently very low in Kafubu. We found the role of the chiefs to be paramount in the mitigation of conflict.
6. We define 'locals' as individuals with kinship or ancestral ties within the area, and 'migrants' as individuals with ties to areas outside of Lufwanyama District.

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7. Prior to this, emeralds were widely used by the traditional land users Informant statements suggest emeralds were easy to collect because they were near the surface. Both males and females possessed emeralds; they were used as ornaments and for games (for example 'drafts'). Anecdotal accounts also suggest that people were buried with emeralds (Gilberthorpe et al., 2012).
8. See company websites for detail: http://consumer.gemfields.co.uk/; http://www.grizzlymining.co.zm/index.php/en/corporate-social-responsibility
9. For discussion of how informal markets can provide opportunities for diversifying away from mineral extraction, see Banchirigah (2008), Hilson & Garforth (2013), and Nyame et al. (2009).
10. Whilst in this paper we identify different categories of 'migrant' that are treated differently by locals, corporates, NGOs and government bodies, there is an interesting body of work on the perception of migrants as 'strangers' in mining zones that renders them external to the local community. See in particular Akiwumi (2014) and Njoh (2007).

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